From the collection of the

San Francisco, California
2006
IN THE BITTERROOTS OF MONTANA

From a photograph by K. D. Swann, courtesy of the U. S. Forest Service
OUR FEDERAL LANDS
A Romance of American Development

BY
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"THE NATIONAL PARKS PORTFOLIO"
"THE TOP OF THE CONTINENT," ETC.

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FOREWORD

BY HUBERT WORK, SECRETARY. OF THE INTERIOR

In a hundred and fifty years a virile, restless, acquisitive people have swept our country from the Atlantic to the Pacific Coast. From Jamestown and Plymouth they have pushed the frontier before them until it has disappeared. The wild turkey vanished before the domestic hen. Sheep replaced deer. The buffalo gave way to better beef breeds; grains and fruits have been substituted for nuts and wild berries. The Conestoga wagon, the canal, the steam railway, the automobile, and the airplane have followed each other in rapid procession—all within the memory of father and son. Towns and cities have been built, many of them among the world's largest, and more than half our people live in them. We win wars for other nations and lend them money with which to mend their wrecked fortunes.

We are admittedly the richest, most powerful Nation in the world and we took this power of wealth out of the ground. Now, we must invoice our resources and determine how we should proceed from here. For a nation begins but once.

April, 1928.
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INTRODUCTION

The first federal land I ever stepped foot upon, as a small child, was probably the post-office in Newark, New Jersey. No doubt the next was a lighthouse reservation near Sandy Hook, and the third must have been either the Brooklyn Navy Yard or the fort on Bedloe's Island from which rises the Statue of Liberty. Later I visited the Custom House because it was national. As an older boy I hunted up all the forts around New York, and on one of these Saturday explorations wondered why the great United States Government should bother to own a tide-washed islet pointed out to me by a fisherman.

As a busy man I knew there were "public lands" somewhere, and occasionally read of "land agents," "land offices," and "land grabs" in newspaper dispatches from Washington. I knew that people "took up" land "out West," presumably for farming, but under what conditions or precisely from whom I would have been hard put to it to say. I had heard Yellowstone called "the national park," and supposed the Government owned the Indian Reservations, concerning which scandals were occasionally alleged by excited persons seeking names to petitions. Gettysburg Battlefield in Pennsylvania was national, I somehow knew, and I supposed that "national monuments" were other memorials to the historic dead. I had read of fires in
"national forests," of which my more definite ideas, together with all my knowledge of the romantic beings known as forest rangers, derived from Stewart Edward White's early novels.

None of these and other isolated concepts of similar kind were related in my mind, nor do I recall ever grouping national land facts nor hearing them grouped. Reclamation when it was new, raising grain by the square mile when this was a novelty, mining copper on a great scale, and other showy Western achievements reported in the press were often referred to in conversation among the men I went with. But never, until I first explored Yosemite and Glacier National Parks on horseback in 1915 and two years later rode High Sierra trails for many miles did the diversity, inestimable value, and interrelation of our national land holdings as a system dawn upon me.

What I then first discovered existed was an unsuspected organized empire of famous history, vast size, colossal wealth, unbelievable opportunity, vast intricate problems, and physical beauty and diversity beyond imagination. Living intimately with it for a decade since, searching its past which is that of America, dealing with its problems which by now have ceased to be sectional, I am impressed with nothing so much as the necessity for detailed knowledge of their country and its problems on the part of all its people alike and for nation-wide vision in perspective of the whole.

Suddenly we have entered a new era in which the destinies of the world, whether we will or not, directly
or indirectly are in some part in our hands. First, and without delay, we must know ourselves. The localism with which the East has always justly charged the West, is disclosed as its own greatest weakness, also. The swift rush of events and swifter achievements of science in practical application have annihilated time and space. East and West exist no longer, but the sectionalism and misunderstandings which characterized their former existence remain. The facts and problems of each are now equally the business of the other. Reclaiming, for one example, the exhausted farmlands of the East and the potential farmlands of the West are equally the nation’s business if it is to perform its duty to itself and its people, and accomplish its destiny among nations. The initial condition for national and international achievement in the future immediately before us is self-knowledge.

As my contribution to this end I offer here neither a history, a handbook, nor a treatise; the literature of detailed information available to students is sufficiently large and complete. This book, remarkable chiefly perhaps for its omissions, addresses only those, West as well as East (but they are millions), who know their national estate little if any better to-day than I did a dozen years ago, but upon whom the new future of the nation depends. It outlines, not details. It sketches the great whole in perspectives, which it fills only with facts that clarify. It will have achieved its purpose if it imparts the vision of the whole which emerged in my own mind out of the studies of a decade, if it makes
INTRODUCTION

usefully for broader public conception and understand-
ing, if it inspires personal participation in the intimate
problems of the nation as a whole.

In last analysis, a nation, like its people, stands
solidly on land.

So far as possible, the statistical information in
this book is that of the last fiscal year before publi-
cation. If later readers want the latest figures, a note
to one or more of the Departments of the United States
Government in Washington will secure the last annual
report, from whose tables changes may easily be iden-
tified. If readers become interested enough to keep
abreast of the deliberate growth of the Government,
one of the chief objects of this book will have been
accomplished. When its citizens think nationally, this
nation's future is secure.
CHAPTER I
OUR NATIONAL ESTATE

ASKED the total area of the public lands, an official of one of the largest land administering bureaus of the Federal Government replied:

"I don't know because I have nothing to do with them. Ask the General Land Office, which administers them."

"But you administer two or three hundred thousand square miles of public lands yourself," was the surprised reply.

"No," he rejoined. "Our National Forests consist of public land but not of Public Lands. There's a difference. The Public Lands or Public Domain constitutes a land division by itself, consisting of the unappropriated and unreserved lands which are subject to homesteading, and of open grazing ranges."

It is important to grasp this official distinction at the outset. No other terms are so loosely used, even perhaps in Congress, as "public lands" and "public domain." In departments of the national government which are not directly concerned with land administration, they are little understood; and press and public constantly misuse them, with, of course, corresponding confusion of ideas.

Many different government organizations control many classifications of Uncle Sam's real estate.
Besides the General Land Office which controls the Public Domain or Public Lands as defined above, others administer National Forests, Reclamation Projects, National Parks, National Military Parks, National Monuments, Indian Reservations, Lighthouse Reservations, and Federal Game Preserves. And, besides these conspicuous land classes, other classes less distinctive are administered by the War, Navy, Post Office, Commerce and Treasury Departments. Then there are Water Power, Oil and Mineral Withdrawals; that is, lands reserved temporarily from other uses until these special uses can be realized.

There is no generic name for federal lands as a whole because the United States government has not, for many decades, considered its lands as a whole. No administration bureau controlling any one class of lands officially knows the extent of any other class of lands, or much about the problems, methods and policies concerned in administration of other land classes. Of course special problems frequently involve two or more bureaus in some common activity. But, until the private organizations of the country concerned in outdoor recreation effected national organization in May, 1924, and called on the national government for co-operation, no common objective had for many years united all land administrations. There is no government agency to correlate the groups.

With organization of out-door recreation, how-
ever, has dawned a new national land era based upon a new use common to all. The National Forests, for example, which were created and are operated to conserve our lumber resources, also furnish wilderness recreation to many millions of persons. The Reclamation Projects, whose purpose is irrigation of arid lands for agriculture, may also become pleasure resorts of high degree. Waste swamps everywhere may become migratory bird refuges, unused military and naval lands may become parks, unused Post Office sites make excellent city play-grounds, and abandoned light-house reservations may be the best of excursion resorts. There is seemingly no end to the beneficent new uses to which Uncle Sam's real estate may be applied without diverting it in the least from original industrial uses.

To these suggestions government officials have eagerly responded, and there is in progress the beginning of an approachment which, in the years, unquestionably will produce increased effectiveness in other directions than only the one which is bringing about this new co-operation. For the first time in many years there is need for an official generic term to cover all. The name Federal Lands is coming into use as that generic term. It is sound, descriptive and concise.

Originally, of course, there was no classification of government lands. All were then known as public lands, or the Public Domain. Uncle Sam first became a large land holder under a resolution of the
Congress of the Confederation in 1780 granting power to receive and take care of land. Seven states at that time presented to the nation nearly two hundred and sixty million acres, or 405,000 square miles. Thereafter, the Public Domain has been increased by the Louisiana Purchase in 1803, the Florida Purchase in 1819, the Oregon occupation in 1846, the Mexico Cession in 1848, the Texas Purchase in 1850, the Mexico Purchase in 1853 and the Alaska purchase in 1867, besides lands in the Philippines, the Hawaiian Islands and Porto Rico; also the island of Guam in the Pacific. Also in lands bought back by the government for special uses, like building sites, forts, camp-grounds and eastern National Forests. Also in lands presented to the nation, like National Parks in the East.

At the outset of its land owning, the young nation had no other income than was derived from selling its wealth of lands, parcel by parcel, to all comers, in order to procure cash for public enterprise. Land was its most plentiful possession, almost its only possession, and was apparently limitless. The Board of Treasury made sales of public land as early as 1785. Its duties were transferred in 1789 to the Secretary of the Treasury, who then became the nation's sales manager. In 1812 land sales assumed such dimensions that a special bureau was organized in the Treasury Department to take over the growing business. Thus was created the General Land Office.
Other sources of national income developed, and, during the thirties, land was perceived to possess higher and very different values in the national economy than merely a source of cash income. Agriculture assumed growing importance in the outlook of the future. Population was needed, and settlement became recognized as sufficient compensation for award of land. The General Land Office was reorganized to meet these ideas in 1836, and in 1849 was transferred to the Interior Department, where later it became the government's principal agency in the swift development of the West. Its operations broadened and became exceedingly complicated, including extensive surveys, sales, grants, and the exercise of judicial powers in the settlement of private claims. In 1862 the homestead system was adopted, and thereafter lands have been awarded on condition of citizenship and occupation.

It will be seen that during these early decades the Public Domain increased enormously faster than it could possibly be lessened by sales and homesteading. Even the tremendously rapid development of the West, once it began, and the increase of homesteading entries from 160 acre units in the fertile prairies to square mile units in the semi-arid lands west of the Rockies failed to keep pace with increase.

But with national growth came new needs which, while not decreasing the nation's gross holdings, built up new land classifications at expense of the Public Domain, which thereafter has decreased
steadily until to-day, while still the largest of the various classifications of Federal Lands, it is only slightly larger than the next in size, which is the National Forest.

One of the earliest methods of dispersing land was making liberal donations to new states as they were admitted to the Union. Just as the original states which had owned practically all the land started the nation as a land holder by gifts, so now the nation equipped its new states with lands. These grants were made for support of schools, for internal improvements, for reclamation, and for railroad construction. The nation also encouraged railroad building by making private companies liberal grants of land, some of them unnecessarily liberal, so that suits are now pending for recovery of large holdings through which several railroad companies are making very large earnings in other lines of business than railroading.

The complicated mining policy of the United States has resulted in withdrawal from the Public Domain, for private claims and actual operation, of areas extremely large in the aggregate, and, in later years, under the theory of conservation of natural resources, of immense areas bearing coal, potash, oil, sodium and other mineral deposits to be subject to the disposition of the future.

In due time, also, the nation undertook large reclamation projects which lessened the Public Domain. It also withdrew large areas for Indian res-
ervations. In 1872 it began to withdraw areas for National Parks and in 1906 for National Monuments. In 1911 it established the National Forests, now embracing an area of 286,000 square miles. And meantime, dating back to the beginning, there have been constant withdrawals of army lands, navy lands, lands for migratory bird and wild animal conservation, lands for post offices, light-houses, national hospitals, federal courts, and many other public uses, none very great in area but aggregating probably several thousand square miles.

Considered as a whole, it is impossible accurately to measure our Federal Lands to-day; the national government itself does not know the total. Some of the administrative bureaus have not had occasion to total their own possessions, and the Public Domain is never exactly the same size for two consecutive weeks. From the information we can gather from the several administrative agencies in the national government, it is safe to say that Federal Lands of all kinds, Public Domain, National Forests, National Parks, Wild Life Sanctuaries, reservations of every kind, exceed seven hundred thousand square miles in area, not including the vast wilderness of Alaska and island possessions.

But how much is seven hundred thousand square miles? Such a figure means as little to most of us as the distance from the earth to the moon. Let us assume these lands collected and fitted together into the northeastern corner of the United
States. Beginning with Maine, inclusive, they would stretch westward to the Mississippi River, and southward from the Canadian boundary to the southern boundaries of Tennessee and South Carolina with some to spare. For still clearer conception let us name the states within this imaginary illustrational area: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Virginia, West Virginia, North Carolina, South Carolina, Wisconsin, Michigan, Ohio, Indiana, Illinois, Kentucky and Tennessee.

An empire!

Most federal land, of course, is in the far west. The group called the Public Lands States are eleven in number and all of them large. Two thirds of Utah is in national possession. But every state in the United States, and every territory and other possession, contains Federal Lands under several different administrative organizations.

So far as I can discover, there is no organization in the United States government whose business it is to collect the facts concerning Uncle Sam's real estate holdings, or to value them. At current land prices, their value would be enormous. But combined market values, if it would be possible to appraise these lands, would be absurdly below their real value to the American people. It might not be impossible to guess shrewdly the billions in oil and metal concealed in the withdrawal areas, or compile
potential crop values in undeveloped irrigation opportunities, or estimate future lumber values in National Forests. But who can estimate the worth of the National Forest as an organized, scientific and finely administered machine for conservation of the nation's all time future lumber resources? Or that of National Parks in health, sanity, education, propagation of pride of country and inspiration? Or that of the extraordinary outdoor museum system which we call our National Monuments?

Thinking of values, it is only possible to say at this time that the new concentration upon the unindustrial uses of our Federal Lands discloses already a horizon vastly greater than even the most optimistic of the men and women who have been looking ahead during a few years past have dared to predict. With recreational organization of people and government effected, however lamely yet, we are entering a new Land of Promise with feelings akin, perhaps, to those of our fathers of the forties and fifties when they looked westward at their possessed but little known wilderness empire.

This full fledged era of new uses arrived on wheels at high speed. The automobile had been with us for many years, but long distance touring began on a national scale only about 1915. Not only has it invested our Federal Lands with new uses and new values impossible of estimation, but it has changed their very face. Some one has yet to estimate what the motor has cost the national, state, county, and
city governments of the United States in new roads alone. The sum will be colossal; it might even have reorganized and refinanced Europe.

A network of ever closer mesh has been drawn across the continent from ocean to ocean, including our Federal Lands. Even the desert southwest is crisscrossed with highly surfaced roads and alive with the new invasion.

National Forests and National Parks, because of the charm of their woods, waters and scenery, naturally bear the brunt of road assault, but all Federal Lands contribute heavily and increasingly to this new draft upon unexpected resources. Camping out, once the sport of boys, is now the pleasure of adult hundreds of thousands of westerners and eastern people who tour west. The western type of mountain hotel-camp, consisting of a “grubhouse” surrounded by tents or rough cabins for sleeping, has become nationalized and is developing luxuriance.

The enormous majority of pleasuring motorists, however, are in no real sense out-door livers, but rapid sightseers, flitting like butterflies from flower to flower. This is true even in National Parks, which are popularly but erroneously supposed to draw millions of worshipping students. Several hundred thousand, possibly, cover all of these; the millions drive carelessly through on tour, with stops of an hour or two or a day or two to see the sights, just as between parks they drive through National
Forests and cities and private resorts to glance about in passing. It is important to recognize this.

Attempting to present the supposedly dull subject of land in its actually dramatic and often thrilling aspects, this book sees long distance touring the principal factor of recent great enlivenment and mighty change. It would need a book of its own adequately to present the visible changes the automobile has made on the face of our country, to say nothing of its effects upon the human view-point and character. In these pages we can give this fascinating influence little space, but its effects, far more than those of any other dictating factor, will constantly appear. The motor cannot be overlooked nor forgotten for a moment in any modern consideration of lands of any kind. It is at once the most beneficent and the most destructive of tyrants, one of our greatest hopes and greatest perils. And what will the history of two decades hence say of the airplane, which already threatens our National Parks.

History will celebrate the last decade also because it has brought together into national co-operation all the many popular movements of the past toward conservational achievement. Beginning under George Bird Grinnell more than fifty years ago, a single national movement for conserving wild life in Yellowstone National Park has begot thousands of organizations, great and small, for conserving, developing and wisely using our wild lands and their non-industrial products. Literally millions
of citizens are interested in one or more departments of nature conservation to-day. Organization of the organizations themselves was inevitable. Beginning informally in defense of National Parks threatened by water power in 1915, it acquired form and initiative in 1924.

The National Conference on Outdoor Recreation, created on invitation of President Coolidge, was badly named. No other word than Recreation was found broad enough to cover the great range of objectives, principally land conservational, then brought together. Many of these, like wild life protection, stream purification, and maintenance of National Park standards, had little to do with "diversion after labor" which is the popular and dictionary meaning of the word recreation, but it couldn't be helped. The inclusive word does not yet exist. By twinning together a council of public-minded private organizations and a special committee of the President's cabinet, a body was created which has achieved much and points to better organization and greater achievement in the future.

It was the Federal Lands which brought to the surface the policy of conservation of natural resources for economic use; the long and bitter war of Cleveland's and Roosevelt's times centering upon national possession of the federal forests made that a formal national policy. It was the Federal Lands which nationalized the principle of conservation for preservation; struggles for many years over wild
life laws and refuges, and especially the recent bitter war for National Park standards, made that a national policy. Because they are the property of all the people, these lands are by common consent the particular battle-ground of conflicting policies. Here are now evolving the fate of our remnant of wild bird and wild animal life. Here will work out the answer to the question whether we shall carry down to posterity a few distinguished examples of our noble original wilderness as God made it.

Federal Lands have developed a very large special literature, largely economic. Problems in forestry, reclamation, mining and many other departments of the subject are set forth in numberless volumes, essays and reports. Books on exploration, travel and sports are also many. But little can be found bearing popularly on the subject as a whole which is the purpose of this book, and on the interrelation of its many subdivisions. No such consideration is possible to-day without giving motoring and nature conservation their due place with economics in the picture of the whole.

For many reasons, then, the national gaze to-day centres upon the remnant of what once included practically all our country from ocean to ocean—a small remainder compared even with the wilderness of the sixties, but vastly greater in recognizable values. It is to study it a little, to estimate profits whose kinds had not been conceived then, to get it into perspective with the developments around it,
with the genius of our times and with the national life of to-day, and to consider, glancing back at history, the movements and influences which will bend it to its new uses, that this book is written. It is to help the thinking of multitudes who are deeply concerned in these new problems.

A joint committee, of which the author was secretary, of the American Forestry and National Parks Associations surveyed in 1925-27 the recreational opportunities of federal lands for report to the National Conference on Outdoor Recreation. The long studies for the report, the first in a fascinating new field, have helped in preparation of this book, which, however, unlike that, also visions Federal Lands from the historic and economic points of view. The report was published in 1928.
CHAPTER II
THE STORY OF OUR PUBLIC DOMAIN

I
BUILDING THE NATION

In any consideration of Federal Lands, the Public Domain is basic. Not only was it, originally, the nation's sole land possession, sum of all potential land possessions, but later it became parent of many great land divisions. Sales of its lands provided the national income for many years. Gifts of its lands brought settlers, whom it fed, clothed, housed and supplied with farms, water, fuel, lumber, power, and material for industry. It furnished roads for travel, railroads for transportation, material for manufacture and commerce. It set apart ample reserves for the future of all that mineral, soil and water provide.

Out of the Public Domain the nation was built and shaped. Its function of creation began in 1780, and for more than a century it was the great original source of prosperity, the spring and reservoir of national progress. To-day, its lands shrunken to culls, its greater work of the future carried forward by younger specialist land organizations carved out of its vitals, its national importance departed like the glory of a day at dusk, nevertheless, it remains the largest of the subdivisions of our Federal Lands, and busier in many directions in its impoverished decline.
## AREA OF STATES AND TERRITORIES

[Based upon careful joint calculations made in the General Land Office, the Geological Survey, and the Bureau of the Census]

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<td>Acres</td>
<td>Sq. miles</td>
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<td><strong>3,435</strong></td>
<td><strong>75</strong></td>
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<td><strong>75,000</strong></td>
<td><strong>133</strong></td>
<td><strong>85,120</strong></td>
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<td><strong>3,742,877</strong></td>
<td><strong>2,395,441,280</strong></td>
<td><strong>2,395,441,280</strong></td>
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</tbody>
</table>

1 Including adjacent islands.
than ever it was in its years of swollen wealth. Its present potential value has been estimated in billions not including those lands in which the United States has recently reserved minerals; but any estimate is the merest guess work. Even after all its remaining lands, now largely desert, shall have been given away, if ever they are given away, the existence of the General Land Office is guaranteed by the mineral leasing act which has retained national ownership of non-metaliferous minerals found in lands thereafter to be homesteaded.

The total area of the United States, exclusive of Alaska and island possessions, is 1,937,144,960 acres, or 3,026,789 square miles. Once the Public Domain consisted of 1,400,000,000 acres or 2,187,400 square miles. To-day, much the most of it having passed into private possession and more than half the remainder having been withdrawn for conservation, it contains about 194,000,000 acres or 303,125 square miles, an area practically equal to the New England and Middle States with Virginia, West Virginia and North Carolina. How these lands were acquired and how they passed, and still are passing, is the story of the Public Domain.

The lands in the original thirteen states, Connecticut, Delaware, Georgia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina and Virginia, also in Texas, never formed a part of the Public Domain, though areas for spe-
cial purposes have been acquired by purchase since. There are no original Public Lands in Kentucky and Tennessee, and none can longer be identified in Illinois, Indiana, Iowa, Missouri and Ohio. Small areas remain in Alabama, Kansas, Louisiana, Michigan, Mississippi, Oklahoma and Wisconsin in widely scattered tracts, much of it unlocated.

The great bulk of it of course is thoroughly well known. The General Land Office quoted the unappropriated and unreserved Public Lands covering seventeen states as totalling, in 1927, 193,737-588 acres or 302,715 square miles, of which 53,850-590 acres are still unsurveyed. They are distributed according to the accompanying table.

### AREAS OF PUBLIC LAND IN ACRES

<table>
<thead>
<tr>
<th>State</th>
<th>Surveyed</th>
<th>Unsurveyed</th>
<th>Total</th>
</tr>
</thead>
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<td>Arizona</td>
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<td>7,635,100</td>
<td>16,961,100</td>
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<tr>
<td>Arkansas</td>
<td>227,529</td>
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<td>227,529</td>
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<td>California</td>
<td>14,847,607</td>
<td>5,763,270</td>
<td>20,610,877</td>
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<td>Colorado</td>
<td>6,488,599</td>
<td>724,701</td>
<td>7,213,300</td>
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<td>Florida</td>
<td>5,730</td>
<td>8,132</td>
<td>13,862</td>
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<td>2,031,945</td>
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<tr>
<td>Minnesota</td>
<td>248,740</td>
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<td>Montana</td>
<td>6,730,447</td>
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<td>6,942,527</td>
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<td>Nebraska</td>
<td>30,001</td>
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<td>Nevada</td>
<td>30,855,598</td>
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<td>93,544</td>
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<td>942,848</td>
<td>19,579,090</td>
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<tr>
<td>Grand total</td>
<td>139,886,998</td>
<td>53,850,590</td>
<td>193,737,588</td>
</tr>
</tbody>
</table>

Public Lands constitute twenty-six per cent of the total areas of the seventeen states therein named,
and a trifle more than ten per cent of the total lands in all the United States together, not including Alaska and our island possessions.

The following eleven far western states, because of their large proportion not only of Public Domain but other classes of Federal Lands besides, are frequently called "the Public Land States": Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. Considerably more than half of Nevada is Public Domain. Several states are still more than half in mixed federal ownership of various kinds, and their slender populations bitterly resent their inability to tax all lands within their borders, especially as the National Forests may comprise about their best lands.

"The United States," we sometimes read in the local press and even hear said in Congress, "grabs all our productive land, dealing us semi-starvation. It is not fair."

This view ignores the fact that every acre of all of these states was once national property, private owners possessing their semi-arid farms of to-day only by gift of the nation, which has "grabbed" nothing from its citizens, ever. The inhabitants of these states, or their parents from whom they inherit, moved into them originally of their own free will, knowing their condition, with all the United States to choose from, applying for and accepting the government's gifts. The lands in these states
which, originally national, the government has withdrawn from settlement and reserved for special purposes remain the property of all the people. National Forests, National Parks, Wild Life Refuges, Reclamation Projects, Mineral, Oil, Potash and a dozen other highly specialized reserves are necessarily national properties. Indian Reservations are the properties of Indians. The great majority of these reserved lands occur in the remote western states, whereas the eastern portion of the Public Land states are practically all privately owned and subject to taxation. It is this inequality which excites most of the criticism in the far west. To equalize this, certain definite parts of the revenue derived from Forest Reserves are given to these states as a substitute for the power of taxation.

Many of us are surprised on first learning that the policy of this government since 1862 has been to give away as fast as possible its vast possessions of land. A large proportion of the actual and potential wealth of America was presented, in the first instance, free to its citizens.

"Imagine," some one once said to me, "acquiring the heart of Pittsburgh at the cost of living awhile on the property."

Could our forefathers have previsioned even a hint of the future, how differently some of the nation's wealth might be distributed to-day!

In early colonial times land was too plentiful to have quotable value. Colonists squatted where
they pleased, often on land reserved for Indians, provoking wars. New settlers on land claimed by old settlers invited bitter and often lasting quarrels. Later, as settlement made some localities more desirable than others, land was sold, originating prices. Out of these conditions arose the need of government land control; and the need of income led governments to sell their own extensive lands. Thus began land offices, first in the colonies and the states which succeeded colonies; later also under the new national government.

Following a resolution of acceptance by the new Congress of the Confederation on October 10, 1780, the states of New York, Virginia, Massachusetts, Connecticut, South Carolina, North Carolina and Georgia made the United States a landowner by presentation of 259,171,787 acres. Little of this land had quotable value at the time. Little of it had even been explored. Almost none of it was surveyed. Yet sales had to be made to meet government expenses. With three classes of ownership, private, state and now national, most boundaries in dispute, and the young nation pledged since 1776 to reward soldiers with grants of land, the duties of the first national land administrator, the Secretary of the Treasury, in 1789, and of his several successors, became complex and strenuous. It is interesting to note in passing, as a flash-back from our late war to that of the Revolution, that fifty acres had been offered to every soldier in the British army, including
THE EARLY COLONISTS FACED MOUNTAIN RAMPARTS
This example of the Great Smoky country is typical of all the Appalachians
CHARACTERISTIC GRAZING LAND IN PUBLIC DOMAIN

Showing James Ear Rings, full-blood Blackfoot, watching his herd
hired Hessians, as a reward for deserting and settling in the new country; and that liberal grants were offered to all American soldiers who should serve throughout the war. There were many beneficiaries of both classes.

The war was followed by vigorous emigration into the Northwest Territory, of which Ohio was the central and most popular part, and vigorous expansions of settlement in all the states. Sales for government support were specially satisfactory in Ohio, great areas of whose finest land, much of it yielding later fortunes in white pine and black walnut, to say nothing of prosperous farms and settlements, brought thirty cents an acre; but it was a high price for the times. In 1787, Jefferson wrote: "I am very much pleased that our western lands sell so successfully. I turn to this precious resource as that which will in every event liberate us from our domestic debt, and perhaps too from our foreign one."

Real estate speculating began early. One sale of 240,540 acres is recorded to John Cleve Symmes of New Jersey, another of 822,900 acres to the Ohio Company.

On April 25, 1812, Congress created the office of the Commissioner of the General Land Office in the Treasury Department, relieving the Secretary of duties which had become burdensome in the extreme. In 1836, the Commissioner's office was made a bureau of the Treasury Department, and this in
1849 was transferred to the Interior Department, inaugurating the system of to-day.

Meantime, in 1803, the Louisiana Purchase had added most of the western drainage basin of the Mississippi to the prospective wealth of the nation, pushed "the west" many miles farther back, and increased the sales of the new Commissioner to "land-office business" proportions, originating that still-current phrase. The Louisiana Purchase, acquired from France, cost $27,267,621.98. Florida, which was bought from Spain on February 22, 1819, cost $6,489,768.

In 1841, the young nation changed its policy from selling land to all purchasers for cash income to using it to acquire a farming population whose industry would benefit the nation permanently. The Pre-emption Act then passed gave the right to purchase 160 acres to actual settlers only. This logically led to the Homestead Act of May 20, 1862, which President Lincoln so highly approved; it awarded 160 acres free to any able bodied citizen of good character who should agree to live on the property and develop it. Upon this policy grew the rapid settlement and much of the prosperity which has attended our national growth since. When the rich prairies of the Mississippi Valley were exhausted, homestead entries in semi-desert lands farther west were enlarged to 320 acres. With nearly all agricultural lands gone and remaining arid lands fit for little except to raise hardy stock, one to half a dozen
animals to the acre, the limit was again lifted, now to 640 acres.

Meantime the Public Domain was meeting increasing demand by rapid additions.

Title to Oregon was established in 1846 on the basis of exploration and occupation. In this tract were also included the lands which now constitute Washington and Idaho.

From Mexico came, by treaty of Guadalupe Hidalgo at the close of the Mexican War in 1848, what later became the states of California, Nevada, Utah, a part of Colorado, and parts of Arizona and New Mexico. Payment to Mexico was $15,000,000.

From Mexico came, by purchase of 1853 for $10,000,000, lands to rectify the southern boundary of the United States, now divided between New Mexico and Arizona.

From Russia, by purchase of $7,200,000 in 1867, came all Alaska, adding 378,165,760 acres or 590,876 square miles more.

The United States was then complete and filling rapidly with people who earned their land by settling upon it and improving it. The sixty years since have seen marvellous development in growth, enterprise, achievement in every conceivable activity, personal, corporate and national, in wealth, in position and in power. Roughly speaking, the eighteen hundreds were devoted to territorial expansion and agricultural development and consolidation, and the nineteen hundreds to achievement of many kinds
built solidly upon the substantial foundation thus created. It was the later eighteen hundreds that gave the farmer that immense political prestige and power that lasts over into the far different grouping of national conditions which prevails to-day. It is the far west, where farming still remains a controlling occupation, which concerns our story.

Meantime, during the increase in national area, the over-lapping ultimate purpose of land distribution was progressing with ever increasing rapidity. Three new acts became paramount in speeding the swift dissipation of our enormous wealth of land.

One of these was the Desert Land Act of March 3, 1877, which allowed one person without residence to take up 640 acres provided that it should be reclaimed by the introduction of water within three years. In 1891, this was reduced to 320 acres. Nevertheless it vastly stimulated reclaiming western deserts, bringing into them permanent populations. Under this act, 8,648,373 acres have, to the time of writing, passed into private hands.

The second was the Timber and Stone Act of June 3, 1878, which permitted any citizen to acquire 160 acres of non-agricultural and non-mineral land if chiefly valuable for timber or stone. Under this, 13,800,030 acres of land have passed into the hands of 107,358 applicants.

The third was the Carey Act of August 18, 1894, granting certain states the privilege of taking up to a million acres each of desert land upon con-
dition that the states should guarantee reclamation. Under this, 1,168,276 acres have been patented up to this writing.

Through all of these and other operations, homesteading steadily progressed. This, which is the real story of the great distribution and its accompanying nation-building, is far more eloquently told by the accompanying table than would be possible in any other way.

**Homestead Entries from Passage of Homestead Act to June 30, 1927**

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<th>Fiscal Year Ended June 30—</th>
<th>Number</th>
<th>Acres</th>
<th>Fiscal Year Ended June 30—</th>
<th>Number</th>
<th>Acres</th>
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<td>1899</td>
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<td>4,306,068.52</td>
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<tr>
<td>1882</td>
<td>17,174</td>
<td>2,219,453.80</td>
<td>1913</td>
<td>53,252</td>
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<tr>
<td>1883</td>
<td>18,908</td>
<td>2,504,414.51</td>
<td>1914</td>
<td>48,724</td>
<td>9,291,121.46</td>
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<td>1884</td>
<td>21,843</td>
<td>2,945,574.72</td>
<td>1915</td>
<td>37,343</td>
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<td>1885</td>
<td>22,066</td>
<td>3,032,670.11</td>
<td>1916</td>
<td>37,958</td>
<td>7,278,280.60</td>
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<tr>
<td>1886</td>
<td>19,356</td>
<td>2,663,531.83</td>
<td>1917</td>
<td>43,727</td>
<td>8,497,389.68</td>
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<tr>
<td>1887</td>
<td>19,866</td>
<td>2,749,037.48</td>
<td>1918</td>
<td>41,319</td>
<td>8,239,438.18</td>
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<tr>
<td>1888</td>
<td>22,413</td>
<td>3,175,400.64</td>
<td>1919</td>
<td>32,623</td>
<td>6,524,759.68</td>
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<tr>
<td>1889</td>
<td>25,549</td>
<td>3,681,708.80</td>
<td>1920</td>
<td>39,774</td>
<td>8,372,695.79</td>
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<tr>
<td>1890</td>
<td>28,080</td>
<td>4,660,592.77</td>
<td>1921</td>
<td>33,889</td>
<td>7,720,740.44</td>
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<tr>
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<td>1922</td>
<td>30,919</td>
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<tr>
<td>1892</td>
<td>22,822</td>
<td>3,259,907.07</td>
<td>1923</td>
<td>22,420</td>
<td>5,594,258.69</td>
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<tr>
<td>1893</td>
<td>24,204</td>
<td>3,477,431.63</td>
<td>1924</td>
<td>18,046</td>
<td>4,791,436.44</td>
</tr>
<tr>
<td>1894</td>
<td>20,544</td>
<td>2,929,047.41</td>
<td>1925</td>
<td>14,675</td>
<td>4,048,910.56</td>
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<tr>
<td>1895</td>
<td>20,622</td>
<td>2,680,800.30</td>
<td>1926</td>
<td>12,244</td>
<td>3,451,105.51</td>
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<td>1896</td>
<td>20,099</td>
<td>2,790,242.55</td>
<td>1927</td>
<td>9,315</td>
<td>2,583,627.48</td>
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<tr>
<td>Total</td>
<td>1,400,443</td>
<td>228,742,680.92</td>
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</tr>
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</table>

“Agricultural entry,” says United States Geological Survey Bulletin 537, “may not be made on
lands containing valuable minerals, nor coal entry on lands containing gold, silver or copper; lands included in desert entries or selected under the Carey Act must be desert lands; enlarged homestead lands must not be susceptible of successful irrigation; placer claims must not be taken for their timber value or their control of water courses; and lands included in building stone, petroleum or salt places must be more valuable for these minerals than for any other purpose. So through the whole scheme of American land laws runs the necessity for determining the use for which each tract is best fitted."

As a natural outgrowth of our theory of development of natural resources, Congress bestowed large areas of land upon each new state as created. Just as the thirteen original states had started the national government in business by gifts of land, so did the national government by similar action speed each later state upon its way. The lands given were of far differing kinds. The greater part were for common school purposes and were designated school lands; but they were granted without selection, so many acres to the section. The state could use them for what it chose, or exchange for lands more conveniently located as actual need developed. Lands were also given for internal improvement, for stock driveways, for water holes in desert tracts, for public roads, very importantly for railroad development, and for many other uses.

Besides these original gifts, Congress has al-
ways been extremely generous in respect to all projects making effectively for growth of population or state prosperity. In recent years, its gifts have increased in number and value. In 1927, for example, grants were made to states for the following purposes: schools, including normal, scientific and mining, universities, penitentiaries, public buildings, insane asylums, educational, charitable, penal and reformatory institutions, deaf, dumb and blind asylums, military institutions, public parks and internal improvements; also extensive swamp lands for reclamation.

The railroad grant period between 1850 and 1872 saw vast areas of Public Lands given away for the purpose of hastening facilities for transportation. According to the report of the Secretary of the Interior for 1927, railroads had received up to then the great total of 130,944,916 acres or 204,679 square miles of free land. Of this, nearly ninety-four million acres were granted directly to ten railroad corporations including the Union Pacific, Northern Pacific, Southern Pacific and Santa Fe, thirty-nine millions going to the Northern Pacific alone. Other railroad grants were made to states upon their application.

Grants for railroads usually consisted of the odd-numbered sections of townships within ten miles on each side of the tracks. Later this was broadened to twenty miles, and then thirty miles on either side the road beds. Among lands passed over in
this informal fashion usually without survey and often without exploration, railroads frequently acquired properties which developed enormous values later on. Great areas of timber, and in the earlier days valuable mining properties passed in this manner into railroad ownership. Some of these have been re-acquired by the nation since; in other instances suits for restoration to national ownership are still pending. A typical instance is related by Franklyn W. Reed:

"About 1860," he writes, "a grant of 2,386,000 acres was made to the Oregon and California Railroad Company for the construction of a line from the Columbia River southward through the Willamette and Rogue River Valleys to the California line. In accordance with standard practice, the grant was composed of alternate sections for an even width on each side the right of way.

"The law required the railroad company to resell the lands in small units of 160 acres to bona fide settlers at not more than $2.50 an acre. In the beginning some few thousand acres were sold at this price; but the Company soon discovered that their lands, being heavily timbered, were worth far more than $2.50 an acre; and that a large proportion of them were nonagricultural in character even after the removal of the timber. They then took the remaining lands off the market to hold for a rise in value. After the Oregon and California Railroad had become a part of the Southern Pacific System,
that Company, about 1913, decided to hold the lands permanently as a railroad forest reserve and permanent source of supply for ties, construction timbers, etc.

"The Government brought suit against the railroad for failure to comply with the law and recovered possession of all the remainder of the grant, which was over 2,000,000 acres, with the proviso that it should sell it and reimburse the railroad at the rate of $2.50 an acre. The general Land Office then proceeded to classify the lands as chiefly valuable for homesteading, for timber, and for water power. The soil and the timber were appraised separately. If the soil value of a quarter section exceeded the timber value, it was classified as homestead land and offered for sale to the settler direct. If the timber value was the higher, the stumpage was offered for sale to lumbermen with the idea of selling the cut-over land to settlers later.

"At the same time hydroelectric power sites were classified and held for disposal for that purpose. The classification of the whole area which had reverted to the Government is summarized as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead lands</td>
<td>1,000,400</td>
</tr>
<tr>
<td>Timber lands</td>
<td>1,237,000</td>
</tr>
<tr>
<td>Water-power lands</td>
<td>112,000</td>
</tr>
</tbody>
</table>

| Total                  | 2,349,400   |

"So far something like 450,000 acres have been disposed of as homestead lands. It will be noted
that in the land classification there has been no recognition of recreational values."

Which reminds me that Congress allows the General Land Office only $25,000 a year for protection of all its forests from fire! This is in line with too common a Congressional policy which cheerfully spends any amount necessary to recover the horse stolen for lack of a lock for the stable door. A fatal policy this when applied to forests which, once burnt, are beyond recovery for many years and often forever. A fire lane which might cost a thousand dollars to build and an annual trifle to keep up might easily save $15,000 fire fighting costs and $50,000 worth of timber.

In time many of the thousand inconsistencies which have developed in the speed and complexity of our development will straighten out. Perhaps then the many forests in the Public Domain which are more suitable for forest conservation than for agriculture will pass into control and care of our expert Forest Service.

Lands recovered from railroads include many great areas of fertile woodland and meadow which, had they not been lying safely in corporation ownership awaiting the top of the market, would have been homesteaded many years ago. Much of this, as Mr. Reed suggests in respect to the old Oregon and California Railway grant, may possess high values for unindustrial uses which have only been recognized during the last several years. Notwith-
standing that these values cannot be expressed in dollars and cents, nevertheless they are as real and beneficial as, say, that of education and physical recuperation.

It may be that the future will find some new method of accounting which will recognize intangible land valuations; otherwise, in the era we enter, our most precious national possessions will have no adequate rendering in the national budget.

II

LAND OFFICE METHODS AND PROBLEMS

The strenuous history of the inefficiently equipped, always over-worked and often berated General Land Office has been related, at least in parts, many times in more or less technical works. From the beginning, its job has been colossal. European precedents were of little value because conditions here were so different, our problems so involved, and the magnitude of our lands so great. Our speed of nation making, also, was extraordinary. Its sins, as we glance back over the bureau's extraordinary career, we see largely those imposed upon it by successive Congresses ever changing in personnel and never fully even with progress.

The growth of the General Land Office has largely been of its own initiative. During the swift years it could seldom await action of a deliberate
Congress, and it waited as seldom as it dared. So far as growth was concerned, the part of Congress was usually to confirm rather than to initiate change.

"The Commissioner," to quote Milton Conover, author of the admirable monograph on the General Land Office published by the Institute for Government Research, "is at once an executive officer, a collector of revenue, an auditor, a legislator, a prosecutor and a judge." "Upon him," says Sato the Japanese investigator of American land problems, "rests the responsibility of the faithful execution of the settlement laws. From him springs directly the title to land. Upon him depends the economic safety of the pioneer settler who struggles to create a home. He must fight the lawless land grabbers. He must keep a watchful eye upon the condition of railroad corporations to which land grants have been made. Public interest requires him to avoid introduction into the United States of English landlordism and other forms of land monopoly."

Many eminent men have been Public Land Commissioners.

For years, land legislation clogged the machinery of Congress at every session. The accumulations of federal land laws became enormous and the totals complicated in the extreme. To review the laws, treaties, proclamations and regulations in pursuit, say, of decisions and bearings upon some given case, one might have to search through thirty-five volumes of United States Statutes at Large, fifty
volumes of Land Decisions, hundreds of Federal and State reports and more than a thousand circular regulations.

Laws are of two classes, public land laws and land grants. The first are general in character providing for disposition of lands to persons willing to meet certain conditions; the second are special laws granting stated tracts to individuals, corporations or state governments. The volume of the records is appalling. The old Land Office building in Washington was burdened with them from attic to cellar. Cases filled all available corners in all rooms and lined both sides of halls and passage ways. Under the orderly rearrangements of to-day, an extraordinary system is necessary to have all always accessible. Details of lands are kept in local land offices, saving helpless confusion at headquarters.

From first beginnings, surveying was one of the most difficult problems facing the Commissioner. In early days of excessive poverty, with lands of little value, to save establishments, salaries, and expense accounts, Congress began farming out its surveying by contract. The practice once established lasted until 1910, proving many times more expensive in the end than survey by a permanent responsible government service possibly could have been. Often surveyors failed to mark section corners, or the marks were destroyed by fire. More than half the surveyed lands have had to be resurveyed; and the costs to governments and property owners for a
century of law suits resulting from error and disputes growing out of error would no doubt prove colossal if it were possible to compute it. Some idea of the grossness of such a system's inaccuracy is shown by Commissioner Spry's discovery as late as 1926 of 14,432,940 acres of Public Domain which the government did not know it possessed. The contract survey system passed in 1910.

Since organization of the cadastral engineering service, the bulk of surveying, notwithstanding decreasing Public Lands, has constantly increased. An aggregate of 5,160,072 acres of surveys and resurveys was applied for in 1927 alone. This contradictory situation is due primarily to decrease in agricultural settlement owing to exhaustion of the supply of good farming land and the consequent movement of population and activity back into regions covered by the faulty surveys of years ago, which now must be done over.

Last year's surveying, for example, besides the run of usual work, corrected thirty-eight erroneous or fictitious surveys in California, Colorado, Idaho, New Mexico, Oregon, Washington, and Florida; determined riparian rights to define swamp lands and omitted lands in Colorado, Oregon, Wyoming, Wisconsin, Oklahoma, Missouri, Arkansas, Mississippi, Louisiana, and Florida; surveyed ten town sites in Alaska, Idaho, New Mexico, Oregon, and Florida together with forty-five islands in California, Nebraska, Idaho, Montana, Washington, Wy-
oming, Minnesota, Michigan, Wisconsin, Illinois, Kansas, and Florida; reported upon thirty-one lighthouse reservations, seventeen isolated homesteads, and one cemetery site in Alaska. There was a lake segregation in Nebraska to be surveyed, twenty-three mineral segregations, twenty-one isolated tracts spotted over the far west, four military reservations, three Spanish grant boundaries, a holding claim in New Mexico, and an Indian village. Regular programmes were also carried out including road, mineral, and other withdrawals, and oil and oil shale land examinations on a large scale in Utah along the Colorado, San Juan, and Green Rivers.

Besides all of which, extensive surveys were made for other governmental agencies covering National Forests, National Parks, mining lands for the Bureau of Mines and Indian reservations. There was also much connecting work with the Coast and Geodetic Survey and Geological Survey, a bird reservation in Florida for the Biological Survey, and one hundred and forty-nine applications for island and water front summer homes along the coast.

A man of to-day desiring to acquire a given piece of wild country whose application to county and state records fails to locate ownership is advised to try the nearest federal land office. Perhaps the tract belongs to the nation. Unless it is evidently a part of the great unappropriated and unreserved domain or of some conspicuous reserve like the National Forest, the chances are that his inquiry will
meet a blank stare at the land office. The official doesn’t know. Where, precisely, is this parcel?

The man locates and describes it. Perhaps the two get into a car and run out to examine it. Perhaps that particular parcel will have to be searched back through a century of records in half a dozen offices. Eventually it is identified and the title proved to be federal. Then, after survey, it is transferred by one of several methods, usually settlement or sale, to its would-be possessor. By this means the Land Office is constantly locating possessions which often it supposed it owned and wasn’t sure about, but often hadn’t the least idea was even government property. Examining and surveying on application occasional tracts of a few acres each within say half a state, many of which are sold for cash as a result of the searches, is quite a different matter from searching the half a state to discover once for all where a few government tracts may hide, most of which, if indeed there are any, may not come into demand for a quarter century. For economy’s sake, therefore, Uncle Sam is content not to know exactly where a few of his remaining scattered lands are located till some one applies for a patent.

During the recent land boom in Florida, every stretch of barren sandy beach or outlying islet well above tide became potentially a shore resort, a speculative town lot site, or a rich man’s estate. Prospective prices jumped to extraordinary figures. Every few weeks tracts or islands scarcely known to exist a
few months before were quoted at many thousands, or perhaps actually sold. Much of the barren shore and innumerable small islands near shore were supposed to be or known to be federal property, and some were filed upon under the homestead act and even thereafter sold for speculation occasionally at high prices.

The Land Office determined to withdraw this property from homestead entry so as to save profits for the Treasury, but surveying for discovery was unthinkable. It would take too long and cost far too much. It was known that about 15,000 acres of public lands subject to entry remained in the state, but location of most of it was unknown. The land records of Florida are very old, voluminous, in places illegible, and often wholly independable.

The problem was solved with a blanket withdrawal by executive order covering all federally owned lands that might exist in a strip three miles wide along the coast, inclusive of islands. As the boom was extending at this time, the order was made to cover the Alabama and Mississippi coasts, also.

Uncle Sam profited little by this invasion of the field of speculation, however, for soon afterward the boom attained its peak and rapidly subsided.

Similarly, along the beautiful lake shores of Michigan and Wisconsin, and elsewhere off the shores of Lakes Michigan, Huron, and Superior, the government owns many beautiful islands and bits of water front mainland which are acquiring
comparatively high potential values for summer homes. Every one knows that a few of the very many are federal, but no one knows precisely which. Here and there speculation has found its prey and taken toll. But for the last time. By executive order of April, 1926, all were withdrawn unidentified in a three mile coast strip, Florida fashion, from homestead entry. All of these the government now wants disposed of.

Probably a quarter million acres, or five hundred square miles, all told, now total the government's unidentified or lost real estate.

Essential to sound conservation policy naturally is knowledge of what it is proposed to conserve, but before 1878, no attempt was made to classify the Public Domain and its resources for the reason that Congress could not then be made to see the usefulness of appropriations to this end. The Geological Survey now performs this important work. A systematic effort is being made to determine the values that each tract contains and the uses to which it may be put, whether mineral development, water power, farming, grazing, or a combination of some of these and others.

Announcement of the discovery of a valuable resource, a new coal field, for example, results in immediate search of the land records to determine whether any portion of it lies within the Public Domain. Or it may be that application for a particular tract may precipitate search at that point. The Geo-
logical Survey passes on proposed irrigation and power projects and stock raising applications, but not metaliferous mineral entries and coal, homestead and desert applications. It restores to entry lands formally set apart under improper classification, and those set apart which fail to qualify. It acts as general adviser to the Land Office.

"Classification," writes Milton Conover, "is required in the matter of agricultural lands, mineral lands, coal lands, and lands used for public and quasi-public purposes. The agricultural lands include those used for homesteads, forest homesteads, enlarged homesteads, desert lands, reclamation lands, isolated tracts, and timber and stone lands. The mineral lands embrace those containing veins of quartz or other rock in place, or lodes, building stone, oil deposits, salines, and other lands which are valuable chiefly because of their mineral deposits, whether those deposits are metaliferous or not.

"The coal land is classed separately because the laws regarding it are so different from the other mineral laws, the coal lands being administered under special legislation rather than under the general mining laws.

"Public and quasi-public lands include rights of way granted to railroads to the extent of one hundred feet on either side of the centre line of the road bed; rights of way for canal and ditch companies which are formed for irrigation purposes; pipe lines, flumes, tunnels, water plants, conduits, dams, reser-
voirs, and such accessories used for irrigation; rights of way for power development on national forests, and for milling, mining, and municipal purposes; and rights of way for electric plants and lines. The grants to railroads do not include any minerals except coal and iron. These may be granted because of their utility in the building and operation of the railroad."

Granting patents alone is a large item in Land Office detail. These guarantee possession, corresponding to deeds in civil procedure. They cover an extraordinary variety of uses, as will be seen by the accompanying table numbering and classifying those of the year ending June 30, 1927.

The list reveals the range, nature, and proportions of Land Office business to-day as nothing else could. Considered with the table, on another page, of Final Homestead Entries from 1868 to the present, one gets a remarkably clear historical and economic picture. United States patents are the basis of all titles in the Public Land states.

Consistent in the main, Public Land policy has passed through many phases under changing conditions. Different Congresses have held varying ideas, and the government has initiated and occasionally instituted ideas of its own. Development of various resources by private interests under government regulation has been established since 1896 when water power was put on that basis. In 1914, the same idea was applied to coal in Alaska, in 1920
From photographs in the files of the General Land Office

PIONEERING IN THE NATION'S WESTWARD MOVEMENT
OF SUCH STUFF WAS MADE AMERICA

Home-building in the public lands. The woman’s dress will suggest the approximate date.
THE STORY OF OUR PUBLIC DOMAIN

PATENTS GRANTED FOR YEAR ENDING JUNE 30, 1927

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<tr>
<th>CLASS</th>
<th>NUMBER OF PATENTS</th>
<th>AREA</th>
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<td></td>
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<td>Timber and stone</td>
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<td>Desert land</td>
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<td>Cash miscellaneous</td>
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<td>Desert-land segregation</td>
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<td>Soldiers' additional homestead</td>
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<td>Stock-raising homestead</td>
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<td>Military bounty land warrant</td>
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<td>Small holding claim</td>
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<td>Swamp</td>
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<td>Umatilla Indian land</td>
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<td>Abandoned military reservation</td>
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<td>Timber culture</td>
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<tr>
<td>Timber sales</td>
<td>75</td>
<td>10,564.39</td>
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<td>Forest exchange</td>
<td>27</td>
<td>16,365.74</td>
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<tr>
<td>Indian</td>
<td>6,408</td>
<td>384,310.40</td>
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<td>Special acts</td>
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<td>12,572.10</td>
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<td>211</td>
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<td>Supplemental (act Apr. 14, 1914)</td>
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</tr>
</tbody>
</table>

|          | 22,796 | 4,456,893.392 |

generally to mineral fuels, fertilizers, coal, phosphate, sodium, oil, oil shale, and gas, and in 1926 to sulphur in Louisiana, and gold, silver and quicksilver in the Southwest.
In 1920, the Federal Power Commission was created, consisting of the Secretaries of War, Agriculture, and Interior, empowered to grant licenses and leases for utilization of water resources on navigable streams in Federal Lands of various classifications, including Public Domain. The Geological Survey reported in 1927 that about 6,000,000 acres of land in power site reserve under the Interior Department would yield 15,000,000 continuous horsepower, approximately half the power resources of the United States. Companies holding permits granted before creation of the Federal Power Commission reported generation in 1926 of twelve percent of the country’s public utility power supply.

The super-power movement is developing with some certainty of eventual achievement. Water power under government lease or control will take its part in combination with state and private systems so as to combine, interchange and otherwise regulate power in such manner as to apply, withhold, and concentrate supply with the maximum of economy and result. Plants operated by water and fuel in every part of the country, connected by wires, will make power chains which in time may even cross the continent.

Of deep interest to motorists will be the following extract from the Geological Survey report of 1927: “The known oil and gas resources of the United States are much more limited in extent than the solid fuels. For years the maintenance of pro-
duction has been dependent on new discoveries, and the areas in which new discoveries can be made are growing fewer and fewer year by year. The saying that haste makes waste is nowhere more evident than in present practices in the production of liquid and gaseous fuels. The greed for gain or protection therefrom compels each landowner or lessee not only to obtain from the acreage he controls the oil or gas found beneath its surface but to draw so far as practicable from that under his neighbor's land before it can be reduced to possession by another. Not only does this lead to wasteful practices in drilling and production, but the balance between available supply and market demand is so evenly drawn that slight overproduction results in economic confusion and waste. From November, 1926, to March, 1927, increase in production of some 200,000 barrels of oil per day in Oklahoma resulted in a decrease of more than $400,000 in the value of oil production in that state and in similar loss to producers throughout the country. Nor is the producer's loss reflected in a gain to the consumer. Some slight temporary gain to the consumer there has been, but in the long run his loss will exceed that of the producer. A measure of regulation by the industry itself, or, failing in that, legislation may be expected in the reasonably near future.

"About six per cent of the oil produced in the United States is under lease by the Government of lands of the public domain or of its wards, the In-
dians. This department has endeavored to set an example to other lessors by encouraging where practicable the cessation of drilling and production on its lands. As a result productive capacity of 120,000 barrels per day, or more than the entire current daily production, is now shut in on public lands, and drilling relief has been granted with extreme liberality. Nevertheless, the Government is not free from blame. Since the passage of the mineral-leasing law on February 25, 1920, this department has granted more than 40,000 permits to prospect for oil and gas on about 80,000,000 acres of land.

"With respect to drilling and producing operations, the department, through its supervisory forces, has continued its earnest efforts to reduce waste, at all times subordinating its royalty returns to the primary duty of conserving mineral values. In this work it has had the hearty co-operation of many lessees and operators. The cost of this supervisory work has been small compared even to the immediate benefits of conservation in royalty returns. Extension of supervisory activities to cover more adequately the field of operations would pay immediate dividends in royalties as well as future benefits in prolonging the life and increasing the ultimate production of Government-owned fields. In the fiscal year ended June 30, 1927, 25,648,101 barrels of oil were taken from Government lands, and royalty products valued at $6,006,455 were sold for the benefit of the several states, the reclamation fund,
the United States Treasury, and other beneficiaries designated by law."

Naturally the General Land Office records are a library of interesting and important facts concerning the country as a whole as well as of its parts. Who would have thought, for example, that originally the United States contained 125,000,000 acres, or nearly 200,000 square miles of swamps, an area as large as Germany or France, and three times as large as New England?

"These wet lands were of two kinds," wrote Palmer in 1915, "tide water or delta-overflowed lands, and glacial swamps. Those of the first class extended from Virginia to Texas. In Florida there were about 19,800,000 acres; in Louisiana 10,316,000 acres; in Mississippi 5,760,200 acres; in Arkansas, 5,911,300 acres; and in North Carolina, South Carolina, Alabama, Georgia, and Texas, 3,122,000 to 1,500,000 acres each. These lands include such swamps as there are along the lower course of the Mississippi River; the Jersey marshes and the Dismal Swamp of North Carolina and Virginia. The wet lands of the second class, that is, the glacial swamps, were most extensive in Minnesota, which had 7,332,308 acres; Michigan 4,547,439 acres; Illinois, 4,421,000; and Wisconsin 2,560,000.

"Because of the abundance of drier and better lands even in the eastern part of the United States, it was not until the middle of the nineteenth century that these wet lands received any attention from
either state or federal government. Until 1850 all the great swamp tracts except those included in the thirteen original states (Dismal, Okefinokee, eastern seaboard plane, Jersey marshes and tidal lands of New England) remained in the national estate.

"Not only is this work of reclamation of great importance to the health and prosperity of the United States as a whole, and immense sums of money beyond the ability of states or individuals to furnish needed to carry on operations until returns commence to come in from the reclaimed lands, but the drainage problem offers better opportunities from a practical economic standpoint than does that of irrigation. The average cost of irrigation is thirty dollars an acre; that of drainage is about five or six.

"Swamp areas are more generally in the midst of populous territory with already developed transportation facilities, the engineering problems as a rule are more simple and the land is usually richer in itself than arid land. Then, too, the federal government is already well prepared to undertake such activities, for the United States Geological Survey, as the result of hydrographic and topographical surveys covering nearly a million square miles for several years, has been gradually accumulating a great mass of maps, charts, statistics, and information relating to rainfall, drainage and water sheds.

"There is a considerable number of large swamps that lie in river basins extending through more than one state, and they cannot be drained ef-
ffectively or economically, or with justice to the inhabitants of each state without the intervention of some interstate authority. The Dismal Swamp occupies parts of Virginia and North Carolina. The Savannah River on the northern border of Georgia, and the Appalachee on its southwestern border, have great swamp and overflowed areas in South Carolina, Alabama, and Georgia. Between North and South Carolina there are extensive interstate marshes. The Okefinokee swamp of Georgia must have its drainage outlets across the state of Florida. The Tombigbee Valley in Mississippi lies above the same valley in Alabama. The Pearl River bottom occupies parts of Mississippi and Louisiana. The St. Francis Basin extends into both Missouri and Arkansas, while the swamp areas of the Red River of the North occupy Minnesota and North Dakota, and those of the Kankakee both Indiana and Illinois. In short, the greater part of our swamp reclamation problem is interstate."

Few of the swamp lands mentioned by Palmer remain in the Public Domain, which nevertheless contains its innumerable smaller swamp lands presenting nearly identical problems to-day. Application for 164,745 acres of swamps were made to the General Land Office in 1927, six times that of the year before.

There are other sides of the Swamp question to-day than recovery of agricultural land. We are not so sure as we once were that all should be re-
claimed. Thousands of square miles of drained bottoms have proved useless for growing, lacking qualities of soil. Swamps are often useful, like forests, in conserving water sources for maintenance of stream flow. One new fact that is causing deep concern to many and increasing hundreds of thousands of conservationists and sportsmen is the decline in migratory bird fowl which necessarily follows destruction of their breeding and resting places en route back and forth between the Gulf shores and Canada. Even an economic argument based on the meat value of millions of ducks, geese and swans shot annually to help out the family larder as well as for sport is brought into the discussions in succeeding Congressional sessions.

Public Domain policies in Alaska are not discussed here because they are not yet recognized as problems. The land is too new and vast. Conditions are altogether different. It will be enough to catalogue our territorial possessions:

<table>
<thead>
<tr>
<th>Territory</th>
<th>Area in Acres</th>
<th>Area in Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>378,165,760</td>
<td>590,884</td>
</tr>
<tr>
<td>Guam</td>
<td>131,840</td>
<td>200</td>
</tr>
<tr>
<td>Hawaii</td>
<td>4,099,840</td>
<td>6,406</td>
</tr>
<tr>
<td>Canal Zone</td>
<td>351,360</td>
<td>549</td>
</tr>
<tr>
<td>Philippine Islands</td>
<td>73,216,000</td>
<td>114,400</td>
</tr>
<tr>
<td>Porto Rico</td>
<td>2,198,400</td>
<td>3,435</td>
</tr>
<tr>
<td>American Samoa</td>
<td>48,000</td>
<td>75</td>
</tr>
<tr>
<td>Virgin Islands</td>
<td>85,120</td>
<td>133</td>
</tr>
<tr>
<td><strong>Total area of Territories</strong></td>
<td><strong>458,296,320</strong></td>
<td><strong>716,088</strong></td>
</tr>
</tbody>
</table>

Alaska, nearly a fifth the size of the United States, is a great possession with a great future de-
spite her northern position. Public Land surveys of more than two million acres have been confined to known agricultural areas, coal fields and lands which in other ways may be attractive to settlers, because population is what Alaska needs most. Also individual town sites, native allotments, trade and manufacturing sites, and homestead entry claims have been surveyed in widely separated parts of the territory to focus growth at as many points as possible. Further to make settlement attractive, in 1918 Congress made provision for homestead surveys without cost to claimants.

Congress has also extended to Alaska the principal laws applicable to land in the state. The mining laws, the coal-leasing acts of 1914 and 1921, the homestead laws confined to entries of 160 acres, the right-of-way laws, town site laws, entries for trade and manufacture laws, and timber acquisition laws apply also there.

Since April, 1926, timber may be exported from Alaska. Indians may now own town site lots elsewhere than in their own towns. Lands may be leased for fur farming and this new type of enterprise has become one of the profitable businesses of the country. Eighteen establishments are engaged in producing fur of the red and silver foxes. Reindeer farming has developed, at this writing, more rapidly than its market. Increase of the herds, especially in the Seward Peninsula, is presenting serious questions. More than half a million animals
have descended from the 1280 which were brought from Siberia between 1892 and 1902.

The solution of the reindeer problem is of course a market. The meat is used extensively in the cities of the Northwest, but has not been offered persistently enough elsewhere to tempt departure from meats to which the public is accustomed. Alaska must develop a permanent population of its own sufficient to create its own markets for all its products before prosperity and growth will come into view.

Home sites not exceeding five acres may now be bought by Alaskan citizens engaged in trade either as principals or employees. Grazing districts may be established by the Secretary of the Interior everywhere except on the Aleutian Islands.

In several of our island territories, laws in existence when they passed under our flag continue to enable citizens to become possessed of homesteads and acquire rights in other kinds to land. Upon these our own system has not yet been imposed.

III

PROBLEMS OF CONSERVATION

Conservation of natural resources is commonly said to have begun with Roosevelt, and this is in a real sense true. The strong hand and the big stick helped. Nevertheless it is a development, not an in-
vention. Its sources are traceable to the royal charters of the colonies, which usually reserved for the crown a fifth of the gold and silver in grants of land. The Virginia charter of 1606 reserved copper, also, and the Massachusetts Bay charter of 1691 reserved certain oak groves for ship timbers. Probably none of these provisions ever produced practical results in colonial times, but it is important to note so early official recognitions of the principle which was to play so important a part in the nation.

Authorization to the President to create forest reserves, which slipped through Congress in 1891 as a rider to a bill of an entirely different purpose, enabled forest conservation to start on a large scale a few years later through action of three consecutive presidents. An act of 1902 authorized withdrawal of lands for irrigation, beginning our great work of reclamation.

At this writing, renewed demand for local possession of the nation's natural resources is marching steadily toward what looks like a new war in Congress. Dangerous as the looming movement now appears, it will be trifling in comparison with the similar demand which, for some years before Roosevelt, bent Congress to lavish distributions of our national wealth, especially of forest lands, which at times amounted practically to confiscation. It was public revolt, in the closing years of the last century, against wholesale looting of national possessions by local interests which resulted in the creation, first,
of our national forests, and later of many other valuable reservations.

The great war which then established conservation as a government policy began under Harrison and was won under Roosevelt. Its story comes later on in the chapter on National Forests. It was followed by many sharp counter attacks which failed, in which by turn National Parks, National Forests and very recently national grazing lands have been the prize. In fact, scarcely a skirmish of them all has succeeded, so far, though the stress of battle has sometimes been severe.

But the greater movement to turn all national properties over to the states within whose boundaries they lie is nevertheless gathering headway.

In the East, persistent energetic attempts have been making for several years to have local areas created National Parks in order to profit locally by the national values which it is hoped thus to build up within state boundaries, at the same time providing upkeep, development, and administration charges at the national expense. So far these have failed. Congress, to be sure, has authorized eastern National Parks, but the undeserving have not yet qualified, and may not. The vigorous but poorly handled movement to get national grazing lands virtually into private possession has also failed, dismally.

Leaders of the local interests now seem to have determined to bring on the main issue without further preliminaries. Demand has been made for-
The Oklahoma Prairie on August 5, 1901. In the tents across the border are camped the thousands waiting for the hour of entrance.

Twenty-four days later, the City of Lawson was photographed on the identical spot shown above.

BIRTH OF LAWSON, OKLAHOMA, PUBLIC DOMAIN CITY

Reproduced from prints of photographs in the Public Land Report of 1901, through courtesy of C. A. Obenchain, who represented the Public Land Office at the opening.
From a photograph in the files of the General Land Office

HOME-MAKING ON THE PRAIRIES IN 1894
mally in Congress that the Public Domain be returned forthwith to the states within whose boundaries it lies. Judging from history, this may be the beginning of a long hard-fought struggle between the two ideas, dragging on perhaps for years. Few wars between nations have had a richer prize than the Federal Lands of the United States.

Signs are that, if this war develops, the Public Domain will be the first objective. This won, local interests would demand forthwith all other national land possessions except only National Parks. This kind of state sentiment is quite willing that the immense annual sum spent to develop and administer the parks shall be carried by the National Treasury.

Discussing, in an address in Denver in 1926, the coming attempt on the Public Domain, Secretary Work said:

“When legislation was passed which enabled western territories to enter statehood, the Government retained ownership of the public lands. The land laws as now administered have been in effect over half a century and have been sustained by the Supreme Court of the United States when attacked. Outspoken demands have been made that publicly-owned lands should be returned to the States wherein located. Our public lands never were owned by States and, therefore, were not taken from them. In 1787 the Confederate Congress passed an ordinance establishing this fundamental policy for the Government of the territory of the United States
Northwest of the Ohio River. I am quoting the exact language of the ordinance dealing with this question:

"The legislatures of those districts, or new States, shall never interfere with the primary disposal of the soil by the United States in Congress assembled, nor with any regulations Congress may find necessary for securing the title of such soil to the bona-fide purchasers.'

"To give to States the public land within their boundaries would be a complete reversal of the policy of this Government from its beginning, a precedent not set by any other nation, and a step which should not be inadvisedly taken.

"Five years in the midst of Government operations have convinced me that the Federal Government is administering more, and the States less, of the activities of Government than they should. It would be agreeable to recommend from an administrator's point of view that States might own and control the public lands. That would, of course, relieve the Government of the labor and expense of administering them and would relieve the taxpayers of an annual deficit in its net operating expenses. The Department of the Interior expended last year (1925) the sum of $2,949,337 for the administration of the public domain, $2,370,170 of which was spent by the General Land Office and $579,167 by the Geological Survey. It collected $9,844,831, exclusive of Indian land sales, and other public land
areas administered under special acts of Congress. Of this amount, $3,221,604 was paid back to the State Governments and $4,979,547 was diverted to the Reclamation Fund to be used in the reclamation of arid and semi-arid lands of the West.

“This leaves an unencumbered balance amounting to $1,643,680 actually placed in the United States Treasury last year to offset the Federal Government’s expenditures of $2,949,337. The net deficit or loss to the Federal Government in administering the public lands was, therefore, $1,305,657. If the State Governments should take over the public lands within their borders, and distribute the receipts as prescribed by present Federal laws, they would be compelled to pay this deficit now met by the United States Treasury. As far as the National Government is immediately concerned financially it would be an advantage to turn the remaining Public Domain over to the States.

“But what would probably become of the Public Lands and their resources if administered by States? This question can best be answered by asking what has become of public lands already released to them. Many of you men can answer that question from your own personal knowledge. The actual title to the mineral contents of these lands would pass from the Federal Government to the States to be disposed of as these States see fit. It is claimed by some of the States that, at the present time, whenever sales of former Public Lands are sold the States
are reserving minerals. In Colorado, all such land contracts reserve these minerals to the State. But when it is asked how the State purposes to handle them in the future, there is no answer. The States east of the Mississippi River regard the Public Lands of the West and the natural resources in them as the property of the United States, in reserve.

"The principal question now is whether the United States as a central administrator, or segregated States operating independently under different State laws, would be the better agency to administer the remaining Public Lands and their mineral deposits. Which would be least vulnerable to local influence lending themselves to their disposition by transfer at less perhaps than their potential worth? Would any State having Public Lands prefer to administer them and pay the Government royalties instead of the Government administering and paying the royalties to the States? How many of our newer States could actually afford to own and administer the public lands within their boundaries? Their net financial income is greater now than if they themselves administered them.

"The mineral industry is vitally interested in whether the remaining public lands with their mineral contents are administered by the National Government or by the States. Within each State there would then be a different law with which applicants for mineral leases would have to comply. This would result in a multiplicity of laws with which the min-
ing industry would have to contend, instead of one
law applying everywhere. Some prospectors have
already expressed alarm over the development of
such a situation. I present this phase of the situ-
tion for the consideration of miners in the Western
country whose interests are directly affected.”

Secretary Work’s assumption that, upon trans-
fer of Public Lands to states, ownership and min-
erals would still remain with the nation is not that
of many thinkers in the states themselves. It is not
merely administration of these lands that local in-
terests desire, but the lands themselves in sole pos-
session. This is not, mark you, the mental attitude
of state populations, but of those business interests
only which deal in national resources. To-day,
thinking nationally is spreading through the West
with great rapidity. It is this which will save our
national possessions.

In computing the losses of the Interior Depart-
ment, however, it is only fair to consider money put
into reclamation as investment. The total loss to
this fund over the reclamation period of twenty-five
years has not exceeded ten per cent, and the immense
increase in wealth in these areas has more than com-
pensated the Federal Treasury in income taxes since
the adoption of that method of taxation.

When the nation equipped each new state with
lands, it turned over one or more sections in each
township for schools irrespective of fitness for that
purpose. They were known as “school lands.” But
the minerals in school lands were reserved in national ownership. Fourteen bills in the Sixty-Ninth Congress demanding release of the minerals to the states show the trend of the coming uprising.

After the hundred and eighty-three million acres of the National Forests were withdrawn from the Public Domain, followed by withdrawals continually since of lands set apart temporarily or permanently for other special purposes, leaving little more than grazing lands and poor agricultural lands, the importance of the Public Domain to the development of the country began rapidly to subside.

"The Federal Government," said Secretary Work in 1926, "is still throwing open to homestead entry large areas of land the character of which makes the homesteading of them impractical. Yet our citizens are being invited to waste their time and savings in fruitless enterprise. From the Arkansas River Valley in Colorado I have received complaints regarding settlers who had filed entry on a number of tracts of public land. Unable to obtain a livelihood from the lands they had homesteaded, they were making appeals for charity, from a neighboring town."

In no respect is the decline of the General Land Office more simply and strikingly shown than in recent sharp reductions of its visible equipment. A dozen years ago its staff and records filled an imposing building covering an entire Washington block opposite the old Patent Office on F Street. In 1922, the declining business of the bureau still engaged
twelve hundred employees divided among the headquarters in Washington (now removed to the new Interior Department Building) the field offices and the ninety-four district offices among the states.

President Coolidge's era of administrative economy found here great opportunity for legitimate reduction. The report of the Secretary of the Interior for 1927 shows only twenty-nine district offices remaining and a personnel reduced to seven hundred and twenty-six. Whatever work remains to be done in the many states in which district offices have been abolished is now done at the Washington office.

But there is another view of this question. Perhaps we are not watching the swift extinction of the oldest institution of our government, as the General Land Office has frequently been called, but its more or less ruthless reorganization for a new career. It will be many years before the remaining Public Lands are surveyed, and decades before they all find takers, if they ever do. As administrator of open grazing lands under a policy now in evolution to meet the new conditions of new times, the future of the Public Domain has immense importance. And as administrator of the mineral leasing act of 1920 under which minerals in lands thereafter patented are held in national ownership under a percentage of minerals mined, the Bureau's continuance and growth are without predictable limit. Operations under the Mineral Leasing Law during its first six years including 1927 are shown in the table.
<table>
<thead>
<tr>
<th>STATE</th>
<th>1921-1923</th>
<th>1924</th>
<th>1925</th>
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</thead>
<tbody>
<tr>
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<td>$11,662,664.33</td>
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<td>$920.00</td>
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<td>California</td>
<td>26,404.75</td>
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<td>373.54</td>
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<td>846.39</td>
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<td>7,188.31</td>
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<tr>
<td>North Dakota</td>
<td>87.51</td>
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<td>South Dakota</td>
<td>69,702.45</td>
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<td>26,821.99</td>
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<tr>
<td>Utah</td>
<td>13,813,560.49</td>
<td>12,270,500.75</td>
<td>6,953,501.44</td>
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Total: $26,105,481.05 $13,631,840.72 $8,278,708.62

<table>
<thead>
<tr>
<th>STATE</th>
<th>1926</th>
<th>1927</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$920.00</td>
<td>$1,564.70</td>
<td>$88,864.70</td>
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<td>923.62</td>
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<td>Utah</td>
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<tr>
<td>Wyoming</td>
<td>6,883,125.55</td>
<td>5,097,775.42</td>
<td>45,018,463.65</td>
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</tbody>
</table>

Total: $8,384,718.76 $6,669,518.76 $63,070,267.91

There is, in fact, no bureau of the government whose co-operation is necessary in so many governmental functions as the General Land Office. Many foresee its future as one of sure if not swift growth to a position again of extended influence and relative great importance.

No official has yet guessed what future income will be derived from the government’s percentage
under the Mineral Leasing Act. Since its enactment in 1920, 76,950 applications have been received; and the government has acquired rights in the unknown mineral wealth in 17,500,000 acres patented under the stock raising homestead law and in more than 12,500,000 acres of coal, oil and other deposits. It has been estimated that 200,000,000,000 tons of coal, at least, remain in the Public Domain, 8,000,000,000 tons of phosphate, and 60,000,000,000 barrels of oil.

Of the untold wealth of its mineral deposit, Secretary Work wrote in 1927:

"While much of the gold, silver, copper, lead and zinc lands once owned by the Government has passed into the hands of private individuals, there are undoubtedly large deposits of these ores remaining in the Public Domain. The States of Colorado, Wyoming, Montana, Idaho, Utah, Nevada, Washington, Oregon and California still contain areas in which are metaliferous ores the quantity of which is unknown. . . . These minerals can be mined by individuals; oil and coal cannot to advantage. The prospector has become a geologist; but wild-catting is being prosecuted continuously, leading to the conclusion that much petroleum still remains in the public estate uncaptured, the exact amount of which is not ascertainable. There are also large quantities of natural gas."

Not considering future earnings, the Public Domain's cash income is sufficiently promising. That
of 1927, increased over the year before, was $9,201,697.25. By law, this was distributed as follows: to Reclamation Fund, $4,338,341.72; to Public Land States, $2,550,200.24; to Indian tribes, $640,694.66; and to the General Fund of the United States, $1,-692,460.63.

Metal mining has reached "an interesting and baffling stage," says the United States Geological Survey report for 1927. "During the half century of development that followed the discovery of gold in California, one great bonanza after another was discovered in the West. These poured into the coffers of the world a wealth of metals which enriched its finders, the Nation, and all mankind. The country was new. The western half of our continent had remained, in the mining sense, undiscovered. Enterprising Americans in seventy-five years have concentrated the exploration and development that in the Old World was distributed over many centuries. Viewed historically this development has been startlingly swift; nevertheless it has been remarkably thorough.

"Now the pioneer stage of mining has passed. In an untouched country simple methods of prospecting revealed great mineral deposits in quick succession, many of them exposed at the very surface, awaiting merely the touch of the prospector's pick and the assay to confirm his findings. Many of the deposits thus discovered were developed into great mines, which have passed through successive stages
of cheap mining of rich oxidized ores at the surface, more expensive but highly profitable mining of enriched sulphides at greater depth, and finally mining of lean primary ores at lower levels, where costs of recovery even with the best modern methods may soon exceed the market value of the product.

"But as time has passed fewer and fewer new deposits have been found. The hills have been prospected over and over by the old-time methods from base to summit, from Canada to Mexico, and from the Great Plains to the Pacific. An occasional strike has been made within the last third of a century—Cripple Creek in 1891, Tonopah and other Nevada camps in 1900 and later—but by far the greater number of the big metal mines of the United States were in operation within two generations after the discoveries in California. The finding of new ore bodies is becoming more difficult, and the difficulty may be expected to increase. The problem of maintaining production involves increasing skill in ore finding and increasing use of lower-grade material. The first is the problem of the geologist and the mining engineer; the second is the problem of the metallurgist and the industrial organizer.

"The leaders in the mineral industry are acutely aware of the necessity of finding more ore, even though the rest of the world may be oblivious to this need."

With revision of land office work and reduction of offices and personnel to meet the altered condi-
tions of to-day, the Secretary of the Interior has called for revision also of an enormous accumulation of laws. It is eloquent of the tangles of past years that one revision specially suggested was authorization to enable the Secretary to sell and issue patents for lands which have been occupied and used for many years, perhaps sold and resold in good faith under the belief that the title was good, whereas the land still vested in government.

In particular, the Secretary desired that grazing should be placed on an entirely new footing. "We have no laws to conserve the native grasses on public lands and protect their grazing values," he stated recently, "The Public Domain is an unrestricted range for those who desire to use it. The pre-empting of water holes and the fencing of streams excludes range men who do not control these first essentials for range stock. This situation in many instances resulted in the conversion of this theoretical grazing common into a private preserve. With no tenure save force, the first to arrive with his herd or flock, if sufficiently powerful, takes all and moves on to other areas."

IV

Enter: the Automobile

Into the huge, wide scattered, somewhat inchoate empire of lands, the much-vaunted Era of
"THE GREAT AMERICAN DESERT"

This scene in Salt Run, Arizona, is typical of much of the remaining public domain in our far Southwest. The cactus is the famous Papago Saguaro.
Outdoor Recreation (which is only another phrase to designate the era of the automobile) has brought many unofficial changes. Of official changes, the new conditions have inspired few in the Public Domain. There is a new point of view. The General Land Office has withdrawn many small tracts from homestead entry because apparently more suitable for recreational use. Under the Recreation Act of June 14, 1926, it has authorized acquisition of an aggregate of 1,440 acres by states, counties and cities. Also it co-operated with the Joint Committee on Survey of Federal Lands of the American Forestry Association and National Parks Association in surveying the Public Domain for recreational opportunities.

Throughout the country, however, motor-wrought changes are many and startling. Roads sweep through vast deserts, through wildernesses of many kinds. They penetrate impassable country, cross mountain systems, bringing distant centres of human activity into communication. They join state and county roads across broad wastes and national forests, make isolated regions accessible, connect farms and markets, develop rich valleys and splendid scenic regions far from accustomed routes of travel and commerce. Twenty-five thousand five hundred miles of federal-aid motor road alone, not counting the often much greater mileage of motor roads built by the states themselves, have been constructed since the federal-aid law became operative.
in 1921 in the seventeen states in which the Public Domain is officially recorded. Corresponding road expansion in those states where Public Lands are too few and scattered for conspicuous record nevertheless open what are there to the uses of recreation as well as of homesteading and business, and many of these have high adaptability.

East of Colorado, comparatively little recreational opportunity offers. Public Lands in Florida have much delightful shore land. And there are shores in Louisiana and Mississippi which will find occupation in the fulness of time. Alabama’s public lands will offer to the future a few pleasant resorts, and Arkansas with its much greater diversity has many small available spots in the foothills of the Ozark Mountains, sharing opportunity with the National Forest. Minnesota and Wisconsin will also make their lesser contributions of Public Lands to the Automobile Invasion.

On Isle Royale in Lake Superior, Michigan, are 5,500 acres of Public Lands which appear destined to pass into some permanent form of recreational use. The island, which is forty-five miles long, has a gross area of 132,000 acres, partly in state but nearly all in private ownership, the land once having been thought to contain marketable copper. It has lakes, streams and virgin forests, a Federal Bird Reservation, and several Light House Reservations. Once it had moose. Enthusiasts think it has National Park scenic grandeur, which we doubt.
West of Denver, the situation alters. All the Rockies, the Sierra, and the Cascades, with their flanking and intermediate plateaus and deserts, once solidly Public Domain, are now patchworked with reserved federal lands of all varieties and kinds, together with private lands acquired by homesteading, gift and purchase. Most of what is left is desert, but roads have saved or developed for the motorist much that is enjoyable for recreation and useful in other unindustrial ways. The scenic, educational and inspirational values of a great proportion of these lands are extremely high.

In the eleven far western states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming, 11,378 miles of federal-aid roads have been constructed at a total cost of $182,363,675, nearly a half from the national treasury. These are in addition to National Forest and National Park roads, both of which have had generous annual programmes. Besides which, all the states have developed their own extensive road programmes, most of them, notably California, having spent millions in new highways and improved surfaces during the same period.

Before we reach the Rockies travelling westward, let us consider the Badlands region of the Dakotas, Nebraska and Montana, most of which is in the Public Domain. Except in river bottoms and around widely separated water sources, this remark-
able country, fantastically carved by the erosion of distant ages and torn in places by long-dead volcanoes, its red rocks almost impassable here and there for miles, is scenically striking, often gorgeous in form and color, but rarely beautiful. Several millions of acres offer little variety.

William H. Bandy, engineer of the United States Land Office, describes Badlands on the banks of the Missouri River for three hundred miles below Fort Benton, Montana:

“As a result of being forced by the continental ice sheet in Pleistocene time to seek a new channel, the Missouri here has cut a canyon 600 to 800 feet deep. This intrenchment has given a steep gradient to all its tributaries, and they also have cut deep channels in their lower courses, producing a much dissected region in which the highly folded and faulted strata are strikingly exposed. This erosive action is still taking place rapidly on the soft or soluble sedimentary strata cutting deep gashes and fantastic forms as it forces its chisel back into the formation, uncovering an endless variety of fossil forms that have been preserved deep in the ground. The altitude of this area ranges from 2,100 feet to 3,500 feet above sea level.

“Many of these canyons and gorges are as much as 600 and 700 feet in depth, with steep, almost perpendicular walls of clay and sandstone, of different colors, which viewed from the buttes and plateaus under different light conditions, offer studies in col-
orings the equal of which, it is believed, will be hard to find in any other place outside of the Badland Country.

"Excellent views of this country are obtained from ridges and hogbacks which extend out from the main divides and ridges. Many of these ridges, hogbacks or spurs have wood roads leading along them, over which one may drive an automobile to points overlooking the innumerable gorges, canyons, and elevations, often looking down upon the Missouri several hundred feet below. Most of the ridges and plateaus are covered with scattering pine, and scrub cedar timber."

Mr. Bandy has recommended that three areas which he specified should be set apart for some appropriate form of preservation, and Mr. Raney Y. Lyman, another Land Office engineer, has recommended that 21,000 acres on the Yellowstone River south of Glendive, Montana, should also be preserved. In southwestern North Dakota residents of a Badlands area on the Little Missouri River were not so considerate of public opinion or government standards. Determining among themselves that, willy-nilly, their specimen must be made formally a National Park, they bombarded Congress session after session to create a "Roosevelt Memorial National Park" of 1,300,000 acres, an area nearly as large as Yellowstone, including a ranch once owned by Theodore Roosevelt. At this writing they are still bombarding Congress—as scores of others have
done before whose favorite home areas have not met the standards of the System. In this instance the bill also demanded an appropriation of a million dollars to buy private lands within the proposed area.

South Dakota has its Badlands national park project, also. The hundred and eighty thousand acres between the White and Cheyenne Rivers proposed for the "Wonderland National Park" is less than half federal land, the rest being state and private land. The projectors of neither of these take the least account of National Park standards or national public opinion. Their concern is local.

At least six other areas of Badlands have been suggested for some form of permanent preservation. In course of time, at least one characteristic and appropriate example perhaps will be chosen as a National Monument, and states may make what parks they please with reasonable certainty that the nation will contribute its lands.

Another Public Lands region rich in scenic and recreational example, straddling the boundary of Nevada and Idaho, is known as the Owyhee Country because drained by the Owyhee River. Several hundred square miles, of altitude too high for agriculture but delightfully forested, are available for special uses of this kind. A grazing country overgrazed, invaluable for summer recreation, it will in time become part of the co-operative state and national recreational programme which is destined in time to replace the present habit of individual states
attempting to force their way into the National Parks System by use of political clubs.

Scenically, the Public Domain reaches its climax in the Plateau Country of Southern Utah and her adjoining states. Geologically, also, this country, which is a part of the drainage basin of the Colorado River and the upper portion of that part of it of which the Grand Canyon is the scenic and erosional climax, has extraordinary importance. From the Wasatch Mountains it falls in great steps, miles in breadth, to the Colorado gorge. Each step includes one or more of many strata of sandstone, limestone and shale highly and variously colored, each named usually for its particular color.

High in the series is the Pink Cliff in which is located famous Bryce Canyon National Monument. Lower down, cut in the White and Vermilion Cliffs, is Zion National Park, the "rainbow of the desert." The foundation stratum of Zion, known as the Kaibab limestone, is the identical stratum upon which one stands, miles southward, to look down into the gorgeous depths of the Grand Canyon, most celebrated natural spectacle of any kind in the world.

If we should refer this gigantic basin's mountain origin back of the Wasatch Range to the crest of the main Rockies in Colorado, of which the Wasatch is but a spur, thereby including the immense erosional plateau in which is carved Mesa Verde National Park, the huge natural bridges of Utah and the Navajo Indian Reservation of Arizona with its
Canyon de Chelly, Rainbow Bridge, and Painted Desert, all legitimately parts of the same great drainage basin, we shall have a picture of creation to tax human imagination.

There are National Forests perched here and there on these titanic brilliant steps. There are National Monuments and large Indian Reservations, also. The variety and richness of carving throughout this magical country is unequalled. Here, during future years, will develop a study in World Architecture which may safely challenge competition, for there is no other country of its general nature which is nearly its equal in size, ruggedness, diversity, richness and sheer beauty of form and color. For minute detail and heroic example, it challenges the world of erosional spectacles.

These are largely unreserved Public Lands. Their condition is arid, often stark desert. The excessively rough surface makes travel over large parts of it extremely difficult. Inhabitants are few, grouped in widely separated spots where water may be found. The country is full of surprises. Though Zion Canyon in Zion National Park was known to Mormon neighbors since 1858 and to exploring geologists in 1870, and was made the Mukuntuweap National Monument within the seventies, it was not "discovered" in any public sense till 1916, when Gerrit Fort, general passenger manager of the Union Pacific Railroad, led an exploring party there on hearing a report of its wonders.
While I was there in 1920, people were talking of another great scenic discovery, “a canyon named Bryce in the Pink Cliff,” which also, we found later, had been known to local Mormon dry farmers for many years. A magnificent double natural bridge in Arizona, discovered by Land Office officials half a dozen years ago, had been really discovered years before that and lost. In fact, it was lost twice.

We may only guess at the scenic and geologic future of this part of the Public Domain, crediting it with extraordinary values which may not be measured in dollars.

V

Concerning Antelope and Others

In Nevada, Utah, Wyoming and other Public Land states of the far West, States Game Departments have proclaimed rules extending far beyond state lands into the Public Domain, where they may be enforced only by courtesy. There is no doubt of the benefit to wild life of this usurpation of authority if it can be made to function, and it has all the help that the Interior Department may give.

The difficulty appears to be that local people do not themselves seem to take this movement seriously. It is charged that it is a device of livestock interests to forestall creation of large Federal Game Preserves on these same lands. It is charged also that it is a device of hunters to discourage the live-
stock industry. Several million acres are involved. It seems certain that, whatever may be the motives involved, this is a step toward a compromise in the Public Domain between the conflicting claims of wild game and domestic cattle. The two can no more both thrive on the same lands than can different governmental authorities rule identical territory without conflict.

Wherever in our western country domestic animals and wild animals are in competition for the range, the creatures of the wilderness will disappear without the protective intervention of man. In National Parks only is the attempt made to preserve original conditions and balances of life, but their areas are too small to count for much in the wild life conservation programme of a country the size of ours. In National Forests wild animals are conserved wherever other objectives permit, subject to the game laws of the states in which the forests lie. In the open range of the Public Domain, nature takes her course subject only to state laws very difficult to enforce. Against competing cattle and sheep, to say nothing of predatory men and animals, the game, great and small, furred and feathered, which once densely peopled the great plains of the far West, scarcely survives.

The situation is complicated by the accepted theory that the states own all wild life within their boundaries, even those on federally owned lands.

"A system of grazing regulations similar to
that in vogue in the National Forests,” writes Franklyn W. Reed of game on Public Domain lands, "would not only benefit the livestock industry but at the same time would be the best step that could be taken for conserving wild life and preserving paramount recreational resources. In a country like this the preservation of the game’s food supply is of more importance than the enforcement of closed seasons, bag limits, and similar protective measures.

“Supplementary to such grazing regulation, in the interest of the game it will probably be necessary to set aside a certain number of comparatively small-sized Game Refuges, strategically located, in which both grazing of domestic stock and hunting are absolutely prohibited. In addition, it might be in order to reserve in public ownership a system of well selected camp grounds, if any such still remain in public ownership, for the benefit and use of hunters and fishermen visiting the region.

“To work out a proper plan of management will necessitate a far more thorough and intensive study of the region by a combination of grazing specialists and wild life experts than has yet been made. In addition to the physical problems to be solved there are political and legislative obstacles to overcome. The states within which these lands are located hold different and sometimes conflicting points of view about range regulation and wild life conservation. No effective action can be taken by one state independently of the others. Although the
states can pass and enforce laws regulating hunting and fishing on the lands, still they have no power to dictate other uses, such as grazing, since the bulk of the land is in Federal ownership."

"In no case that I know of," writes Smith Riley, one of our closest observers of wild life conditions, "has the national government taken steps to improve the unsatisfactory food conditions of those Public Lands covered by state game refuges as a result of public pressure to protect the wild life. There has been no action to lead state game officials or game protective associations to believe that any other than the present conditions can be expected, except perhaps a further gradual destruction of food plant values by uncontrolled grazing.

"It is estimated that there are between twenty and thirty thousand antelope scattered through sixteen states in the West and that this number is a very small per cent of the number the ranges where these animals are located can support. The bulk of the antelope range is on the Public Lands, and one branch of the national government has been working with the state authorities to protect and improve the conditions for the herds by enforcing the closed season in every state where they exist and destroying those animals and birds which prey upon them. The most needed action looking to the perpetuation of these rare, valuable game creatures is to insure to them a food supply throughout the year and this on lands which are publicly owned and of such a
character that they have never been attractive of acquirement for individual ownership.

“One of the attractive game birds of the United States is the grouse, which used to exist in vast numbers throughout the sage brush lands of the West. These birds which have afforded food and recreation to hundreds of thousands of our citizens have literally been swept away over millions of acres, much of which is still Public Domain. Should those lands that are in national ownership be so administered as to prevent the destruction of the food and cover plants attractive to the sage chickens, these birds, together with the antelope and other game, will afford recreation to the citizens of this country that can be valued at many millions of dollars. The State of Nevada has seventy-seven millions of acres that have produced untold millions of sage hens. Ninety per cent or more of this acreage is of such a character that it cannot be cultivated. Its greatest value will always be production of native plants to support animal and bird life.”

Wild life problems, of which we here get a couple of intimate glimpses, to-day invade the principal divisions of land service of all kinds. They also enter intimately into the administration both of National Forests and National Parks from widely differing points of view, and the Bureau of the Biological Survey finds its most conspicuous function the study of American game birds and game animals, and their conservation on Federal Lands. We
shall meet these questions again in later chapters.

The Public Domain is too old, too complicated, too detailed, too technical, too significant in a thousand ways, too intimately woven into the warp and woof of the governmental fabric to describe with greater particularity here without endangering the perspectives of the broad national picture of which it is a part.

The slight sketch here attempted leaves imagination to fill in connecting lines. Students of history and government will find it wholly inadequate. It is not for them, however, that this book is written, but for those men and women busy with living who want graphic backgrounds, true perspectives and sound relationships without cluttering detail in order that they may plan intelligently and live vigorously the more useful national life which the new times demand of every citizen.
CHAPTER III

THE STORY OF OUR NATIONAL FOREST

THE ORGANIZED REMNANT OF A WASTED HERITAGE,
IT STANDS BETWEEN POSTERITY AND DEPLETION,
AND IS NOW DISCOVERING NEW AND INVALUABLE
USES UNDREAMED OF HERETOFORE

THE first comers to America found a mighty
forest fronting the Atlantic shore and extending westward as far as the white man ventured for many years. They were justified in believing, and no doubt they did believe, that it covered the unknown continent to the shores of the western sea. Along the coast this forest consisted of small pines which, a little back, gave way to greater pines, with which presently were mingled a wide variety of other conifers and deciduous trees of very many species; where level lands gave way to foothills and mountain ranges, the trees assumed still greater size. Forests covered even the mountain tops.

To the early settlers the forest was both a blessing and a menace. From it were hewn the timbers for their houses, barns, plows, and wagons, the rails for their fences, and fuel to cook their food and temper the heavy winters. It harbored plentiful game for their sustenance. But also it was cover for savage beasts and hostile Indians, and it had to be la-
boriously cleared away for fields to raise their corn. It is no wonder that the early American colonists considered the forest a mixed blessing, and that, as is recorded, forest fires were often welcomed because they saved some of the labor of clearing farm lands. Sometimes fires were lighted to drive game to better shooting grounds. If also the fires destroyed mountains of timber, what of it? Was there not forest enough on the levels to furnish timber for thousands of years? Would trees not grow again? For centuries the forest was considered inexhaustible. Even in the eighteen eighties few but specialists doubted it. Even at the birth of the present century, there was little real belief that the depletion which exists to-day could possibly occur for many generations, if at all.

Originally there were 1,064,528 square miles of solid forest between the Atlantic and the prairies within what is now the United States; and in the West, in the Rockies, the Cascades and the Sierra, and on the high plateaus, there were 220,062 square miles more; these in a total area of 1,284,590 square miles. Between the forests of the East and those of the West lay a million and three quarters square miles of prairie, unforested plateau and desert.

To-day, we have 733,554 square miles of forested lands left, which is somewhat more than half the original area. But this includes 390,804 square miles which have been cut over once or oftener and can be restored only by scientific fire control and re-
forestation, and 126,875 square miles which have been so slashed, burnt, reburnt, and eroded as to be wastes probably incapable of future usefulness.

There remains, therefore, only 215,875 square miles of virgin forest out of 1,284,590 square miles which the early colonists found here. To live off the greater area, we then had a few thousand people whose needs were little more than those of bare existence. To live off its remainder, we now have more than a hundred and twelve millions whose complicated modern requirements are many times per capita greater than those of our forefathers. According to Richard H. D. Boerker, timber consumption in France amounts to twenty-five cubic feet per capita of population, in Germany to forty cubic feet per capita, in the United States two hundred and fifty cubic feet per capita. But we are not personally so extravagant as the comparison makes us appear, only unbelievably negligent. Half of this expenditure is destruction. Forest fires have devoured annually more timber than all uses combined.

The story of the ignorant, careless, almost blithesome dissipation of the grandest heritage of forest, no doubt, of any land on earth is one of the world's tragedies. We can better understand it of Asia and southern Europe in civilization's childhood than of stalwart, brainy America during the last hundred years. Much of the forest, of course, had to give place to the farms, villages and cities of a swiftly growing nation. In the handling of the remainder,
that which to-day should be the nation's dependence, lies the tragedy. Its history, culled from the enact-
ments of Congress, the speeches there made, and the records of administrative bureaus of government, is almost unbelievable as seen in the perspective of to-
day. It is a story of utter blindness, of ignorance of startling facts, of passionate greed, of frauds on a gigantic scale, of interests combining and competing for the common spoils, of the complete subordina-
tion of national interest to sectional, local, partisan and even personal interest. It constitutes one of the darkest chapters of our national history.

It is not as if we had had no precedents. England had directed her American colonists to con-
serve mast pine for her navy, imposing a fine of five pounds for cutting trees under a foot in diameter. The colonial governor of New York had charged every person cutting a tree to plant five others. In 1736 Plymouth Colony passed a law against export-
ing lumber, and New Haven ordered that no trees should be cut without magistrates' permission. The young nation passed numerous laws protective of the forest. In 1795 a Massachusetts society studied and reported methods to increase timber growth. In 1799 Congress appropriated $200,000 for the pur-
chase and conservation of timber lands for Naval use, and in 1831 a law was passed, which no attempt was made to enforce, prohibiting lumbering of all kinds in national lands.

The wasteful destruction which had inspired
these and many other early conservational enactments by the colonies, the new nation, and several of the states, increased extraordinarily during the quadrupling of the population in the half century following 1820. Numerous official and private warnings were meantime published, but were unheeded. The bare mountains and soil-less wastes in Spain, in much of France and in the Far East were cited as the inevitable end of a course which appeared to grow madder as the population increased. The vanishing of virgin white pine and black walnut was predicted years before it occurred. But the people, blinded by belief in the inexhaustibility of their forests, remained indifferent, and Congress, apparently drunk with the wealth at its disposal, flung its vast treasures of woodland to whoever asked in the name of local need or personal profit. By 1870 more than 95,000 square miles of finest timber lands had been presented to soldiers in extra recognition of service, recalling our recent soldier bonus, but far more costly even than that since it gave what never could be replaced. Nearly all these bonus lands passed quickly into the hands of speculators at a fraction of their values even then. By 1870, nearly 200,000 square miles of rich forest had found their way into private possession through grants to states, and twice that—an area greater than the combined total areas of the New England and Middle Atlantic states with Ohio, Maryland, and the Virginias thrown in—had been tossed free
to the railroads to encourage building. By 1870, 25,832 lumber manufacturing companies, some of very large size, were in full-time operation. Lumber interests ranked second in the bulk and value of the national products.

And the dissipation of our colossal fortune of forest had only begun.

What has happened since then—the swelling of destruction's tide, the concentration of enormous fortunes of forest lands in the hands of a few companies without compensation to the nation, the climax of greed, the sobering of a few, the organization of conservation and beginning of the war of recovery, the passage of saving laws when the spoils-men of Congress were not looking, the upbuilding thereunder, amid a din of protest, of a great administrative service of conservation, the constant assaults in Congress upon this service even to the present time, and the recent discovery of a new tremendous usefulness for the remaining forest—that of recreation—will be outlined in order.

First, for perspective's sake, let us view our great forest as it was originally.

**America's Heritage of Forest**

The forests which confronted rather formidable the early settlers of the country were magnificent in the extreme. We shall first consider that in the East.

In its northern section, including the states
north of Connecticut and Rhode Island, most of New York and Pennsylvania, the Great Lakes country and the crest of the Southern Appalachians as far south as Georgia, the conifers prevailed. Four species of pines including the famous white pine which housed the growing nation for many decades, hemlock, balsam fir, and three species of spruce covered together many thousands of square miles. But growing with them in fascinating variety and occasional profusion were many deciduous species. Red, sugar, and silver maples, no less than ten species of oaks, besides beech, ash, hickory, poplar, and birch, were some of many hardwoods which, by their very presence, differentiated the coniferous forests of our East from those of the far West in which deciduous trees formed an insignificant part.

In the South, the enormous yellow pine belt, whose remainder to-day is the last considerable single source of virgin pine east of the Rockies, bordered the Atlantic coast from Chesapeake Bay to Florida, and the Gulf coast westward into Texas. In the alluvial bottoms and swamp lands of these states, six or seven species of oak besides gum, poplar, hickory, ash, beech, maple, elm, white cedar, locust, willow, cottonwood, bay, and sycamore were numerous and luxuriant. Fragments of these hardwood interludes among the southern pines still abound. The southern forest, it will be seen, was marvelously varied and beautiful.

And between the northern and the southern
coniferous forests, bounded by them on three sides and on the west by the prairies, grew the most remarkable of all, a hardwood forest of grandeur and enormous size, which farms have long since largely replaced. Most of Connecticut, Rhode Island, New Jersey, Ohio, Indiana, and Kentucky, together with parts of New York, Pennsylvania, the Virginiats, the Carolinas, Minnesota, Wisconsin, and Michigan were included. It divided Illinois, Iowa, Missouri, eastern Kansas, Oklahoma, and eastern Texas with the prairie, and invaded the northern parts of what now are Georgia, Alabama, Mississippi, and Arkansas.

An extraordinary hardwood forest, this! It shared large areas with the conifers, several species of which were well scattered throughout it. There were no less than a dozen species of oak, several elms and maples, beech, poplar, locust, chestnut, cottonwood, tulip, sycamore, butternut, cherry, and dogwood in profusion, not to mention many less common and lesser species. And there were included large quantities of black walnut which supplied the nation's household furniture for a long period.

As an entirety, our eastern forest probably never had a peer for extent, variety, and beauty in the world's history. More than a hundred and a quarter species have been identified, which makes a sharp contrast with the famous forest belt that is the world's paradise of big trees, midway up the Sierra of California, which has very few; wherein
ADIRONDACK WHITE PINE SEEDING NEIGHBORING MEADOW
is discovered the richness, beauty, and charm with which the eastern forest offsets the superior grandeur of that of the far West.

Down the higher slopes and summits of the Southern Appalachians, northern conifers invaded the far South, while up the sandy lowlands of the Atlantic coast southern conifers thrust another long finger invading the North. Thus, throughout the East there then was, and is within the narrow limits of forest remaining to-day, a delightful if sometimes confusing variety.

On Mount Desert Island in Maine, for example, in Lafayette National Park, southern species common on the Gulf of Mexico overlap northern species from the shores of Hudson Bay. Throughout the entire eastern forest, rarely anywhere in any considerable area was possession complete either for the conifers in their special ranges or for the deciduous trees in theirs. There were usually a few pines, at least, among the hardwoods, a few hardwoods among the pines; and throughout hundreds of thousands of square miles the contest for supremacy produced remarkable variety and charm. Only the spruces in close stands, because their dense foliage ceilings excluded sunlight, discouraged invasion even of their own kind. Of the eastern forest’s original total of 1,065,000 square miles, 439,000 square miles, a little more than forty per cent, consisted of conifers.

The most famous of all eastern trees was the
white pine because of the great part it played in the development of the young nation. Easily lumbered, easily sawed and handled, heavy-trunked, strong yet yielding to the tool, clean, white, straight-grained and plentiful, it roofed the young nation and for many years was one of its principal commodities in domestic and foreign trade. One of the most beautiful of trees individually and in stands, its loss to the landscape also is very great. Young white pines are growing lustily to-day in many limited areas which have been spared by civilization's encroachments, but it will take many years to produce giants like those of old, and it is probable that high quality white pine, once cheapest of lumber, will always remain as to-day the costliest. Its native lands are now waste lands, farms, villages, and cities.

The greatness and the glory of our vast eastern forest have passed forever, but fortunately we can see to-day, and posterity can see, examples of it in something of its pristine loveliness preserved in areas which fortuitously have escaped the swirling currents of civilization as islands the rising tide. In Cook County in western Pennsylvania, for example, several thousand acres of noble white pine have been held safe in a private estate, which is now the prized property of Pennsylvania. Also, in the area chosen for the Great Smokies National Parks on the crest of the Southern Appalachians, there are many thousands of acres of original forest untouched by the axe, which will pass on as perpetual exhibits.
in the eastern National Forests, notably in the White Mountains, are fragments of untouched forest which, let us hope, may escape for many years.

So much for the vast eastern forest. The western forest was scarcely more than a fifth its size, and was located on widely separated mountain ranges and on islands of high plateau in oceans of desert. But it possessed, and possesses, marvelous distinction in the size and grandeur of its conifers.

You will recall that, between the Rockies and the Sierra lies a vast semi-arid country, and that the western slope of the Cascades and the Sierra is famous for its forest of gigantic trees. The reason is that the latter lofty barrier of mountains robs the warm winds from the Pacific of moisture with which nature meant to water half a continent. Therefore the exuberant fertility of the western slope of the Cascades and the Sierra. Therefore the desert between these ranges and the Rockies.

As with other crops, forests depend wholly on watering, and in the arid West water depends primarily on altitude. Above certain altitudes, varying also with latitude and local conditions, whatever moisture the air contains deposits in dew, rain, and snow while below it aridity prevails. Standing in the most arid part of the great Navajo desert, for example, Navajo Mountain is a forest-crowned pyramid, from which cold streams descend to evaporate in the desert.

So it is that the nation’s great western forest
occurs in many isolated sections, great and small, dependent upon altitudes. The main range of the Rockies carries a ribbon of forest on either side its barren and often snow-covered crest. So also many of their component ranges, like the Bighorn, the Absoroka, the Wasatch, and the Sangre de Cristo. So also the Cascades and the towering Sierra. So also isolated mountain masses in various parts of the west, like the San Francisco Peaks in Arizona. So also many lofty plateaus, like the splendid Kaibab forest north of the Grand Canyon, which, with its teeming population of deer, is wholly surrounded by desert. When we speak of the Western Forest, we mean all of these forested ribbons and fragments considered as one.

Because conditioned by altitude, the western forest far more than the eastern is affected by the life zones which belt lofty mountains, so that a journey from the hot plains of California to the bald summit of the high Sierra, for example, will encounter gradations of vegetation and animal species similar to those encountered in a lowland journey from the Gulf to the Arctic.

Roughly differentiating the tree stocks of the two main divisions of the western forest, that of the Rockies and that of the Cascades and the Sierra, very much is found in common, zone compared with zone and latitude considered. In the north of both, we find Douglas and lowland white firs, western red cedar, lodgepole and western white pines, Engel-
mann spruce, western hemlock, western larch, and many lesser species. Farther south, in southern Montana, Wyoming, Colorado, Utah, and Nevada on the Rocky Mountain sides, and California on the Sierra side, we find most of the same in lesser and different proportions, with white spruce and a number of pines importantly added in the Rockies, and redwood, sequoia, incense cedar, red and white fir, and yellow, sugar, and foxtail pines in California.

Cataloguing and proportioning these very important trees and many others less important either for lumber or landscape would make a fascinating story in itself, but one unnecessary for the purposes of this book.

What is necessary here, because it helps differentiate the eastern and the western forests, is noting the complete subordination of deciduous to coniferous trees in the lofty western forest. Oaks are fairly numerous and beautiful, but comparatively small. Maples are bushes in comparison with conifers which in vast stands approach and sometimes exceed two hundred feet in height. Aspen adds brightness to moist places in the altitudes. There are numerous others. The most conspicuous deciduous tree at lower altitudes is the cottonwood. Together the gracious hardwoods are the lacy trimmings to the dark majestic court-dress of the high mountains.

Splendid the contribution of the Rockies and their attendant ranges and plateaus to the magnificence of the western forest, but far greater is that
of the drenched western slopes of the Cascades and the Sierra. It is Washington, Oregon, and California which carry the world’s honors in great trees.

The giant tree of the northwestern states is the Douglas fir, second in grandeur only to the two sequoias of California, rising frequently to 180 feet or more with trunk diameters as much as ten feet. The western white pine, while rarely more than a hundred and twenty-five feet high in the Rockies, is twice that on the Pacific slope, with some occasionally scoring as high as 275 feet in stature with trunk diameters of five or six feet. Western red fir occasionally reaches two hundred feet, with trunks six feet thick. Western red cedar averages nearly as lofty a stature, with trunk diameters of eight, twelve and sometimes even sixteen feet at the swollen base. Incense cedar attains a hundred and a quarter feet, occasionally more, Engelmann spruce a hundred feet on high mountain slopes, western hemlock a hundred and seventy-five feet with occasional giants, sugar pine a hundred and eighty feet and sometimes more, with diameters sometimes as great as seven feet, giant sequoias two hundred and eighty to three hundred and thirty feet, with diameters up to twenty-eight feet well above the ground, and redwood two hundred and fifty to three hundred feet with occasional examples even higher and diameters of six to twelve feet, occasionally more.

These dimensions are desirable in order to emphasize the gigantic character of the western forest
as compared with the eastern. Nothing can equal in majesty the cathedrals of the main forest belt of the mountain ranges facing the Pacific. With the number of species far fewer, and deciduous trees subordinated, nevertheless the balance of beauty and the magnificence of profusion remains with the fertile East.

The value of this vast original forest if computed at the market prices of timber to-day would run to figures of incomprehensible size. Such a calculation would serve no purpose except to emphasize the vastness of lost opportunity, the enormity of what once were possibilities of national greatness and wealth. It might make us better appreciate the inevitable disaster always involved in dealing with a national whole from the standpoint of local interest and political ambition. So great has been the waste, so disastrous the ignoring of destruction by fire, that it is a safe statement that comparatively little forest value remains in any shape to-day of the vast potential wealth which the past has mishandled.

A little of our forest heritage remains, a fifth part of which is now controlled by a federal bureau possessing knowledge, devotion and efficient organization; the balance is in private possession. The people are rapidly awakening. Hundreds of their organizations are working locally, and a few nationally, to spread information and better the outlook. At last enlightened Congresses, the Sixty-Eighth, Sixty-Ninth, and Seventieth, enacted laws which in
time may bring public and private owners of forest lands into co-operation for protection. Whether enlightenment and co-operation can merely slow the speed of inevitable depletion, or whether, as optimists believe, the remaining forest can be so handled and increased by reforestation that the needs of future generations may still be reasonably met, remains to be shown.

Whatever the result of present efforts toward rehabilitation, this generation’s problem is one for promptness, with a margin allowing few errors. The resurgence of sectionalism in efforts to control again the national is inevitable, but must be quenched by national protest, for there is now no leeway in surplus forest as in the past. Congressional leaders of local causes and private interests can no longer be allowed their day; there are few days left.

In order that we may see our problem clearly, let us glance at the period of culminating folly, that from 1870 on, with its wholesome latter-day reaction of organized conservation.

The Climax of Folly

The increased forest destruction of the seventies and eighties was greatly augmented by the Free Timber Act and the Timber and Stone Act, both of 1872, yet it was the interpretation of ambiguous statement in these acts rather than their original intention which gave them their enormous power for
mischief. The Free Timber Act gave the people of nine far western states the right to cut at will on mineral lands for mining and domestic purposes, but it did not define originally either mineral lands or mining. In time any convenient forest anywhere was assumed to grow on mineral lands, and smelting and manufacturing companies were assumed to have the miner’s right to free timber. For one example, vast forest areas were burnt over to cheapen the manufacture of charcoal, the enormous surplus of which, over its use for smelting, being sold in the open market as a by-product.

The Timber and Stone Act confined timber grants to 160 acres, inviting evasion because so small an area could not be lumbered economically; whereupon developed frauds of the most extraordinary effrontery and extent. Besides, since homesteading laws made no distinction between farm and forest lands, many million acres of the finest forest in the country were taken up under the Preemption Act, the Commutation Homestead Act and the Desert Land Act by dummies acting for lumber companies. So demoralized did public sentiment become in some of the forested states that acting as dummies became practically a calling, while many nomadic operators erected temporary mills wherever conditions favored, without pretense of settlement or purchase, and lumbered till they were stopped, when they moved elsewhere.

The fact is that appropriations for government
inspection in the federal lands were so small that few frauds, compared with the many, could be prosecuted; and, because Congress repeatedly defeated bills to give the federal departments power to compel the testimony of witnesses, few law-breakers were brought to trial. Cases by the thousand were thrown out of court for lack of competent proof which could have been had if it had been possible to subpoena witnesses who would not serve voluntarily. In 1885, the United States government sought to recover the value of sixty million feet of high grade lumber stolen from the public forests by a single California company.

Meantime, under the constant urgings of Senators and Representatives from forested states, the laws were constantly amended to favor the "poor settler," who was described as struggling to "keep a roof over the heads of his children," whereas the final beneficiaries were almost always speculators or wealthy companies. Under the rulings of Secretary of the Interior H. M. Teller of Colorado, and of several Public Lands Commissioners and other officials here and there in power, the freest possible construction was put upon ambiguous phrases in the forest laws. For one example, when the railroads had disposed of the timber in their own munificent grants, Secretary Teller construed the phrase "adjacent to the line of road" in the Right-of-Way Act to mean that railroads could cut timber free within fifty miles of their tracks. Later he approved the
operations of a "logging railroad" company in
Washington, which built and operated no railroad
whatever except those sunk into the forest for the
sole purpose of carrying timber to market. This
made the precedent for any logging company with a
locomotive, track, and half a dozen flat cars to se-
cure the vast tracts of lumber free which the law
granted to great railroads.

Many railroads hired men to file claims on
worthless grant lands, counting upon the Interior
Department allowing them unclaimed forested lands
in any state crossed by their roads in exchange. A
later Secretary of the Interior, John W. Noble,
found 105,000 untried cases against forest depre-
dators accumulated in the Land Office, which he dis-
posed of by still further "liberalizing" the adminis-
trative interpretation of the laws.

For many years these practices were open se-
crets, and many times were frauds charged in local
political campaigns and denounced in newspaper
editorials; but, failing convictions, the frauds were
never much believed by the public, which was dis-
posed to attribute these periodic sensations to poli-
tics. There were local and national investigations
which failed and were discounted as political. Only
once were lumber scandals of magnitude brought
home, when two members of Congress were in-
dicted; but one of these died untried and the indict-
ment against the other was quashed under a succeed-
ing administration.
It is useless to multiply facts and instances, which could be cited by hundreds. During this long period lumber legislation occupied a considerable part of every session of Congress. In the painstaking cataloguing of Congressional bills and enactments and of administrative acts affecting forests compiled by Dr. John Ise of the University of Kansas ("The United States Forest Policy," Yale University Press), the names of certain legislators from forested states principally in the west recur again and again. It is surprising how small the group, when all is told, which handled in Congress this transfer of vast national wealth to the railroad magnates, speculators and unabashed thieves who for many years made grabbing the nation's forests a highly specialized and enormously profitable business. But still more surprising is it to the plain citizen to discover how easily political conventions and Congressional tradition served to restrain from interference the mass of well-meaning but ignorant representatives in Congress of the general people. The historic assumption that all natural resources within a state's boundaries belong solely to its own people and that "foreign" Congressmen are presumptuous in advancing national claims thereto is the first "principle" pounded into the heads of newcomers in Congress. Trading votes was as common then as it is now and always will be, and then as now the interest of political parties was skilfully distorted to cover a multitude of sins of commission as well as omission which were made to look like policy in-
stead of sin. It is an axiom that every generation has the Congress which it deserves. During these generations the people of America slept soundly, so far as concerned the national interest in its forests.

Rapidly reviewing the acts of Congress and the rulings of departments during these years of forest dissipation, one is more powerfully impressed by the absence of national horizons and the paralysis of the moral sense on the part of both operators and legislators even than he is by the frightful losses which the greed of quick wealth imposed on the nation. Each state insisted intensely on disposing as it pleased of the nation's lumber grown within its own boundaries, each lumberman and speculator grabbed strenuously all he could get while it lasted, and each legislator demanded his fullest share of political power and prestige; nearly all of them ignored absolutely the nation's interest.

Here and there we find emerging on the records of Congress a man of national vision; the rest appear what the rest always are, either self-seekers or lookers-on. There appear many who, like Pontius Pilate, showed interest once or twice but, as soon as vigorously opposed, made haste to wash their hands. It was not until the people themselves awoke to the fact that their wealth of forest had nearly disappeared and had assumed control by emphatically instructing their own Congressmen, that the era of conservation, so many years struggling toward the surface, found expression.

It is always difficult for the mass of the people,
without actual experience with Congress, to understand the inhibitions, the presumptions, the written and unwritten rules, and the political considerations which govern our representative assembly. Every man on entering Congress is inspired by high public purposes, and nearly all maintain these as personal ideals throughout their careers; but once in Congress they find themselves in a new and different environment whose complications and greater perspectives impose personal and political problems which the few only can solve. It has been said that sixty men of the five hundred in both houses rule the country, but the people behind Congress nevertheless always determine the issues which they themselves feel deeply enough to carry in large numbers to their own representatives. In these instances, which are too rare, the inconspicuous majority in Congress comes into its own, because each Congressman personally and for his party's sake wants re-election, and rises to the personal call of his own constituents. The leaders also quickly fall in line with the sentiments of those on whom they believe their renomination and re-election depend.

Popular protests nevertheless are unpopular, even among the highest minded Congressmen, because they upset policies, habits, and relationships, personal and political, imposed by the very nature of such assemblies—a fact often utilized by the self-seekers to discourage revolt and independent action.

Since the late war during which enemy propaganda assumed such dangerous proportions, pub-
licity has been called by two names in Congress according to the point of view. If it favors a Congressman's cause, he may call it "publicity." If it opposes his cause, he may call it "propaganda."

THE COMING OF CONSERVATION

We have seen that forest conservation was the subject of official action in early colonial times, and that in 1831 Congress passed a law, futile but significant historically, which forbade lumbering in public lands.

In 1849 the Commissioner of Patents issued what appears to be the first warning from administrative sources of a disappearing forest. In 1855, the Interior Department ordered that all lumber cut on public lands should be seized and sold. Between 1860 and 1872 other warnings followed from official sources, and there was much discussion of forestry throughout the country; this found its reflection in Congress. Bitter complaints from forest Congressmen about the government's "illegal interference" with lumbering on federal lands provoked counter charges of waste and spoliation. Senator Cole of California introduced a bill for lumber culture as early as 1867. Senator Ross of Kansas followed with others. Many forest conservation bills of many kinds, offered during this period, failed of consideration. In 1870 the first inventory was made of forest lands, which were then estimated at 39 per cent of the total area of the country.

The first special appropriation for forest pro-
tection, $5,000, was made in 1872. In 1873 the American Association for the Advancement of Science memorialized Congress and the legislatures of several states on the necessity for forest protection. Between 1869 and 1878, protective and forest culture laws were passed by Maine, Connecticut, Rhode Island, Massachusetts, Minnesota, Wisconsin, Michigan, Illinois, Missouri, Dakota, Wyoming, Nevada, Colorado, Washington and California, and the movement emerged to plant trees along highways. In 1874 Nebraska inaugurated Arbor Day. In 1878 President Hayes called the serious attention of Congress to the need of better protecting forests on federal lands.

Thus gradually began forest conservation, though the name was not yet current. The popular movement may be dated, for the sake of a date, from the action of the American Association for the Advancement of Science in 1873. The committee consisted of H. P. Hough of New York, who was exceedingly active thereafter for many years, George B. Emerson of Boston, Asa Gray of Cambridge, Massachusetts, J. D. Whitney of California, J. S. Newberry and Lewis Morgan of New York, William H. Brewer of New Haven, Charles Whittlesby of Cleveland, Ohio, and E. W. Hilgard of Ann Arbor, Michigan, whose names may constitute a Roll of Honor.

Representative Herndon of Texas followed up the Association's campaign in 1874 with a bill to ap-
point a commission of inquiry into forest destruction, but it failed. The next year Representative Dunnell of Minnesota introduced a similar bill which failed, but he hung a rider on the seed distribution bill which of course passed. Thus was an appropriation of $2,000 secured for a report, and the Secretary of Agriculture appointed F. B. Hough of the American Association for the Advancement of Science to undertake the work. Two years later Representative Dunnell got another $2,000 to finish the report, and, when completed, Congress appropriated $25,000 for printing and distribution.

The cause of forest protection was now at least formally launched. The first popular forestry organizations followed. The American Forestry Association was started in Philadelphia in the year of the Centennial, 1876, and a state association followed in Minnesota. But it was not until 1882 that forestry became a popular movement. Then the American Forestry Association, which had languished meantime, was recognized as a vital influence following a notable Forestry Congress in Cincinnati. State organizations in Ohio, Pennsylvania, Maine, Texas, Florida, New York and elsewhere followed during the next few years. Quickened by popular interest, forest conservation sentiment made headway in Congress. Local and sectional grabbing no longer had an undisputed field.

The earliest official herald of the future direction of forest conservation was a bill by Represen-
tative Fort of Illinois to set aside forest reserves at the head of navigable streams. It died for lack of interest, and meantime, under the old Swamp Land grants, vast forest areas were passing into speculative hands. Of Florida’s quota of public lands, a hundred thousand square miles, largely forest, disappeared within a few years, a quarter of it in one sale at twenty-five cents an acre.

About this time another idea found expression which was to loom large in the coming conservation of the remaining forests. Senator Clayton of Arkansas having introduced a bill authorizing the sale of southern pine lands based on the current belief that private ownership would assure fire protection, Senator Boutwell of Massachusetts voiced the future in an amendment to sell the timber while retaining the land in national ownership. The idea was new to Congress, and was immediately opposed. The amendment was thrown out and the bill passed. In the debate, Senator Howe of Wisconsin expressed a sentiment common enough then, and still, unhappily, persistent, in these words:

“When he (Senator Boutwell) calls upon us to embark in the protection of generations yet unborn, I am inclined to reply that they have never done anything for me.”

Under President Cleveland, the timber thieves, then at the high tide of activity, were rigorously curbed within the limits of slender appropriations. Commissioner of the Land Office William Sparks
urged bills in Congress which were violently opposed, and Secretary Carl Schurz moved vigorously for fire protection but without efficient response from Congress. Public alarm was awakening, however, and the newspaper and magazine press thereafter frequently discussed forestry, especially tree culture and fire protection. Appropriations to study forest questions gradually developed from the original $5,000 in 1872 to $100,000 in 1890. A Division of Forestry was organized in 1881 to study conditions, and an agent was sent abroad to observe forestry work in other lands.

Then came the "Forest Reserve Act," which made possible all that has happened since and that will happen in future years toward rehabilitation of American forests. It was not a separate act, but passed in 1891 as a rider added to another bill in conference. No special agitation led up to it. The fact is that its tremendous importance was not appreciated, nor the prompt and sweeping use which would be made of it suspected. But as an independent bill it could not possibly have passed any Congress of that period.

Leading up to it from 1876, Representative Fort of Illinois, Secretary Schurz, Senators Cameron of Wisconsin, Sherman of Ohio, Miller of New York, and Representatives Converse, Butterworth, Taylor and Sherman of Ohio, Deuster of Wisconsin, Hatch of Missouri, Markham and Clunie of California, Joseph of New Mexico, and Holman of
Indiana had all introduced bills more or less sympathetic with the idea of reservations. Few of these were even considered in committee, and none passed both houses. But they reflected growing public opinion and, broadcasting the reservation idea, prepared the way by accustoming Congress and the people to the idea. Several of these bills called definitely for reservations of land from which the timber was to be sold—but the land held in public ownership.

More immediately contributory was the memorial of the American Association for the Advancement of Science to President Harrison in 1889 vigorously urging forest reservations. This he transmitted to Congress, but Representative Dunnell's bill founded upon it failed.

The Forest Reserve Act passed in this way: In 1891, the General Revision Act, not a forest but a general land measure, was passed by both houses and went into conference for the settlement of a few points of difference. The American Forestry Association persuaded Secretary of the Interior Noble to ask for a rider authorizing the President to establish forest reserves. It was fortunate that four of the six conferees happened to favor forest reserves, with the others unopposed. The conferees wrote the clause into the bill as Section 24. A forest measure was not expected in a general land bill, and, in the usual rush at the close of the session, bill and rider passed without opposition.

In this indirect way, so often used for less
worthy ends, was secured the most important act of conservation in the history of the country!

President Harrison lost no time in making use of it. Beginning with a forest reserve adjoining Yellowstone National Park, he created fifteen reservations during the balance of his term of office, totalling more than twenty thousand square miles. President Cleveland created two more, and later, on February 22, 1897, upon the recommendation of a committee of the National Academy of Sciences, he created thirteen others having an area of thirty-three thousand square miles.

The first and second groups of reservations created no special opposition, though bills were promptly introduced, but failed, to undermine their effectiveness.

But with Cleveland's final thirteen broke a storm of opposition. These reservations locked up specially important forests, and Senators Allen, of Nebraska, Carter of Montana, Clark of Wyoming and others introduced bills to revoke them, which they backed with western vehemence and stirring eloquence. The President was denounced by many in unmeasured terms.

Dr. Charles D. Walcott undertook to steer the storm-ridden bark of conservation into safer waters by persuading Senator Pettigrew of Dakota to introduce a bill authorizing grazing, timber sales, and free timber for actual settlers, within the reserves. The bill also provided for exchanging existing claims
on lands within the reserves for patented land elsewhere. The bill passed, damaged by amendments, to be sure, but it saved the reserves and defined the sure path ahead.

From this event on, the story hastens. In September, 1901, Theodore Roosevelt became President and the decade began which has been called the golden age of forest preservation. Already the little Division of Forestry with Gifford Pinchot at its head had become a flaming torch. Schools of forestry were founded at Cornell, Yale, the University of Michigan and elsewhere. Forestry journals were started. State associations were formed in New Hampshire, Iowa, Nebraska, Kentucky, Maine, West Virginia, North Carolina, Georgia and Louisiana. In 1908 the National Conservation League was organized with Walter L. Fisher as president, and the following year, Dr. Charles W. Eliot of Harvard headed a National Conservation Association with forestry as a main objective. In 1908, both the Democratic and Republican conventions wrote forest protection planks into their platforms, an example followed by the Progressive and Prohibition conventions four years later.

Pinchot extended the conservation idea to cover other public resources including coal, gas, iron, grazing, and water for irrigation and power, filling the country with enthusiastic propaganda. Roosevelt concentrated his enormous driving power behind conservation, making it a constructive national pol-
icy. Characteristically he bent Congress to his will, defying opposition. Foreseeing the future, he created organizations within the government which long after became beneficent and powerful bureaus. The big stick was never used with more efficiency than in the interest of conservation.

Let Roosevelt summarize this period himself. The following is from the "Autobiography":

"When I became President, the Bureau of Forestry (since 1905 the United States Forest Service) was a small but growing organization under Gifford Pinchot occupied mainly with laying the foundation of American forestry by scientific study of the forests, and with the promotion of forestry on private lands. It contained all the trained foresters in the Government service, but had charge of no public timberland whatsoever. The Government forest reserves of that day were in the care of a Division in the General Land Office, under the management of clerks wholly without knowledge of forestry, few if any of whom had ever seen a foot of the timberlands for which they were responsible. Thus the reserves were neither well protected nor well used. There were no foresters among men who had charge of the National Forests, and no Government forests in charge of the Government foresters.

"In my first message to Congress I strongly recommended the consolidation of the forest work in the hands of the trained men of the Bureau of Forestry. This recommendation was repeated in other
messages, but Congress did not give effect to it until three years later. In the meantime, by thorough study of the Western public timberlands, the groundwork was laid for the responsibilities which were to fall upon the Bureau of Forestry when the care of the National Forests came to be transferred to it. It was evident that trained American Foresters would be needed in considerable numbers, and a forest school was established at Yale to supply them.

"In 1901, at my suggestion as President, the Secretary of the Interior, Mr. Hitchcock, made a formal request for technical advice from the Bureau of Forestry in handling the National Forests, and an extensive examination of their condition and needs was accordingly taken up. The same year a study was begun of the proposed Appalachian National Forest, the plan of which, already formulated at that time, has since been carried out. A year later experimental planting on the National Forests was also begun, and studies preparatory to the application of practical forestry to the Indian Reservations were undertaken. In 1903, so rapidly did the public work of the Bureau of Forestry increase that the examination of land for new forest reserves was added to the study of those already created, the forest lands of the various states were studied, and cooperation with several of them in the examination and handling of their forest lands was undertaken.

"While these practical tasks were pushed forward, a technical knowledge of American Forests
was rapidly accumulated. The special knowledge gained was made public in printed bulletins; and at the same time the Bureau undertook, through the newspaper and periodical press, to make all the people of the United States acquainted with the needs and the purposes of practical forestry. It is doubtful whether there has ever been elsewhere under the Government such effective publicity—publicity purely in the interest of the people—at so low a cost. Before the educational work of the Forest Service was stopped by the Taft Administration, it was securing the publication of facts about forestry in fifty million copies of newspapers a month at a total expense of $6,000 a year. Not one cent has ever been paid by the Forest Service to any publication of any kind for the printing of this material. It was given out freely, and published without cost because it was news. Without this publicity the Forest Service could not have survived the attacks made upon it by the representatives of the great special interests in Congress; nor could forestry in America have made the rapid progress it has.

"The result of all the work outlined above was to bring together in the Bureau of Forestry, by the end of 1904, the only body of forest experts under the Government, and practically all of the first-hand information about the public forests which was then in existence. In 1905, the obvious foolishness of continuing to separate the foresters and the forests, reinforced by the action of the First National For-
est Congress, held in Washington, brought about the Act of February 1, 1905, which transferred the National Forests from the care of the Interior Department to the Department of Agriculture, and resulted in the creation of the present United States Forest Service.

"The men upon whom the responsibility of handling some sixty million acres of National Forest lands was thus thrown were ready for the work, both in the office and in the field, because they had been preparing for it for more than five years. Without delay they proceeded, under the leadership of Pinchot, to apply to the new work the principles they had already formulated. One of these was to open all the resources of the National Forests to regulated use. Another was that of putting every part of the land to that use in which it would best serve the public. Following this principle, the Act of June 11, 1906, was drawn, and its passage was secured from Congress. This law throws open to settlement all land in the National Forests that is found, on examination, to be chiefly valuable for agriculture. Hitherto all such land had been closed to the settler.

"The principles thus formulated and applied may be summed up in the statement that the rights of the public to the natural resources outweigh private rights, and must be given its first consideration. Until that time, in dealing with the National Forests and the public lands generally, private rights had
almost uniformly been allowed to overbalance public rights. The change we made was right, and was vitally necessary; but, of course, it created bitter opposition from private interests.

“One of the principles whose application was the source of much hostility was this: It is better for the Government to help a poor man to make a living for his family than to help a rich man make more profit for his company. This principle was too sound to be fought openly. It is the kind of principle to which politicians delight to pay unctuous homage in words. But we translated the words into deeds; and when they found that this was the case, many rich men, especially sheep owners, were stirred to hostility, and they used the Congressmen they controlled to assault us—getting most aid from certain demagogues, who were equally glad improperly to denounce rich men in public and improperly to serve them in private. The Forest Service established and enforced regulations which favored the settler as against the large stock owner; required that necessary reductions in the stock grazed on any National Forest should bear first on the big man, before the few head of the small man, upon which the living of his family depended, were reduced; and made grazing in the National Forests a help instead of a hindrance to permanent settlement. As a result, the small settlers and their families became, on the whole, the best friends the Forest Service has; although in places their ignorance was played on by
demagogues to influence them against the policy that was primarily for their own interest.

"Another principle which led to the bitterest antagonism of all was this: whoever (except a bona-fide settler) takes public property for private profit should pay for what he gets. In the effort to apply this principle, the Forest Service obtained a decision from the Attorney-General that it was legal to make the men who grazed sheep and cattle on the National Forests pay for what they got. Accordingly, in the summer of 1906, for the first time, such a charge was made; and, in the face of bitterest opposition, it was collected.

"Up to the time the National Forests were put under the charge of the Forest Service, the Interior Department had made no effort to establish public regulation and control of water-powers. Upon the transfer, the Service immediately began its fight to handle the power resources of the National Forests so as to prevent speculation and monopoly and to yield a fair return to the Government. On May 1, 1906, an Act was passed granting the use of certain power sites in Southern California to the Edison Electric Power Company, which Act, at the suggestion of the Service, limited the period of the permit to forty years, and required the payment of an annual rental by the company, the same conditions which were thereafter adopted by the Service as the basis for all permits for power development. Then began a vigorous fight against the position of the
GRAZING IN IDAHO NATIONAL FOREST

COUNTING SHEEP ENTERING NATIONAL FOREST
Upon their number depends the fee charged by the government
Service by the water-power interests. The right to charge for water-power development was, however, sustained by the Attorney-General.

"In 1907, the area of the National Forests was increased by Presidential proclamation more than forty-three million acres; the plant necessary for the full use of the Forests, such as roads, trails, and telephone-lines, began to be provided on a large scale; the interchange of field and office men, so as to prevent the antagonism between them which is so destructive of efficiency in most great businesses, was established as a permanent policy; and the really effective management of the enormous area of the National Forests began to be secured.

"With all this activity in the field, the progress of technical forestry and popular education was not neglected. In 1907, for example, sixty-one publications on various phases of forestry, with a total of more than a million copies, were issued, as against three publications, with a total of eighty-two thousand copies, in 1901. By this time, also, the opposition of the servants of the special interests in Congress to the Forest Service had become strongly developed, and more time appeared to be spent in the yearly attacks upon it during the passage of the appropriation bills than on all other Government Bureaus put together. Every year the Forest Service had to fight for its life.

"One incident in these attacks is worth recording. While the Agricultural Appropriation Bill was
passing through the Senate, in 1907, Senator Ful-ton, of Oregon, secured an amendment providing that the President could not set aside any additional National Forests in the six Northwestern States. This meant retaining some sixteen million of acres to be exploited by land grabbers and by the repre-sentatives of the great special interests, at the ex-pense of the public interest. But for four years the Forest Service had been gathering field notes as to what forests ought to be set aside in these States, and so was prepared to act. It was equally unde-sirable to veto the whole Agricultural bill, and to sign it with this amendment effective. Accordingly, a plan to create the necessary National Forests in these States before the Agricultural Bill could be passed and signed was laid before me by Mr. Pin-chot. I approved it. The necessary papers were immediately prepared. I signed the last proclama-tion a couple of days before, by my signature, the bill became law; and, when the friends of the spe-cial interests in the Senate got the amendment through and woke up, they discovered that sixteen million acres of timberland had been saved for the people by putting them in the National Forests be-fore the land grabbers could get at them. The op-ponents of the Forest Service turned handsprings in their wrath; and dire were their threats against the Executive, but the threats could not be carried out, and were really only a tribute to the efficiency of our action. . . .
"The theory of stewardship in the interest of the public was well illustrated by the establishment of a water-power policy. Until the Forest Service changed the plan, water-powers on the navigable streams, on the public domain, and in the National Forests were given away for nothing, and substantially without question, to whoever asked for them. At last, under the principle that public property should be paid for and should not be permanently granted away when such permanent grant is avoidable, the Forest Service established the policy of regulating the use of power in the National Forests in the public interest and making a charge for value received. This was the beginning of the water-power policy now substantially accepted by the public, and doubtless soon to be enacted into law. But there was at the outset violent opposition to it on the part of the water-power companies, and such representatives of their views in Congress as Messrs. Tawney and Bede.

"Many bills were introduced in Congress aimed, in one way or another, at relieving the power companies of control and payment. When these bills reached me I refused to sign them; and the injury to the public interest which would follow their passage was brought sharply to public attention in my message of February 26, 1908. The bills made no further progress.

"Under the same principle of stewardship, railroads and other corporations, which applied for and
were given rights in the National Forests, were regulated in the use of those rights. In short, the public resources in charge of the Forest Service were handled frankly and openly for the public welfare under the clear cut and clearly set forth principle that the public rights come first and private interest second.

"The natural result of this new attitude was the assertion in every form by the representatives of special interests that the Forest Service was exceeding its legal powers and thwarting the intention of Congress. Suits were begun wherever the chance arose. It is worth recording that, in spite of the novelty and complexity of the legal questions it had to face, no court of last resort has ever decided against the Forest Service."

Since Mr. Roosevelt penned these words in 1913, his expectation that his arbitrary water-power policy would be enacted into law has been more than fulfilled in the Federal Power Act of 1920. His theory of public stewardship, which as President he sometimes effected without Congressional authority and against the most violent opposition, has been written into many laws. His expectation that the Forest Service would survive many assaults has been amply verified. Under Gifford Pinchot's able and public-spirited successors, Henry S. Graves, William B. Greeley, and Robert Y. Stuart, it has won the increasing confidence of the people.

During the Roosevelt régime public sentiment
naturally settled into definitely opposing camps. For the first time anti-conservation organized to meet the conservationists who, without respect to party and in every state in the nation, gathered in constantly increasing numbers behind the Roosevelt leadership. The struggles increased in purpose and in violence, centering principally at first upon agriculture and grazing in the public forests, and later upon governmental charges for private use of public utilities. The latter, which Roosevelt relentlessly carried through upon an opinion of the Attorney-General without Congressional authority, provoked years of bitter struggle. He won his conservation causes because he was perpetually aggressive, forcing the fight at many points at the same time, inferring executive authority from general enactments and acting promptly and forcefully thereunder. From the beginning to the end of his presidency, he kept the anti-conservationists in Congress on the defense—always excited, often vituperative, never quite catching up.

The Agricultural Appropriation bill of 1907 which anti-conservationists used by amendment to rob the President of his power to create forest reserves in certain states was not all loss, for another of its provisions permitted the use of national reserve timber outside the boundaries of the states where it was cut. This once for all nationalized our forests, which thereafter were accurately and officially called National Forests.
No serious attempt was made during Roosevelt's administration or since to repeal the Timber and Stone Act, under which, according to the National Academy of Sciences, eleven billion feet of timber were stolen from the public forests during the decade ending in 1897, because by that time little public timber-land of value remained outside the National Forests. It is still on the statute books. So also are the equally "generous" Free Timber and Permit Acts under which manufacturing at no charge for raw material was conducted at enormous profits for many years.

Throughout the country, the "golden age decade" was marked by the rapid spread of conservation ideals and popular organization, the reaction of which had its powerful effect on Congress. Nevertheless, the anti-conservation group struggled manfully; some of its chieftains maintain to-day, less strenuously but ready when opportunity offers, their advocacy of local as opposed to national uses of the National Forests, together with an attitude of constant criticism of the Forest Service.

Among the men of that time who led the opposition to the policy of forest conservation were Senators Carter of Wyoming, Cannon of Illinois, Tawney of Minnesota, Heyburn of Idaho and Fulton of Oregon, occasionally or frequently assisted by Shaffer and Patterson of Colorado, Jones of Washington, Bailey of Texas, Fordney of Michigan, Hemingway of Indiana, and others. Senators Hale of
Maine and Lodge of Massachusetts are among the many who markedly showed at one time or another sympathy with conservation's enemies. In the House, the names of Representatives Mondell of Wyoming, Wilson of Idaho, Floyd of Arkansas, Booker and Clark of Missouri, Bennett and Fitzgerald of New York, Hamilton of Michigan, and Haugen of Iowa appear as opponents of forest conservation, or as unfailing critics of the Forest Service, or as both.

It will be seen that opposition was by no means confined to the West. Nor was the advocacy of forest conservation confined to the East. The names of Senators Beveridge of Indiana, Platt of Connecticut, Nelson of Minnesota, Dolliver of Iowa, Newlands of Nevada, Spooner of Wisconsin, Warren of Wyoming and Hansbrough of North Dakota, and of Representatives Lacey of Iowa, Rawling of Utah and many others in the House appear frequently in the records of the often heated debates of the period, ranged on the side of national interest. In spite of the claims loudly made then and since, forest conservation was not and is not a sectional but a national question, and then as now had its earnest advocates in all the states.

The extension of the National Forests to the East marks another great stride toward forest recuperation. This was accomplished by the passage of the Weeks Bill on February 11, 1911, appropriating two million dollars a year until 1915 inclusive.
for the purchase of forest lands in the White Mountains and the Southern Appalachians. Until that date, National Forests were confined to lands already in possession of the nation.

The first move toward this end was made in 1899 when the Appalachian National Park Association was organized in Asheville, North Carolina. The following year this Association together with the Appalachian Mountain Club, the American Association for the Advancement of Science, and the American Forestry Association memorialized Congress, and Senator Pritchard of North Carolina secured a small appropriation for investigation. His bill to appropriate five million dollars for Appalachian reserves, together with several which followed, failed. A considerable series of bills appropriating for reserves in both the White Mountains and Southern Appalachians also failed, due principally to the opposition of Speaker Cannon in the House and western anti-conservationists. But Roosevelt vigorously approved, Missouri, Minnesota, Texas and New York wanted National Forests of their own, and the bill introduced by Representative John W. Weeks of Massachusetts in 1909 finally passed the House in 1911 by a vote of 130 to 111, and the Senate by a vote of 57 to 9.

The bill's stated purpose was to conserve the flow of navigable streams by protecting their sources; this because doubt existed whether appropriations to buy forest lands for lumber conservation were con-
From a photograph by A. G. Varela, courtesy of the U. S. Forest Service

A NATIONAL FOREST IN NORTH CAROLINA
Showing a glimpse of the celebrated Linville Falls
NATIONAL FOREST IN THE HIGH ROCKIES

Timberline on the trail to Mount Evans, west of Denver, Colorado

From a photograph by Bruce Wiswall
stitutional; but the debate and the vote hung on the lumber issue. Another peculiarity was that southern members voted solidly for forest reservations under national control in their own mountains; this in marked contrast with the South's traditional opposition to centralization of government.

It will be seen that a mighty change has taken place in public sentiment.

Between the Weeks Act of 1911 and the Clarke-McNary Act of 1924 elapsed a period of consolidation, reconstruction, study, growth and preparation. The Weeks Act dropped the curtain on an unholy past. The Clarke-McNary Act lifted it to a sane future.

Meantime conservation had become a national creed. The people had awakened, and preservation was the word of the hour. Wild life conservation hastened its already vigorous stride. National, state, and local organizations were born to protect the birds, the beasts, the wild flowers. Many hundreds of organizations of many kinds united in an alliance led by the National Parks Association to defend the conservation of the National Parks which were attacked in Congress by those who sought to prostitute them, as once they had the forests, to the profit of special interests and localities. The automobile carried millions of people a year into the forest where they learned to love it for its own sake. States vied with the nation in creating parks and forests, and many of them excelled in parks. The
Forest Service became a colossal engine of investigation, and published arrays of facts which astonished the nation.

And all the time, year in and year out, the fire demon, unrestrained, was sweeping away a million acres of woodland every year!

The Clarke-McNary Act was the first deed of a nation at last awakened to the tragedy of forest fires. John Davenport Clarke, Representative from New York, and Charles L. McNary, Senator from Oregon, were its sponsors. It passed both houses of the Sixty-Eighth Congress with little opposition. In many respects it was the most important bill signed by President Coolidge during his first half term in office. One fifth of our remaining forest is owned by the nation and administered by one of the most efficient government organizations in the world. The remaining four fifths are owned principally by farmers, lumbermen, and states. The Clarke-McNary Act proposed a partnership of all parties in ownership for co-operative national fire protection and reforestation, offering the nation's financial help to private landowners to make it effective. Some one has called this union "our national fire department," but it is far more than that. The act provided for the study of forest taxation in the expectation that states, by reducing taxation, would help make lumber a profitable crop. It provided also a sounder basis for the purchased National Forests of the future than the Weeks Act by mak-
ing their legal object forest conservation instead of merely the preservation of stream sources.

With this act began a reconstruction which it is the duty of every man and woman to do all possible, however small or local, to advance. The saving and upbuilding of our forest remnant has now practically passed out of the intimate control of Congress into the hands of the people individually and in organization. It is a national problem of the first order of importance which must largely be worked out locally—and each can find at home his own part, for there is a part for each. Let the United States Forest Service, expert, public-spirited, and willing, become the instructor and the partner of all.

**National Forests and Their Administrators**

The Forest Service administers to-day one hundred and sixty National Forests whose boundaries include areas summing 183,938,106 acres or 287,403 square miles. Included in this total are many private holdings which aggregate 39,279 square miles, leaving 158,800,424 acres, or 248,126 square miles, net, in public ownership.

These forests occur in twenty-eight states and two territories. Because suitable forested lands in the East had all passed into private or state ownership before National Forests were authorized by Congress, they group largely in eleven far-western states: Washington, Oregon, California, Idaho, Montana, Wyoming, Colorado, Nevada, Utah,
Arizona, and New Mexico; also Alaska. The second largest grouping of National Forests occurs in six of the southern Appalachian states: Virginia, West Virginia, North Carolina, South Carolina, Tennessee, and Georgia. The third group in area is that in the Ozark Mountains of Arkansas. Small National Forests also occur, approximately in the order of their size, in Minnesota, South Dakota, New Hampshire, Pennsylvania, Florida, Nebraska, Alabama, Michigan, Oklahoma, and Maine. There are National Forests also in Alaska and Porto Rico. Those purchased under the Weeks Act amounted, in 1927, to 2,564,619 acres or 4,007 square miles.

So widely scattered, the National Forests include lands of every kind in the United States, together with scenery of every rank and variety. They include, for example, the glacier-covered summits of Mount Hood in Oregon, part of the Sierra summits in California, and the Sangre de Cristo range of Colorado; also the majestic White Mountains of New Hampshire and forested summits in the southern Appalachians. They include forest-dotted barrens in South Dakota, semi-deserts in Utah and Arizona, and splendid masses of primeval forest in many states, watered by rushing rivers which, in the far West, originate in everlasting snows.

A wilderness empire, this, including thousands of square miles of magnificent primeval forest. In its safe guardianship and scientific administration lies largely the future of the American lumber sup-
ply. Through its fastnesses rush the waters upon which depend the irrigation of many thousands of square miles of otherwise arid land. In its fastnesses are water-power resources of incalculable value to the future growth and prosperity of many states which have little or no coal, and, indirectly, of the whole nation. Upon thousands of square miles of grass lands dotted with forests and thousands of square miles of forest lands dotted with meadows, are grazing facilities for several millions of cattle and sheep. Through thousands of shafts sunk into the solid rock are mined millions of tons of metal. Hundreds of thousands of wild animals must be conserved and administered as game. Eighteen million pleasure seekers must be looked after and many of them provided with camp grounds.

Because our remaining forest resources are mere remnants of dissipated resources once a hundred times as great, and because they are the hope of a fast growing population already well exceeding a hundred millions, their conservation and administration is an exacting work of scientific skill. Each kind of resource must be developed to its utmost without injury to any other kind. Grazing and mining must not retard forestry, nor irrigation water power. Nor must any class or group of interests using the forests profit unduly at the expense of other classes or groups, or of individuals.

In 1905 Secretary of Agriculture James Wilson, in a letter to the Chief of the Forest Service,
stated that every part of the nation's forest domain must be "devoted to its most productive use for the permanent good of the whole people and not the temporary benefit of individuals or companies," and that all forests must be "conserved and wisely used for the benefit of the home builder first of all." These two principles have remained and unquestionably always will remain the fundamental objectives of National Forest administration.

But during the last two decades, National Forest problems have become exceedingly complicated. In his annual report of October, 1924, Chief Forester William B. Greeley said:

"Congress has added, and the Forest Service has welcomed, one new function after another: The classification and segregation of agricultural land, the issuance of term permits for summer homes and other forms of land occupation, the exchange of Federal land or timber for private holdings, and the construction of a comprehensive system of roads and trails. The requirements of the national forest ranges and the needs of the livestock industry, including the inflow of additional settlers at many points, has compelled a constantly greater intensity and technical development of grazing administration. The extension of forest protection and reforestation in the national forest regions has brought many demands upon the service for co-operation with State agencies and private owners in protecting adjacent areas and applying forest practice on State and private holdings."
From a photograph by W. I. Hutchinson, courtesy of the U. S. Forest Service

FORESTERS MARKING TIMBER FOR CUTTING
Holy Cross National Forest, Colorado
FALL OF A GIANT YELLOW PINE
Lumbering the Plumas National Forest, California
"The most critical phase of this whole development is the constantly greater demand for business and technical efficiency which it has imposed upon the personnel of the Forest Service. The duties of the average forest ranger and forest supervisor, indeed of every grade in the field and administrative personnel, have enormously expanded both in volume and variety. Forest officers who a few years ago were largely custodians of public property have become business managers, disposing of public resources on a large scale and dealing with the local public as responsible representatives of the National Government in an immense range of contacts and obligations. The technical work required of the trained foresters, lumbermen, and grazing experts in the Forest Service has vastly increased in its demands in the degree of competency required, particularly since the state of theory and experiment has long passed and sound technical practice must now be applied on a large scale in the current use of resources."

The Forest Service is a bureau of the Department of Agriculture, maintaining its general administrative office in Washington.

The hundred and sixty National Forests are divided among eight Districts, each in charge of a District Forester who maintains an office in some convenient city with a sufficient staff. Each forest is under a Supervisor with an office staff, specialist assistants and a ranger force. Rangers are in charge
of patrol districts, for which they are in all respects responsible. Roads and trails are built to meet the administrative and fire fighting needs of each forest, and water towers connected with headquarters by telephone stand at points which enable the entire forest to be seen. When smoke is reported from two or more towers, the supervisor at headquarters is able to determine its exact location and give orders intelligently.

In 1927 the personnel of the Forest Service numbered 5,322 men. Of these 4,012 were employed in the field as supervisors, deputy supervisors, rangers, guards, etc., and 920 were engaged in administrative, scientific, and clerical work in the Washington and district headquarters, the Forest Products Laboratory and the Forest and grazing experiment stations.

The cost of this work for 1927 was $23,512,220, of which $5,166,605 were returned from the forest as timber, forage, water-power and other charges. General administration cost $383,424; fire protection and suppression $5,164,360; reforestations, $240,457; camp grounds $41,072; and research $1,027,606. Roads under the acts of 1913, 1916, 1919, 1921, and 1925 to provide, in addition to working roads and trails, connections between highways on either side of the forests, and access for the communities and individual settlers of the forests with each other and to state and national highways, cost $10,512,220.
Study of the accounts shows that, were they computed after the fashion of business for profit, other large items than road building would be charged to capital account. Much equipment, surveys, maps, lands acquired under the Weeks Act, nursery and research plants and buildings of a permanent character, if charged off as in business, would reduce materially the net annual cost fairly chargeable against service inestimably valuable to the present and future prosperity of the nation.

The fundamental forest problem involves forests of all ownerships in a common purpose, namely, to make ends meet and keep them joined. The ends are forest supply and lumber demand. Although it is admitted that, fire included, we are still destroying times over what we are growing, nevertheless long-headed thinkers who are also hard-headed are beginning to see a balance barely possible. William B. Greeley finds three ways of approach: by cutting down consumption, by great economy of consumption, and by increasing timber growth. There are beginnings in all three. The use of substitutes has already become important. With 470,000,000 acres of reforestable soil, three quarters of it near the heart of the great market of the future, the opportunity of the American people is discoverable.

"This is the constructive way," he writes, "to balance accounts with both our timber and our land. It promises not only replenished lumber yards and pulpwood piles, but local industries and pay-rolls and
tax-paying resources. It will bring the lumberjack and the thriving rural community back into vast areas which are now retrograding through the idleness of land. It is the only rational solution.

"The old law of supply and demand is at work. The commercial impetus for timber-growing is steadily gaining momentum. A few far-sighted lumbermen in the South are leaving the small timber in their logging, protecting their cut-over land, and planning their manufacturing enterprises with a view to an assured future. Others are studying their cut-over lands and weighing the possibilities of timber-growing as a business venture. Many landowners in the northeast are practising some sort of forestry, whether they call it that or not. Two New England paper companies maintain forest nurseries and are planting on old burns and other denuded areas. Forms of really intensive silviculture, like girding old 'wolf' hardwoods and thinning young stands of dense spruce, are being studied by business men. Forest planting on private land now reaches scarcely 20,000 acres a year (1926), but the states which maintain forest nurseries are practically unanimous in reporting that the present demand for cheap planting stock far exceeds their ability to supply it. The leaven is at work.

"Even on the Pacific coast, which is but fairly entering its heyday of virgin forest exploitation, private reforestation has begun. Several redwood operators, recognizing the commercial possibilities
of a growth rate which probably exceeds that of any other forest type in the Temperate Zone, have begun the planting of their cut-over land. Here and there in the California Sierra and the Douglas Fir belt of Oregon and Washington, lumbermen are beginning to study the earning power of their land as a business asset which they can afford no longer to ignore. One of the striking signs of the times is the extent to which timber-growing is creeping into the management of private land. So far it represents, to be sure, but a few small spots on an enormous map, but it is progress."

By calling a commercial forestry conference in November, 1927, the United States Chamber of Commerce gave recovery a great push forward. It was held in Chicago. It showed lumbermen more optimistic than scientific and government forests, believing that a new fashion of cutting would ultimately cure the situation. "Selective logging" plus fire protection, plus tax on forest yield instead of on forest land value, would, they held, bring about a condition of sustained yield to guarantee the future. "Almost within five years," reported R. B. Goodwin of Wisconsin, "there has developed a new forest policy which is based upon the theory that, if the individual timber is afforded a reasonable adjustment of tax burden, the growing of timber may be made commercially attractive. Then private enterprise will have the necessary inducement to perpetuate our forest resources."
An Oregon lumberman called our forests "a factory for continuous wood production." A Chicago operator stated that more than half the lumber cut in the United States comes from southern forests sixty to seventy per cent second growth.

"Billions of dollars," states the United States Chamber of Commerce, "will be invested in the new industry—the business of growing trees by private enterprise."

One feels tempted to hope. The problem, then, of the future is not so much even protection and management as it is forest farming. It is an agricultural business in which the Forest Service must act the double part of the national forest farmer and the practical instructor of the nation in farming the state and private forest lands which constitute four fifths of our total wooded and denuded lands.

The function of the National Forests next in importance to farming crops of trees is grazing millions of sheep and cattle—another farm function. This is not the place to discuss the complicated and highly technical business of controlling the sustenance of six million sheep and goats and two million cattle, horses and swine. Some idea of the detail and the competitive problems involved may be gathered from the fact that, in 1923, twenty-seven thousand eight hundred permits were issued to grazers using Forest Service lands.

In earlier years, the ranges of the forests, like those of the open public domain to-day, were unreg-
ulated. On both, big and little, grazers competed for forage.

But conditions have changed with the greater populations which have come to the West. On the public domain, the small farmer often can acquire sufficient grazing land for his own needs by homesteading, but forest lands cannot be homesteaded and the neighborhood settler must take his chances with great cattle companies. Not only therefore must the Forest Service justly apportion grazing rights among ever increasing competitors, preferring the home-builder, but he must conserve the health of the ranges lest overgrazing, the stockman's historic vice, destroy this national possession also.

"There is natural sheep range," writes Dr. Herbert A. Smith of the Forest Service, "natural cattle range, and national goat range; there is range on which it takes fifty acres to support a cow, and range which at its best might carry eighty head of cattle to the quarter section; there is winter range, summer range, and year-long range; there is range on which the tree growth is no more than scattered brush valuable only for water protection, range on denuded foot hills and mountain slopes, in dense brush, in open parks, in timber that grows wide-spaced and high-crowned so that one may see through it for a mile, and in timber so dense that sheep can scarcely penetrate it."

This is only the beginning of the problem.

"The grazing animals may crop seeds for their
concentrated food value, or the tender foliage of an earlier state of growth. Their hoofs trample, cut, pack. They may loosen or compact the soil; they may facilitate or almost wholly prevent reforestation; but always there is an effect on the forage crop."

So the health of the range is intensively studied and constantly watched.

"Is its carrying capacity on the decline? If so, why? Because the stock come on too early or stay too late? Can they better be distributed by a different method of salting, by new water development, by drift fences, or by some other change in the method of handling? Or must the number be decreased or the grazing season shortened? If the range is depleted, how can it be restored to normal productivity with least disturbance to those dependent on continuous use of the area? Or would it perhaps do better if used by a different class of stock—by cattle instead of sheep, or vice versa?"

Recreational Use of National Forests

Love of out-door life is inherent. From earliest times people have used woodlands for recreation. We can imagine the early colonists, whose very homesites and fields had to be "cleared," spreading their table-cloths now and then upon the grassy floors of specially beautiful groves. Those of us who were brought up in country towns recall that each had its
"picnic ground," always wooded, to which the population repaired on "the Fourth" and other holiday occasions, and where public meetings and political gatherings were held whenever practicable. Religious camp-meetings always were held in groves.

What country-bred boy has not looked forward to the summer as the time to load pots, provisions, blankets, gun and fishing-line into a borrowed wagon (now-a-days probably tin) and "go camping" at some forest-bordered pond as far from home as possible? I suspect that, with most sportsmen, the forest shares fifty-fifty with the game in the pleasure of hunting. The joy of camping-out knows neither age nor sex, and when the automobile made it comfortable and practicable to grown men and women, it became a national pastime. Long-distance touring, with camping outfit strapped on the running board, has become one of our most popular methods of summer pleasuring. Thus has developed a new use for our National Forests not contemplated when the System was conceived and built-up.

When the "forest reserves" were first created they were used recreationally by persons living within driving distance and by hunters who camped out. These uses increased as population neared national forest-borders. Applications from neighborhood people for permits to build vacation shacks were early recognized. Later on, summer hotels were permitted in places specially favored by nature, and here and there resorts developed. In 1917, when
recreational use first attained sufficient importance to secure a seven line paragraph in the Forester's annual report, 814 summer residences, 26 hotels and 28 summer resorts were noted. No report was made the following year, but in his report for 1919, Henry S. Graves, Forester, emphasized the swift prophetic growth in the pleasure use of the forests, and the need of a comprehensive study of their recreational resources. He concluded:

"In short, the national forests, which must be administered with a view to recreation use as one of their major functions, cannot carry out that function in fullest measure except through co-operative relations with other agencies in the same field, resulting in joint effort under a truly national and common policy."

When these words were written, already New York, Pennsylvania and other states were developing extensive wild park systems, the National Parks movement was in full swing, the road building era was well started, automobile touring was taking hundreds of thousands into the country's many wildernesses, and wild life conservation had caught the ears and enlisted the sympathies of millions.

This first call for national co-operation in outdoor recreation assumed the proportion of a trumpet call. The nation was ready, and the first steps toward organization followed closely. In the surprisingly short interval of four and a half years, in May, 1924, was organized in Washington the National
Conference on Out-door Recreation, which precisely and fully met Colonel Graves's demand of 1919.

In 1920, the Forester's report prophesied that recreation "bids fair to rank third among the major services performed by the national forests, with only timber production and stream flow regulation taking precedence of it." By this time summer residence and hotel permits had increased to 1,329, and, in the absence of public funds to equip camp grounds for motor tourists, private funds from neighborhood communities were pouring in as contributions. The following year he reported that "counties, municipalities, forest recreation associations and other semi-public organizations, and in some cases individual citizens" were installing toilets, fireplaces, shelters, water-supply equipment, refuse depositories, tables, benches, etc., in many places in the national forests where touring motorists sadly needed them." He modestly asked for $10,000.

In 1923, Forester Graves's last report before resignation to head the School of Forestry at Yale University had announced that recreation had already become a major activity so far as concerned public service, quoting the increase of persons so using the National Forests from three millions in 1917 to six millions in 1922. Only four years later, the annual report for 1926 showed seventeen million forest visitors! A new era, indeed!

Toward caring for this human deluge, Congress appropriated $10,000 in 1923, $15,000 in 1924,
### RECREATION USE OF NATIONAL FORESTS—1926

#### CLASSIFICATION OF VISITORS

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<td>2,403,211</td>
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Of total visitors, 15,480,526 enter the Forests by automobile.
$25,000 in 1925, and $25,000 in 1926. The appropriation of 1926 amounted to a tenth and a half of a cent per visitor to National Forests as against ninety-nine cents per visitor to National Parks. The total cost of all recreational undertakings handled by the Forest Service from the beginning was calculated by Associate Forester A. E. Sherman in 1925 at $131,472, of which $27,644 had been contributed in cash by citizens. The sum included the proportion of rangers' and supervisors' salaries for the hours devoted to recreational work, incidental hired labor, and the estimated value of materials and contributed improvements. The total cost to the government was $103,828.

It was in 1912 that campers first appeared in National Forests in sufficient numbers to attract the attention of rangers. Thereafter, summer after summer they increased with remarkable speed. Knowing nothing of woodcraft, careless about their fires, and destructive of young tree growth which they cut and trampled, they soon inspired rangers and supervisors with dread, even some with enmity. It is not surprising that a sentiment arose to exclude tourists from the forests. But Forester Graves saw it differently. To him, another new public duty was being offered to the Forest Service, one which, after studying the situation thoroughly in the field, he early predicted, as we have seen, would grow to very large proportions.

Even before this policy was announced, the ne-
cessity to segregate tourist campers so as to gather their camp-fires under observation led to the designation of fixed areas for camp grounds. This was done first in the Sierra somewhat previous to 1915, and the practice spread through the Pacific forests. In the Rocky Mountain region the first such camps, purely protective against forest fire and water contamination, were undertaken in 1915 in Cottonwood Canyon which held the sources of Salt Lake City’s water-supply, and the Canyon where originated the water-supply of Logan, Utah. In the Wood River country of Idaho, local enterprise added comforts to necessities, and the foresters opened registration books and displayed maps for reference.

Between 1915 and 1920, the field force, following their chief’s exhortations to this new duty, spread development of this kind throughout all the national forest, adding to their already strenuous duties the education of tourists and intensive watchfulness of their camp-fires. Nevertheless, many dangerous fires followed in the motor’s wake during these early years. At this writing the National Forests contain 1,500 simple camp grounds in addition to the considerable hotel and resort developments which private initiative and capital have inaugurated under official permits. Some of the camp grounds will accommodate up to five thousand motorists in the course of the season, but the great majority are much smaller. To equip all for simple comfort would cost, it was estimated in 1928, $515,000.
From a photograph by F. E. Colburn, courtesy of the U. S. Forest Service

"AT THE TOP OF THE WORLD"
Snowmass Peak in Holy Cross National Forest, Colorado Rockies
From a photograph by E. S. Shipp, courtesy of the U. S. Forest Service

BIG FALLS OF THE SNAKE RIVER, IDAHO
Targhee National Forest
Wilderness Areas

The wonder is that, with equipment and organization so slight, throngs of such magnitude, growing so rapidly year by year, can be handled with safety to themselves and the forest. The doing has proved it. But how far will this thing spread? Out of the danger springs urgent popular demand for "wilderness areas" to be set apart now for insurance sake; and out of that comes Chief Greeley's pledge of 1927:

"It will be the aim (of the Forest Service) to keep substantial portions and some of the outstanding scenic features of the national forests available for forms of recreation impossible where automobile roads, commercial enterprises, and other popularizing facilities for use are encouraged. Excluding Alaska, one-third of the gross area of the national forests is in roadless areas of 10 townships (that is, 230,000 acres) or more each; and even when the road-and-trail programme now mapped out is completed, more than one-fourth will be in such areas.

"This will not prevent the orderly use of timber, forage, and water resources as future needs may dictate. It will, however, prevent the unwise destruction of recreational values which are steadily attaining greater social significance and importance. The Forest Service plans to withhold these areas against unnecessary road building and forms of spe-
cial use of a commercial character which would impair their wilderness character."

GAME ADMINISTRATION

Of the various lesser functions of the National Forests, administration of their wild life has particular interest to the people of to-day. The vast wealth of wild animal life which the early colonists found in America has suffered proportionally even a greater destruction than the original forests. Nevertheless a surprising number of wild creatures are still left in the National Forests, where efforts are being made to conserve them in reasonable proportions to the sheep and cattle whose grazing for the market is one of the forests' major functions. The census of 1927 reported the following:

Antelope, 6,942; black or brown bear, 47,865; grizzly bear, 5,814; caribou, 174; deer, 671,050; elk, 82,478; moose, 7,192; mountain goats, 18,418; mountain sheep, 13,285; beaver, 115,676.

These are distributed through the National Forests of twenty-four states and Alaska. Arizona and Idaho contain a substantial majority of all the antelope, with New Mexico standing a good third. California, Washington, Oregon, Idaho and Montana have together most of the common bear. There are 5,000 grizzlies in Alaskan National Forests, Montana being second with 441, and Wyoming third with 136. Twenty caribou are listed in each of Idaho, Montana and Washington, and 22 in Minnesota.
California National Forests have 236,060 deer, with Oregon second, and Montana, Alaska, Arizona and Idaho with about 51,407 each. In Oklahoma, Alabama, Tennessee, and West Virginia, only, are no deer found in the National Forests.

Wyoming leads in elk with 39,008, Montana following second with 10,593; Washington, Colorado, Idaho and Oregon are closely behind. Arizona, California, New Mexico, North Carolina, Oklahoma, South Dakota and Utah also have elk.

Wyoming also leads in moose with 2,145; Montana with 1,185 comes second, and Minnesota a close third; Alaska and Idaho National Forests also have moose.

Mountain goats are found in the National Forests of Alaska, 9,000 in number, with Montana 4,248, Idaho 3,042, and Washington 2,125. Mountain sheep are more widely distributed, Colorado National Forests leading with 3,888, and Wyoming second with 2,639. Colorado has 45,275 beaver, Montana 16,060, and Idaho 15,110.

Observe that, while there is no "game" in the museums which we call our National Parks where wild life is left in nature's care, in the National Forests the animals listed above are all so classified. They are hunted in season under the laws of the states where they are found, and are counted valuable in season to surrounding settlers as meat. With the coming of recreation these animals acquire an additional value as part of the forest spectacle.
Conserving wild animals is an expert problem. Everywhere, nature's balance of life has been destroyed these many years. Even in National Parks the relentless killing of wolves, mountain lions and other predatory beasts has disturbed the natural balance. But in the National Forests game preservation is entirely a humanized problem. There, forest fires which devastate enormous areas, the crowding of the forest-borders by farms, the destruction of animals which prey upon domestic stock, hunting, and the competition for forest forage of millions of sheep and cattle, have reduced wild animal conservation to purely an artificial and scientific process, requiring constant observation and study.

Under these conditions, to leave the distorted problem to crippled nature is, in many instances, to invite starvation. Relentlessly, under all conditions, nature will accomplish her objects, even, if interfered with, at occasional frightful sacrifice of animal life. Under National Forest conditions, there is much in common between grazing cattle and sheep for the market and conserving deer and elk for sport and the neighborhood table. Both are administrative problems closely related to farming, in which a third consideration, the health and perpetuation of the range, is importantly concerned; for it is mad extravagance to sacrifice the grazing of the future to the greater present production of beef, mutton and venison. Though a minor function of the National
Forests, game conservation is one of its most difficult, variable and scientific problems.

In conclusion, let us emphasize the one all-important outstanding fact that, upon the health and scientific administration of our National Forests and the skill and success with which they grow new crops of trees, depends one of our principal sources of national development and prosperity.

Let us face the fact squarely that, if we are somehow to escape the imminent calamity of lumber exhaustion, the Forest Service must become essentially a Farm Bureau. Reforestation is looming as its chief function. Its most important future service, by far, is to raise immense crops of new trees, and to promote and supervise the raising of other immense crops of new trees on state and private lands. The Chief Forester, if he accomplishes his highest public duty, must become forthwith the nation's Chief Farmer.

The success of this programme will depend ultimately upon stanch and active public support, which means the outspoken and continued advocacy of every citizen in the locality in which he lives. It means, also, his earnest and continued support of the bureau whose continued efficiency is the sole agency by which lumber exhaustion may be averted. It means his personal defense of the forests and the Forest Service against commercial grazers who will earnestly seek for years to come to subordinate the
one and cripple the other in the interest of sheep and cattle production for the market.

This generation, in other words, faces the identical war for national prosperity, from a different angle, which Roosevelt in his time fought and won.
CHAPTER IV
RECLAIMING THE DESERT

UNTIL 1903, a certain three hundred and seventy-five miles of southern Arizona through which two rivers, the Salt and the Verde, carried their burdens of distant mountain waters to the sea, were arid except for narrow river fringes here and there of green. So far as eye could reach, nothing was visible but desert sand thickly dotted with gray-green sage and grease wood relieved by cacti of many kinds.

To-day, those identical three hundred and seventy-five square miles are solidly green. Alfalfa, wheat, oats, cotton, oranges, grapefruit, and broad fields grazed by cattle, sheep and horses, have replaced the sand flats and the grease wood. Every acre is under cultivation at an average crop return of $75.74. Seven thousand, three hundred and three farms, all prosperous, support a population of 45,000 persons, and twelve towns add 62,000 more. Fifteen banks safeguard thirty-one million dollars belonging to 43,200 depositors. Seventy public schools and sixty-eight churches serve the region, which is crossed by three railroads, two national highways and many excellent lesser roads.
The irrigation works of the Salt River Reclamation Project, including the famous Roosevelt dam, 280 feet high, through which this transformation was brought about between 1903 and 1927, cost the United States government $15,106,942, of which a third has already been repaid by the farm owners. The farmers' total indebtedness to others than the United States government averaged less than forty dollars an acre in 1928.

In 1903, a certain two hundred and ten square miles in South central Washington was a sage brush desert bisected by the Yakima River. To-day six fine storage dams, the Tieton, Cle Elum, Clear Creek, Keechelus, Kachess and Bumping Lake, ranging in height from 45 to 222 feet, reinforced by two diversion dams, store water producing a ten-years' average crop return of $104.50 an acre. Beet-sugar, dried fruit and canning factories, creameries, and cold storage plants, help furnish eighteen towns with 22,000 people, not to mention the city of Yakima's equal population.

This is Reclamation realized. Besides the Salt River and Yakima projects here described, the government has started twenty-nine others in western deserts, of which three are new and incomplete. Four have been abandoned through failure. That is the other side of the story.

In an address in Yellowstone National Park in the summer of 1923, Representative Charles E. Winter of Wyoming exclaimed:
“Water! That greatest, most wide-spread, most wonderful, most blessed gift to man! Under its vitalizing contact, the deserts of the West shall spring from sterility to fertility, from barrenness to fruitfulness, from desolation to habitation, from death to life. And then behold the apotheosis of the West! New heavens shall be opened to the coming millions, a new earth shall be theirs. A mighty people whose blood is red and whose hearts are strong and true shall here develop an empire in plenty, peace and happiness. Water! It is the spirit of the West!”

Even from the car window, the possibilities of irrigation powerfully impress the eastern traveller. Knowing what happened in the Imperial Valley, he assumes that these chrome deserts through which his train takes days to pass would likewise yield inestimable wealth if they also could be watered! The Sante Fe, the Salt Lake, and the Southern Pacific are invaluable propagandists of reclamation. If only the traveller chances to observe a successful irrigation project in operation before he returns East, he will talk of little else for months than the West’s opportunity, making guesses at the millions whom the reclaimed desert some day will surely feed.

Who will dare predict, in a period of amazing achievement and in such a land, that the problem of farming a majority of our desert lands may not be solved? Why is it more absurd, for supposition’s sake, to think of tapping sufficient fountains of water
deep below the surface than it would have been, a couple of decades ago, to count on grinding the petrol of the future out of solid rock?

Irrigation began in America long before Columbus. Remains of dams and ditches are among the most interesting relics of the thrifty tribes which peopled our Southwest a thousand years or more ago. The Mormons who followed Brigham Young across the Wasatch Mountains to settle the arid Salt Lake plains, overrunning hundreds of desert miles north and south, were our earliest irrigationists on any organized plan. Their methods were simple. It was their industry, responsibility and faith that pointed definitely the desert's subjugation. With the great emigration which followed the gold seekers who crossed the continent in covered wagons two years later, began, for the Pacific Coast the perpetual hunt for water whose results have measured the pace of progress ever since.

"It is now almost impossible," Dr. F. H. Newell, first director of the Reclamation Service, wrote in 1924, "to realize the great difficulties encountered by pioneers among the scientists, such as Major John Wesley Powell in his efforts to induce Congress to investigate the extent to which the waste lands of the country might be utilized. He did succeed, however, after years of patient perseverance, and in 1888 was authorized by Congress to begin the work upon which has been founded the great national policy of reclamation and home-mak-
ing. Methods of measurement of streams were devised by him; surveys were made of possible reservoir sites; and vast quantities of data were acquired concerning the mountain masses from which came the streams, and also of the lower-lying desert lands which might be irrigated by conserving and distributing the erratic floods which came from the mountains and foot-hills. This was the first great step of research in this line."

It was Francis G. Newlands and Theodore Roosevelt who secured official applications of these studies; but meantime irrigation at private expense was being practised in all the arid states.

The birth of the twentieth century found the growing populations of the semi-arid states anxiously discussing the need of more and still more water. Dry-farming had been practised for years with results that here and there were surprising, and irrigation had been developed in many places by individual and group enterprise. By that time the better stream-side locations had been filed upon so far as settlement had extended, but storage on a scale great enough to provide dependable irrigation to large areas was seen to be a pressing public necessity. New communities founded on mining, grazing, lumbering and other activities appeared daily. Villages were becoming towns, towns cities, almost over night. Demand for farm produce was out-running production, yet much of the western desert soil was known to be highly productive, lacking only
water. All over the western states, local and sectional irrigation conferences were held at increasing intervals at which it became increasingly evident that states themselves must assume large responsibilities, and once a year delegates from groups in all the far western states, together with many interested individuals, met to discuss the larger problems. Many apparently insuperable obstacles had to be overcome before state irrigation could be undertaken, of which states’ rights on interstate rivers was by no means the least.

It was at the Phoenix, Arizona, general Congress in 1901 that national reclamation was born quite unexpectedly. The California delegation was late, and resolutions had already been passed urging states to action. One of the California men, not an agriculturalist but a lawyer interested in reclamation as a public question, asked the privilege of a belated hearing. In a brief address which electrified the convention, George H. Maxwell held that irrigation was also a national function. Leaving state and local responsibilities undiminished, he argued that great undertakings on federally-owned lands, involving vast expenditures, were clearly the duty of the federal government. Projects of these kinds supplementing state and group activities might easily solve the problem of western agriculture.

Backed by the National Irrigation Congress, Mr. Maxwell devoted himself thereafter exclusively to realization of his plan. A national association
was organized of which he became, later on, the mouthpiece and executive.

On June 13, 1902, the present Reclamation Act passed the House. Three days later, it passed the Senate without change, and the following day was signed by President Roosevelt. It set aside a proportion of the receipts from the sale of public lands in Arizona, California, Colorado, Idaho, Kansas, Montana, North Dakota, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming to constitute a fund for construction and capitalization of irrigation works on federal lands under direction of the Secretary of the Interior. Later, a percentage of the royalties from oil produced on the public domain has become a prolific source of reclamation capital.

"It is as right for the National Government to make the streams and rivers of the arid region useful by irrigation works for water storage," said President Roosevelt to Congress, "as to make useful the rivers and harbors of the humid region by engineering works of another kind. The reclamation and settlement of the arid lands will enrich every portion of our country. Our people as a whole will profit, for successful home making is but another name for the upbuilding of the nation."

"In 1902 when the reclamation act went into effect," wrote Reclamation Commissioner Elwood Mead twenty-four years later, "the arid region was a primitive pioneer country. Since then more than
eleven million people have been added to the population and more than two hundred and fifty million acres of arid land then public have passed into private ownership. The one-room schoolhouse has been replaced by the consolidated community school. On some reclamation projects the school tax alone is now more than all taxes combined were twenty-four years ago.

"At that time there were neither automobiles nor tractors. The covered wagon still wended its slow course along dim sage-brush trails. Now, eighty thousand miles of concrete and surfaced highways built in the last twenty-four years make travel easy for the automobile but add to the farmer's yearly tax burden. More than five million motor cars are owned in the seventeen arid states, and the farmer spends more money for tires, gas, and oil than it cost to operate a majority of the farms in the first years following the reclamation act.

"Equally fundamental changes have taken place in crops grown and in farming. Cotton and sugar-beets, now important money crops, were not grown on reclamation projects during the first ten years. Some farmers now have more money invested in facilities to market their crops than their farms would have sold for ten years ago.

"Grain and hay were the standard crops of the pioneer. Now they are grown only in rotations to prepare the land for products of higher acreage value. Only intensive scientific farming will meet
From a photograph by the Reclamation Service

FAMOUS ELEPHANT BUTTE DAM, NEW MEXICO
Impounding the waters of the Rio Grande River for reclaiming a great area of desert, also for power

PROFITABLE ORCHARDS WHERE ONCE WAS DESERT
Practical results of reclamation at Yakima, Washington
the high taxes, high cost of cultivation, and high water charges which have come as part of an evolution but which have been accentuated and increased by the Great War.

"Up to the beginning of this century the lure of free land caused the pioneer settler to ignore hardship and privation. He built and lived in sod or log huts. He will no longer do this. He then made a start (or tried to) without money. This is no longer possible and only the impractical and inexperienced would attempt it. How to obtain settlers who are expert cultivators or train them to become such, and how to provide money or credit to develop earning power on farms, to meet higher charges for water and increased living expenses, have become outstanding problems of reclamation.

"In the twenty-four years since the reclamation act was passed more than $200,000,000 has been spent in building and operating federal irrigation works. Of this, more than $50,000,000 has been repaid. Congress at the last session (Sixty-ninth) just closed, has appropriated money for works which will cost $60,000,000 to complete. New appropriations were sought for thirty additional projects."

The following table catalogues the Reclamation System a quarter century after its start:

PROJECTS, 1903 TO 1928

Arizona: Salt River; Yuma.
California: Orland.
OUR FEDERAL LANDS

Colorado: Grand Valley; Uncompahgre.
Idaho: Boise; King Hill; Minidoka.
Kansas: Garden City (abandoned).
Montana: Huntley; Milk River; Sun River.
Montana-North Dakota: Lower Yellowstone.
Nebraska-Wyoming: North Platte.
Nevada: Newlands.
New Mexico: Carlsbad; Hondo (abandoned).
New Mexico-Texas; Rio Grande.
North Dakota: Buford Trenton (abandoned); Williston (abandoned).
Oregon: Umatilla; Vale.
Oregon-California: Klamath.
Oregon-Idaho: Owyhee.
South Dakota: Belle Fourche.
Utah: Salt Lake Basin; Strawberry Valley.
Washington: Okanogan; Yakima.
Wyoming: Riverton; Shoshone.

SETTLEMENT AND ECONOMIC RESULTS, 1926

Acreage for which water was available: 1,844,550
Acreage irrigated: 1,411,020
Acreage cropped: 1,328,810
Value of crops: $60,369,620

Note.—In addition 1,097,190 acres were irrigated on private land adjacent to the Federal projects under Warren Act or other water service contracts. Of this area 949,590 acres were cropped in 1926, producing crops valued at $49,750,040.

Number of irrigated farms: 38,091
Population: 140,625
Number of project cities and towns: 204
Population: 390,193
Number of schools: 667
Number of churches: 645
Number of banks: 137
Capital stock: $9,380,500
Deposits: $127,103,720
Number of depositors: 243,111
II

Certainly a dramatic contrast, that between the beginning of national reclamation and now, but far indeed from the whole story. What is not here hinted is that, perhaps characteristically, we rushed into this vast undertaking unprepared by study and uninformed by experience. Beginning many works of unprecedented size almost together, we rose efficiently to engineering and building requirements but blundered miserably in other phases upon which success depended quite as much.

Previous to an exhaustive study made by Secretary Work’s special committee of 1924, Federal Reclamation had been “investigated” an astonishing number of times (“550 Congressional hearings and reports from 1902 to 1923”) without discovering exactly why many irrigated lands served by marvelously efficient works costing hundreds of millions had been utilized only to half or less their capacity. The shining generalities usually quoted blind casual eyes to other and desolate facts. As against the
thousands of farmers who prospered more or less, there were more who met hardship or failure or even ruin on the farms of our reclamation projects. The soil of half only of one project, for example, was found fit for cultivation, doubling the burden of those cultivating it. Thousands of farms had been abandoned. Many farms purchased at high prices from speculators, who had fattened them for the market, perhaps never will free their new owners from the slavery of possession. Disappointment and failure have threatened scandal many a time.

"Building canals," wrote Commissioner Mead in 1927, "is only the initial stage of reclamation. Preparing the land for cultivation, securing settlers, and teaching them the technique of irrigated farming are all necessary. There is the same need for organization and constructive planning and expert direction in the succeeding stages as in the first. Realization of this fact has been slow. At the outset there was a mistaken but confident belief that building canals would alone create agriculture; that, once water was available, settlers would rush in and without aid or direction complete the difficult and costly work of clearing and leveling the land and do many other things needed to change deserts into farms.

"For more than twenty years there were no investigations into the cost of changing raw land into farms or as to the capital or credit needed by those who did this. No inquiry was made into the qualification of settlers, nor was authority given to reject the unfit."
"For the highly intricate business of irrigation farming and the hard and costly task of subduing raw land we accepted all comers. In this we ignored the teaching of common sense and our practice in other lines of effort. For school teaching we have always selected educators; for carpenters, men skilled in the craft; but the creation of a new and complex kind of agriculture was entrusted to the uninformed, to men whose livelihood had been gained in other occupations or who lacked either the capital or the aptitude essential to success.

"In recent years it has been evident that the economic results of reclamation were not meeting the expectation of its founders. Too many settlers were losing their farms through mortgage foreclosure, too many were unable to meet their payments to the Government. Tenancy has increased on some projects until more than half the farms are owned by nonresidents. Sixty per cent of the land on the North Platte project is cultivated by tenants, forty-six percent of the Milk River project, and fifty-seven per cent of the Uncompahgre project. This increase in tenancy means that more and more of those who tried to secure a farm of their own have failed. Human tragedies lie behind these percentages. Something needed to give the pioneer a fair chance to succeed has not been provided, or we have by accepting the over sanguine and unequipped made reclamation a temptation rather than an opportunity."
Yet this situation had come about naturally. From 1896 on, reclamation had been a much discussed subject. As soon as it was accepted as a national policy, every western state instantly demanded numerous projects. The original law requiring as broad an allocation of the funds as possible, the government started four projects in 1903, seven in 1904, and nine in 1905, representing all the states except California, Idaho, and Wyoming; and projects were started in these states in 1906. Still others, to a total of twenty-nine, of which several have since been abandoned, followed rapidly.

Politically, it probably was good policy to satisfy demands of all the states as rapidly as possible, but many blunders and much human misery would have been avoided had Roosevelt's advice been followed. "It would be unwise to begin by doing too much," the President had said in his first message to Congress on reclamation, "for a great deal will doubtless be learned as to what can be and cannot be safely attempted by the early efforts which must of necessity be partly experimental in character."

Begun in this wholesale way, experience, stated Secretary Work's Committee of Special Advisers in its report of 1924, "was of course gained in the overcoming of the difficulties that arose from time to time, but it was practically impossible to utilize this body of knowledge for the benefit of the system as a whole. Moreover, once having begun these
structures, the organization was forced to continue the large programme, and the money available had to be divided among the projects. It became a piece-meal construction. One of the effects was the request in 1910 for a loan of $20,000,000 to complete the projects more rapidly than the natural increments of the reclamation fund would allow.”

**SEQUENCE OF RECLAMATION PROJECTS**

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The whole must be seen historically as the outgrowth of expansion too rapid to be orderly, there-
fore wasteful. "Characteristically American," an English writer has called it, which is true because unstudied precipitancy, with all attendant evils, has been characteristic of all phases of American development in turn. But if it is characteristic of us to begin a long race at finish speed, as some one else has said, it seems also characteristic somehow to finish strongly with time and breath to spare. We see national reclamation well along in its swift erratic course, recovering from many stumblings, gaining second wind, steadying, and settling into winning pace.

All but four of the contemplated projects, namely Grand Valley in Colorado, Orland in California, King Hill in Idaho, and Riverton in Wyoming, were initiated during the administration of the Secretary of the Interior who started the System, E. A. Hitchcock. The Orland project followed under his successor, Secretary James A. Garfield, 1907–1909. None began under Secretary Richard A. Ballenger, 1909–1911, but Secretary Walter L. Fisher, 1911–1913, started the Grand Valley project, and Secretary Franklin K. Lane, 1913–1920, the King Hill and Riverton projects.

Expansion paused during the secretarships of John Barton Payne, 1920–1921, and Albert B. Fall, 1921–1923, and reorganization began with Secretary Work, who followed Fall.

The men who designed and carried out the work were equally strong in their professions.
The act having assigned to the Geological Survey the duty of organizing the new service, Dr. Charles D. Walcott placed beginnings in charge of Frederick H. Newell as Chief Engineer. Five years later, in 1907, the Reclamation Service was created with Dr. Newell as Director. In 1913 a Board of Control was organized with Dr. Newell as Director and Arthur P. Davis as Chief Engineer. In 1914, the offices of Director and Chief Engineer were merged in Mr. Davis. In 1915 the Board was superseded by a Commission of three under Mr. Davis. In 1918, the Commission lapsed, Mr. Davis remaining alone as Director and Chief Engineer. In 1923 Secretary Work abolished the office and title of Director and created the Bureau of Reclamation under D. W. Davis as Commissioner, who was followed by Dr. Elwood Mead.

In 1923, Secretary Work appointed a Committee of Special Advisers on Reclamation consisting of Thomas E. Campbell, formerly Governor of Arizona, Dr. John A. Widtsoe, former President of the University of Utah, Oscar E. Bradfute, President of the National Farm Bureau Federation, Clyde C. Dawson, authority on irrigation law, James R. Garfield, former Secretary of the Interior, and Dr. Elwood Mead, Commissioner of Reclamation.

Those experienced in public administration will recognize this history of constant investigation and change as significant of efforts to develop efficiency out of conditions and complications not clearly un-
derstood during years of experiment. Projects of this size developed problems all their own. Begun before its time, the System had to find itself. From inception, through every stage of rapid groping toward efficiency, management has been clean, open-minded and able. Otherwise, the System would not have escaped catastrophe. It is believed by many that at last reclamation is on its way.

III

Glancing back again to beginnings, we perceive a solid backing of nation-wide interest and support for the new far western policy from the beginning. There could have been no better evidence of it than the speed with which $150,000,000, then regarded a much greater sum than it is to-day, was applied to the experiment. East as well as West, reclamation became a public enthusiasm. Plans of the projects and photographs of the works in course of building had wide vogue in the press of the period.

The four projects authorized in 1903 achieved world fame. The Roosevelt Dam of the Salt River project in Arizona came to typify American reclamation, and remains one of the country’s conspicuous spectacles. The Milk River project at the entrance of Glacier National Park, Montana, assumed international importance. The North Platte and Newlands projects, in Nebraska and Nevada respectively, brought realization for the first time to thousands
of eastern folk that the reputed barren deserts of our West were real.

A dam of monumental size blocking a deep canyon always centres public attention. Often it has dramatic beauty. Besides the Roosevelt Dam in Arizona, the Elephant Butte Dam in New Mexico, the Pathfinder and Shoshone Dams in Wyoming, the Arrowrock Dam in Idaho and the Tieton Dam in Washington are among the world’s most famous and beautiful irrigation works, and at once became so recognized. Including three dams in Indian Reservations not parts of the System, storage reservoirs built by the Bureau were capable, on June 30, 1927, of storing 12,556,653 acre-feet of water.

Projects are so widely scattered that few even in the far West have any definite idea of the system as an achievement. It is difficult to picture. Construction results will give some idea. At the beginning of the fiscal year 1928, these were:

Storage and diversion dams ...................................................... 117
   Volume (cubic yards) ......................................................... 20,206,351
   Reservoir capacity (acre-feet) ............................................ 12,556,653
Canals, ditches, and drains (miles) ........................................ 16,156
Tunnels ................................................................. 110
   Length (feet) ............................................................. 155,172
Canal structures (feet) ......................................................... 145,294
Bridges ................................................................. 11,174
   Length (feet) ............................................................. 262,626
Culverts ................................................................. 12,925
   Length (feet) ............................................................. 476,904
Pipe (linear feet) ............................................................ 3,759,800
Flumes ................................................................. 4,550
   Length (feet) ............................................................. 836,580
Power plants ............................................................... 35
Power developed (horse-power) .............................................. 155,903
Statistics of this kind have little meaning to any of us, but assembled they cannot fail at least to convey vivid impressions of magnitude and detail. They help also to inspire respect for the purchasing ability of two hundred million dollars.

One may conceive the appeal that such works made to the imaginations of inexperienced desert farmers, and the enthusiasm and confidence with which many thousands undertook to make their fortunes under leadership of the nation's wise men. The power, capital, wisdom, and skill of the United States assembled in the grim desert for no other purpose than to insure their personal success! As the latest investigators of the causes of failure have remarked, these were conditions not unlikely to upset good judgment by seeming to offer without stint. No doubt many inexperienced and incompetent persons undertook these farms on the imagined assumption that the government would see them through; and, eager to fill their lands, reclamation officials at first accepted practically all comers.

So it happened that all the projects set out on their careers as fast as each could serve enough water for a beginning, with the confident hopes of states, neighborhoods, farmers, project officials and the national administration itself. In fact many impetuous entrymen were permitted to go upon the
lands before the water arrived. Some held them so for years—to the exhaustion of their funds as well as their patience. The fact is eloquent of the excited expectation that the building of these great projects aroused in the West. Since irrigation on a small scale, privately capitalized and managed, had been successful, how much more successful would reclamation be on so great a scale backed with the nation's wealth and brains! People all over the country, from ocean to ocean, became profoundly interested. America was entering a new phase of her career triumphantly, as became her. That we should equip reclamation on a scale never before dreamed of, confidently, competently, was of course to be expected.

The theory that in time the farmer owners, having completed title by repayment of costs advanced by the government shall themselves acquire possession and control the properties under the irrigation laws of their respective states is beginning to work out. In 1927 Secretary Work reported sixteen projects in whole or part under operation of the water users, nine having qualified during that year. Many projects are extremely successful. In 1917, the cropped area was 966,784 acres and the value of the crop $56,462,000. In 1926, cultivated areas totalled 2,264,600 acres and the value of the crop was $109,118,300.

The average crop value during these ten years was $53.42 per acre, far exceeding the average in
the United States as a whole, which statistics show ranged from $14.45 to $35.74 for the same period. The Okanogon and Yakima projects in Washington showed averages ranging from $77.30 to $385. The programme will not, however, carry out in full. Four projects have been abandoned, and every project had its unsuccessful parts. Eighteen millions were written off by the Board of Survey and Adjustment in 1925 as lost beyond recovery—for all causes, including lands discovered in practice to be unproductive and irreclaimable. For so great an experiment conducted under conditions so varied and lasting over so many years, I do not think a loss of ten per cent in an attempt only to break even can be fairly criticised.

"The economic side of reclamation as it relates to the investment of the United States," writes Francis M. Goodwin, formerly Assistant Secretary of the Interior, "has been repeatedly stressed. The investment of settlers and others is equally important. A conservative estimate places the average investment of each reclamation settler on federal projects at three thousand dollars, and loans by private parties in addition will greatly increase this amount. As a matter of fact, actual investments of settlers plus private loans on reclamation property will exceed, if it does not double, the amount invested at any given time by the United States. Reclamation economics, therefore, involve safeguarding investments by United States and settlers alike, and this in turn involves social and all other factors of life."
From a photograph by the Reclamation Service

EAST PARK DAM, ORLAND RECLAMATION PROJECT
Little Stony Creek waters a large California area
From a photograph by U. S. Reclamation Service

IRRIGATION DITCH THROUGH CITY OF PHOENIX, ARIZONA
"In return for this investment there has been a total crop production in the United States on the federal reclamation projects in excess of the sum of six hundred million dollars. The value of the land, in many instances practically worthless, has tripled and quadrupled, and to-day, after making all necessary allowances for losses, reclamation is a substantial tax producing asset for nation and states alike, with thousands of prosperous homes in the background.

"The future of reclamation in the United States is bright. The more feasible and the least costly undertakings were, of course, absorbed long ago by private enterprises or by Government initiative. The vast areas of desert and semi-desert lands, with proper soil conditions, for which water is available can only be undertaken by the Federal Government. The great cost and extended time necessary to permit repayment precludes private development. Likewise future development of new projects on a scale cannot be accomplished with the present reclamation revolving fund. If the entire amount invested by the United States at present could be immediately collected, it would be totally inadequate to undertake the construction of reclamation projects in connection with the Colorado and Columbia rivers. The Congress of the United States must of necessity appropriate large sums of money for these purposes, and the projects just mentioned would alone require expenditures in excess of half a billion dollars."
"The experiment of the United States in reclamation has also demonstrated the necessity for a careful and exhaustive study of soils and the selection of settlers. These are matters which are now even more closely analyzed than engineering features by the Bureau of Reclamation.

"Another feature neglected in past enterprises, to be considered in future development, is the part towns and cities within the borders of reclamation projects have to play. In the past settlers have been required to bear the total cost of construction, while towns and cities within the projects have escaped liability, although their growth and prosperity have been dependent upon project development and success. The United States now seeks to contract with the project as a whole and not with individual settlers, so that the entire area and every acre within a project shall be responsible for repayment of construction costs. By the creation of an irrigation district, with power of taxation, levies can be equitably made on all property benefited by construction. A part of the burden of cost can thus be taken from the settler and producer and placed on the shoulders of others benefited.

"Modern reclamation takes into consideration engineering, soil, settlers, markets, social conditions, and taxation of all property benefited. The immense prospective projects mentioned, like the Colorado and the Columbia Basins, can be safely undertaken by the Government, with assurance of tremendous
benefit to the people of the United States, under these conditions, which are the fruits of our Federal reclamation experiment."

IV

The recreational opportunities of such a system in semi-arid lands are beyond computation. During its development has come the motor and the motor road. Many of these reservoirs are the principal fishing, camping and bathing opportunities of their respective regions, and they will more and more importantly serve the West in this way as population increases and roads multiply. They share with National Parks and National Forests the function of travel objectives to millions of tourists awheel.

All these reservoirs are remarkable spectacles, and some have rare beauty.

Reaching back often for miles up the winding erosional valleys of hills and mountains, a shining octopus, or filling miles of bald canyon with still deep mile-wide river, or painting blue some shallow green-bordered hollow in a vast level of sage-dotted yellow sand, a reservoir of this size and character valiantly asserts man-power in defiance of nature. The very discordance with natural surroundings adds to its declarations of human might. The roaring waters of its dams, and the immense system below of sluices and ditches outlining miles of desert-bordered vegetation triumphantly shouts man's conquest of the unconquerable.
No one has seen the West who has not seen and studied at least one of our national reclamation projects. No one knows beauty till he has seen it wrested from desolation. No Easterner knows the power of earth to produce till he has seen for himself what these dull sands can bring forth under controlled waters.

Seen at a little distance, under conditions so surprising, in surroundings so unfriendly, these unexpected bodies of deep water are always inspiring. Close up, it depends upon the season whether they picture beauty or desolation. Before the water is drawn low in summer, Jackson Lake at the foot of the Tetons in Montana may not have lost a great deal from the pristine loveliness which inspired Struthers Burt to call it the American Lake Geneva, and it has gained in size, if size is a gain, and human interest; but in July and especially in August, the horror of broad mucky shores disclosed by retreating waters has made it world-famous for a far different reason.

Shoshone Reservoir on the way into Yellowstone, Klamath Lake in Oregon, the Salt River Valley reservoirs in Arizona, in fact all which lie among hills or mountains, are creations of unusual, perhaps extraordinary beauty, but a different beauty, far, from nature's, a fact which those persons do not comprehend who cite increasing the beauty of nature as a reason for building reservoirs in National Parks. Calling the Hetch Hetchy Reservoir in Yosemite Na-
ional Park a lake fools no one. The vertical plunge of its rocky sides, were there no other indications, alone shouts its artificial character and consequent total unfitness for a place among lands reserved of old as examples of nature unmodified. The park boundary-lines should be redrawn to exclude it from misrepresentation so flagrant as Hetch Hetchy.

So with reclamation reservoirs everywhere. Usually serving best on levels not much higher than the lands they are meant to water, in areas usually long since wrested from nature, their location has little in common with water power, which prefers the narrow canyons of high river sources. The same water may serve double duty, power returning it to streams where, much farther down, irrigation impounds it for distribution over broad valleys.

Irrigation seldom legitimately wars with nature conservation as exemplified in our National Parks. It locates far below them. But not infrequently is irrigation’s service to humanity a camouflaging robe flung over what really are water power schemes to pass a bill through Congress, just as San Francisco’s alleged need of city water was the camouflaging robe concealing the Hetch Hetchy water power joker. Thousands will always believe that prospective water power, not those disproved irrigation claims, was the real purpose behind the Yellowstone Lake bills which conservation organizations fought four years in Congress, for the time successfully.

Every reclamation reservoir has its potential
by-product of power, usually used to shift waters to levels not otherwise accessible, but power reservoirs may not serve reclamation. Power must be constant, necessitating a reservoir kept approximately at a level. Irrigation stores water during wet seasons to be drawn low during dry seasons.

V

The advanced thinkers of to-day see Reclamation a vastly bigger, broader and more necessary movement than we thought it a quarter of a century ago when the system which bears its name set out to rescue a few score opportunities in a western desert of colossal size. What are those few lands to the half billion acres which four centuries of wasteful farming has depleted in the East? The time is nearing to reclaim these, too.

"The older states also must be restored agriculturally," said Dr. Work in an address to a Reclamation Conference in Washington in 1925. "Western farmers can not compete with the wages paid and hours of city employers, then pay freight to the East. Those keen Americans on the Pacific Coast have already become manufacturers, and they are rapidly developing a market out through the Golden Gate. There are two mountain ranges and a wide desert between the Middle West and the Pacific Coast. Economically, a trade division is pending between the Atlantic and Pacific states. Home pro-
duction and home consumption will soon demand intensive study by our economists. The Great Divide already means more than a seam in the earth's surface. It is already a rent in the economic fabric of a nation.

"To reclaim small areas in a few states by irrigation is of local concern. It does not comprehend the two real questions vital to the supremacy of this nation, the conservation of our natural resources and the reclaiming of land lost to agriculture. We may no longer follow the sun, burying our dead as the ancients did, with their faces toward it, without hope of a new day. We must begin again, in the East, as did our forefathers. Not to conquer the land, wrest a living from it, and abandon it, but to restore it. Not to leave it for new farm homes in the West, for they are already taken up except where artificially watered. This is a question for states to study and not the Federal Government, whose inadequacy as an operator has been demonstrated in the irrigated agriculture of the West. Each state and territory has a Government-subsidized agricultural college. They should stress reclamation. Centralized authority from the Agricultural Department of our Government, through its agricultural colleges with decentralized responsibility assumed by states are the agencies available at hand to turn the thoughts of our people in this direction.

"Reclamation for a growing nation of 110,000,
1,000 people should, from now on, include recapture and restoration of lost soil fertility. It is estimated that there are 1,000,000,000 acres of arable land in the United States, 503,000,000 acres of which have been converted into improved lands. There remain 452,000,000 acres of land never yet under the plow.

"Much of this vast uncultivated area consists of neglected, exhausted or abandoned lands, or cut-over forest lands capable of being brought into agriculture. Millions of acres are located outside of the arid and semi-arid domain of the West. A considerable portion is situated at the doors of the great cities of East and Central states. Within sight of the city of Washington are thousands of acres of neglected lands in the State of Virginia, worn out and abandoned, yet susceptible of regeneration. In North Carolina 22,000,000 of the state's 31,000,000 acres are unimproved. Only 8,000,000 acres are in farms. Out of 19,500,000 acres in South Carolina but 5,000,000 acres in 1924 was crop land, scarcely more than one-fourth. Tennessee cropped less than 8,000,000 of its 26,000,000 acres. In the New England states several million acres of land have reverted to pasture. Of the 3,000,000 acres in Connecticut 497,435 acres were harvested in 1924. Vermont harvested 1,124,000 acres in 1924 with a million acres lost to agriculture by non-use. New Hampshire cropped in 1924 only 542,846 acres out of 2,262,000 acres in farms. Here pasture lands comprise over 1,000,000 acres. Maine, with an area
of 5,164,000 acres in farms, cropped only 1,659,000 acres last year. Similar proportionate conditions exist in other states located in this section of the United States.

"The major portion of this untilled land in the East is susceptible of being reclaimed. Much of it only awaits the plow. Other portions need clearing of second growth. In most of these states are thinly-peopled regions, the inhabitants living on a soil skimmed of its cream that with fertilizer may be made producing farms. Large communities with their concentrated populations afford a ready market with short truck hauls and low transportation."

Buying fertilizers instead of building dams is the reclamation method of the East. Although eastern reclamation may be a state problem as Dr. Work contends, the national government has shown its willingness to help by appropriating $100,000 for studying soil conditions in co-operation with states.
CHAPTER V

WATER POWER AND OTHER CONSERVED RESOURCES

At present man draws power only from coal, oil and gas, which are consumable earth products whose exhaustion is already dimly foreseen, and from streams whose possibilities are limited. After present power sources are no longer able to supply human needs, we shall draw it from the tides, the sun, the internal heat of the earth, the earth's rotation, and atmospheric electricity. Here, we deal principally with water power, the earth's possibilities of which the United States Geological Survey estimated in 1921 at 441,000,000 horse-power; of this a quarter part, untouched, was located in the basin of the Congo.

Water power in the United States was estimated several years ago by O. C. Merrill, Executive Secretary of the Federal Power Commission, at 50,000,000 potential horse-power, of which 30,000,000 would become commercially available. Upon these figures our national establishment has been founded. Since then extensive surveys by national and state governments, corporations and private engineers have extended knowledge greatly, warranting a Geological Survey estimate in 1928 of 80,000,000 horse-
power for complete development of the whole country's resources.

Of this, on January 1, 1928, the developed water power of the United States plants of 100 horsepower or more was 12,296,000 horse-power, an increase of 4.9 per cent for the year.

Nature has not been unfair in her distribution of power sources over the United States. Forty per cent of the country's potential water power is in three Pacific states: Washington, Oregon and California. Eighty per cent of our enormous coal supply lies in six eastern states: Pennsylvania, Ohio, Indiana, Illinois, West Virginia and Kentucky. The West will develop water power with all speed; the East will continue to depend chiefly on coal.

"In the east," says Jerome G. Kerwin in his "Federal Water Power Legislation" (Columbia University Press, 1926) "by developing water power a huge saving of coal would be possible; in the west, development of water power means saving in oil." According to Mr. Kerwin, water power is no cheaper than steam power. But a third of the freight equipment of railroads is used for carrying coal, which can be saved for other carrying purposes to any extent that water power can be substituted for steam.

"We have now," writes Herman Stabler in Economic Geography, October, 1927, "a most healthy condition in the power industry—water and fuels competing for supremacy in cheapness of develop-
ment yet supplementing each other to give the most perfect and cheapest service when combined in extensive systems. Where water powers are abundant and can be economically developed, fuel as a source of power is held as a reserve, supplying peak loads and supplementing steam shortage in low-water season. In other areas, where fuels are abundant, fuel power dominates the field, water powers, if developed at all, being used as feeders to the power stream but not being relied upon for base load.”

Considering our possession of more than half the world supply of coal, our power situation is indeed fortunate. With only eight per cent of the world’s population, wrote Secretary of the Interior Lane in 1920, we produce annually 46 per cent of all the coal taken from the ground. In less than a hundred years, our annual production has increased from a hundred thousand tons to seven hundred million tons. Steinmetz has estimated that the coal mined in the United States in 1926 would surround the boundary and coast lines of the entire country with a wall as big as the Great Wall of China, and that this same coal contains the latent power to lift that same wall two hundred miles in the air.

Water power’s contribution to so fortunate a balance in power is an interesting chapter in the development of national enterprise.

Water power began in America with the stream-turned wheel of the first grist mill, which is believed to have been built in Dorchester in 1638.
Originally, Congress left the regulation of navigable streams, and the building of structures in and over them, entirely to the states. Later on, with recognition of national responsibility, individuals and corporations were granted rights to develop water power incidental to damming streams for slack water navigation.

The authority of federal control over water power is recognized to-day as resting on three bases: first, the United States owns the Federal Lands in which the great bulk of undeveloped power opportunity is found; second, the United States controls navigable streams; third, the United States controls international waters of every kind. Eighty five per cent of the waters suitable for power fall into one or more of these three classes.

For many years power was taken directly from the passing current by the overshot or undershot water wheel. In the early days of hydro-electric power, Niagara furnished three quarters of the power in the principal plants of the country. Notable activity in water power development began in the eighteen nineties. There was little early legislation beyond the act of 1901 pertaining to power development of streams on Federal Lands. The first general act concerning water power development was passed in connection with navigation improvement in 1906, placing no time limit on grants. This, revised, was the act of 1910, completing power legislation previous to the Federal Power Act of 1920.
The fifteen years covering the life of these acts were years of contention between power companies and the government.

The inability of early legislation to provide for the disposition of power properties once created or for the extension of grants upon termination, its limited tenures, reserved rights and uncertain requirements, made financing great power undertakings exceedingly difficult. The power companies insisted upon what they believed necessary if capital was to be attracted to water power development; it was the lack of faith in them by government, which still failed to see ahead clearly, that was responsible for the long delay. "It is simply national foresight," wrote Dr. George Otis Smith, Director of the United States Geological Survey, in 1916, "to see to it that the public utilities organized to-day for private operation do not include promoters' hopes or speculative land values in the capitalization upon which future power users might be asked to pay returns. Cheap power promises to be in some future century this country's largest asset in the industrial rivalry between nations. Our unsurpassed coal reserves (more than half of the earth's) reinforced by these water power resources constitute a strong line of national defense in that they form the real basis for an industrial organization of the Nation's workers."

So conservatively did Congress approach this new field of promise that it needed the flat failure
MITCHELL DAM ON THE COOSA RIVER, ALABAMA

The power-house is above the dam, and the transformers on top of it
Big Creek, California. This is the power-house. The dam is far up-stream, the water tunnelled down.
of the acts of 1906 and 1910, plus nearer approach of industry to water sources, plus long strides in power transmission, to produce our present law and the immense development under it.

The annual growth of power development from 1910 to 1923 was reasonably uniform except in the years 1913 and 1919. The story is told graphically in the diagram on this page which was compiled by the Federal Power Commission from Geological Survey data. The shaded portions show development on private lands. The increase of 1913 was due to the development of the famous Mississippi River dam at Keokuk, Iowa, and the works on Big Creek, California. The increase in 1919 was due largely to new installation at Niagara Falls. The great increase beginning in 1923 is accounted for by
the Geological Survey as follows: larger demand for power; reaction from retarded growth during the war period; stabilization of construction costs after the war; and the Federal Power Act of 1920.

"While it is unfortunate," writes Mr. Merrill, "that so many years were required to work out the details of the national policy and that development was meantime largely suspended, it is fortunate that so small a part of our water power resources passed out of public control, and it is undoubtedly true that the delay resulted in the formulation of a wiser policy than would otherwise have been possible and in one better adapted both to protect the public interest and to meet the needs of industry." One reason undoubtedly was the location of many most desirable waters at high altitudes which, until recently, had been too far from the market for profitable utilization. Western population was spreading fast.

But the Federal Power Act came at last. It was, after all, extremely simple.

"The principle of retaining in public ownership and control rights and resources to be used in the public service," Mr. Merrill wrote of it in 1922, "in order that returns therefrom shall be based on actual investment and that service may thereby be rendered at the lowest reasonable rate, is the fundamental element in the federal water-power policy as embodied in the act of 1920. The other provisions of the act are largely for the purpose of supplementing and supporting this basic principle."
In order that this principle might apply in case of public purchase, the act provides licenses with fixed terms not exceeding fifty years, at termination of which the United States shall have the right to take any project over at original investment, plus severance damages, less any depreciation and amortization, reserves which may have been built up after crediting the owners with a fair return on the investment. When the license period expires, the United States may take over the property of the licensee for its own use, permit it to be taken by another, or issue a new license to the old licensee.

"The federal policy assumes," Mr. Merrill continues, "that our water powers will be developed primarily by private capital for public service, and the history of public-service operations shows that regulation of such services is necessary for public protection. It recognizes, however, that there is another side to the question of regulation which must not be overlooked or ignored. Regulation will not, of itself, produce development. Nothing will do that but the hope of reward. It is essential, therefore, that supervision and regulation shall not take away the reasonable certainty of a reasonable return; that there shall always be the incentive to invest in the business all the capital that the expanding needs of the industry require."

The act was immediately and extraordinarily successful. Two years after passage, Mr. Merrill announced that 364 applications for permits or li-
licenses already had been filed, involving installations exceeding twenty-one million horse-power.

"This amount," he stated, "is more than twice the existing water-power installation of the United States, and more than six times the aggregate of all applications for power sites under federal control in the preceding twenty years. Up to June 30, 1922, the Commission had authorized 58 preliminary permits and 49 licenses, of which 18 were for transmission lines. The 58 permits involve an estimated installation of 2,406,000 horsepower, and the 31 licenses for power projects, of 1,945,000 horsepower, or a total of 4,351,000 horsepower. Of the projects covered by the 31 licenses, 27, involving an estimated installation when completed of 1,952,000 horsepower and investment of not less than $200,000,000 were either completed or under construction at the close of the fiscal year. This is thirty per cent more than was constructed under federal authorization in the twenty years preceding the passage of the Federal water power act."

One of the issues during the contentious years preceding the passage of the bill was the right of the government to charge for the use of streams for power. Notwithstanding that Presidents Roosevelt, Taft, and Wilson had vetoed all bills for projects using navigable rivers which did not pay tolls to the federal treasury, vigorous opposition developed from companies East and West, based on the common law rights of riparian owners.
Since passage of the act, water power has grown healthily into one of the great substantial business interests of the country. In tables appearing in the text of this chapter will be found information of very great interest and value, covering regional distribution of plants and power, percentages of distribution of developed water power, and the ranking, in developed water power, of the ten leading states. Out of these may be culled a variety of illuminating facts which I shall leave to the reader to discover for himself, notwithstanding that they might make a couple of dramatic pages.

Now that a fair power law is applicable throughout all federally owned lands except of course national parks and monuments, and on many waters not in Federal Lands, and that wholesome development is proceeding at a healthy speed, national thinking has characteristically centred upon the possibilities of future achievement. Although super-power has become a household word, it is probable that many think it means multiplication of power. It doesn't. It is merely planning to tie up regional power plants so that they may be used together to supplement each other. During the day, for example, power from rural plants may be concentrated in the city to help turn mills, and at closing hour, power from city plants may be shifted into rural districts to help trolley the workers to their country homes, cook their meals, and light their evenings' work and play. Apply the same idea to greater areas
for greater purposes, or even on occasion to the field of the nation, and its enormous economic possibilities at once will become apparent. Super-power is power flexibility.

Giant power, on the other hand, means power combined from all sources of production—steam power plus water power, practically. Imagine steam

### REGIONAL WATER POWER BY PLANTS (100 HORSE-POWER OR MORE) AND HORSE-POWER

<table>
<thead>
<tr>
<th>DIVISION AND STATE</th>
<th>TOTAL</th>
<th>PUBLIC UTILITY AND MUNICIPAL</th>
<th>MANUFACTURING AND MISCELLANEOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF PLANTS</td>
<td>CAPACITY IN HORSE-POWER</td>
<td>NUMBER OF PLANTS</td>
<td>CAPACITY IN HORSE-POWER</td>
</tr>
<tr>
<td>United States</td>
<td>3,397</td>
<td>12,206,006</td>
<td>1,600</td>
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<tr>
<td>New England</td>
<td>1,108</td>
<td>1,556,062</td>
<td>259</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>613</td>
<td>2,077,820</td>
<td>247</td>
</tr>
<tr>
<td>East North Central</td>
<td>382</td>
<td>1,036,785</td>
<td>263</td>
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<tr>
<td>West North Central</td>
<td>205</td>
<td>541,627</td>
<td>155</td>
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<tr>
<td>South Atlantic</td>
<td>340</td>
<td>1,967,250</td>
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<tr>
<td>East South Central</td>
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<td>966,103</td>
<td>44</td>
</tr>
<tr>
<td>West South Central</td>
<td>33</td>
<td>44,432</td>
<td>22</td>
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<tr>
<td>Mountain</td>
<td>245</td>
<td>1,117,668</td>
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<tr>
<td>Pacific</td>
<td>314</td>
<td>2,088,261</td>
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### DISTRIBUTION OF DEVELOPED WATER POWER IN UNITED STATES, 1921, 1924–1928

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>PERCENTAGE OF TOTAL IN UNITED STATES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1921</td>
</tr>
<tr>
<td>New England</td>
<td>16.5</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>18.7</td>
</tr>
<tr>
<td>East North Central</td>
<td>9.3</td>
</tr>
<tr>
<td>West North Central</td>
<td>5.6</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>13.6</td>
</tr>
<tr>
<td>East South Central</td>
<td>3.1</td>
</tr>
<tr>
<td>West South Central</td>
<td>.2</td>
</tr>
<tr>
<td>Mountain</td>
<td>10.4</td>
</tr>
<tr>
<td>Pacific</td>
<td>22.6</td>
</tr>
</tbody>
</table>
power produced at the mouths of mines so as to eliminate coal transportation charges. Imagine it twinned with water power and the two handled as super-power.

A people which dramatizes achievement is rejoicing, at last, in water power. Before the Act of 1920, it was popularly regarded as the instrument with which money barons were seeking enrichment in the destruction of natural beauty. Hetch Hetchy and Niagara will never be forgotten. They have become and will remain synonyms of greed. Their conspicuousness in great centres of visitation keeps alive the public suspicion which attaches not only to every large water power proposition but to every proposed storage of water for any purpose. Because

<table>
<thead>
<tr>
<th></th>
<th>1921</th>
<th>1924</th>
<th>1925</th>
<th>1926</th>
<th>1927</th>
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<tbody>
<tr>
<td></td>
<td>RANK</td>
<td>PER CENT OF U.S. TOTAL</td>
<td>RANK</td>
<td>PER CENT OF U.S. TOTAL</td>
<td>RANK</td>
<td>PER CENT OF U.S. TOTAL</td>
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<tr>
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<td>1</td>
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<td>1</td>
<td>17.0</td>
<td>1</td>
<td>17.1</td>
</tr>
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<td>California</td>
<td>2</td>
<td>14.5</td>
<td>2</td>
<td>16.0</td>
<td>2</td>
<td>15.3</td>
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<tr>
<td>Washington</td>
<td>3</td>
<td>5.7</td>
<td>3</td>
<td>5.3</td>
<td>3</td>
<td>5.6</td>
</tr>
<tr>
<td>Maine</td>
<td>4</td>
<td>5.7</td>
<td>4</td>
<td>5.2</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>Montana</td>
<td>5</td>
<td>4.3</td>
<td>9</td>
<td>3.8</td>
<td>9</td>
<td>3.6</td>
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<tr>
<td>Massachusetts</td>
<td>6</td>
<td>4.3</td>
<td>10</td>
<td>3.8</td>
<td>10</td>
<td>3.4</td>
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<td>7</td>
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<td>6</td>
<td>4.4</td>
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<td>4.1</td>
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<tr>
<td>South Carolina</td>
<td>8</td>
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<td>5</td>
<td>5.1</td>
</tr>
<tr>
<td>North Carolina</td>
<td>9</td>
<td>4.2</td>
<td>5</td>
<td>4.7</td>
<td>4</td>
<td>5.3</td>
</tr>
<tr>
<td>Georgia</td>
<td>10</td>
<td>3.5</td>
<td>7</td>
<td>4.0</td>
<td>8</td>
<td>3.9</td>
</tr>
<tr>
<td>Alabama</td>
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<tr>
<td>Michigan</td>
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</tr>
<tr>
<td>Total</td>
<td>66.9</td>
<td>68.1</td>
<td>68.1</td>
<td>67.9</td>
<td>67.6</td>
<td>66.8</td>
</tr>
</tbody>
</table>
of Hetch Hetchy, the public conviction that the once so vigorously urged damming of Yellowstone Lake had water power as its concealed purpose is beyond removal, perhaps for generations.

This unfortunate clouding of the repute of a great American business may serve in the end a useful purpose. It will pass, of course, and the deliberation of its passing may bring conception to business of the balances demanded by the ideals of a nation such as ours. Public realization that water power is a national instead of sectional enterprise, a great development of the East and the South as well as of the far West, will tend to just comprehension.

At this writing, the country contains thirty-three hundred and ninety-seven power plants of a hundred horse-power or more. Many of them are small, many incidental to water storage for other purposes, many large, a few of great size. All which impound water, creating lake-like reservoirs, have their additional public recreational use. Except in reservations specially set apart for perpetual preservation of natural conditions, like National Parks, or in localities where works will damage beauty of very extraordinary quality, recreational enjoyment and public education in national enterprise must be added to the economic arguments in any contest to determine whether or not proposed projects should be undertaken.
From a photograph by Federal Power Commission

POWER DAM ON THE SPOKANE RIVER, WASHINGTON
Second highest spillway dam in America. Head, 172 feet; capacity, 94,000 horse-power
GRANDEUR OF THE HIGH SIERRA

Rae Lake, California, on the headwaters of the Kings River, which water-power interests kept out of Sequoia National Park.
### SUMMARY OF OUTSTANDING MINERAL WITHDRAWALS AND CLASSIFICATIONS, JUNE 30, 1927

<table>
<thead>
<tr>
<th>STATE</th>
<th>COAL WITHDRAWN</th>
<th>CLASSIFIED AS COAL LAND</th>
<th>OIL WITHDRAWN</th>
<th>CLASSIFIED AS OIL LAND</th>
<th>OIL SHALE WITHDRAWN</th>
<th>CLASSIFIED AS OIL-SHALE LAND</th>
<th>PHOSPHATE WITHDRAWN</th>
<th>CLASSIFIED AS PHOSPHATE LAND</th>
<th>POTASH WITHDRAWN</th>
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<tr>
<td>Alaska</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
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<td>56,993</td>
<td>92,496</td>
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<td></td>
<td></td>
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<tr>
<td>California</td>
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<td>8,720</td>
<td>1,178,392</td>
<td></td>
<td>64,560</td>
<td>952,239</td>
<td>78,192</td>
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<td>3,193,502</td>
<td>218,997</td>
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<td>4,603</td>
<td>466,990</td>
<td>4,233</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Idaho</td>
<td>8,560,671</td>
<td>1,350,426</td>
<td>67,651</td>
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<td>Louisiana</td>
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<td>8,560,671</td>
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<td></td>
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<td>3,833</td>
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<td>Montana</td>
<td>83,673</td>
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<td></td>
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<tr>
<td>Nevada</td>
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<td>570,372</td>
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<tr>
<td>New Mexico</td>
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<td>11,178,286</td>
<td>84,894</td>
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<tr>
<td>North Dakota</td>
<td>4,361</td>
<td>18,887</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Oregon</td>
<td>250,093</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>South Dakota</td>
<td>3,363,541</td>
<td>1,270,972</td>
<td>1,341,264</td>
<td></td>
<td>91,404</td>
<td>2,703,755</td>
<td>301,945</td>
<td>160</td>
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<tr>
<td>Utah</td>
<td>691,801</td>
<td>141,444</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>2,260,604</td>
<td>6,738,516</td>
<td>545,737</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29,941,092</td>
<td>32,054,219</td>
<td>5,279,196</td>
<td>71,884</td>
<td>156,147</td>
<td>4,116,097</td>
<td>2,044,582</td>
<td>297,705</td>
<td></td>
</tr>
</tbody>
</table>

**WATER POWER 197**
Withdrawals of Other Resources

Other natural resources of uncalculated and incalculable value in our Federal Lands, withdrawn from entry as Public Land and leased or held for lease elsewhere, are not within the province of this book because each constitutes so small a part of the country’s whole supply. Of an original coal total of 3,000,000,000,000 tons, for example, only comparatively a trifle in scattered lots remains in public possession, and of the annual consumption of 600,000,000 tons, 2,500,000 tons only are developed on federally owned lands.

The Geological Survey table here reproduced shows the acres of coal, oil, coal shale, phosphate, and potash lands withdrawn, and those classified, within the Federal Lands; but the country’s total supplies are vastly greater.

Concerning Oil

Quoting Gerrit Gerrit in the Saturday Evening Post of March 3, 1928, computations from the findings of the Federal Oil Conservation Board in 1924 show 30,000,000,000 barrels of oil remaining, in 1928, beneath the American surface, enough to last thirty-three years at the 1927 rate of consumption; but only six per cent of total production is in lands leased from the United States. “In the fiscal year ending June 30, 1927,” reports the United States Geological Survey, “26,640,101 barrels of oil were
taken from Government Lands, and royalty products valued at $6,006,455 were sold for the benefit of the several States, the reclamation fund, the United States Treasury, and other beneficiaries designated by law."

The oil shales of the United States, of which those in our Federal Lands are but a slender part, constitute a future resource beyond present computation. Their practical use may not be so far away as generally is believed. When the cost of crude oil overlaps that of oil from shale, said a recent authority, a competition will begin which will extend the use of crude oil into many years. This will happen, it was predicted, at the production cost of about 25 cents. Endowed many times more richly than any other land with material for all oil substitutes of importance, America will probably carry her present advantage into the centuries.

Who will predict what the future will bring forth? Oil in great quantities has recently been discovered at levels far below oil fields long exhausted. With new methods of search and new light from science, new bonanzas of gold, silver, and copper may again enrich the country.
CHAPTER VI
OUR INDIAN WARDS

Two hundred reservations, altogether equal in area to Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York combined, scattered widely among twenty-four states from New York west to California, and Michigan south to Florida, are owned and occupied by 355,000 wards of the nation. These properties, together with annual appropriations of ten to twelve million dollars, are equivalent to conscience money in compensation for the half continent we took by force from its original Indian possessors. Whatever the score against us, and it is heavy, two eloquent facts are written to our national credit. One is that we have cared far better than any other nation in history for a remnant of savage aborigines conquered and replaced. The other is that our conquered wards, now citizens, not only are steadily increasing in number, health, and education, but average also the wealthiest people in the world.

Occupants of reservations by no means constitute all the Indians in the United States. Of the total of 354,940 reported by the Secretary of the Interior on June 30, 1927, 101,506 belong to the Five Civilized Tribes in Oklahoma, namely the Cherokees,
Chickasaws, Choctaws, Creeks, and Seminoles, which for many years maintained separate governments by treaty with the United States, and still, though long since merged in the nation, are considered a group apart. About five thousand wholly unattached and independent Indians are scattered among the twenty-four states. Distribution is shown in a government table reproduced on a succeeding page. We are not considering the native population of Alaska or our island territories.

At this writing, April 1928, Indian population represents 193 tribes speaking fifty-eight languages. Official records identify 331 tribes originally. Remnants which have disappeared are incorporated into those which remain, or have merged in populations. At this writing there are 202 government schools for Indians with 700 teachers. In schools of all kinds, including sectarian mission and state schools, are 90,725 pupils. There are 90 government hospitals with 178 physicians and 140 nurses. The total value of individual and tribal property is $1,716,815,123; of this $796,708,737 belong to individuals, an average of nearly $2,300 for every Indian; of this, about $74,000,000 are banked in cash by its owners or held in trust by the government; the balance is land, mineral, lumber, stock, and farm equipment. Besides individual holdings, every Indian has an interest in tribal property, averaging nearly $3,000. While many tribes and individuals are poor, on the average they are not unprosperous.
Neither are Indians now "a dying race"; they have been increasing in number for forty years.

All Indians became citizens under a law passed June 2, 1924, but how many possess the franchise depends upon state laws. There will not be many. Nearly all Indians, also, have "received their allotments" and theoretically are on their own, independent of government help. Theory and fact, however, do not always agree; there's another side to this pretty picture of prosperity. In spite of the appearance of experience, judgment, and confidence which make many Indian faces impressive in mature and older years, few Indians have the capacity to meet the competition of the white man's civilization. Occasionally Congress, or some Secretary, assumes that they have and turns a lot of them loose on the hard world, nearly always with disastrous results. In 1887, Congress decreed that each Indian should personally be allotted his own share of his reservation under the proviso that he could not sell it nor borrow on it for twenty-five years. This is known as a trust patent, and most Indians now possess it. Later, legislation provided that he could sell or borrow upon receipt of an award by the government of a patent in fee. Altogether, the Bureau has only issued experimentally about twenty-five thousand patents in fee, but Congress has taken affairs into its own hands to the number of nearly a hundred thousand more.

But mark the results. About ninety per cent of
these picked Indians, once in unhampered possession of their own property, lost everything they possessed within a few months!

The fate of these unfortunates has been to fall back on the main tribal possessions, reducing pro rata values by just so much. In view of these facts the Bureau, in making the original allotments required by law, habitually holds something back in reserve from each full share. Usually an original individual allotment, upon which the Indian is supposed to live, measures 160 acres of farm land, or twice that if desert or forest land. They vary in size according to the productivity of the lands and the purposes for which they can be used, and the size is generally restricted by the amount of land available for that purpose in the reservation to which each belongs. Indians in isolated localities earn their living in various ways, such as securing employment from white men in the neighborhood, raising garden truck and caring for a few head of stock for their own use. Their income from this source is often supplemented by gathering nuts and wild fruits, fishing, and other similar activities. Generally speaking, allotments have not been made in desert regions except where water is available for irrigation. Much of this desert land is very productive under irrigation. In other localities where the land cannot be irrigated the Indian earns a livelihood by raising sheep and goats which graze on their allotments and adjoining lands. The Nez Perce and Navaho Indians carry on
their agricultural activities with considerable success, but others generally lease their allotments, living on their rentals.

To help him make his living, the government will make loans for purchase of seed, tools, cattle, hogs, sheep, even in some cases chickens.

Excepting some proportion of Navahos, practice shows that few full blood Indians are able to earn the most modest livings without the helping hand of government, and few enriched by chance finds of oil or mineral on their properties have kept their own without the restraining or protective hand as the case may be, of the Indian bureau.

It is the belief of experienced observers that, in spite of a good education, the Indian will never much improve in those respects which make for competitive success except by intermixture of white blood. This often has yielded excellent results. Crossing with Asiatic and African stock, which happens extensively in Oklahoma, works no improvement.

President Jefferson's dream was "to let our settlements and theirs meet and blend together, to intermix and become one people. Incorporating themselves with us as citizens of the United States is what the natural progress of things will bring on; it is better to promote than retard it. It is better for them to be identified with us and preserved in the occupation of their lands than to be exposed to the dangers of being a separate people."

While admixture of Indian and White blood
States with Indian Reservations are indicated by the letter R. [In other states, Indians are not under government control]

<table>
<thead>
<tr>
<th>State</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>405</td>
</tr>
<tr>
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<td>R 46,235</td>
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<tr>
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<td>106</td>
</tr>
<tr>
<td>California</td>
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<td>District of Columbia</td>
<td>37</td>
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(Figures compiled from reports of Indian agents, supplemented by 1920 census, where no Indian agent is located.)

has brought about many happy individual results, appearances so far indicate that it will not carry far enough to realize the Jeffersonian prediction so far as this may have contemplated inter-marriage. So far as it contemplated mixed business relationship, experience shows that the Indians will always be under disadvantage.

With our Indian population consistently increasing, the Bureau of Indian affairs may look forward to a permanent career of increasing importance. Special significance therefore may attach to
the opening paragraph of Secretary Work's report for the year 1927:

"The Indian Service has not kept pace with the progress elsewhere along health, educational, industrial, and social lines. The appropriations for general purposes for the fiscal year 1923 were $10,316,221.30, and in the five fiscal years since they have been increased by about $2,338,463.70, principally for medical and health activities. But the cumulative effect of many years of financial neglect has demanded even larger appropriations, if the Government may perform its full duty to the American Indian. Underrating the requirements of the Indian service has continued so long that it has become a habit difficult to correct."

So definitely fixed, through so many years, has become the broad public impression that our Indians are a degenerating, disappearing fragment of a once strong people, driven by force from ancestral lands, decimated by centuries of persecution, wars, and disease, undermined by liquor and drugs which we have sold them, impoverished by official oppression and private fraud, that news of their increase and prosperity is positively startling to many.

Still more surprising is the fact that, so far as records permit an estimate, the United States contains to-day practically as large an Indian population as it did even before the coming of the white man.

It is not surprising that the earliest estimates of
## OUR INDIAN WARDS

### STATISTICS OF INDIAN POPULATION

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Indian population, based on the limited contacts of colonists, were notably incorrect. That of George Croghan in 1759, the first recorded, was 10,500. Nine years later, Colonel Bouquet of the British army, estimated 54,960. In 1769, another army estimate, by Captain Hughes, reduced the number to 35,830. In 1779, John Dodge reduced it to 11,050. Ten years later the Secretary of War estimated 76,000, which Gilbert Inboy reduced to 60,000 ten years thereafter. In 1820 estimates were suddenly jumped to 471,036, but in 1825 the Secretary of War reduced them to 129,366. Four years later his successor, raised them to 312,930. So far, the extremes of fluctuation disclose entire unreliability.

From 1834, however, as shown in the accompanying table, reports are inclusive and consistent, warranting the belief that, before the coming of the white man, Indian population was not very much greater, if any, than to-day. A reasonable backing might even be found for the contention that, considered as a race, Indians have profited rather than lost by our forcible seizure of their empire. Without ultimate loss of population, they have attained Christianity, civilization, and prosperity.

Few as they were originally, they were very widely scattered. Columbus met Indians on the islands and mainland of Florida in 1492. In 1542 Coronado encountered them in large numbers in the Southwest; his famous exploration, which even touched lands now in Nebraska, was in search of
seven Indian cities believed in Spain to contain enormous stores of gold. The Fathers established missions up all the California coast which Indians themselves built under their instructions. The earliest expeditions to Puget Sound discovered Indians throughout the Northwest.

So also in the East. In 1604 Champlain met Indians in large numbers in what then was Massachusetts but now is Maine. In 1620, the Pilgrim Fathers found them in Massachusetts. First settlers fought them for a foothold all the way south to Georgia, and westward, along the entire continental front. The first century of settlement was one of massacre and war from Maine to Florida. Countless Colonial hostilities culminated in the French and Indian War.

From 1782 to 1785, the new nation fought Indian wars in Pennsylvania. From 1790 to 1795, it fought almost constantly the Chippewas, Delawares, Miamis, Mingoës, Ottowas, Potawatomies, and Shawnees. In 1806 Lewis and Clarke encountered Indians all the way to the Pacific Coast and back. Between 1782 and 1898 records show sixty-seven distinct wars between United States troops and Indians, some of them small and brief, of course, but others bitter and bloody, spreading over years.

In one of these, by the way, General Harrison paved the way for his Congressional and Presidential career by defeat of confederated tribes at Tippecanoe, Indiana, in 1811. In the war against the
Creeks in Alabama, Georgia, Mississippi and Tennessee in 1814, General Andrew Jackson delivered two smashing defeats, the latter of which broke the Creek power forever. Jackson was also hero of the first Seminole war in Florida in 1818. In the second Seminole war in 1842, one of the tribes held out through the peace-making, and to-day, on the Everglades reservation, boasts its unbroken record of undefeat. In the war against Indian allies in 1855–6, Lieutenant Phil Sheridan began his national reputation which culminated in the Civil War.

From 1855 war was waged almost constantly in the Middle West and West with the Cour d’Alenes, Paloos, Cheyennes, Sioux, Arapahoes, Kiowas, Comanches, Lipans, Kickapoos, Modocs, Apaches, Nez Perces, Bannocks, Paiutes, Utes, Sheepeaters and Chippewas. Two of these were wars of two years each with the Sioux, in the latter of which, in 1877, occurred the massacre of General Custer. The Chippewa disturbance in 1898 ended a century of Indian wars, closing, as the table shows, the lowest decade of Indian population. Our wars with the Indians, the table also shows us, very far indeed from decimated them, as has been charged. Low tide of Indian population in 1887 was only twenty-two per cent below that reported by the Secretary of War in 1834 which may be said to begin the dependable census, and thirty-one per cent below that of 1927, the last report available for this writing. Far more than war contributed to the decline to the figures of
1887, and far more than its cessation contributed to the climb to the altitude of forty years later.

How different is the Indian citizen of to-day from the utterly cruel warring savage of unbroken spirit fighting for his home and hunting ground against an ever encroaching power increasingly threatening extinction; fighting, too, let us admit, because it was his habit, tradition, sport and joy to fight, and for lust of conquest and pleasure in torture! Think now of the inert tribesman of to-day, sure always of his food, fire, roof and medical care from the parental hand of his father’s conquerors. There was only one conception of him, then. How many and different are the conceptions we have of him now! To some he is the worthless ne’er-do-well, shiftless from nature, tricky at heart, essentially lazy and cruel. To others he is a child of nature, deceived by those who claim to befriend him, plucked of his substance even by his official protectors, happy with little, responsive to the kindly word. To still others he is the noble broken hero of a lost cause and country, bewailing freedom passed forever, the hopeless victim of human wolves whose persecutions he must endure with bowed head!

The Indian perhaps justifies all these conceptions and more. He is a primitive who, a half century only out of savagery, still unable to survive through fitness the conditions of civilization, accepts what life offers good humoredly with neither enthusiasm nor protest. Whether or not he is capable
of developing ambition for himself and his race, generations to come will show. What Commissioner Charles H. Burke calls the missionary spirit inspires much of the work of the Indian Service to-day both at headquarters and in the field. Without it the work would not succeed.

The dry, hot Southwest developed a very different primitive Indian, though racially identical, from the East and North. The Hopi, Navajo, and other tribes of pueblo dwellers were tillers of the soil rather than followers of game. Builders of stone community houses often of large size, they constructed efficient irrigation systems aiming for permanency and a progressive civilization. Communities which were ancient when the Spaniards invaded our Southwest still exist, but for each occupied dwelling hundreds are in ruins, recording the rapacity and greed of enemy tribes of prehistoric times. The Pueblo Indians’ greatest enemy so far as we can now guess were the Apaches, several reservations of which are scattered through the region.

Rights of Indians to about 17,000 acres of land attached to each pueblo were granted by the original Spanish conquerors, established under the United States in the treaty with Spain of 1848, confirmed by Congress in 1859, and passed upon by the Supreme Court in 1913. But, under the assumption that the Indians had the right to sell parcels of their lands, there was much white settlement meantime upon these lands; some parcels passed by actual sale, but most by squatting and claiming. Many lands to
From a photograph by the Indian Office

PROSPEROUS INDIAN FARMER AT HIS WASHINGTON HOME
From a photograph by the Pacific Stereopticon Company

PRIMITIVE INDIANS IN HAVASUPAI INDIAN RESERVATION, ARIZONA

This woman, reverted to type, may have had an excellent education as a girl.
which title was wrongly assumed were sold to later purchasers in good faith. Eventually 12,000 persons concerned with 3,000 claims which ranged in size from town lots to half a dozen acres shared pueblo lands with their 8,000 Indian owners.

This impossible situation occasioned many out-breaks of sympathetic protest, and local courts overflowed with cases which seemed impossible of solution. In 1924, however, Congress appointed a board to adjudicate all claims with instructions that none should be decided against the Indians except by unanimous agreement of the Commissioners. Many cases carry back to the original Spanish grants.

Pueblo lands are held by the Indians in communal ownership and occupancy. Under Indian Bureau supervision, they conduct their own government and their own petty courts. Many are the complaints of individuals and societies against governmental repression of ceremonial dances and other customs descended from prehistoric times.

The rapid increase of Indian wealth is shown in the following table compiled from Government figures:

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<td>796,708,737</td>
<td>920,106,386</td>
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Its distribution by States in 1927, also shown, has much interest. That Oklahoma Indians should have seventy-one per cent of total wealth with only a third of total population is due to remarkable finds of oil on Indian lands therein. Of these, the Osages, 2,863 in number, are credited with wealth chiefly in tribal oil lands valued at $656,919,013, an average of $229,420 an individual. The Indians of the Five Nations stand next with wealth valued at $394,876,415, also chiefly in oil, but, because they number 101,506, wealth per capita drops to $3,299 each. Third in gross wealth are the Shoshones of Wyoming, with oil and mineral properties exceeding $91,000,000. Numbering 1,951, their average total wealth stands second at $50,000 each.

"The records show," Assistant Commissioner E. B. Meritt writes me as this manuscript goes to the publisher, "that during the past fiscal year (1927) Indians of the Five Civilized Tribes received under Departmental jurisdiction a revenue of $4,846,091 from oil and gas mining leases. The leases produced 13,414,657 gross barrels of oil. There were 8,804 oil and gas leases in force embracing more than 788,000 acres. There were at the end of the fiscal year 7,050 producing oil wells and 214 producing gas wells on restricted lands of the Five Civilized Tribes.

"The Osage Indians received in bonus payments for leases made during the last fiscal year the sum of $3,953,000; the rental and royalty income for the
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Year was $10,527,296; the gross production of oil in the Osage Reservation was 25,884,734 barrels. There were 411 producing oil wells and 49 gas wells drilled on the Osage Reservation during the year. There were at the close of the fiscal year 9,887 producing oil wells and 776 producing gas wells on the reservation.

"The Indians of tribes other than the Osages and Five Civilized Tribes received a revenue from the oil and gas leases of more than $1,200,000. In the Navajo Treaty Reservation, New Mexico, seven producing oil wells were drilled during the year, making a total of 29 wells now producing there, and yielding a gross oil production of approximately 869,208 bar-
A small producing oil well was reported during the past year within the Ute Mountain Reservation in southeastern Colorado, the first indication of oil on that reservation. The gross production from all Indian oil and gas leases for the year was approximately 41,000,000 barrels.”

The Indians of the Five Civilized Tribes did not reserve minerals to the tribe when allotments were made, so that some individuals received great sums in royalties from oil found on their lands, while others possessed only agricultural values. A Creek Indian named Jackson Barnett, who refused to pick an allotment and had one arbitrarily assigned to him later received more than $3,000,000 from oil royalties. Oil has also been discovered in the Pawnee, Otoe and Kiowa Reservations of Oklahoma and the Crow Reservation in Montana.

With these statistics let us compare Indian wealth in states without oil and mineral deposits. The 23,107 Indians in South Dakota share wealth principally in lands of the value of $51,643,953, an average of $2,235 each. The 6,667 Indians of Oregon share wealth principally in lands and timber of the value of $50,344,487, an average of $7,763 each. The 46,235 Indians in Arizona share wealth principally in lands and livestock of the value of $50,067,742, an average of $1,089. The 12,900 Indians of Washington share wealth principally in lands and timber of the value of $49,263,133, an average of $3,811 each.
If, to arrive at a more general conception, we should eliminate the two oil states of Oklahoma and Wyoming, we should have in the rest of the country 234,772 Indians sharing wealth valued at $384,458,004, an average of $1,637 each. Approaching from still a different point of view, let us eliminate from consideration the entire item of oil and mineral wealth, which amounts to $952,498,197. There will then be left a total in lands, live stock, timber, buildings, farming equipment and cash, of $764,316,926, an average of $2,153 for each Indian in the country.

Wealth other than oil and mineral was distributed in 1927 as follows:

Lands exclusive of timber, $489,079,312; timber $97,022,866; homes, barns, furnishings, etc., $30,365,835; live stock $28,467,110; crops and miscellaneous, $11,901,923; funds in bank and treasury $98,384,834.

These figures include both individual and tribal property.

"Large timber operations," Mr. Meritt writes, "are conducted under contract at very good stumpage prices on a number of reservations. Timber is offered for sale as economic conditions and the needs of the Indians for cash require. The receipts for the sale of timber are approximately $2,000,000 per annum. For the fiscal years 1926 and 1927 receipts were $2,446,455.07 and $2,953,202.10 respectively. Eight per cent of the gross receipts is retained by the Government to defray the cost of scaling, marking,
supervision and other proper timber sale expenses. The remainder (92%) of the gross receipts is credited to the Indians.

"Timber is selectively logged and young growth preserved in accordance with approved forestry practice to provide for future timber crops. Approximately twenty-five sawmills are operated on the reservations, including two large, modern electrically equipped band mills, to provide lumber for Indian homes, general improvements on the reservations, and the industrial advancement of the Indians in general."

With all their developed and undeveloped wealth, many Indians are exceedingly poor. "They live in dissimilar conditions," Representative Louis C. Cramton, of Michigan, told Congress in January, 1928, "some of them in the hot desert wastes of the Southwest and some of them in the coldest winters of the Northwest. Some of them have much more money than is good for them to have or good for any one to have without earning it; many of them are destitute. Some of them are well advanced and others are in the lowest condition of civilization.

"With all of their reservations scattered over the great West it is inevitable that, through human agencies, occasional mistakes of administration will occur. There was a time, I have read, in the earlier days when we had just subdued the Indians, when the West was not as well developed as it is now, and when those regions were most remote from the seat
of government, that the Indian Service was notoriously corrupt; and I think in the public mind the Indian Service of to-day has the disadvantage of some of that ancient aroma still clinging around it.

"The Commissioner of Indian Affairs, Hon. Charles H. Burke, has had long experience with Indian affairs through his life in the West and through his former connection with Indian affairs as Chairman of the Committee on Indian Affairs of this House, and is a man of capacity, integrity, and of practical sane idealism. He has associated with him, as assistant commissioner, Mr. Edgar B. Meritt, who has been in that bureau for some thirty years. I do not believe there is in the Government service a man who is more thoroughly devoted to carrying out the responsibilities of his position than Mr. Meritt. It was his vigilance that saved the San Carlos Reservoir site, and he is most zealous and devoted to the real welfare of the Indians."

In Colonial days the Indian was an enemy, only, but the young nation recognized treaty and other responsibilities. Committees of Senate and House were the new nation's first managers of Indian affairs. The War Department appropriately took charge of its creation in 1789. Traders introduced liquor, under influence of which Indians suffered both as buyers and sellers in their business with whites. To correct this, President Washington set up Indian trading posts, which the traders got abolished by Act of Congress in 1822. Retort to that
was the creation, in 1824, of a Bureau of Indian Affairs, which handled trade in addition to treaties, appropriations, a small fund to establish Indian civilization, claims by and against Indians, and agencies of all kinds. Eight years later the first Commissioner of Indian Affairs, Elbert Herrick, was appointed. Two years later, the Bureau was enlarged to its present importance, and in 1849 it passed from the War Department to the Interior Department.

The idea of removing all Indians east of the Mississippi to reservations to be established in federal lands in the West was one of the first entertained by the new government. As early as 1804 it was embodied in the law creating two territories of Louisiana, and in 1820 a treaty with the Choc-taws provided for a new home for them in Arkansas. President Monroe reported a formal plan to Congress in 1825, under which the present state of Oklahoma and most of Kansas was acquired by treaty from the Osages and Kansan Indians. This became the Indian Territory of the early school geographies.

Within fifteen years all the principal tribes were established there by treaty, including the Five Nations. With forty tribes resident, unoccupied parts of the territory were thrown open to white settlement in 1889 under the name of Oklahoma; the present state was created in 1907. But meantime, in 1871, treaties had been abolished and only the United States was thereafter recognized.
A principal obligation of the Indian Service is building up the vitality of the people and establishing a new standard of living. In this is involved, besides its current health programme, an industrial programme, a great amount of preventive work, systematic attention to the physical welfare of children, and even going into the Indian homes and by precept and example teaching the adult Indians matters relating to personal hygiene, home sanitation, fresh air, good food, and the safeguarding of the well from the sick who may be housed together in one tepee, tent or other habitation. Besides the diseases to which white people are subject, Indians suffer particularly from tuberculosis, a contagious disease of the eyes known as trachoma, and a variety of child diseases.

To combat tuberculosis are twelve sanataria with a capacity of 968. Trachoma affects 30,000 Indians, of which 9,000 are treated surgically. The Bureau's ninety hospitals with bed capacity of 2,965 is about to be increased by fourteen others of bed capacity of 320. There are 113 full-time and 68 part-time physicians, 13 special physicians, 10 dentists and 182 nurses.

Besides this regular service, the United States Health Service has, since 1926, furnished Medical Directors for four general districts and sanitary and other specialists for regular tours of observation. Laboratory facilities and the advice of experts are also available upon request.
One of the first obligations recognized as owing to the Indians was that of education, but, except for an appropriation of $500 to Dartmouth College in 1776, occasional small contributions to mission schools, and $10,000 a year from 1820 to help volunteer societies, little was accomplished before the establishment of trade-schools in 1849. Carlisle School in Pennsylvania, established in 1879, was the first outside a reservation. Compare these with the extensive educational developments of the present time for which the government appropriates more than five million dollars annually.

Long before obligation was felt to educate, the missionary spirit was manifest in many ways. Missionary work began during Coronado's invasion of 1542, the mailed soldiers seeking loot and the robed priests seeking souls, hand in hand. Protestant missionary work began a century later in New England under the preaching of John Eliot. In the far West, the mission builders pushed northward up the Pacific coast. In the East, outposts of civilization penetrating the wilderness westward fought Indians for footholds while endeavoring to convert them to Christianity.

The Moravians were the real pioneers in Protestant denominational work along educational lines, followed by establishment of schools by Friends in 1795, Baptists in 1807, American Board (Congregational and Presbyterian) in 1810, Episcopalians in 1815, Methodists in 1816, Presbyterians (North)
INDIAN SCHOOL AT YAKIMA, WASHINGTON

From a photograph by the Bureau of Indian Affairs

SOUTHERN NAVAHO SCHOOL BOYS
in 1833, Methodists (South) in 1844, the American Missionary Association (Congregational) in 1846, Dutch Reformed in 1857, Presbyterians (South) in 1857, Hicksite Quakers in 1869, United Presbyterians in 1869, Unitarians in 1886, Reformed Presbyterians (Covenanter) in 1889. Almost all denominations are represented in this work, ranging from the Roman Catholic and the various sects of Protestantism to the Orthodox Russian among the Indians of Alaska, and the Mormon Church of Utah. Practically every tribe has come under the influence of the teaching of some Christian religion, led by such men in the earlier day as Samson Occum, the Mohican student of Rev. Eleazer Wheelock's Indian School in Connecticut; James B. Finley, David Zeisberger, and other pioneers of Ohio; the teachers of the Society of Friends in Pennsylvania and adjoining states; Evan Jones and Samuel Worcester among the Cherokee of the South; The Williamsonsons, Riggs, and Ponds of the Sioux country; Bishops Whipple and Hare of Minnesota; Whitman, Lee, and Spalding among the tribes of the Northwest coast; Father Hamilton among the Omaha; Father de Smet among the northern tribes west of the Mississippi; Cyrus Byington among the Choctaw; Father Ravalli as priest and physician among the western tribes; a list much too lengthy to enumerate, taken from all Christian denominations.

The United States government contributed annually to the education of the Indians, such funds
passing through the hands of the missionaries, until the year 1870. It was about this time that the Indian country was apportioned among the missionary societies, both Catholic and Protestant, each society having its own particular field of labor.

The report of the Indian Office shows that in 1925 there were 400 Protestant and 200 Catholic missionaries engaged in work among the Indians, and a total of 50,000 Protestant and 60,000 Catholic church-going Indians attending a thousand churches. These statistics do not include the Five Civilized Tribes of Oklahoma, who are Protestant.

A hundred or two thousand still maintain in whole or part their ancient religion, the fundamental concept of which is the existence of magic power in objects, animals and men. This is known by name of Manito, Tamanaos and others, but, contrary to common belief, Indians rarely clothe the idea in personality. The "Great Spirit" popularly assigned as the Indian deity exists to most tribes only as a vague influence, visualized usually, if visualized at all, as large animals or inanimate objects like rocks, cliffs or mountains. In the Havasupai Reservation in the Grand Canyon, I found the deity idea visualized in a detached column of red rock rising several hundred feet from the south wall of the Canyon which the Indians called "Man."

The invocation of this vague, mysterious power through prayers, charms, incantations, fetishes, prayer sticks, offerings, sacrifices, dances and the
like, under the control of medicine men, constitutes the Indians' ceremonial religion. It is knit into the fabric of his family, social and industrial life. Christianity never wholly eliminates it as a conscious influence.

Raising and reaping the products of the soil was manifestly the Indian's principal natural means of sustenance, and upon this from the beginning the guardians of the Indians concentrated. To make him self-supporting as a farmer was to solve the problem. The success of the Bureau's efforts can only be measured by results.

In 1922 a movement known as the Five Year Programme was inaugurated in the Blackfoot Reservation which may solve the problem of industrial self support. A reservation Farm and Livestock Association composed of all adult members of the tribe is divided into chapters which are set into competition with each other for records of production. With each chapter under its own Indian officers, seasonal campaigns in stock and crop raising cause unusual interest. Auxiliary chapters of women competing in gardening, canning, dairying, chicken raising and other less arduous pursuits involve the entire reservation in activity.

One of the greatest drawbacks to Indian farming has been the custom of visiting in summer, leaving garden, farm and range to shift for themselves. Under the new programme both men and women pledge themselves to stay on the job. Chapters are
established now in twenty-eight reservations, and community organizations similar in kind are organized in eight cities.

"The Indians in the Southwest," writes Mr. Meritt, "were the first irrigationists in this country. It is of record that they have been irrigating land for more than three hundred years. Congress has appropriated about $33,340,000 for irrigation projects on Indian reservations, and there are 1,450,000 acres of land under these projects capable of irrigation, with over 690,000 acres under constructed works and now irrigable. Some of the Indians are making remarkable progress cultivating irrigable lands."

"The Indian problem is unique," writes Francis M. Goodwin, who handled the Indian office for some years as an assistant secretary of the Interior. "Its solution depends as much upon the capacity of the Indians as it does upon the government programme. If President Jefferson's solution by assimilation ever becomes reality, it must be by a practical programme under direction of the United States, with State co-operation. Otherwise, the Indian problem may never be solved.

"Our original attitude was one of war or force, but treatment of Indians as separate nations has disappeared. Our next step was to confine them to reservations with large areas of land owned by tribes as common property. Can this property be divided or sold? Or do the Indians need the same common conservation found necessary to protect the white
man? Large areas of public lands, the common property of the people, have been set aside as forest and other reserves to protect our national resources for future use. The white race is not willing to surrender all its common property to individual ownership, and apparently the same protection must be accorded the Indian tribes. In all probability, therefore, the United States must for many years act as administrator or trustee of the common property of whites and Indians alike.

"Thousands of Indians have been allotted lands, subject to supervision for their protection, in order to arouse and encourage individual initiative and responsibility. Thousands have not yet been allotted, although the work is rapidly progressing. Here again the United States must act as administrator. If an Indian dies, the United States must in some way see that the estate is probated. If a sale of the allottee's property is necessary or advisable, the transaction must be supervised.

"In time Congress found it necessary to authorize certificates of competency to Indians who possessed capacity to handle their own affairs. Individual Indians in many instances were permitted the unrestricted use of their property. In some cases Congress authorized certificates of competency to mixed bloods, where the white predominated or was equal in the individual. Congress has adopted this policy. It represents an unique problem in administration. It will bring into play human nature
at its best and worst, a common heritage that seems always to accompany the development of our great natural resources. The task of the administrator under these conditions will never be an easy one.

"To assimilate the Indians involves their education, health, and employment. The Government has taken the lead in these particulars and has expended millions for such purposes. Where Indians have gained great wealth through oil discoveries or otherwise, the problem differs widely from dependence upon agricultural pursuits. In recent years, for the first time, Federal agencies have fathered, with some signal successes, a movement to arouse all agricultural Indians to self support.

"By an act of Congress of 1924 all Indians are citizens of the United States. Whether the Indians take advantage of political rights will depend upon their willingness and ability to abide by the laws of the several States. This in turn involves the education of Indians and whites in common schools, the use of common hospital facilities, and the payment of taxes by the Indians upon the property now exempt from Federal and State taxation."
CHAPTER VII
NATIONAL PARKS SYSTEM A UNIVERSITY OF NATURE

Among so many reservational land holdings of such a people as ours, it would have been strange had not one, at least, principally expressed other aspirations than attainment of prosperity and occasional relaxation from the labor of producing it. There are other important objectives than these in our national life.

The National Parks System was born of the instinct to preserve for all time extraordinary beauty and majesty of native landscape in original unmodified record; it was developed by the genius of the people, without conscious planning, through a generation and a half of park making; this product analyzed, its purpose and its standards were formulated for the conscious upbuilding of the future. The System is thus revealed a unique expression of the combined idealism and practicality which makes this nation great.

National Parks are areas of original unmodified natural conditions, each the finest possible example of its kind in the country, preserved as a system from all industrial use.

Thus they unmistakably differ physically from
National Forests and State Parks. They differ as widely in principal objectives, also, National Parks being inspirational, educative, historical and recreational, National Forests economic and recreational, State Parks recreational. Recreation, by which most persons mean its dictionary definition of relaxational diversion, is common to all three, wherein lies to-day’s chief danger to the National Parks System because, in the hurrah beginnings of this new outdoor era, enthusiastic public clamor so unduly exalts mere outdoor pleasuring that many overlook the System’s additional unique permanent qualities and higher values.

This is dangerously true of localities in the East which yearn to possess National Parks for their own pride and profit, and of legislators keen to please constituents upon whose supporting votes will depend their own future public careers. It is true also of certain ardent propagandists of recreation in the dictionary sense only, who would reduce every outdoor area, national and state, to the same dead level of standards and uses.

To get at the root of the matter at the very start, besides the recreational function which National Parks share equally with National Forests and State Parks, this System is also, under its definition, a very remarkable National Gallery of Scenic Masterpieces, the splendor and value of whose exhibits will rapidly depreciate if diluted with landscapes of lesser, commoner low-mountain country, however
charming. Also, under the definition they constitute a still more remarkable and valuable National Museum of Original America, depository of unique unmodified irreplaceable examples of the vast wilderness which our forefathers conquered, the international fame and usefulness of which will dissipate if mixed with exhibits altered by civilization’s often ruthless hand.

Such reservations of lesser quality may be excellent recreational parks, and there are places for all good things; but a national institution of very special character and value is no place for anything, however admirable it may be, which will damage it by its presence.

After nearly sixty years of upbuilding, our National Parks include, among nineteen units, five which do not meet standards, these fortunately so small as to detract practically nothing from the idea of the whole. The combined areas of these exceptions constitute only twenty-nine square miles out of a total of more than eleven thousand square miles, a negligible proportion. It is of the great primitive parks constituting the Standard National Parks System which we treat.

When we consider the fortuitous origin and unplanned development of the National Parks System, we wonder at its remarkable scope and representative character. It is difficult to believe it other than the product of careful initial survey of possible fields of scenic greatness and variety, and of geologic
<table>
<thead>
<tr>
<th>NATIONAL PARKS IN ORDER OF CREATION</th>
<th>LOCATION</th>
<th>AREAS IN SQUARE MILES</th>
<th>DISTINCTIVE CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowstone</td>
<td>Northwestern Wyoming.</td>
<td>3,348</td>
<td>The world's most spectacular volcanic exhibit—More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Petrified forests—Grand Canyon of the Yellowstone, remarkable for gorgeous coloring—Large lakes—Many large streams and waterfalls—Vast wilderness, greatest wild bird and animal preserve in world—Exceptional trout fishing.</td>
</tr>
<tr>
<td>Sequoia</td>
<td>Middle eastern California.</td>
<td>604</td>
<td>The Big Tree National Park—The Giant Forest alone contains hundreds of sequoias over 10 feet in diameter, and a few 25 feet in diameter—Sugar pines, white fir, yellow pine and incense cedar all attain their greatest development—Kern River drainage basin—High Sierra including Mount Whitney.</td>
</tr>
<tr>
<td>Yosemite</td>
<td>Middle eastern California.</td>
<td>1,125</td>
<td>An immense granite wilderness replete with world-famous spectacles—The Yosemite Valley acknowledged the most beautiful in existence—Many waterfalls of extraordinary height—Great forests, including three groves of giant sequoias—Lofty Sierra divide—A paradise for trail riders and campers.</td>
</tr>
<tr>
<td>General Grant</td>
<td>Middle eastern California.</td>
<td>4</td>
<td>Created to preserve the famous General Grant Tree, 20 feet in diameter, and the splendid forest which surrounds it—Six miles from Sequoia National Park.</td>
</tr>
<tr>
<td>Mount Rainier</td>
<td>West central Washington.</td>
<td>324</td>
<td>Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful subalpine wild flower fields, surrounded by forest belt in which Douglas Fir attains its greatest development—Probably finest exposition of glacial erosion in the world.</td>
</tr>
<tr>
<td>Park</td>
<td>Location</td>
<td>Year</td>
<td>Description</td>
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<tr>
<td>Crater Lake</td>
<td>Southwestern Oregon</td>
<td>1902</td>
<td>Lake of extraordinary depth and color filling crater of prehistoric Mount Mazama, a volcano which collapsed within itself—Six miles in diameter, brilliantly colored lava sides rising 1,000 to 2,200 feet above surface—Fine fishing.</td>
</tr>
<tr>
<td>Wind Cave</td>
<td>South Dakota</td>
<td>1903</td>
<td>Limestone cavern having miles of galleries and numerous chambers.</td>
</tr>
<tr>
<td>Platt</td>
<td>Southern Oklahoma</td>
<td>1904</td>
<td>Conserving sulphur and other springs—Serves the town of Sulphur as a city park.</td>
</tr>
<tr>
<td>Sullys Hill</td>
<td>North Dakota</td>
<td>1904</td>
<td>Wild animal reservation administered by U. S. Biological Survey.</td>
</tr>
<tr>
<td>Mesa Verde</td>
<td>Southwestern Colorado</td>
<td>1906</td>
<td>Most notable and best preserved cliff dwellings in the United States—Forest covered mesas composed of material eroded from the Rockies and again eroding into the desert a thousand feet below.</td>
</tr>
<tr>
<td>Glacier</td>
<td>Northwestern Montana</td>
<td>1910</td>
<td>Rugged mountain region of unsurpassed romantic beauty and extraordinary individuality—250 glacier-fed lakes—60 small glaciers—precipices thousands of feet deep—Product of a great overthrust, revealing by erosion ancient pre-Cambrian strata, beautifully tinted, overlying rocks of comparatively recent origin.</td>
</tr>
<tr>
<td>Rocky Mountain</td>
<td>North middle Colorado</td>
<td>1915</td>
<td>The heart of the granite Rockies—Snowy Front Range carrying the continental divide with peaks from 11,000 to 14,255 feet in altitude—Remarkable records of the glacial period—Most patronized of all our National Parks.</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Hawaii</td>
<td>1916</td>
<td>Three separate areas—Kilauea and Mauna Loa on Hawaii, Haleakula on Maui—Includes the world-famous “Lake of Everlasting Fire.”</td>
</tr>
</tbody>
</table>
# THE NATIONAL PARKS AT A GLANCE

<table>
<thead>
<tr>
<th>NATIONAL PARKS IN ORDER OF CREATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Lassen Volcanic</td>
<td>Northern California</td>
<td>124</td>
<td>Only active volcano in United States proper—Lassen Peak 10,465 feet—Cinder Cone of 6,879 feet—Hot springs—Mud geysers—Fine exposition of volcanism in most of its phases, but there are no geysers.</td>
</tr>
<tr>
<td>Hot Springs</td>
<td>Middle Arkansas</td>
<td>1½</td>
<td>Conserves 46 hot springs possessing properties which alleviate rheumatic and other affections—Hotels at all prices in adjoining city, into which park water is piped, and 18 bath-houses under government supervision.</td>
</tr>
<tr>
<td>Mount McKinley</td>
<td>South central Alaska</td>
<td>2,645</td>
<td>Encloses the heart of the Great Alaskan Range with Mount McKinley rising 20,700 feet, seen from an altitude of 3,000 feet—Colossal glaciers—Immense herds of caribou—Mountain sheep in large numbers.</td>
</tr>
<tr>
<td>Grand Canyon</td>
<td>North central Arizona</td>
<td>958</td>
<td>Discloses in its vertical walls strata telling the Story of Creation during hundreds of millions of years—also the greatest example of erosion, and no doubt the spectacle nearest sublimity in all the world—Fine hotel, camps and motor camps, and trails to river and along the canyon floor.</td>
</tr>
<tr>
<td>Lafayette</td>
<td>Maine coast</td>
<td>8</td>
<td>A group of ancient granite mountains on Mount Desert Island remarkable for their beauty, their geological significance and their human history.</td>
</tr>
<tr>
<td>Zion</td>
<td>Southwestern Utah</td>
<td>120</td>
<td>“The Rainbow of the Desert.” A gorge cut 3,000 feet down through the White Cliff and the Vermilion Cliff of the colorful Plateau Country of Utah, magnificently carved by erosion—Carries the Story of Creation, from the rim of the Grand Canyon, up through millions of years of later strata.</td>
</tr>
</tbody>
</table>
From a photograph by Hileman

NATIONAL PARK SCENERY

Showing Going-to-the-Sun Mountain from a slope of Mount Jackson, Glacier National Park
From a photograph by Hileman

NATIONAL PARK SCENERY

Trick Falls in full flood, Glacier National Park
example. Had a well-chosen commission of scientists, educators and lovers of the sublime in nature planned the whole in advance when the first National Park, Yellowstone, was created in 1872, a system built thereon could have differed little except in superior richness and variety from that which Congress has since actually created, park by park, in obedience to public demand originating from time to time mysteriously in the genius of our people.

In an accompanying table the parks are listed historically in order of creation with statement of area and characterization of difference. Here we shall consider them in their most useful classification as examples in supremely beautiful expression of the natural processes through which our gloriously beautiful country was created. At the outset, let me repeat my indisputable statement of 1919 that our National Parks System presents scenery of far greater magnificence and wider variety of kind and beauty than is comfortably accessible in all the rest of the world combined.

**Its Story of Creation**

Of the basic granite of the country, the National Parks System offers four great examples: Yosemite National Park, California, with its Valley of remarkable origin, its wilderness of domes, lakes, rivers and great forests, and its waterfalls of immense height; Sequoia National Park, California,
whose newly acquired basin of the Kern is bounded by the loftiest and most impressive peaks of the High Sierra; Rocky Mountain National Park, Colorado, characterizing in best expression the vast mountain backbone of the continent; and Mount McKinley National Park, Alaska, whose ice-clad peak rises 17,000 feet above its adjoining plains.

Sequoia is also distinguished for its gorgeous forests of gigantic trees, and Mount McKinley displays also some of the world’s largest and finest glaciers, and examples of the exuberant wild life of the far North.

Of sedimentary landscape, marvellously carved by erosion and glowingly colored, the System presents three unequalled examples: Grand Canyon National Park, Arizona, world spectacle of sublimity carrying the story of life from its near beginning up through highly colored strata disclosing a hundred million years at least of world building, a library in brilliant bindings; Zion National Park of the gorgeously colored plateau country of Utah, “rainbow of the desert,” majestic in architecture and ornate in decoration, carrying Grand Canyon’s story on into relatively late geologic times; and Glacier National Park, northern Montana, recording an extraordinary event in the history of the earth’s surface, literally a Romance of Creation, with a wealth of detail, magnificence of exposition, and exquisite quality of beauty unequalled of its kind.

Of volcanic landscape, the System offers a wide
range: Yellowstone National Park, Wyoming, with its geysers more and greater than elsewhere in all the world combined, its mud volcanoes and hot springs, and tier upon tier of lava-buried forests—a heroic example of dying volcanism; Mount Rainier National Park, Washington, giant of the volcanic Cascade Range, still warm in places, a spectacle of sublime beauty; Crater Lake National Park, Oregon, whose waters of extraordinary depth and color fill the bowl left when Mount Mazama, which no man has seen, collapsed within its own rim during eruption; Lassen Volcanic National Park, California, its volcano a few years ago in eruption and classed as active; and Hawaii National Park with two of its three famous volcanoes spectacularly active, and one crowned with a dead crater of enormous size and uncanny quality of beauty.

Yellowstone is, besides, a land of many waters, source of large rivers, whose vividly painted canyons and lofty abundant falls challenge comparison; also it is a wild animal sanctuary unequalled. Mount Rainier's greatest story is not volcanic but erosional, disclosing many glaciers in advanced operation wearing down the heights, with suggestions in its Tatooch Range of a past which dumbs imagination.

Mesa Verde, Colorado, records the intermediate process of disintegration of mountains for upbuilding of plains, its giant mesas worn from the Rockies themselves seen passing in turn into the lower desert; it discloses, also, on forested mesa tops and in caves
in precipitous cliff sides, remains of prehistoric civilization of high degree.

The towering long wall of the Sierra continued northward by the Cascades rob the Pacific winds of moisture which otherwise would have watered the desert eastward to the Rockies, producing on these ranges' western flanks forests of luxuriance and size of species unknown elsewhere. Sequoia, General Grant, Yosemite and Mount Rainier National Parks conserve magnificent examples of forests in unaltered descent from earliest beginnings, while Rocky Mountain, Yellowstone and Glacier National Parks function similarly for the Rockies. Mesa Verde, Grand Canyon and Zion National Parks preserve distinguished examples of desert evolution.

In many National Parks besides those which specialize in volcanism are many minor volcanic records, some possessing great interest. Varied granitic forms abound in parks principally sedimentary, and sedimentary forms in parks principally granitic and volcanic. Mountain building and stream formation are illustrated in nearly all, and in all, in magnificent example and infinite range, are masterpieces of the artistry of Nature's marvellously skillful sculptor, Erosion, many of them unequalled in the whole world of scenery. Together, also, they show records of the evolution of life from earliest visible evidence to the living forms of to-day.

As working laboratories and exhibitions of na-
ture, national parks are theoretically untouched by man's hand except for roads to enter and examine them, trails to points of beauty and interest, and hotels and camps for the use of visitors. Flora and fauna theoretically are left to nature's handling. But a paternal government fights forest diseases with scientific treatment, and reduces the number of predatory animals for the safety of those which add much to the life and charm of the wilderness.

Natural balance of life, therefore, no longer actually exists. This is the principal blotting of the record of creation in our Standard National Parks System—besides concentration of human population in one or more spots in each; this we shall consider later; neither can be helped.

This system, which John C. Merriam has so aptly called our Super-University of Nature, is one of the most precious of national possessions. Its educative application far exceeds mere imparting of scientific knowledge, and, as a field of research among unmodified natural conditions, its value to the future is beyond estimation.

Nor is even this the parks' highest function. "Their primary uses," writes Dr. Merriam, "extend far into that fundamental education which concerns real appreciation of nature. Here beauty in its truest sense receives expression and exerts its influence along with recreation and formal education. To me the parks are not merely places to rest and exercise and learn. They are regions where one looks
through the veil to meet the realities of nature and of the unfathomable power behind it. I cannot say what worship really is—nor am I sure that others will do better—but often in the parks, I remember Bryant's lines: 'Why should we, in the world's riper years, neglect God's ancient sanctuaries, and adore only among the crowd, and under roofs that our frail hands have raised?' National Parks represent opportunities for worship through which one comes to understand more fully certain of the attributes of nature and its Creator. They are not objects to be worshipped, but they are altars over which we may worship.'

This system is as precisely a National Institution as if its park units were so many purposeful structures, special schools in our Super-University, built around a common centre and surrounded by campus walls.

Were there no National Parks System we can imagine that a proposition to create so noble and useful a super-university of nature as Dr. Merriam visions would stir the pride, imagination and desire of the people to its depths. We can imagine our ablest leaders in science, education and affairs gathering earnestly behind the project, and the treasuries of the nation opened for its achievement.

With what meticulous care would it be planned and its exhibits so chosen that none should be admitted save those heroic examples of world architecture which are "the grandest products of creation," rep-
resenting also the "unmodified primitive life of the world, both plant and animal, remaining just as the Creator moulded it over the mountains and the valleys."

Our national super-university of nature, if thus created under the concentrated gaze of the nation, would, by virtue of the people's concept, be as safe as the Lincoln Memorial. It would be accepted for all time as one of our most cherished National Institutions. But, though we actually possess exactly that to-day, nearly completed and equipped, and in far nobler expression than could be got afresh in times when little of the primitive remains, it is far from safe. Because, like monumental cathedrals, its building has been spread thinly over many years (and meantime its naves and chapels utilized for pleasing), the majority of the people of to-day fail to appreciate either the majesty of architecture or the nobility of purpose of the amazing thing which they actually possess.

Besides the National Parks System, the country possesses another lesser outdoor national museum in its National Monuments System, which we shall describe later. The two are not in competition. The latter is far broader in its scope, and where it touches the field of the National Parks System it supplements it. Scenic magnificence is not a requisite of National Monuments, though occasionally it exists; nor is recreation a necessary or desirable function, though nearness to through highways bring some
monuments many passing visitors. The two systems must not be confused nor mixed.

**Patriotic and Social Functions**

Another function of the National Parks System second only to its inspirational and educational function, I want especially to emphasize. That is its importance as a formal visible expression of the greatness and beauty of this nation among the nations. Much value both to nation and individual flows directly from this conception. The sentiment which brings the majority of the people so promptly to the defense of the system when endangered by invasion is very far removed, indeed, from the "sentimentality" with which defenders of the System are always charged, unless national pride can be so termed.

The Parks help very practically in a social problem of profound usefulness to so heterogeneous a nation spread over so large a territory. In hotels and camps, before mighty spectacles of nature, on trail and at night around camp-fires, meet Americans of every kind, occupation and degree of fortune from every corner of the country. Every summer we meet a few of the distinguished and the conspicuous in the national parks. Politicians, merchants, legislators, artists, architects, bankers, scientists, judges, millionaires and the merely fashionable all are represented. But we also meet in immense numbers business and professional men and their families, teachers, lawyers, brokers, manufacturers of everything
on earth, writers, publishers, advertising men—the well-to-do of all sorts and degrees.

These constitute the great body of National Park visitors. We also meet the workers in lesser numbers—clerks, salesmen, farmers, small employers and the thrifty employed—all who can afford to tour by automobile, and want to see their country.

Imagine an average of church congregations and the audiences of theaters, concerts, popular lectures, grand opera and the better motion-picture houses, of college football crowds and the patrons of the Chautauquas and Ocean Groves of the country, and you will come pretty close to the average of National Park visitors who come really to see the parks, not merely to glance at them from passing automobiles as is a fashion to-day among countless casual tourists. It is an intelligent and a fairly educated crowd; but not rich nor fashionable. It represents America very well.

Of enormous importance is the System's by-product of democratization in a period which needs it. Nowhere else do people from all the states mingle in quite the same spirit as they do in their national parks. One sits at dinner, say, between a Missouri farmer and a Utah miner, and at supper between a New York artist and an Oregon shopkeeper. One stages it with people from Florida, Minnesota and Idaho, climbs mountains with a chance crowd from Vermont, Louisiana and Texas, and sits around the evening camp-fire with a California grape grower,
a locomotive engineer from Massachusetts, and a banker from Michigan.

Here social distinctions so often insisted on at home exist in least possible measure. Perhaps for the first time one realizes the common America.

Several years ago, at a large dinner of salesmen for clothing manufacturers, I sat beside a man who owned four factories making women's suits.

"These National Parks you talk about," he said, "have saved me a lot of money."

Wonderingly, I inquired how.

"Well, you see we get the fashions from Paris far in advance from our agents over there, but we couldn't sell that stuff in our trade just as it comes. Not a bit of it. In New England they have certain notions of their own, to meet which these new styles must be modified. Southern women have still different notions, and out in the Middle West, they don't like what the New Englanders and Southerners like. They differ again down the Mississippi Valley, and again in Texas. So elsewhere in the West. Say, we used to carry a big department to study the new Paris styles and readapt them to twelve or fourteen different types of trade, and of course if we overestimated sales in any one of these divisions it was almost a total loss, for you couldn't sell the surplus anywhere else. And, mind you, all this had to be done twice every year. But now, we've got these differences down to four or five. That means a lot of money saved in these days."
"But what have the National Parks got to do with it?" I asked.

"Everything. Or so at least my salesmen tell me. They ought to know, for they're the boys who travel the country and make the contacts. Why, these women from all over the country meet each other every summer in the National Parks and see fashions. Then they go home and talk fashions. That's what's done it."

It is the democracy and sense of common ownership in these parks that work this magic. They have discovered to America the American people. Elsewhere travellers divide among resorts and hotels according to pay, and maintain their home attitude. In the National Parks all are just Americans. It is difficult to imagine an institution making more powerfully for national solidarity than this annual congregation from all states.

**How the System Began and Developed**

Most national policies originate in some individual Congressional action which serves as precedent for repetitions when similar conditions recur. Congress seldom plans. It deals in detached acts finding guidance in its own precedents, seldom seeking it in prevision.

The National Parks System was no exception. None of those concerned in the creation of Yellowstone in 1872 visioned the System to be created after
its model—or in fact any System. The oft-repeated tale of the birth of the "national park idea" during a semi-official expedition to prove adventurous explorers' tales about sprouting columns of boiling water and mountains roaring with internal fires is not tradition, but recorded history. It is true that, the day before starting home, the explorers seriously discussed apportioning these marvels among themselves, filing upon the land under the homestead laws, and growing rich out of the rush of sightseers; that a Montana lawyer dissuaded them, urging that this wonderland should be the possession of all the people forever; and that, upon emerging from the wilderness, some of them hastened to Helena and drew up the bill which created Yellowstone National Park and began the National Parks System.

The mountain in whose shadow this fateful determination was reached has been named National Park Mountain. The father of the National Park System was Christopher Hedges.

Eighteen years passed before the next National Park creation. The fact that three parks, Yosemite, Sequoia and General Grant, were then created practically together is significant. Those eighteen years had been the gestation period, and the creation of the three parks in 1890 constituted the Birth of the System. Within those intervening years the ideas and ideals planted by Yellowstone developed within the womb of national conception a creation which affects our intellectual and spiritual life to-day and
THE NATIONAL PARKS SYSTEM

has inspired similar ideas and systems in several other nations. Two events during this period stand out. One was ardent acceptance of the principle of complete National Park conservation following George Bird Grinnell’s winning of the “first Yellowstone War,” through which he secured from Congress after years of popular organization and demand laws forbidding hunting in the national park. Not only did this centre public attention upon a new idea, and consolidate public opinion concerning National Park conservation, but it also inspired the immense nation-wide wild life conservation of later years. The other was recognition of the fact that is so clear to-day that natural beauty of supreme quality is essentially a national possession. Yosemite, which the national government had presented to California in 1862, returned in 1890 as a National Park to record nobly the new conception and confirm Yellowstone.

Mount Rainier and Crater Lake National Parks, which followed in 1899 and 1902 respectively, were products of the conception at full tide. It is significant that other ice-clad volcanoes in the Cascades, spectacles of remarkable grandeur which could have become National Parks under conditions then existing, were rejected upon selection of Mount Rainier. The pure public opinion of this current near its source would have none in the System but the one noblest of each kind.

That the next two years brought into the Sys-
tem three units, Wind Cave, Platt, and Sully's Hill, which were so absurdly small and out of key with the fundamental idea as to be manifest blunders, cannot be ascribed for a moment to change of public attitude. The public knew nothing of these products of local vanity and politics. Congress knew no more about them than it does of half the bills it passes at every session—which is nothing. The system had no watchers, yet, for its protection, and its standards were still undefined in phrase.

Mesa Verde followed in 1906 and Glacier in 1910, both backed by enthusiastic public opinion.

During these first forty-four years of park making, people valued National Parks principally for their scenery, and the System, as it grew in richness, variety and perfect example aroused ever increasing enthusiasm. People visited their parks with serious purpose, often at much expense of time and effort (they were not so accessible as now), in much the same spirit in which some of them also crossed the ocean to see the Alps, the fiords of Norway and the Himalayas. Travellers came here from abroad. Artists immortalized them. A world literature developed. Except for a few spots in Switzerland, few localities anywhere inspired notice so distinguished.

In this period's later years, popular organization to conserve forests, game, native birds and animals, wild flowers, and historic and prehistoric relics everywhere attained nationwide influence, and innumerable other clubs, societies and leagues of clubs
operating for far different purposes had also their conservation committees. Among the thinkers and workers for conservation, hundreds of thousands in number, National Parks, because preserving majestic wildernesses in original unmodified condition, acquired great fame. They were recognized as the outposts of the swelling conservation movement, preserving in original record the plant and life forms of this country as our forefathers had found it.

This was the precious possession which the Interior Department was now to develop. Undertaking to prepare the Californian National Parks for the Pacific Exposition of 1915, Stephen T. Mather brought with him from Chicago his dream of a system so developed as to lead the world. There was nothing to inform the little group he gathered round him, of which I was one, that the automobile was about to change the out-door conditions of all America. Studying the park creations of the past for the plannings of the future, these men had no hint that a period had reached its fulness, that another, charged with change and conflict, was at hand.

National Parks had been created individually without special reference to each other, and up to that time had been administered in a group of unrelated entities including freedmen’s institutions and other unclassified federal units. It was inevitable that they should be correlated and handled as a system. A separate bureau was created in 1916, and became operative the year following, with Mr. Mather as Director.
The first annual report of the new park administration in 1916 ranked National Park purposes as "the stimulation of national patriotism" and "the fostering of knowledge and health." So far, recreation had not figured as a principal National Park function. It was the beginning of the "see America first" promotion, and the report stressed National Parks as a factor in holding travel at home, but cautioned that "the fostering of recreation purely as such is more properly the function of the city, county and state parks, and there should be a clear distinction between the character of such parks and National Parks." It also differentiated National Parks from National Forests. There was never a doubt in the minds of this first administration of the precise nature of the National Parks System and its marked distinction from every other land system in the country. That an official definition of what the country was so absolutely agreed upon should ever be demanded occurred to none of us.

Probably the first official attempt at definition came from Secretary of Agriculture Houston in his annual report of 1916. "A National Park," he said, "should be created only where there are features of such outstanding importance for beauty as well as for natural marvels that they merit national recognition and protection."

Secretary of the Interior Franklin K. Lane, official custodian of the National Parks System, was far more explicit in his policy statement of May 13, 1918, addressed to the Director.
"In studying new park projects," he said, "you should seek to find scenery of supreme and distinct quality, or some natural feature so extraordinary or unique as to be of national interest and importance. You should seek distinguished examples of typical forms of world architecture. The National Parks System as now constituted should not be lowered in standard, dignity and prestige by the inclusion of areas which express in less than the highest terms the particular class or kind of exhibit which they represent."

That this principle has inspired the government to the present time, outliving the intermediate touring tidal wave and in face of the preaching of double standards by recreational enthusiasts anxious to extend parks under federal control and upkeep into the East, is noted in a letter written January 24, 1924, by Secretary Hubert Work to Senator Fletcher of Florida defining National Parks in some part in identical phrases used by Secretary Lane eight years before.

In furtherance of his National Park policy, Secretary Work said, in a letter to the writer dated October 25, 1925, for which he suggested publication:

"Municipal and State Parks and National Forests together offer outdoor opportunities in countless numbers, and easily accessible. The Government finds itself duplicating these areas down to the smallest picnic park. We have gotten away from the fundamental principle that the Government
should do nothing an individual municipality or State can do for itself, and we are competing in little things, benumbing public spirit and thwarting local pride of possession and development."

Herbert Hoover has contributed to the governmental expression of National Park standards a phrase fast becoming famous.

"My own thought," he said to the National Conference on Outdoor Recreation in December 1925, "is that the National Parks—the parks within the responsibility of the Federal Government—should be those of outstanding scientific and spiritual appeal, those that are unique in their stimulation and inspiration."

"The national park system of the United States," wrote Stephen T. Mather, Director of the National Park Service, in November, 1927, "is unique both in its scenic exhibits and in the exceedingly high standards by which each candidate for admission to the system is judged. As now constituted, it is made up of areas of incomparable scenic grandeur. Each of the major national parks was selected for parkhood because of some distinctive feature, either scenic or prehistoric, which is of national importance and interest. Under the policy governing the establishment of national parks, only one area of a particular type is considered for inclusion in the system, and each area selected must represent the highest example of its particular type.

"The scenic supremacy of an area alone is not sufficient to gain it admission into the national park
system. It must also be susceptible of whatever development is necessary to make it available for use by the millions of park visitors who may care to use it, without injuring in any way the extraordinary natural features which, under the expressed command of Congress, the National Park Service is to preserve 'unimpaired for the enjoyment of future generations.'

"Areas whose principal qualification is adaptability for recreational uses are not, of course, of national park caliber.

"Proposed parks are measured by the standards set by the major national parks of the system; hence the requirements are exacting. As long as these standards shall prevail there is no danger of too many national parks being established, or of the excellence of the present system being lowered."

It will be useful here to supplement these expressions of federal conception with others showing the popular conception of to-day. No other division of the Federal Lands has aroused such interest among the people of the present as our National Parks. The temper of the times sharply distinguishes between the type of area to be included in future additions, if any, to the National Parks System, and the types which belong naturally to State Park and other principally recreational systems.

On May 24, 1924, the National Conference on Outdoor Recreation, after thorough discussion, passed the following:

Resolved, 1. That the Conference express its
approval of the historic and popular belief that the National Parks System consists of permanent national reservations protecting inviolate those wonderful or unique areas of our country which are museums representing the scenery and principal natural features of the United States available in our great heritage of animate and inanimate nature;

2. That these Parks must be protected completely from all economic use; that their scenic qualities should represent features of national importance as distinguished from those of sectional or local significance and that they must be preserved in a condition of unmodified nature;

3. That laws should be provided which will furnish an administration as nearly uniform as possible throughout the National Parks System.

The American Association for the Advancement of Science, much the largest and most progressive scientific body in the world, has issued a series of National Park resolutions covering a number of years, the latest of which, passed by the Council December, 1925, follows:

"Resolved, That the American Association for the Advancement of Science recognizes the National Parks as the means of preserving unique representations of the primitive and majestic in nature, and wishes to record its protests against additions to the National Park System, or change in policy, which may tend to lessen in fact or in public estimation their present high value as natural museums, their
complete conservation from industrial uses, and their effectiveness as a national educational institution.”

The National Chamber of Commerce passed the following resolution on May 13, 1926:

“The Chamber of Commerce of the United States has earlier expressed its interest in the creation of national parks. It believes the primary responsibility of the federal government in the establishment or maintenance of national parks is to preserve those features of our landscape where, in sufficiently large areas, the scenery is so unusually beautiful and is so characteristic of its kind, and where consequently it has so great an educational or other value, that it may be considered a heritage of the whole nation rather than a recreational facility for the inhabitants of adjacent territory.

“The primary responsibility for supplying recreational facilities for the people of states and municipalities lies with the States and municipalities themselves.”

The Directors of the General Federation of Women’s Clubs, representing more than two million women organized in every state, passed the following resolutions in January, 1924:

Whereas, The Conservation and Scenic standards of our National Parks System have been maintained by the United States Government for more than half a century to the enjoyment, education and inspiration of the American People and the wide propagation of patriotic pride; and
Whereas, Both its conservation and scenic standards have been continuously attacked in Congress during the last four years by interests seeking the ruin of national values for local advantage; and

Whereas, The General Federation of Women's Clubs has promoted for many years the development and higher uses of our National Parks, and has ardently defended them from debasement; therefore, be it

Resolved, That the Federation reaffirm its steadfast purpose to continue working for the preservation of the System's ideals, pressing untiringly for the correction and perfection of its protective laws, until Congress definitely recognizes the National Parks System as a beneficent national institution whose conservation and highest standards must by no means be imperiled, but maintained for the Nation's benefit for all time.

In 1926, the Conservation Council of Chicago, then representing forty-six organizations of diversified civic interests, expressed itself in the following resolution:

"The Conservation Council of Chicago sees the National Parks System as a national institution of untold importance to the education, as well as to the health, recreation and spiritual inspiration, of the American people. It should be conceived, not merely as a better system of playgrounds in a nation and age of playgrounds, but also as our Super-University of Nature, in which Nature herself, in her lofti-
est manifestations of unique scenery and primitive life, is the supreme teacher.”

Scores of others upholding National Park ideals could be cited; these present a sufficiently wide range of representative sentiment.

Meantime, park making in completion of the System was continuing. Rocky Mountain, Hawaii, Mount McKinley, Grand Canyon, Zion and the rest, were created between 1915 and 1919.

Meantime, the touring automobile arrived unannounced, bringing extraordinary new conditions and perilous problems, changing all things. Meantime organized industry, alarmed for water sources, fought cunningly and powerfully for privileges in national parks which she conceived her own. And local interest, suddenly aroused to opportunity and blind to all but community profit, eagerly extended grasping hands. It proved a kaleidoscopic decade filled with emergencies which puzzled at first the amateur defenders in Congress of the national ideal. The motives behind cunningly devised bills which skilful companies introduced and skilful politicians handled all became clear in time, however, and all these bills were defeated.

Of this absorbing story, more later. There remains unsettled at this writing the grand campaign to force eastern parks irrespective of standards into the System. Out of it has developed one of magnificent scenic quality containing a great area of splendid primitive forest. To purchase the lands for
Great Smoky National Park, ten million dollars are now provided, made up of local private subscriptions, plus legislative appropriations by the states of North Carolina and Tennessee, balanced by a Rockefeller gift of equal size. Saving for posterity so large an area untouched of the finest original forest of the East is one of the greatest achievements of the National Park System or of the age we live in.

Whether one or both of two other areas authorized by Congress at the same time, the Shenandoah region of the Blue Ridge Mountains in Virginia and the Mammoth Cave in Kentucky, shall also be acquired by purchase depends on the next several years. Both would make excellent State Parks, and Mammoth Cave would probably also make a good National Monument.

The Educational Period

The National Park educational movement of today may be said to have begun when effort was exerted consciously toward systematic development, but in reality National Parks have been very practically educational and inspirational from their start. Early in the seventies, discussions in the daily, weekly and monthly press of the causes and mechanism of Yellowstone's geysers, hot springs and mud volcanoes attracted wide public attention to natural phenomena. Later, the Hayden survey by the United
States Geological Survey very greatly increased both popular and scientific knowledge.

Similarly, forty years of speculation and theories, widely commented on, preceded the recent solution, by Francois E. Matthes of the United States Geological Survey, of the remarkable geologic history of the Yosemite Valley; and the Grand Canyon, Rocky Mountain, and Glacier regions were advancing popular education long before they became national parks. The writings of John Muir and other naturalists, professional and amateur, attracted nation-wide attention. Among investigators of the United States Geological Survey, the writings of Dutton and others in the seventies, and of Matthes, Campbell, Alden, Lee and others in later years, not to mention many connected with state and private universities and institutions of research, had their distinct influence toward popularizing the real mission of the National Parks.

No doubt National Parks were used as classrooms by individual teachers and universities many years ago. Probably the University of California was the first, or among the first, to take advantage of near-by opportunities. In 1915 Director Stephen T. Mather and I found Dr. Lenertz, then of the University of Minnesota, piloting a class in geology on a study tramp through Glacier National Park, the third or fourth of an annual series. Small classes from the University of Utah visited the Zion Canyon before it became a National Park. Doubt-
less there were many others. A little later began the practice of Boy Scout expeditions under supervision of naturalists. National Park regions had long been the subject of popular lectures by scientific observers.

The first movement toward formal educational organization of which I have heard began in the National Park Service of the Interior Department in 1916 with the writer in charge under title of Chief of the Educational Section; but it failed for lack of public and official comprehension and co-operation. The idea was altogether new. This was succeeded by organization of a National Park Educational Committee, of which the late Dr. Charles D. Walcott was chairman, which, after nearly a year's correspondence with educators in many states, resolved itself, in May 1919, into the present National Parks Association under executive management of the writer of this book.

The Association's educational activities were promotive. It sought to interest educators, schools, universities, associations and learned societies in the National Parks System as an educational institution, and to bring about co-operative activity of a practical kind. The first year's work appeared to be wholly fruitless of result. Many individuals became interested, especially scientists, but no university except Columbia; and no formal step of any kind, however small, resulted. When, early in 1920, the Association was compelled to drop its educational pro-
From a photograph by J. V. Lloyd

NATURE GUIDE CLASS IN YOSEMITE NATIONAL PARK
From a photograph by Thompson Brothers

HUGGINS HELL, GREAT SMOKY NATIONAL PARK
gramme to lead the defense of National Park conservation attacked in Congress, it mourned what it thought was indefinite postponement of its purpose. But, as seen in perspective later, the "war" that followed, by nation-wide advertisement of the reasons for defending the System, launched and developed the educational cause, leading to the later organized activity as nothing else could have done. Here and there seeds rooted in widely separated localities, from which activities have spread.

One of the first practical results was organization of a volunteer nature guide service in Yosemite National Park which since has become a formal government activity spreading into other National Parks. At this writing we see under government salary Park Naturalists in several National Parks, several rangers on whole or part time, and a Chief Park Naturalist. The work is supplemented by volunteer and privately salaried workers during the summer, and an excellent outdoor school for teachers and specialists is maintained under private support in Yosemite.

Congress yields very slowly to popular demand for financial support of other than concrete recreational development and administration. For equipping National Parks "for recreation," it inconsistently appropriates nearly a dollar a year per national park visitor, including passing motorists, while appropriating only a small fraction of a cent per visitor for the same service in National Forests.
For education, it allows a small fraction of a mill per visitor in National Parks and nothing in other reservations.

Developing as it has from small local beginnings, without survey or prevision of the field, the government educational service in the National Parks perhaps fails to place sufficient emphasis on the fundamental Story of Creation, of which our System as a whole is by far the greatest organized exponent that the world possesses. It is natural, from the sources of its beginnings and the circumstances of its development, that this work should largely confine itself to existing wild life. "That is what interests the people who come here," explained a Park Naturalist. "The whole crowd will rush off from a lecture on geology to follow some small animal, and women constantly interrupt to know the names of wild-flowers." One answer is that national parks are not places for "lectures on geology." If experienced teachers will dramatize the Story of Creation in words as Nature has herself dramatized it in scenery, they will have no lack of enthralled listeners. Another answer is comparison of the minute place that the wild life of to-day occupies in the picture of wild life from its beginnings which Nature has painted so boldly and fascinatingly on the System's great canvas.

Another educational movement of interest and importance, inspired by the need of better museums in the parks than those built and conducted by rang-
ers of their own initiative and without appropriation, resulted in 1925 in the building, by a special committee of the American Association of Museums, of an admirable modern museum in Yosemite National Park. This will have achieved its purpose when it inspires Congress to erect museums of equal quality throughout the system.

Another long step forward was the designing, by Dr. John C. Merriam in 1926, and erecting on the brink of Yavapai Point in 1928, an exhibit to interpret the story of the progress of life disclosed in the Grand Canyon. Striding far forward in outdoor education, destined to inform and inspire all future methods under which our Super-University of Nature will be developed, the exhibit at Yavapai Point appropriately represents a wide co-operation. Planned under the National Parks Association’s Advisory Board on Educational and Inspirational Uses of National Parks and constructed by a special committee of the National Academy of Sciences, it was appropriately housed by the same committee of the American Association of Museums which built the Yosemite Museum. The same committee also plans similar buildings in Yellowstone and elsewhere.

Still another long stride forward was the appointment by Secretary Work of five educational advisers to visit the Parks under a Rockefeller appropriation and make individual suggestions to Director Mather.
THE DECADE OF STRUGGLE

The story of the decade of reaction beginning in 1920 which tested public acceptance of park standards from every view-point will some day need a book of its own. Its merest outline only can here be sketched. Target of profit seekers by every method of attack known in Congress, the System exists today only because devoted citizens, combined in an informal league of defense throughout the nation, protest unceasingly.

The invasions fall into these classes:

1. The Industrial Invasion began in 1819 with an attempt to plant an irrigation reservoir within Yellowstone National Park. Attempts also to dam Yellowstone Lake for irrigation, to force water power into a Sierra area designed for park inclusion, and to force into the System the precedent of a New Mexican area violating National Park principles in every possible respect, were the features of a bit- terly-fought struggle in Congress which was finally concluded in 1926 by public acknowledgment of defeat by the interests and their cessation of hostile acts. Since then, industrial interests have sought, instead, to cut reservoirs out of park boundaries—which makes a fair public issue in which each side may rest safely upon its merits.

2. The Local Profit Invasion, turned back in the Far West, now swarming up from the Southeast
with enormous energy. Assuming that an area of any scenic quality at any distance from tourist pleasure routes would draw extensive motor patronage if called a National Park, and seeking development and upkeep for local parks at national expense, localities in many states have pressed demands continually upon Congress for national parks at home. Some offered to buy and give property to the nation, others have demanded that neighboring national forests should be turned into national parks. As we go to press a movement develops to eliminate the protective control of the Secretary of the Interior.

3. The Automobile Invasion began when continent-wide motor touring reached national parks about 1916. Ignorant of park conceptions and standards, eager to view the wonders of American scenery, eager especially to see their newly accessible West, the rushing hordes of the wheel were kept from trampling out of existence the precious irreplaceable quality of the primitive only by their need to hold the road. There has been found a solution to this problem. Through government limitation of national park roads the people may control this innocent, amiable, overgrown, ungovernable agency of dire destruction. By concentrating the crowd in chosen centres within the parks, a unique American Institution may be preserved for posterity.

A more interesting situation for the student of the times than this triple invasion, to say nothing of its importance to people and nation, has rarely of-
ferred. We participate literally in a contest between localism and national idealism for the sake of a priceless irreplaceable national possession. Let us look at the struggle more closely.

**Commercialism Definitely Ruled Out**

Several years before the storm broke, a fight to save Hetch Hetchy Valley in Yosemite National Park from damming had been lost through failure of the straggling defense to organize. Later, as the great dam rose slowly, it dawned upon the country that it had been camouflaged water power for profit, not city water for San Francisco, as had been claimed in Congress, which had won this notable triumph.

So when, in 1920, a bill to dam an obscure valley in Yellowstone National Park slipped quietly through Senate into House, when the new Federal Power Act was found deputing rights to a commission to issue water power leases in National Parks without reference to Congress, and a bill in the Senate asked authority to dam Yellowstone Lake, no time was lost in organizing the country to meet the grave emergency which it was plain faced the National Parks System.

Investigation showed all a part of a single programme. Three chances with need to secure only one precedent! To meet the skilled professional business and political players of the game in Congress,
the amateur defenders called upon the people of the country. It took years to defeat them but we did it. The Federal Power bill gave us the closest shave of all and left its scar behind.

Here is the story:

A couple of days before adjournment in late May, 1920, this famous measure which has done so much since for the West emerged from conference, passed both Houses in final compromised shape, and went to President Wilson for signature. On the very last day of the session, the writer discovered that it specifically turned National Parks and Monuments over to the new Federal Power Commission with authority to grant water power leases within them all at will.

Instant action was necessary. The National Parks Association telegraphed the news to public-spirited men and organizations in every part of the country, and, before the fall of the gavel closed the session, the President was deluged with telegrams urging that he withhold signature until National Parks should be stricken from the text. Secretary of the Interior John Barton Payne laid the situation in full before the President, who refused to sign, a courageous act at the beginning of a Presidential campaign summer.

Adjournment of Congress without effectuating the Federal Power Act provoked instantly a tremendous protest from western states. Senator Jones of Washington, Republican, and Senator Walsh of
Montana, Democrat, led a delegation to Secretary Payne urging that a way should still be found, although constitutionally too late, for the President's signature. To this appeal the President yielded upon assurances of leaders of both parties in both Houses that a bill would be pushed at the next session to cut National Parks out of the act. A precedent for delayed signature was dug up in the archives, and the otherwise beneficent water power act began its great career.

But lost ground was not wholly recovered in the following session. When the promised bill to restore National Parks to sole authority of Congress came before the House the following January, a representative of five far-western power companies moved that its authority should be limited to parks already in existence. Otherwise, he threatened, the bill itself would not pass. Rather than subject all National Parks to further risk so great, the government yielded, and to this day each new National Park is subject to authority of the Federal Power Commission unless its creative act shall have specifically excepted it therefrom.

The companies' reason for wanting this exception was to hold subject to their future grasp the two tremendous Sierran Canyons of the Kings River in the event of their some day being added to a National Park. The struggle lasted, on the part of the Park Service to include these valleys in the proposed Roosevelt-Sequoia National Park, and on the part of
the City of Los Angeles (representing the power interests) to make them subject to power in National Parks, until 1926, when compromise resulted in passage of a Greater Sequoia bill which omitted the Kings country. The battle was drawn. The Valleys of the Kings remain where they were in the Sierra National Forest, still safe from power use; but not tied up forever as they would be in a National Park. Year by year they will establish more surely in the public mind their manifest destiny. Whether administered by the Forest Service or transferred to the National Park Service, these valleys are as certainly lost to water power as though a National Park.

In all the other contests of these strenuous years involving power or irrigation inclusion within National Parks, whether fought in Congress or in the several western states where not infrequently the tide of battle passed, the cause of national policy triumphed consistently over reactionary localism. No Bechler Basin dam was authorized within Yellowstone National Park. Four years of campaigning failed to get one of Senator Thomas B. Walsh's bills to dam Yellowstone Lake even out of Senate committee. A National Park spotted around in a desert and an Indian Reservation, including every possible violation of national standards, was not created at Secretary Fall's demand in New Mexico. An absurd little National Park was not perched like a jockey cap on the peak of a Virginia moun-
tain. No damaging precedent was established. On the contrary, the people's will that National Parks should continue exempt from industrial uses was publicly registered. The system had passed its test.

Ruling Out the Unfit

Concurrently with this struggle, overlapping it at both ends, demands were made in Congress for creation of local National Parks without any consideration of quality or standards. These had swarmed in from the West as far back as 1916. Pacific coast communities were specially anxious to have their own home Yosemites for the profit which visiting motorists would bring their farms and shops. It was not difficult to shelve these bills then because Yosemite wasn't so profitable to its neighborhood as now, the motor touring tide being in its earliest flood. That it would oversweep the coast from Seattle to Los Angeles was not at that time, fortunately, foreseen. To-day, when it does, new National Parks are no longer believed necessary on the coast because it has become apparent that it is the West itself, not its National Parks, that brings the profit-bearing crowds. In the Southeast, where the fallacy still prevails that the name National Park even unaccompanied by the extraordinary magnificence which it connotes will lure prosperous travel, this demand continues. When that fallacy shall dissipate, the System's last grave danger will pass.

Of the lengths to which politics will go in cater-
ing to real or imagined local interest, the story of Mammoth Cave is eloquent. An advisory commission appointed to report the best National Park available in the southern Appalachians had chosen Great Smoky, had then shifted to Shenandoah because of its nearness to Washington, and finally, after the bill was filed, had agreed to add Great Smoky, making two choices instead of one. It declined at that time to add Mammoth Cave in spite of the urging of local interests.

When, in the spring of 1926, the Temple bill to authorize Great Smoky and Shenandoah approached passage, Mammoth Cave demands were renewed, but the attempt to write it into the bill with the others was refused. Claiming that its authorization was necessary to the re-election of a United States Senator whose term was expiring, and threatening to block the Temple bill unless it also should pass, its backers forced a belated recommendation from the advisory commission. With this, on the eve of a Congressional election in which control of the Senate was in doubt, Mammoth Cave was authorized without approval of the Secretary of the Interior, and without any official of the National Park Service having even seen it.

From this may be predicted with certainty what the fate of our National Parks System would be with amateur advisers in the field and national politics directing its course. National Parks can only be safely chosen by the permanent, respon-
sible, professional National Park Service. At this writing, by the way, the Kentucky boomers have not raised the two and a half millions to avail of the authorization.

A logical descendant of the Mammoth Cave bill appeared in February, 1928 (preceding another election) in a demand from Arkansas to turn excellent Mena National Forest into an under-class National Park (to be called Ouichita National Park) in opposition to the Secretaries of Agriculture and Interior and the chiefs of both the National Forest and National Parks Systems. Bills of this destructive kind, products of localism and ignorance, will continue to appear at intervals, but when the standards of the System shall become recognized as a tradition, even if unwritten in the law, the parks will have their final test.

THE TRUTH ABOUT PARK PATRONAGE

The third great danger to the National Parks System during this decade came from sudden crowding from 1915 on as a result of development of nation-wide motor touring.

Park patronage totals follow: 1912, 229,084; 1913, 259,703; 1914, 235,293; 1915, 344,799; 1916, 356,079; 1917, 488,268; 1918, 451,661; 1919, 755,325; 1920, 919,504; 1921, 1,007,335; 1922, 1,044,502; 1923, 1,280,886; 1924, 1,422,353; 1925, 1,760,512; 1926, 1,930,865; and 1927, 2,354,643.

With announcement of Mr. Mather’s plans for
system development in 1915, the press suddenly discovered that such a system existed, and embarked upon a period of exploitation of the country's unrealized scenic supremacy that lasted several years. No doubt the new public keenness for long distance motor touring helped maintain publicity at fever heat. From newspapers the chorus spread to magazines, especially those devoted to motoring, and to the lecture platform.

With every publicity medium in the country suddenly sounding the System's praises, and motion pictures displaying park scenes and explorations nightly the country over, it is not surprising that we in the Service then thought park popularity the cause of western motor touring. For several years this idea was general East and West and of frequent comment in the newspapers. Now we know it was the other way about, that the day of touring had arrived concurrently with park advertisement, and that other western country was concurrently over-run, as it still is, in far greater measure even than our parks. No doubt much western travel was hastened, in those first years, by public desire to see much-praised scenery. No doubt the parks centred and colored to some extent eastern desire for the West, hastening visitation by both rail and motor. Advertising so spontaneous, so laudatory, so persistent, could not but produce prompt results. National Parks became the "national craze" in the fullest sense of the word, and remained so at full tide as
long at least as any other of the greatest crazes of recent years.

It was not until the craze phase of the public interest gave way that vision became possible, and not until motor touring facts outside the parks created perspectives, that the truth began dimly to emerge. The fact that pleasure patronage of the National Forests increased in even greater proportion during the same years was the first observation disturbing to our comfortable early theories. It has not been till very recently that analysis has shown that the new and sudden passion for motor touring found its objective in its early days, not principally in the parks or even the forests, but in the West, of which the parks were but one exhibit of very many. What was the Yosemite to San Francisco or Sequoia to Los Angeles as a touring attraction?

Among the many lures which have swept the East awheel into the West, and which to-day fill the entire West with visitors, the greatest no doubt is the very pleasure of motoring over fine roads through inspiring famous country. The fact that most recorded park increases include as park visitors many thousands of touring motorists who merely stop for a meal or a glance is eloquent. The fact that sudden great permanent jumps in patronage, like Yosemite's in 1927, follow building of better motor roads is full of meaning.

It must be understood, also, that the full range of increases quoted above are not for identical areas.
During the same decade six new National Parks, Hawaii, Lassen Volcanic, Mount McKinley, Grand Canyon, Lafayette, and Zion, have been added to the System, and their initial and increasing attendances are merged into the totals. These new fountains of patronage, for example, account for 8,000 of the total in 1917, 2,000 in 1918, 114,245 in 1919, 139,307 in 1920, 166,329 in 1921, 200,045 in 1922, 223,458 in 1923, 253,056 in 1924, 301,500 in 1925, 317,544 in 1926, and more than 400,000 in 1927.

The totals therefore cannot be understood to represent increase either in park popularity or in motor touring. If we assume, for example, that attendance in all National Parks should decrease, the totals for the System nevertheless might still increase annually provided that meantime enough recreational areas of established patronage should be added to more than offset losses. To predict such an occurrence would, of course, be absurd, but the point is worth making to warn us of the danger of inferring much from unanalyzed statistics.

It should be understood also that these increases include figures for several parks which differ so widely from standard parks as to make inclusion misleading. Hot Springs, for example, draws patronage for its bath houses. Platt, acting as city park to the adjoining city of Sulphur, draws incidental crowds wholly uncharacteristic. Wind Cave is the picnic terminal for a great surrounding country of farms.
Let us look at recent figures in detail.

<table>
<thead>
<tr>
<th>NAME OF PARK</th>
<th>1924</th>
<th>1925</th>
<th>1926</th>
<th>1927</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowstone, Wyoming</td>
<td>144,158</td>
<td>154,282</td>
<td>187,807</td>
<td>200,825</td>
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<tr>
<td>Sequoia, California</td>
<td>34,468</td>
<td>46,677</td>
<td>89,404</td>
<td>100,684</td>
</tr>
<tr>
<td>Yosemite, California</td>
<td>105,894</td>
<td>209,166</td>
<td>274,209</td>
<td>490,430</td>
</tr>
<tr>
<td>General Grant, California</td>
<td>35,020</td>
<td>40,517</td>
<td>50,597</td>
<td>47,996</td>
</tr>
<tr>
<td>Mount Rainier, Washington</td>
<td>161,473</td>
<td>173,004</td>
<td>161,795</td>
<td>200,051</td>
</tr>
<tr>
<td>Crater Lake, Oregon</td>
<td>64,312</td>
<td>65,018</td>
<td>86,019</td>
<td>82,354</td>
</tr>
<tr>
<td>Wind Cave, South Dakota</td>
<td>52,166</td>
<td>69,267</td>
<td>85,466</td>
<td>294,954</td>
</tr>
<tr>
<td>Platt, Oklahoma</td>
<td>134,874</td>
<td>143,380</td>
<td>124,284</td>
<td>81,023</td>
</tr>
<tr>
<td>Sully's Hill, North Dakota</td>
<td>8,035</td>
<td>9,183</td>
<td>19,921</td>
<td>22,632</td>
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<tr>
<td>Mesa Verde, Colorado</td>
<td>7,109</td>
<td>9,436</td>
<td>11,356</td>
<td>11,915</td>
</tr>
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<td>Glacier, Montana</td>
<td>33,372</td>
<td>40,063</td>
<td>37,235</td>
<td>41,745</td>
</tr>
<tr>
<td>Rocky Mountain, Colorado</td>
<td>224,211</td>
<td>233,912</td>
<td>225,027</td>
<td>229,862</td>
</tr>
<tr>
<td>Hawaii, Territory of Hawaii</td>
<td>52,110</td>
<td>64,155</td>
<td>35,000</td>
<td>37,551</td>
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<tr>
<td>Hot Springs, Arkansas</td>
<td>164,175</td>
<td>205,500</td>
<td>260,000</td>
<td>181,523</td>
</tr>
<tr>
<td>Lassen Volcanic, California</td>
<td>12,500</td>
<td>12,596</td>
<td>18,739</td>
<td>20,089</td>
</tr>
<tr>
<td>Mount McKinley, Alaska</td>
<td>62</td>
<td>206</td>
<td>533</td>
<td>651</td>
</tr>
<tr>
<td>Grand Canyon, Arizona</td>
<td>108,256</td>
<td>134,953</td>
<td>140,252</td>
<td>162,356</td>
</tr>
<tr>
<td>Lafayette, Maine</td>
<td>71,758</td>
<td>73,673</td>
<td>101,256</td>
<td>123,699</td>
</tr>
<tr>
<td>Zion, Utah</td>
<td>8,400</td>
<td>16,817</td>
<td>21,964</td>
<td>24,303</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,422,353</td>
<td>1,760,512</td>
<td>1,930,865</td>
<td>2,354,643</td>
</tr>
</tbody>
</table>

Another fact interfering with safe inference from the government's statistics is that nearness of large permanent populations to several National Parks brings numerous visits a year from the same individuals, each of which necessarily is counted each time at the gateways. Another lies in the habit of most touring motorists of visiting several National Parks on the same journey, in each of which they are counted anew in the totals.

Totals, therefore, mean little in terms of individuals visiting the System. By how many the 2,354,643 visitations to all National Parks in 1927 should be reduced so that we may approximate the number of individual visitors, there are no observed ratios to apply.
Sequoia’s jump from 46,677 in 1925 to 89,404 in 1926, exceeding 91 per cent, followed the completion of a better surfaced entrance from the California state highway system, luring the lover of the road. The completion, late in the season, of the new “all year road” into Yosemite jumped the year’s patronage from 209,166 in 1925 to 274,209 in 1926, or 31 per cent, and to 490,430 in 1927 or 58 per cent more. There was this significant difference, however, that Yosemite’s increase was largely week-end local visitation from San Francisco and neighborhood cities, attracted by the fine roads in and the day-and-night pleasures of the Valley, while Sequoia’s new visitors found no resort entertainments to amuse them, but averaged longer visits. Thousands camped in the Giant Forest for weeks.

Little General Grant National Park’s patronage for the same year averaged 22,400 persons for each of its four square miles of area. Completion of the road connecting General Grant on a circle drive with the Giant Forest in near-by Sequoia National Park settles its future for all time as a day, week-end, and camping-out resort for southern California residents. It will be the turning point of Los Angeles’s local motor runs, as Yosemite has become the turning point of San Francisco’s. Both lose national character and prestige.

The fact that Lassen Volcanic Park had, in 1927, only twenty thousand visitors, we conceive to be wholly due to poorer road connections with the
superlative tourist highway system of the Pacific Coast. Whenever motorists on tour can glide to it over perfect surfacing and find facilities for a comfortable night’s rest before gliding back to the main highways, no doubt we shall hear that Lassen, also, is attracting visitors by very many thousands annually. Much will depend on the quality and rates of its hotels.

The future of Crater Lake appears settled by its loop road, which also touches beautiful Klamath Lake. The great majority of its “visitors” are touring motorists who give it an admiring glance in passing. Still farther north, in Washington, Mount Rainier National Park remains one of the grandest wildernesses in the continent, with Paradise Valley, south of the mountain, its only point of concentration. Extensive road plans to open up the entire west side and penetrate the park from the east suggest a future similar to the California parks. The ice-clad volcano is only forty miles from Tacoma and sixty from Seattle, both growing cities.

We must recognize the patent fact that the entire Pacific coast, under California’s leadership, has entered the resort business on a great scale as a major industry, and that its National Parks are merely one of many groups of advertised attractions. Were no National Parks created in its mountains, it is probable that its patronage from other states would not be less than now, and that its own inhabitants would be as persistent motorists.
From a photograph by Mile High Photographers

LOCH VALE AND TAYLOR GLACIER, ROCKY MOUNTAIN NATIONAL PARK
CHARACTERISTIC NATIONAL PARK MOTOR CAMP
Opposite Eagle Peak of the Tatoosh Range, Mount Rainier National Park
Not only because of the summer warmth of her valleys, suggesting escape, but as a natural result, perhaps, of tourist example and highway opportunity, California's restless permanent population has itself taken ardently to the wheel. Automobile licenses equal in number a third of her total population including babies. To these, and to the increased permanent population which is expected to follow the extensive advertising campaign now conducted throughout the country, the cool altitudes of the National Parks will offer irresistible attractions for repeated day and week-end runs.

If we are to comprehend conditions of National Park patronage in the Pacific states, and it is high time that we did, considerations such as these must engage our serious attention. We must understand that the records of immense park patronage are largely records of passers-by, dependent on the quality of the roads, and of neighborhood visitors out for pleasure. To what extent the Federal Treasury should finance new resorts for local patronage in any state is one of the questions of the day.

From this rapid touching of crowd conditions a decade after dawn of the automotive age, many interesting inferences may be drawn; and those personally not familiar with National Park conditions beyond the roads and points of concentration may easily foresee therein the certain doom of the System's precious primitive quality; but such a conclusion, I feel sure, is far from warranted. It is true
that the new conditions cannot be cured; motor touring doubtless is in its infancy. A million a season may camp week ends in "Yosemite City," or sweep in an endless procession of cars past the bowl of Crater Lake, stopping or not to look in, or swing around the double-eight in Yellowstone, or file through the Fall River gorge in the Rockies, without disturbing in the least the loveliness, purity and isolation of the surrounding fastnesses of mountain, forest, canyon, lake and river. On the contrary, I am sure that we should not want these unchangeable conditions changed, for the more who see these spectacles, even in this desultory modern way, the more there will be who benefit by impressions at least of their great gifts of revelation and inspiration.

But the very nature of the invasion carries with it the key to its control. Motorists are motorists. They can be concentrated because they refuse to be anything else. They stick by the road. They demand, on tour, the comforts of the road house and the public camp. Their travel schedules rarely can be disarranged. Limitation of roads within National Parks, then, is the ultimate solution. The 2,354,643 visitors recorded in 1927 averaged 201 to the square mile. With nineteen twentieths at least sticking fairly to the roads and camps, the use of the enormous outlying wilderness is seen to be trifling. Saving the precious, original, unmodified quality of these sanctuaries of nature for use of those who care enough for it to endure the pleasurable hardships of the trail becomes, therefore, feasible.
Of course, the parks must pay the cost of concentration by virtual destruction of the natural quality of the areas of concentration. The price is trifling in comparative acreage, but occasionally it is very costly in quality. The incomparable Yosemite Valley, to name the most distinguished example, is, since the opening of the new road, destined to be the most crowded always of them all. There is no help for that, now.

"As has been shown," reported the Joint Committee on Recreational Survey of Federal Lands in 1928, "the history of National Parks has established the national conception that their primary purpose is preservation of areas of extraordinary majesty and beauty in a condition of unmodified nature. In the main, not only the parks themselves, but the very character of the features which they represent, have established their own standards, but neither their purposes nor their standards have as yet been clearly defined in law. To those who hold that the historic standards of the National Parks must be maintained, a recently developed tendency to consider the parks primarily as popular playgrounds appears rightly to be a serious danger. If principles and standards are to be maintained, then playground use must be coordinated as secondary to these primary principles and objectives. And further expansion of the land area of the parks necessarily will be limited extremely.

"If, on the other hand, the tendency growing out of public clamor for outdoor playgrounds is permitted to set aside National Park principles and to substitute
a code of use which conceives them merely playgrounds, the whole problem of recreational development is put upon a vastly different plane. Under the latter conception, any Federal land not dedicated by law to other uses would qualify for National Park inclusion provided it possessed recreational possibilities. The expansion of the National Parks area would thereafter be almost unlimited, but it would be at the tragic sacrifice of the institutional character and inspiring public and national uses of the National Parks System. And the intricate question of where the responsibility of the Federal government to provide outdoor playgrounds begins and ends in relation to similar responsibilities on the part of states, counties, and municipalities becomes at once injected into the whole scheme of recreational development.

"Looking forward a hundred years into the future it must be obvious that no permanent and inclusive national programme of outdoor recreation can be formulated until the principles and objects of the National Parks System are clearly defined in law once for all. In the judgment of the committee this is one of the most immediate problems confronting the formulation of a national policy of outdoor recreation."

Thanks to the thousands of individuals and hundreds of organizations throughout the country which have come to the defense of the System attacked, and stuck to it through a series of years, the continued safety of the national ideal appears to me
at this writing eventually certain. A few more sharp resistances followed by years of watchfulness and public education should insure safety for all time. The work of the future, then, is realization of inspirational and educational possibilities. Toward this each may contribute his own part. It is a problem in national co-operation.

With few exceptions, those who hear while in the National Parks what this System really is, what its standards and purposes are, and what it means to the nation, rise enthusiastically to the splendid conception. They have discovered another and a glowing reason to be proud of their country. No less is this true of millions who have not seen and expect never to see their National Parks. As a National Institution embodying the grandeur of physical America, the inspiration of her great places, and the idealism of her people, it will have the enthusiastic support of all her people.
DURING the first years of the century tales constantly reached Washington of the looting of a great area of petrified trees in middle Arizona. Gorgeously colored trunks were being gathered by the wagon-load and shipped East by the car-load to make mantles, table-tops, and other embellishments for the homes of the rich. So beautiful was the material that prices grew higher and demand greater year by year. Some of this was semi-precious stone.

The land being ordinary Public Domain, no law could stop the taking; so John F. Lacey of Iowa, Chairman of the Public Lands Committee of the House and friend of Roosevelt, tried to protect the area by making it a National Park. Failing twice to secure passage, he wrote into the American Antiquities bill, then before his Committee for action and sure to pass, the following:

"Sec. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of
the United States to be National Monuments, and may reserve as a part thereof parcels of land, the limit of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected."

The American Antiquities bill was enacted in June, 1906, and later in the same year the Secretary of the Interior sent to the White House for Presidential signature proclamations covering four National Monuments, the first group of what afterward became a noble system. They were Devil Tower in Wyoming, El Morro in New Mexico, and Montezuma Castle and the already famous Petrified Forest in Arizona.

For several years thereafter, monument-making was rapid. In 1907, three were created, and in 1908 seven. Six were created the following year. Of these early twenty, eight were Agricultural Department monuments and twelve Interior Department monuments. The first War Department monument, Big Hole Battlefield in Montana, was made in 1910. The largest number in any one year was eight in 1924, of which five were War Department creations. None were made in 1912, 1920, 1921, 1926 and 1927. Including the early winter of 1928, in which this chapter is written, fifty-eight national monuments have been created, of which thirty-two are administered by the Interior Department, fifteen by the Agricultural Department, and eleven by the War Department.
<table>
<thead>
<tr>
<th>TITLE</th>
<th>LOCATION</th>
<th>DATE</th>
<th>AREA IN ACRES</th>
<th>CHARACTERISTICS</th>
<th>ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devil Tower</td>
<td>Wyoming</td>
<td>1906</td>
<td>1,152</td>
<td>Basaltic core of ancient volcano rising 1,200 feet</td>
<td>Interior.</td>
</tr>
<tr>
<td>Montezuma Castle</td>
<td>Arizona</td>
<td>1906</td>
<td>160</td>
<td>Prehistoric cliff dwelling in niche in vertical rock</td>
<td>Interior.</td>
</tr>
<tr>
<td>El Morro</td>
<td>New Mexico</td>
<td>1906</td>
<td>240</td>
<td>Inscriptions carved by early Spanish explorers</td>
<td>Interior.</td>
</tr>
<tr>
<td>Petrified Forest</td>
<td>Arizona</td>
<td>1906</td>
<td>25,625</td>
<td>Accumulations of colored petrified tree trunks</td>
<td>Interior.</td>
</tr>
<tr>
<td>Chaco Canyon</td>
<td>New Mexico</td>
<td>1907</td>
<td>20,625</td>
<td>Prehistoric cliff dwellings and communal houses</td>
<td>Agriculture.</td>
</tr>
<tr>
<td>Gila Cliff Dwellings</td>
<td>New Mexico</td>
<td>1907</td>
<td>160</td>
<td>Prehistoric cliff dwellings near Roosevelt Dam</td>
<td>Interior.</td>
</tr>
<tr>
<td>Tonto</td>
<td>Arizona</td>
<td>1907</td>
<td>640</td>
<td>Prehistoric cliff dwellings</td>
<td>Interior.</td>
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<tr>
<td>Muir Woods</td>
<td>California</td>
<td>1908</td>
<td>426</td>
<td>Fine grove of coast redwoods near San Francisco</td>
<td>Interior.</td>
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<tr>
<td>Pinnacles</td>
<td>California</td>
<td>1908</td>
<td>2,642</td>
<td>Spire-like rocks, 600 to 1,000 feet high</td>
<td>Interior.</td>
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<tr>
<td>Jewel Cave</td>
<td>South Dakota</td>
<td>1908</td>
<td>1,280</td>
<td>Limestone cave of great beauty</td>
<td>Agriculture.</td>
</tr>
<tr>
<td>Natural Bridges</td>
<td>Utah</td>
<td>1908</td>
<td>2,740</td>
<td>Three rock bridges of enormous size</td>
<td>Interior.</td>
</tr>
<tr>
<td>Lewis and Clark Cavern</td>
<td>Montana</td>
<td>1908</td>
<td>160</td>
<td>Limestone cave on route of Lewis and Clark expedition</td>
<td>Interior.</td>
</tr>
<tr>
<td>Tumacacori</td>
<td>Arizona</td>
<td>1908</td>
<td>10</td>
<td>Fantastically eroded volcanic area where Wheeler exploring party failed</td>
<td>Interior.</td>
</tr>
<tr>
<td>Wheeler</td>
<td>Colorado</td>
<td>1908</td>
<td>300</td>
<td>Lofty mountain region, home of the Olympus elk</td>
<td>Agriculture.</td>
</tr>
<tr>
<td>Mount Olympus</td>
<td>Washington</td>
<td>1909</td>
<td>299,370</td>
<td>Prehistoric cliff dwellings in good preservation</td>
<td>Interior.</td>
</tr>
<tr>
<td>Navajo</td>
<td>Arizona</td>
<td>1909</td>
<td>360</td>
<td>Large limestone caves of unknown extent</td>
<td>Agriculture.</td>
</tr>
<tr>
<td>Oregon Caves</td>
<td>Oregon</td>
<td>1909</td>
<td>480</td>
<td>Limestone cave Cody entrance to Yellowstone</td>
<td>Interior.</td>
</tr>
<tr>
<td>Gran Quivira</td>
<td>New Mexico</td>
<td>1909</td>
<td>560</td>
<td>Scene of massacre of Russians by Indians</td>
<td>Interior.</td>
</tr>
<tr>
<td>Sitka</td>
<td>Alaska</td>
<td>1909</td>
<td>57</td>
<td>One of the most majestic spectacles in the world. Marblely example of erosion</td>
<td>Interior.</td>
</tr>
<tr>
<td>Rainbow Bridge</td>
<td>Utah</td>
<td>1910</td>
<td>160</td>
<td>Nez Perce Indians were defeated in 1877</td>
<td>War.</td>
</tr>
<tr>
<td>Big Hole Battle Field</td>
<td>Montana</td>
<td>1910</td>
<td>5</td>
<td>Remarkable examples of erosion. Lofty monoliths.</td>
<td>Interior.</td>
</tr>
<tr>
<td>Colorado</td>
<td>Colorado</td>
<td>1911</td>
<td>13,883</td>
<td>Spectacular mass of basaltic columns</td>
<td>Agriculture.</td>
</tr>
<tr>
<td>Devil Postpile</td>
<td>California</td>
<td>1911</td>
<td>800</td>
<td>Headland where Pacific Coast first sighted; 1542</td>
<td>War.</td>
</tr>
<tr>
<td>Cabrillo</td>
<td>California</td>
<td>1913</td>
<td>1</td>
<td>Illustrating varied desert flora</td>
<td>Interior.</td>
</tr>
<tr>
<td>Papago Saguaro</td>
<td>Arizona</td>
<td>1914</td>
<td>1,940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Monument</td>
<td>State</td>
<td>Year</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinosaur</td>
<td>Utah</td>
<td>1915</td>
<td>Extraordinary deposits of fossil animal life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnut Canyon</td>
<td>Arizona</td>
<td>1915</td>
<td>Many prehistoric cliff dwellings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bandelier</td>
<td>New Mexico</td>
<td>1916</td>
<td>Cliff dwellings; pueblos; a fine exhibit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capulin Mountain</td>
<td>New Mexico</td>
<td>1916</td>
<td>A perfect cinder cone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Kasaan</td>
<td>Alaska</td>
<td>1916</td>
<td>Abandoned Indian village with good totem poles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verendrye</td>
<td>North Dakota</td>
<td>1917</td>
<td>Crowhigh Butte, from which white men first saw country west of Missouri River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casa Grande</td>
<td>Arizona</td>
<td>1918</td>
<td>Remarkable prehistoric ruin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Katmai</td>
<td>Alaska</td>
<td>1918</td>
<td>Recently exploded volcano of unusual interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotts Bluff</td>
<td>Nebraska</td>
<td>1919</td>
<td>Landmark of early transcontinental travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yucca House</td>
<td>Colorado</td>
<td>1919</td>
<td>Ruin of prehistoric pueblo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lehman Caves</td>
<td>Nevada</td>
<td>1922</td>
<td>Limestone caves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timpanogos Cave</td>
<td>Utah</td>
<td>1922</td>
<td>Limestone cave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fossil Cycad</td>
<td>South Dakota</td>
<td>1922</td>
<td>Rich deposits of plant fossils for future excavation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aztec Ruin</td>
<td>New Mexico</td>
<td>1923</td>
<td>Restored prehistoric pueblo of 500 rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mound City Group</td>
<td>Ohio</td>
<td>1923</td>
<td>Prehistoric Indian mounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hovenweep</td>
<td>Utah-Colorado</td>
<td>1923</td>
<td>Prehistoric towers, pueblos, and cliff dwellings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Spring</td>
<td>Arizona</td>
<td>1923</td>
<td>Refuge against Indians. Early Mormon station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bryce Canyon</td>
<td>Utah</td>
<td>1923</td>
<td>Niche in the Pink Cliff intricately eroded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carlsbad Cave</td>
<td>New Mexico</td>
<td>1923</td>
<td>Largest limestone caverns in the world</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chiricahua</td>
<td>Arizona</td>
<td>1924</td>
<td>Erosional pinnacles in Coronado National Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craters of the Moon</td>
<td>Idaho</td>
<td>1924</td>
<td>Fissures, cones, craters, and other volcanic phenomena</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Wood</td>
<td>New York</td>
<td>1924</td>
<td>Fort which encloses the Statue of Liberty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Castle Pinckney</td>
<td>South Carolina</td>
<td>1924</td>
<td>Fort built in 1810 to replace a revolutionary fort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Pulaski</td>
<td>Georgia</td>
<td>1924</td>
<td>Built in 1810 to replace Fort Greene of Revolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Marion</td>
<td>Florida</td>
<td>1924</td>
<td>Built by Spaniards about 1656, at St. Augustine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Matanzas</td>
<td>Florida</td>
<td>1924</td>
<td>Relic of Spanish invasion on the Matanzas River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wapatki</td>
<td>Arizona</td>
<td>1924</td>
<td>Two groups of prehistoric ruins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meriwether Lewis</td>
<td>Tennessee</td>
<td>1925</td>
<td>Grave of Capt. Lewis of Lewis and Clark expedition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glacier Bay</td>
<td>Alaska</td>
<td>1925</td>
<td>Muir Glacier, and six others, funnelling from mountains to the sea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lava Beds</td>
<td>California</td>
<td>1925</td>
<td>Battleground of Modoc War</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Niagara</td>
<td>New York</td>
<td>1925</td>
<td>Reproducing a cross erected in 1688</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort McHenry</td>
<td>Maryland</td>
<td>1925</td>
<td>Birthplace of Star Spangled Banner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
National Monuments differ from National Parks in several vital ways.

National Parks, as we have seen, are areas of original unmodified natural condition, each the finest example of its scenic type in the country, preserved as a system from all industrial use. They are created by act of Congress and administered by the Interior Department. National Monuments are areas preserving landmarks, structures, and objects, "confined to the smallest area compatible with proper care and management," created by executive order of the President upon certification of the Department of the national government caring for or administering the land from which each is created.

Both, it will be seen, are outdoor museum systems and as such have much in common, including high educational values. But the National Parks System is also a National Gallery of Scenic Masterpieces, which the National Monuments System is not; that some monuments, like Mount Olympus, have extraordinary scenic values is accidental. Also, our National Parks System by its nature is inspirational in high degree, which the National Monuments System is not except in incidental units. Also from its nature the National Parks System is recreational, whereas recreational uses attach to National Monuments only by accident of location or because approached by highways.

The fact that several National Monuments are very large in area is no violation of the law. Mount
From a photograph by George E. Welch

MOUNT OLYMPUS, WASHINGTON
Centre of a national monument established to protect species of elk found nowhere else
 Courtesy of the Santa Fe Railway

RUINS OF PREHISTORIC PUEBLO BONITO, CHACO CANYON NATIONAL MONUMENT

This communal dwelling in New Mexico is under restoration. Observe the tents of the archaeologists across the canyon floor.
Olympus in Washington, for example, needs its four hundred and seventy square miles to conserve its unique species of elk. Of course conserving wild life does not come within the definition of the antiquities act; the area should have been made, as was intended, a game preserve; but Washington sportsmen were then opposed to game preserves (they are no longer) and threatened to stop the project. That was in 1909. Determined to save the Olympus species from destruction, conservationists persuaded the President to make it a National Monument. Katmai National Monument likewise needs its seventeen hundred square miles to enclose its volcanic basin; less would be insufficient. And Glacier Bay requires its even greater area to encircle its huge amphitheatre of many large glaciers.

Created, like the National Parks System, without prevision or planning, National Monuments, analyzed, also disclose a system built around an unformulated idea. Just as National Parks were studied by the Interior Department in 1915 to determine the creative spirit and motive behind them in order to perpetuate these consciously in the future, so the time has come to study National Monuments and build machinery for sane and orderly development of the system. The fact that three Departments of the government instead of one create and administer its units stands, however, in the way. From its Secretary down, each Department is traditionally jealous of its own, and unwilling to exploit the mon-
ument creations of its rivals. Also, each declines to approach the others with propositions to work out joint standards and common control, and, as Congress is altogether likely to take the system into its own control if asked to interfere, thus subjecting it to local and political influences which the present system of creation reduces to a minimum, the situation may remain as it is unaltered for years unless the National Conference on Outdoor Recreation succeeds in bringing about co-operation among the Departments concerned.

A list of National Monuments in order of creation, their location, areas and differentiating characteristics, appears in this chapter. Analyzed, they fall into these groups:

14 Prehistoric dwellings, or groups of dwellings, of the pueblo type.

5 Ruins of the early Spanish invasion.

14 Places of later historic interest.

22 Areas of special geologic significance.

3 Areas conserving wild life.

Remains of prehistoric civilization dot our Southwest freely. Ruins of very ancient cliff houses, pueblos, irrigation systems and places of worship are specially numerous in Colorado, New Mexico and Arizona. The most fully developed and best preserved of all are conserved in the Mesa Verde National Park. Fourteen others chosen by archaeologists out of thousands, have been preserved in National Monuments. They are: Montezuma Castle,
NATIONAL MONUMENTS SYSTEM

Tonto, Navajo, Casa Grande, Walnut Canyon, and Wapatki in Arizona, Chaco Canyon, Gila Cliff Dwellings, Bandelier, and Aztec Ruin in New Mexico, Yucca House in Colorado, Hovenweep straddling the boundary between Utah and Colorado, and the Mound City Group in Ohio. Some of these, notably Casa Grande, Montezuma Castle, Bandelier, and Chaco Canyon, stand among the very finest in the country. Casa Grande was reserved by Congress in 1889 and handled without legal status among the National Parks. In 1918 it was defined a National Monument by executive order. Congress has spent $22,400 upon its restoration out of a grand total of $190,130 for all National Monuments up to 1926 inclusive. Bandelier National Monument was a strong contender with Mesa Verde for the honor of national parkhood, losing out in 1906. It is a group of remarkable nobility and interest.

The five ruins of the early Spanish invasion, Tumacacori in Arizona, El Morro and Gran Quivira in New Mexico, and crumbling fortification at Fort Matanzas and Fort Marion in Florida, are remarkable each of its kind. Gran Quivira is the most famous of the very earliest churches of the continent; Tumacacori near Tucson is much later and naturally better preserved; El Morro, at the crossing of ancient trails, preserves inscriptions and messages by America's first travellers; the two Florida forts were built by very early comers from across the sea, perhaps as safe retreats.
The historic remains of later periods vary widely. A bare acre on a California headland is supposed to have been the first land sighted from the Pacific, in 1542; it is called the Cabrillo National Monument. Wheeler in the Colorado Mountains, Big Hole Battle Ground in Montana and Lava Beds in California commemorate Indian battles, the first a massacre. Fort Niagara reproduces a cross erected in 1688 as a memorial, Sitka and Old Kasaan, both in Alaska, were respectively a deserted Indian village and the scene of a massacre of Russians. Scotts Bluff in Nebraska was a wilderness landscape before the white man and afterward, and Verandrye was the bluff from which white men first saw the country west of the Missouri River. Pipe Spring in Arizona conserves a wilderness water hole with historic Mormon buildings. Meriwether Lewis, in Tennessee, contains the great explorer's grave. Fort McHenry in Maryland commemorates the writing of the Star Spangled Banner, Fort Pulaski in Georgia and Castle Pinckney in South Carolina remain from 1810; Pulaski was refitted for the Civil War.

Of our twenty-two geologic monuments, eight are limestone caves, and more are threatened. The federal lands may possess a hundred thousand limestone caves, each of which appears very wonderful to local imaginations. One of these, high up a mountainside, overlooks a sample of the trail travelled by the Lewis and Clark Expedition; for which
reason it bears the name of these celebrated explorers, though it is not even claimed that Lewis and Clark, nor any of their men, knew of the cave’s existence. Ranking with this, for contrast, are some of the world’s noblest spectacles, particularly the Carlsbad Cavern in New Mexico unequalled in the world in size and magnificence of decoration, the incomparable Rainbow Bridge, the imposing volcanic spectacle at Katmai, and the incomparable funnel of glaciers at Glacier Bay. The two latter are on the Alaskan Coast.

There is probably no other single object in the world at once so appalling in size and environment and so exquisitely beautiful as the gorgeous arch of Rainbow Bridge. It would easily span Madison Square in New York City, and the adjoining Flatiron Building would slip under it with room for three floors to spare. Of red sandstone in a yellow desert, its modelling and proportions suggest the inspired art of man. Our three largest natural bridges, in Southern Utah, together also constitute a National Monument.

Devil Tower, core of a once great volcano in Wyoming; the Devil Postpile, basaltic columns in the Sierra; Capulin Mountain, a perfect cinder cone in New Mexico; Katmai, scene of a terrific volcanic explosion in 1912; and Craters of the Moon in Idaho; offer a remarkable exposition of volcanic phenomena. The Petrified Forest of Arizona, the mine of prehistoric monsters in Utah known as Di-
nosaur, and South Dakota's mine of prehistoric plants known as Fossil Cycad, conserve the best of their kind perhaps in any land. The Pinnacles in California and Bryces Canyon in Utah are remarkable examples of erosion, the latter extraordinary for its carving and coloring. Among the several vast glacial amphitheatres on the coast of Alaska, Glacier Bay is unsurpassed.

A very wonderful opportunity, this, for developing a natural geologic museum of broad scope and magnificence!

Of our three National Monuments conserving wild life, Muir Woods and Papago Saguaro offer a striking contrast. The one preserves the last remaining redwood grove, beloved of John Muir, on San Francisco Bay, and the other preserves a generous sample of the rich desert, with its giant cacti, of southern Arizona.

Geographically, one territory and nineteen states possess these National Monuments, as follows: Alaska, 3; Arizona, 11; California, 5; Colorado, 4; Georgia, 1; Florida, 2; Idaho, 1; Maryland, 1; Montana, 2; Nebraska, 1; New Mexico, 8; New York, 2; North Dakota, 1; Ohio, 1; Oregon, 1; South Carolina, 1; South Dakota, 1; Tennessee, 1; Utah, 5; Washington, 1; and Wyoming, 2;

That so haphazard a collection of fifty-eight units selected at odd intervals during twenty-two years by a number of scores of men in different Departments of the government mostly unknown to
"THE FIRST APARTMENT-HOUSE"

Prehistoric dwellings carved in the soft volcanic rock several stories high, and built of masonry outside. Bandolier National Monument, New Mexico
CASA GRANDE NATIONAL MONUMENT, ARIZONA

The noblest prehistoric ruin in the Southwest, named by the first Spanish explorers the Great House
each other should have produced so excellent a combined group as this, so really a system, so nearly well balanced, containing so little, comparatively, that is unworthy, is little short of astonishing. Nevertheless Secretary Work's belief that some should be turned over to state and local control is sound, and the joint administration which some day unquestionably will develop and carry on all together as a single group will find perhaps a number unsuitable for the well-studied balanced system that this should become eventually.

Suggestions for National Monuments come from many sources, usually perhaps from government scientists and officials travelling federal lands on business. Sometimes they come from universities and scientific institutions, or from organizations interested in federal land development. Most suggestions originate in local sources; of these, few get by the many interested official watchers unless backed by the kind of sentiment which appeals through politics. It is from the latter source of influence, in these days of super-motoring and local enterprise in self-advertisement, that grave danger is likely to come. Just as now the National Parks System is imperilled by the craze in the South for National Parks of any kind so long as they carry the supposedly money-coinning name; so, failing them, National Monuments will come more and more into local demand.

Another very dangerous tendency is to consider National Monument making an intermediate
step to securing National Parks, for it is sometimes easier to persuade Congress to change the status of a reservation already created by Presidential proclamation than to create the National Park straightforwardly in the first instance. This has been deliberately done in two cases within my personal recollection, and has been suggested in a number of instances. While there may be little danger of damaging the National Monuments System by making it a stepping stone to an order of reservations scenically higher, the principle involved is inherently wrong, and this practice makes for further belittling in the eyes of its creating agencies a system of very great dignity and potential value to posterity.

The root of these actual and prospective evils is the failure of the national government to conceive our National Monuments as a System. I have found nothing in Roosevelt's writings to warrant the belief that either he or Lacey ever previsioned the splendid system which since, like Topsy in "Uncle Tom's Cabin," just grew. It was his part, in advance of the thinking of his day, to perceive future values and to provide the governmental machinery for posterity to utilize. It is for some later President to model the hit-or-miss creation of the intervening years into a unified grouping of incalculable value to present and succeeding generations.

The fact is that, in the strictly official view, our National Monuments constitute nothing more than a collection. Unofficially but actually, they consti-
stitute an Outdoor Museum System of some nobility. What is needed, all, in fact, that is needed, is official recognition that this System exists as such, and a little inexpensive machinery, the simpler the more effective, to define standards, clean it of dross, determine the units which shall be admitted to it and administer it through an organization which shall combine representatives of the three Departments with experts appointed from outside of government.

National Military Parks

The wonder is that National Military Parks were so long in coming. It took a quarter of a century after the close of the Civil War to create the first reservation, that which encloses the ten square miles in Tennessee in which had been fought the great battles of Chickamauga and Chattanooga. It was called the Chickamauga and Chattanooga National Military Park. The impulse swept into creation in the very same Congress the battle-field of Antietam in Maryland, under similar title. The year was 1890. These parks naturally were referred to the War Department for administration.

There was at this time, of course, no plan for building a system, but the seed was sown. Other Civil War battle-fields were proposed, but none was made till 1894, when the Shiloh National Military Park was created at Pittsburgh Landing, Tennes-
our federal lands

see. Gettysburg in southern Pennsylvania followed in 1895, and Vicksburg in Mississippi in 1899.

After that, an interval of seventeen years marked public absorption in matters wholly different, during which time several historic National Monuments were created. In 1916, Lincoln's birthplace in Illinois having come into national possession, the question of its administration arose. There was only one appropriate place for it, the National Monuments System; but somebody under the delusion that Lincoln's birth was a military event asked to have it made a National Military Park, which was done.

That act again called public attention to this system, which resulted in creation of Gilford Court House National Military Park at Greenboro, North Carolina, the following year.

With our entrance into the Great War began a new demand for National Military Parks which, no doubt fanned by the motor touring tidal wave, has since reached large dimensions. The War Department had set its face relentlessly against the expansion of a system which, having no limiting standards, may easily override control and involve the Treasury in unlimited expense. Only one of very many bills, that in the last Congress creating Moore's Landing National Military Park, has been enacted recently.

Each battle-field park in this system includes all the lands obtainable over which contending forces
moved in action. Within its limits earthworks and structures of all kinds existing during the battle, so far as they remained at the time of the park creation, are maintained. Both within the grounds, and so far as possible without them, points have been marked which help to disclose the strategy and action of battle.

**LOGICAL REORGANIZATION Demanded**

Because they are federal, historical and unindustrial, National Military Parks group naturally with National Monuments, which, as a system, they preceded by sixteen years. National Military Parks preserve battle-fields of the Civil War and a historic memorial of before the Civil War which is not a battle-field; and National Monuments preserve (besides much else) battle-fields and historical memorials not of the Civil War. The difficult distinction was not intentional on the part of a casual and careless Congress. Lincoln’s Birthplace, which is not a battle-field, is absurdly a National Military Park, while Fort Wood in New York Harbor, out of which rises the Statue of Liberty, a military reservation, is a National Monument!

A logical reclassification would group historical reservations of every kind since the coming of the white man together under the title of National Historical (instead of merely Military) National Parks, leaving only the scientific reservations (ar-
chæological, geological, zoological and botanical) in the National Monuments System. There was no more prevision in National Military Park beginnings than in the origin of National Monuments, so such a change would upset no tradition nor orderly purpose. There is need in our Federal Lands for a reservation system broadly historical.

Such reorganization was suggested in 1924 in the National Parks Association’s report on National Monuments to the National Conference on Outdoor Recreation. It attracted much attention, but, suffered the usual fate of bills referred to special interdepartmental committees of government officials already overburdened with routine.

A joint War and Interior Department bill to transfer administration of National Military Parks to the Interior Department, changing their titles to National Historical Parks, is a step toward such reorganization. It was introduced in the winter of 1928.
CHAPTER IX
DEPLETION AND RESCUE OF OUR AMAZING HERITAGE OF WILD LIFE

In no other respect is the wastefulness of this nation so apparent as in the passing of our original wealth of wild life. Before the coming of the white man, the country which is the United States possessed an amazing population of furred and feathered creatures, as great, perhaps, as the uncivilized part of Africa.

Think of millions of bison roaming our western plains at one time. Observers of long ago casually mention migrations of solidly massed buffalo columns requiring four or five days to pass a given point. Reports believed to be fairly reliable estimate a million in one herd near the young city of Denver. Bison are identified as animals which old reports locate in New England, the District of Columbia and Virginia. Imagine as many antelope, also, in far western deserts, where thirty thousand only may now be found. George Bird Grinnell believes that originally there may have been more antelope in the country than there were bison. Imagine, also, at least a million elk, possibly several times that, where now the nation possesses less than fifty thousand, and incalculable numbers of deer in forests east and west, to say nothing of moose, mountain sheep,
mountain lions, wolves, bears, goats and four-footed creatures of lesser degree many to one as compared with their numbers to-day.

Think of the wild bird life of those days, impossible approximately to estimate even in millions—passenger pigeons, for example, (now extinct) which old records tell us used occasionally more or less to cloud the sky for hours at a time. Think of regular and usual migrations of wild geese, swans, and ducks in numbers which would be altogether impossible to-day even on occasions of extraordinary concentration. It has recently been contended that song birds are more plentiful now than then, which may be true because vast forests have given way to opens in which the song bird thrives. It would be pitiful indeed if Nature had not provided some compensation for losses so vast.

Loss of the bulk of our splendid heritage of wild life is part of the price we pay for civilization. The forest home of deer, moose, bear and others has given way to opens. The prairie home of bison and elk, and the plains where once lived sage hens and antelope by the many millions, have become farms. Living off the land means, for pioneers, living largely off the game of the land, until replaced by cattle. Hunting the creatures of the wilderness for food is part of the business of settling a new country. "We say now," writes Grinnell, "that all the game has been killed off, and in fact some part of it has been killed; but its total extermination came
from the fact that after much of the game had been killed the remainder was crowded off and none was left to reproduce its kind."

It will be seen that, necessarily, hunting was established as the custom of the young nation. There was no question of ethics then as now. Then, people sought their grouse in the brush or their venison in the woods as now we seek our poultry and beef in the market. Hunting for sport and hunting for food travelled hand in hand—and even to-day game has its important food value. No doubt the issue of life and death hanging on success added a tang to hunting in those days of need for meat as it does in these days of sport. The triumph of conquest over so wild a creature and its extreme beauty still warm in the final defeat of death were, then as now, unconscious elements in the reward of skill. Pursuit of the anise seed bag with horse and hounds in these pallid days appears poor sport to others besides those who follow the fox himself. There must be a brace or a brush, at least, to show for the day's triumph.

There is probably little difference in the spirit of the sportsman of those days and these. No doubt he enjoyed the wilderness and its denizens, some of which he hunted, then as much as now, but perhaps on the average not so consciously, and not so appreciatively. Then it was the environment of his daily life. To-day he is the most ardent of our conservationists for other reasons also than the continu-
ance of game. The point I make is that custom, meaning the average point of view toward wild animal life, constitutes the difference between the philosophy of those days when hunting was a necessary part of the business of life, and of these when the urge of need has departed and shooting is frankly for sport’s sake.

One of the more apparent differences is that the grosser man, unfortunately numerous in all nations and times, in those days possessed, naturally, both gun and opportunity. It was he who boasted day’s records in pigeons and killed buffalo from car windows for the sake of the shot. Skin hunting, sister enterprise with fur trapping, was also a large element in the Great Slaughter which followed the opening of the West. The unusual vogue of the “buffalorobe” is not so long passed but that many of us recall it. There was a time when skin wraps were too cheap and common all over the country to be fashionable. The business was well organized, it covered all North America in time, and while it lasted was highly profitable.

“The mighty herd of buffalo ranging the plains,” wrote Grinnell, “the undisturbed existence of countless elk, deer, and antelope, the invasion of the country by the railroads, the slaughter of the skin hunters, the rapid killing off of the game and its practical extermination, the conversion of the game ranges into cattle ranges and of the cattle ranges into ranch lands, our tardy awakening to the waste
of our game, a new evaluation of the wild life as a resource of vast economic importance, the enactment of legislation to save the remnant, the provision of refuges for harboring it—these successive phases of our big-game history followed one another so rapidly and in a period so recent and so short as to fall within the term of a life-time. As an explorer in the West in the early seventies, a man hunting in the game regions for successive seasons, and as one who has been personally interested and actively engaged in game protection, I myself have witnessed the whole course of these changing conditions."

The building of the Union Pacific and Kansas Railroads which began in 1872 gave a tremendous impetus to wild life destruction in the West. Hired hunters supplied construction camps with meat, and when a bill to protect western game, probably the very first, was entered in Congress, it was opposed by army officers of high rank who declared that buffalo ought to be destroyed because when they had become exterminated the Indians then at war with the United States would be without means of subsistence and would be obliged to come into the agencies for food and so would be under control of the troops.

The destruction of the buffalo was practically completed in 1883. "Most of us then," continues Grinnell, "deemed it a mercenary and wanton butchery. We now know that it was a necessary part of the development of the country. The buffalo having been destroyed, their place was taken by
range cattle and horses, and then after a time the range stock was crowded out by the homesteader and the farmer."

Meantime, other bills to save passing wild life, including one in 1876, had been pushed in Congress and lost. In the early eighties Grinnell's initiative secured legislation that stopped all hunting in Yellowstone National Park, where twenty-two bison left from the slaughter have since developed two splendid herds. The fame of that great centre of wild life concentration had in the single decade preceding this law drawn to the park the big game hunters not only of America but of lands across the sea, and after them had followed hunters of all degrees and none. Recently graduated from Yale and informed by his western explorations, young Grinnell had acquired a magazine for game preservation campaigning throughout the West. His "first Yellowstone War" not only gave original impetus to the spirit of wild life preservation, starting the remarkable development of conservation organizations of every kind, national, state, and local which has followed in the half century since, but established the national policy of complete conservation for all national parks to follow Yellowstone.

The wild life conservation movement of to-day contemplates not only a constant supply of game increasing with growth in population, but, more importantly, preservation of species for future generations under natural conditions. Its purpose is, as
with the national park movement, not impossibly and undesirably to restore any part of the lost past, but to retain enough examples of the original to inform posterity and reproduce for its enlightenment and enjoyment the spirit of the great past.

The next effective forward step came through government.

Unique among the bureaus of the national government, the Biological Survey, created for a purpose far different from its eventual destiny, has come to function principally as national guardian of important game animals and administrator of the migratory bird treaty with Canada. Originated solely for scientific investigation, it grew out of studies in bird migration undertaken by the American Ornithological Union upon the organization of that body in 1883. It conducted minute investigations of American species in every part of the country, investigated bird and insect habits in relation to agriculture and issued many popular reports, saved many species under the ban of ignorance, and investigated and established the theory of life zones—all before its main endeavor became the study and administration of game birds and animals.

The story of its beginning is interesting. Upon inaugurating its studies in bird migration, the American Ornithological Union placed its special committee under the chairmanship of Dr. S. Hart Merriam of New York, who had been naturalist of the Hayden Survey at the age of seventeen, and later, as
a student in Sheffield Scientific School at Yale, had become deeply interested in the breeding range of birds as affected by temperature.

Upon graduation as a physician, failing to find funds to conduct a survey of wild life distribution in New York State in furtherance of theories of faunal areas suggested first by Humbolt and advanced by A. E. Verrill, J. A. Allen, and others, he had settled into successful medical practice, but in 1885 had utilized a vacation to visit Germany in the interest in Europe of the bird migration studies of the Ornithological Union.

Meantime government naturalists had secured from Congress an appropriation of five thousand dollars for extension of the Union's work on bird migration, and Dr. Merriam received in Germany a cablegram asking his acceptance of a position as ornithologist in the Department of Agriculture looking to organization of a new Division to study the economic relations of birds.

Scenting an opportunity to resume investigations of faunal zones, thereafter on a national scale, he accepted, but on reaching Washington found that his Section of Economic Ornithology had been created as a part of the Division of Entomology and that his research work on birds would be directed by an entomologist.

Chagrined, nevertheless he set to work on the relations of birds to agriculture, producing reports conspicuously useful to farmers, meantime collect-
ing from every possible source facts bearing on faunal areas. In 1885, he secured from Congress an independent status for his work, under title of the Division of Economic Ornithology and Mammalogy of the Department of Agriculture, and outlined investigations to cover the “food, habits, distribution, and migrations of North American birds and mammals in relation to agriculture, horticulture, and forestry.” In time, reports on the English sparrow and many bird and insect relationships to agriculture went abroad. Its early functions were “first, to determine as accurately as possible the food of birds of economic importance; second, to act as a court of appeal to investigate complaints concerning depredations of birds on crops; and third to educate the public as to the value of birds.”

Hawks, owls, crows, black birds, woodpeckers, and blue jays received first attention. Many thousands of bird stomachs were examined. Habits were closely studied. The section’s first public achievement was lessening popular prejudices which had long been causing wholesale destruction of birds of many species.

Meantime, Dr. Merriam was realizing his long time dream of life zone investigations. In whatever part of the country, particularly the West, he and his assistants travelled, scientific observations were made with utmost care bearing upon the relations of temperature and altitude to species. Public announcement of results was first made in a report of
1890, elaborately mapped in colors, which began as follows:

"Recent explorations in the West conducted by the Division of Ornithology and Mammalogy of this Department led to the belief that many facts of scientific interest and economic importance would be brought to light by a biological survey of a region comprehending a diversity of physical and climatic conditions, particularly if a high mountain were selected, where, as is well known, different climates and zones of animal and vegetable life succeed one another from base to summit.

"The matter was laid before the Assistant Secretary of Agriculture, the Honorable Edwin Willits, and I was authorized by the Secretary, the Honorable J. M. Rusk, to undertake such a survey of the San Francisco Mountain region of Arizona. San Francisco Mountain was chosen because of its southern position, isolation, great altitude, and proximity to an arid desert. The area carefully surveyed comprises about 13,000 square kilometres (5,000 square miles) and enough additional territory to make in all about 30,000 square kilometres (nearly 12,000 square miles) of which a biological map has been prepared.

"No less than twenty new species and sub-species of mammals were discovered, together with many new reptiles and plants; and the study of the fauna and flora as a whole led to unexpected generalizations concerning the relationship of the life
From a photograph by the U. S. Biological Survey

ANTELOPE, SWIFTEST OF WILD ANIMALS
THE END OF A WILDERNESS ELK
Winged and four-footed scavengers have left only bones
areas of North America, necessitating a radical change in the primary and secondary divisions recognized.” Thus began a scientific work which the world has since gratefully recognized.

In 1896, in recognition of the breadth, importance, and character of its work, the Division’s title was changed to the Division of Biological Survey. President Roosevelt enthusiastically praised its work in public reports, which brought attacks upon it from his political enemies. Following its promotion in 1906 to its present status of Bureau of Biological Survey, an investigation by Congress resulted in publication of an astonishing record of practical achievement flowing from painstaking scientific investigation.

Dr. C. Hart Merriam continued as director till his retirement from government service in 1910. The Survey’s scientific studies of birds, animals, insects, forests and agricultural conditions, planned and started by him, continue unceasingly. Merely to enumerate them and their successful application to concrete problems in every part of the country would need pages. This part of its work, originally its principal part, now secondary, will increase in scope and importance with the growing years.

The Survey’s main objectives of later years began with passage of the Lacey Act in 1900, which assigned it the duty of regulating interstate commerce in game and fur animals. Later, it was charged with administering the Migratory Bird
Treaty legislation which Representative George Shiras 3d of Michigan introduced in 1907. Protection of certain song birds and birds feeding freely on insects injurious to agriculture had long before been granted by some state laws, but the Biological Survey's studies of migration showed that the wide diversity of laws in different states and nations through which they passed in vast numbers twice annually between the Gulf States and Canada worked serious injury to geese, swans and ducks. Hereafter one law would govern them wherever they would be. To this specialty, Dr. Charles W. Nelson, who succeeded, brought conspicuous ability.

The situation at this writing is well stated in the Survey's annual report for 1927, which begins:

"The wild life of the country is a heritage that was vital to the welfare of the early settlers, and its perpetuation means much, both economically and aesthetically, to the present and future generations of their descendants. Any lover of birds and animals knows full well that these wild creatures clearly appreciate the difference between kind and cruel treatment. Unfortunately, however, they do not have the ability to argue their cause before the bar of public opinion.

"Forward-thinking individuals, recognizing this fact, have designated certain public defenders, whose duty it is to represent these creatures of the wild in all cases where their rights are in question. These defenders fall into three general groups: (1) Or-
ganizations of individuals interested in the welfare of wild life; (2) State governmental organizations; and (3) the Bureau of Biological Survey, co-operating with other interested Federal agencies and all other wild-life defenders."

"The chief problem of the bureau," writes the new chief, Paul G. Redington, "is to obtain facts on which to base plans for wild-life administration. Until it has the necessary resources to gather these facts its work cannot progress to that point where it can be of maximum benefit to the birds and game and fur animals of the country, or of greatest assistance to the general public or to governmental agencies having jurisdiction over areas essential to the maintenance of wild life, or that are confronted with the problem of controlling excessive numbers of harmful or beneficial forms."

Of methods, he extols experiment stations as having proven their usefulness in agricultural, horticultural, and forestry investigations. "Already four field stations have been established by the Bureau of Biological Survey—a fur-animal experiment station in Saratoga County, N. Y., a station for co-operative quail investigations in southern Georgia and Florida, a reindeer experiment station near Fairbanks, Alaska, and an eradication-methods laboratory in connection with pest control at Denver."

Besides the field stations, the Survey administers seventy-one bird and big game refuges, the first of which, on Pelican Island, Florida, was es-
established in 1903. Sixty-eight of these protect sea-birds, waders, and water fowl; three, in Montana, Nebraska, and North Dakota, study buffalo, elk, antelope, grouse, pheasants and others.

But these are not all our federal wild life refuges. Under administration of the Forest Service are eight refuges and game preserves, some of very large size, conserving bison, elk, deer, antelope, and others. One is the Olympus National Monument created solely to preserve the Olympus Elk, a species found nowhere else. Under administration of the Bureau of Fisheries are two refuges for sea otters, fur seals, and sea lions. Under administration of the Bureau of Lighthouses are seven reservations, and under the Navy Department four reservations, for birds. Four National Military Parks under administration of the War Department, and, under the Interior Department, five National Monuments and all nineteen National Parks protect all life native to their several locations.

Altogether the United States maintains a hundred and thirteen refuges of various kinds. Accomplishment would be altogether inadequate without the help of the states, which maintain a hundred and thirty-five more refuges, including some of large size and great importance. Altogether we may be considered to have made a fair start toward adequate study and preservation of wild life to meet the future needs of so fast growing a nation; nevertheless, it is a start only.
DEPLETION OF WILD LIFE

The state movement is very important. Most states now maintain at public expense conservation departments of much and increasing efficiency which consider bird and wild animal preservation from economic and sport points of view. The national control of migratory birds aroused at the start many points of disagreement between state and nation, and state and national politics are still often at odds over game questions. But on the whole, the overlapping and yet quite distinct functions of state and national conservation bureaus are bringing about agreements and co-operation which point to a future efficiency which is national in the fullest sense.

At best no marked recovery of wild life is possible. We should recognize that fact. We overran too far. Within the limits of the United States we shall be very fortunate indeed if, on the average of the whole, wild life can be made to hold its own. This is done in several countries abroad by a somewhat elaborate and minute game administration which considers flocks, groups and sometimes even individual creatures, regulating hunting with astonishing strictness and detail. In so large a country as this, politically controlled, it may be impossible to duplicate the achievements of lands in which game is largely concentrated in immense private estates where often it is handled as one of numerous component inter-related economic products. A more enlightened and co-operative future may work out a method approximating similar efficiency with the
very much greater national opportunities we possess, but it is not possible under present conditions. Even permission for sportsmen to tax themselves for purchase of swamp lands for the nation to perpetuate the breeding of aquatic birds has been held up for years in Congress by several politicians representing the prejudices of local rural communities.

Whatever may be done for local birds in state and private lands, it is nevertheless true that the hope of the future is in lands remaining under federal ownership. Besides the refuges, nearly all small, only in National Parks, which total less than twelve thousand square miles in area divided among twenty widely separated reservations, is shooting wholly prohibited. National Forests, which will always remain our greatest wild life preserves, are subject to the game laws of the states in which they are included, under the theory that, no matter where found, native birds and animals are the property of the state. In National Forests, hunting occurs in season. They have shown some wild life recovery during recent years, but this can only last under present laws until civilization crowds their borders more closely, bringing more hunters nearer their prey. It is here that development of game administration by co-operation of states and the nation would count heavily. The end sought would be a constant game supply under conditions of increasing demand. Students believe this possible under unified control.

How necessary efficient co-operation has be-
come appears in the modern use of automobiles and airplanes for hunting. A thousand miles of search awheel is considered none too great for the guerdon of a couple of antelope. The vast desert country is alive with motoring sportsmen in season, and out of season many a lawless driver with a surreptitious rifle keeps a roving eye on the passing landscape in hope of a chance shot. More and more airplanes are used not only to locate game on plain and mountain, but to land hunters within striking distance. More and more are they carrying hunters and supplies over miles of difficult wildernesises to hunting grounds which in former days would seldom be attained because of the time and the difficulty necessary for passage of pack trains.

Analyzing more comprehensively than Mr. Redington the forces combined for wild life recovery, we find them four: first, organized sportsmen seeking game conservation for the continuance of sport and wild life protection generally, a very large earnest body conspicuous in every state, able and willing to raise all the money necessary for efficient campaigning; second, wild life conservationists for preservation sake only, numerically many times the sportsmen, potentially representing a broad national sentiment, but unorganized and unfinanced; third, state conservation departments responsive largely to the demands of local sportsmen and applying science to their interests; and, fourth, the Biological Survey, responsive to all public demands for con-
ervation in the interest of sport, agriculture, science, and sentiment.

Except when ambitious personalities contend for control, creating parties; or conservationists for preservation resent killing for sport, alleging cruelty; or the concrete-minded laugh raucously at "sentimentalists," stirring recrimination; a fine spirit of common purpose (if not always for common reasons) combines all parties behind wild life recovery, inspiring effective work.

Let us examine a few of the situations and policies involved in so excellent a quest.

Unfortunately, when National Forests and National Parks were laid out no thought was given to their wild inhabitants. Timber conservation and scenic preservation governed respectively their creators' minds, and it happened that summer ranges and winter ranges for elk, deer and other ruminants were seldom included in the same reservation. Summer forage in the show places is plentiful, but winter forage usually lies in the open ranges of the unserved and unappropriated public domain in which grazing, without regulation, goes always to the strong. What boots it to preserve our wild-life herds in summer if they are to starve on the over-grazed competitive ranges in winter? Establishing sanctuaries, narrowing bag limits, and shortening hunting seasons is small help to game continuity compared with furnishing good winter range.

Even on the best of ranges, summer or winter,
native animals suffer in competition with domestic sheep and cattle. The productivity of public ranges impoverished by the uncontrolled competition of a century of live stock must be restored before wild life reasonably can be expected to hold its own. Those western states which, without warrant, have declared large areas of public range game preserves have no means to enforce their will even though it were worth enforcing. Most of the winter feed lands for wild life in the Public Domain is without control, and no protection can be developed until some form of regulation has been devised. Even with regulation there can be no restoration of forage plants without careful research of the widely diversified range so different in character from the well-studied grazing lands of the National Forest. There is work for the government here.

A popular part of any experimental programme of wild life restoration will be transplantation from existing reservations to colonize areas presumably once populated but long since denuded of game animals. Buffalo have taken kindly to efforts begun years ago by the American Bison Society when the species was thought in danger of extinction, and several large herds exist in Canada and the United States, besides numerous small plants in game preserves, zoos, and elsewhere. The only really wild herd, however, in the United States is the smaller of the two herds in Yellowstone National Park. A very large wild herd has been secured by the Cana-
Government in the Athabasca country by preservation of a native nucleus to which additions have been made.

Several native elk herds survive, notably those in Yellowstone Park and Mount Olympus National Monument. Elk principally from Yellowstone have been transplanted to Arizona, Colorado, Idaho, North Dakota, Minnesota, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, and Wisconsin. Drifting over very wide areas and multiplying rapidly, elk are unpopular in cultivated countries; there, they do not survive for obvious reasons. Time has not yet elapsed sufficient to develop really good independent herds anywhere, but some of the experiments in suitable wildernesses are promising. Canada also has good herds in Vancouver Island and elsewhere. Elk are a "cattle proposition," requiring only adjustment to local conditions to succeed.

Antelope plants have not yet been notably successful. The plant on the floor of the Grand Canyon is surviving after three years but fed partly on hay. Antelope only prosper unfenced, yet unfenced planted antelope usually disappear. Roving over great areas, they tempt illegal rifles. They are the swiftest of all beasts except race horses.

Moose and mountain goats have not responded yet to planting in degree offering encouragement, but experimentation is young. Mountain sheep
From a photograph by Hileman

MOUNTAIN-GOAT IN FULL WINTER COAT, MONTANA
From a photograph by E. F. Keller

YOUNG BULL MOOSE, YELLOWSTONE
transplant successfully, but are subject to diseases of civilization. So far, with them, failure means nothing except that the formula has not yet been found to colonize successfully against modern conditions which include the open season and the surreptitious local rifle. Twenty years from now we may be reproducing here and there, in small examples, the past. Meantime grizzly bears are not the only American species apparently destined, for reasons not yet scientifically determined, to extinction in the United States. In the wilderneses of Alaska and Canada they still apparently hold their own.

Raising fur for the market is a new business which may develop success and magnitude in our Federal Lands. Silver fox farming is prospering in a number of New England states and in northern middle-west states. Successful blue fox farming is adding a new industry to Alaska. Beaver may again become a fur of reasonable price and popularity, for aspen and willows, which are the beaver’s principal food, are rapid growers capable of cultivation to any necessary extent in valleys where these animals make their homes. There are still plentiful supplies of beaver for stocking in the Great Lakes country and our national forests and parks—for that matter in the Adirondacks and some parts of Pennsylvania. Beaver are also valuable conservers of head waters, for which alone they are worth preservation.

Pine martin is another valuable fur which may be developed commercially, lodge pole pine being a
rapid grower in the altitudes. But, as martin approaches extinction, quick work will be needed to stop and turn the downward tide.

Opportunity to regain in our Federal Lands a little of the wealth of wild life we threw away so recklessly during so many years is still large. To this end even the culls of the Public Domain may be applied if only we get about the business of recovery energetically and at some speed. Admirable as its career has been in the past, the Biological Survey has before it still a greater possibility of future achievement, in leadership.

"Several herds like the 40,000 deer on the California National Forest," wrote Smith Riley in 1928, "or the 26,000 deer on the Trinity National Forest, both in the northern coast range of California, are striking instances where deer have increased under regulated use of hunting. The steady increase of deer in Pennsylvania under intense use, where they have been provided suitable breeding places and ample food, proves beyond question that these animals thrive and are vigorous under constant use. On the Kaibab National Forest in Arizona, which has been rigidly protected as a National Game Refuge for the past seventeen years, mule deer have increased from six thousand or less in 1906 to a present herd of thirty thousand, and are adding five or six thousand fawns a year to their number. As the range has become overstocked, this refuge presents an administrative problem in the disposal of the surplus that is taxing the minds of game administrators."
"Of the elk in the National Forests, about a third form part of the great herds ranging in and out of Yellowstone National Park. The Olympus elk in the Olympus National Monument, included in the Olympus National Forest of western Washington, have increased to about seven thousand and present an administrative problem in as much as the areas upon which they congregate in winter are along the river-bottoms under dense timber where nutritious food plants are becoming scarce. Elk occur or have been established in some of the National Forests of all of the Rocky Mountain and Pacific Coast States. Of the western groups, Nevada is the only State having no elk. The animals have been established in the National Forests of North Carolina, Oklahoma and South Dakota. They have increased so rapidly that the limits of the range in some of the plants now necessitates development of plans for disposal of a surplus.

"Among other large wild animals worthy of note on the National Forests are 12,000 mountain sheep, 10,500 mountain goats, 4,300 moose, a few caribou, 3,000 antelope and 149 buffalo."

Theoretically, the original balance of life holds in our National Parks, but practically wild life is maintained there in some approximation to its original condition only by careful management. In each park there are one or more small areas for camps, hotels, and motor concentration whose native quality has disappeared. The Yosemite Valley, for example, is urban in all essential respects, and the various
camp and hotel centres along the road circuit in Yellowstone have lost their primitive quality. But elsewhere in Yosemite National Park's eleven hundred and twenty-five square miles and Yellowstone National Park's thirty-three hundred and forty-eight square miles primitive conditions are appreciably undisturbed. We are fortunate that the desire and habit of the motorist make this condition possible.

Loss of the balance of life in National Parks, then, is not due to trampling of vegetation by tourist throngs, as many suppose, but to destruction of birds and animals during the Great Slaughter before parks were created or safe-guarding laws passed, from which there has been little recovery, and to the policy since of killing off predatory beasts in protection of the gentler creatures which are more easily seen by visitors. This loss can never be repaired, and to this extent National Park conservation fails in practise. Once broken, the life circuit cannot be restored.

Yellowstone elk, also, have produced an artificial condition of some magnitude. The enormous numbers in both northern and southern herds, once greatly in excess of their present twenty thousand each, compelled originally a very large winter feeding area outside park limits. Encroachments of cattle men and ranchers on this precipitated years of more or less bitter contentions of several sorts, out of which at last sanity and co-operation is following upon greater knowledge. Solution, however, will
DEPLETION OF WILD LIFE

not mean return to a balance of life, but adjustments almost wholly artificial and scientific.

The story of the Yellowstone elk, including slaughters, catastrophes, and national campaigns to relieve starvation, needs a volume of its own. At this writing, through co-operation brought about by the National Conference on Outdoor Recreation, solution waits only upon public acceptance of the principle that both herds must be held numerically within their winter food supply. To augment that, hay ranches are planned to be acquired on rather a large scale.

It may be that Yellowstone's bison herds as well as elk herds must be reduced at times by the official rifle. A far cry, this, from Nature's method of creating balances, though one, it must be admitted, at times more humane.

Demand for the absolute primitive has resulted in setting apart, in 1926, a large area in the fastnesses of Yosemite National Park to be open only to scientists and students. Few have ever even entered this area. There are extremely large areas similar to this in Yellowstone possessing nearly a primitive quota of creatures of the wild, which doubtless will also be set apart for study purposes only. Glacier National Park west of the divide also escaped the Great Slaughter to some extent and may be regarded as nearer primitive in animal as well as plant survival than most National Park wildernesses. Mount McKinley National Park may safely
be regarded as primitive, the huntings of a few explorers and prospectors amounting to an inconsiderable proportion of the whole. All other national parks than these have suffered regional depletions of animal life in early years, even if hunting invasions of their territory have been few, and will require many years to recover.

The new movement for specially reserved wilderness areas in Federal Lands other than National Parks will make wholesomely for wild life protection. Keeping out automobile roads is the key to retention of wilderness.
CHAPTER X

A HALF CENTURY OF NATURE CONSERVATION

WHEN President Coolidge issued a call in May, 1924, to all the popular national organizations in the country which dealt with out-of-doors activities to send delegates to a National Outdoor Recreation Conference, there did not lack seasonable accusations that he was "playing for the conservation vote." But jockeying for the next presidential campaign was just beginning, whereas, this getting together had been in evolution for fifty years; it had been confidently prophesied for half a dozen years; it had been expected any time for two or three years, and circumstances quite fortuitous precipitated the occasion and made the President the appropriate mouthpiece of the call.

An Outdoor Recreation Conference! Not many, perhaps, of the delegates arrived conscious of the historic significance of the gathering, and many departed without realizing that they had participated in the practical beginning of a new order. Certainly the press did not, for it reported little besides the initial statements and address by the President on the influence of outdoor life, and none of the Conference results.

The term outdoor recreation of course meant
nothing because it meant everything. But what could one do? There was no other inclusive term. To the sportsman it meant shooting; to the nature student it meant conserving wild areas and preserving species; to the park enthusiast it meant reservations; to the motorist it meant touring; to the social worker it meant factory holidays in the open, children's playgrounds, and a higher type of men and women; to the angler it meant fishing and propagating game fish; to the public minded, it meant national health and patriotism; to many others it meant any kind of out-door pleasuring from tennis at the club to scaling the High Sierra.

The triumph of the Conference was that, in three days, it found what appeared then to be a common meeting ground for all, formulated a practicable working platform, and developed a permanent organization with the very practical purpose of determining by survey a national plan for future outdoor development of every unindustrial kind. It was a competent convention. It gathered scores of detached popular movements into a single movement which would put the power of all behind each. And it established a Council which, getting promptly to work, assigned preliminary fact-gathering to organizations able to produce results, and establish relations with a committee which the President had appointed from his Cabinet to represent the national administration.

Fast work, this culminating organization of
forces which had been half a century in maturing; fast not only because the time was ripe, but because momentary opportunity facilitated the mechanics of governmental co-operation. All of which came about because, among the assemblage of earnest men and women specialists, were some who had seen these lines converging from afar, who realized their significance, who foresaw their power in co-operation when once they should coalesce, and who communicated their vision to the ready minds of the assembling delegates.

It will be valuable to review this past in order that we may follow the future open-eyed.

Remote beginnings were within the active periods of none of those who organized this conference, and before most of its delegates were born. Already, sixty years before, social workers were sending waifs from the Five Points to discover trees, flowers, cows, and pigs in the country. Already George Bird Grinnell, pioneer of nature conservation, was spreading the gospel through his writings, and leading groups of earnest workers to the defense of Yellowstone despoiled, of forests threatened, and of wild life dissipating. Already prophetic sportsmen were crying halt to the senseless slaughter of big game. Already the prophet Johns, Muir on the Pacific and Burroughs on the Atlantic, were entralling thousands with the charms of nature, and Dutton was proving to geologists that rocks were beautiful, also, and their stories thrilling
dramas. Powell had navigated the Canyons of the Colorado, but nobody knew why. Yellowstone National Park had been created, but was thought a freak of nature. California was known as a gold mine, and the intermediate West as a wilderness inhabited by savage bears and troublesome Indians.

As we look back, we realize that those old days were wonderfully romantic. Or was it youth that made them seem so to the boys we were; and will our boys look back at our times as an age of romance? At least those old days possessed the mystery of the unknown. To us in the East, it seemed more of an adventure to cross the Mississippi than it does now to circle the world.

The young conservation movement thrived upon the outrages perpetrated on Nature. The soil of the Great West had been drenched increasingly for years with the blood of our vast heritage of wild animals. Our heritage of forest was increasingly slashed and burnt. It was the heyday of a mighty destruction against which fast-growing bodies of conservers were protesting with ever increasing vehemence. Then Roosevelt came.

The discussion grows concerning what was Roosevelt's greatest contribution to his times. Asked by a by-stander at a train-end rally on his last political campaign, he was puzzled to reply, and later, discussing the incident in private conversation, expressed the belief that, in all respects but one, he was altogether an average man. "There is this one
difference,” he said, “that, when there is anything to do, I do it with all the power I possess.” There is a thought here. To my mind, Roosevelt’s personal genius lay in his unerring perception of the inspirations, aspirations, and limitations of the American genius, and the conviction, courage, and power with which he sought their fulfilment. He was, perhaps consciously, the embodiment of America, whence came his powerful convictions and sureness of action. Upon becoming President, he created in law, beating down all oppositions, institutions which he believed that public consciousness would make permanent. He knew his America.

Among Roosevelt’s first works as President was development of our forest reserves, which he found administered by the Interior Department while the Forest Service under Pinchot was studying principles and promoting private forestry from an office in the Agricultural Department. Roosevelt put the work and the workers together and built up, against opposition which would have appalled another, the National Forest as we know it to-day. He assembled the movements making for national irrigation, and launched Reclamation. He encouraged governmental control of game, enabling the Biological Survey to emerge from precarious scientific beginnings into its present position of national efficiency. He established the first bison range and the first fifty bird refuges. He made possible the National Monuments System to preserve objects and
## Federal Lands Having Recreational Uses

### A. Continental United States

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<tr>
<th>Type</th>
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<td>Fishery Reservations</td>
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### B. Territories

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The above do not include water power, oil, mineral and other withdrawals, non-military, naval and lighthouse properties, post-offices, custom houses, hospitals, and national institutions of various kinds in actual use.
areas of historic or scientific value in the Federal Lands. He discovered the West to the nation. He promoted and secured Conservation Departments in thirty-six states, and appointed a National Conservation Commission.

With this word, Conservation, the new era attained self-consciousness and power. The people rallied to it as to a flag. Popular organizations to conserve forests, wild life, scenery, natural resources of many kinds, sprang into existence in every corner of the country, following the leadership of the Boone and Crockett Club, the pathfinder and pioneer which Roosevelt himself had organized in 1887 and of which he had been the first president. The steady growth of popular organizations since has been little less than phenomenal. Many hundreds of associations specializing in various conservational activities exist to-day, and many thousands formed for other purposes have each its active Conservation Committee.

If this sketch were even a brief history of the tidal phase of the conservation movement which began with Roosevelt, it would run to many times its length, for in the years since he discovered to the American people their own aspirations, hewed entrance through walls of opposition, and pointed the path of progress, conservation has increasingly flavored our national life. We can merely glance at it here. Roosevelt did not distinguish then, because the times were not ripe, between conservation for
utility and conservation for preservation. In that period of abundant wilderness as compared with now, the two ideals were not at war. Nor should they be now. Nor will they be when their distinctions are fully clarified to this generation, for both are practical ideals inherent in every American.

Meantime his acts, addresses and voluminous popular writings on wild life defined the nature study movement, which forthwith spread amazingly. Reading clubs on nature subjects sprang up everywhere, and many thereafter specialized. Thus evolved Audubon societies in cities, towns and villages the country over. Thus evolved the wild flower clubs. Shooting and fishing clubs became nature clubs, and sportsmen's magazines became educational. Newspapers devoted columns to bear stories and wild life adventure. Magazines discovered the natural beauties of the West. John C. Van Dyke wrote a book on the Desert which gave Easterners a thrill. Graded nature study supplanted Gray's "Botany" in the schools. The How-to-Know books on ferns, wild-flowers, trees, and birds, vied with the best sellers.

Thompson Seton's "Wild Animals I have Known," itself a best seller, became parent to a great family of animal personality stories in magazines and between covers; and when legitimate supply failed demand the "nature fakers" (how well we recall them) rushed in and snuffed out demand by silly exaggerations and fictions. Presently a solid litera-
ture of nature developed behind this flare of popularity. Essayists treated the aesthetic side of scenery. A boom in travel books developed which has not waned. Stewart Edward White found plots in the wilderness struggles between rangers and depredating "interests," and dozens followed in his wake. Scientists endeavored, often but not always with success, to popularize their writings.

More or less concurrently appeared the back-to-the-country movement, which grew vigorously in the cities. Suburbs took on the aspects of country villages, and deserted farms in the East became estates where the families of the leisurely would spend most of the year in the open. Gardeners became landscapists, and landscape architecture one of the profitable professions. The "modern girl" developed, tall of stature, free of stride, bronzed from tennis and golf in the formerly despised and rejected sunshine.

The bicycle evolved, became a national craze of the first order, played its important rôle and retired before the automobile, which, itself an evolution, in time became the mightiest of all the agencies of out-of-doors development. Let us hope it will not become a Frankenstein.

Meantime state governments took the motor era seriously. Untold millions went into roads, with many times as many millions still to go the same good way. The State Park idea became a movement. Counties and cities caught the fever. Chi-
cago bought property for many miles around, and Denver bonded herself to acquire an imposing group of mountains in a neighboring county. The people enthusiastically espoused forestry. State and local associations were formed. Technical forestry schools were founded in universities. In Massachusetts, towns everywhere are now establishing "wood lots," and spreading the new idea joyously abroad.

Social service kept abreast of the fast growing times. The country-home and woodland camp multiplied. A man named Perkins raised a dozen millions of dollars for an interstate park on the Palisades of the Hudson where millions of New York workers could vacation with nature at charges unbelievably low. In cities the playground was developed scientifically and the infection has since spread like prairie fire to towns and villages the country over. Dan Beard captured the American boy and led him into the woods. Outdoor sports of every kind were systematized, then organized, then codified. Some one brought the Boy Scouts idea from England to sweep the nation with its man-making mission. The Girl Scouts movement promptly followed. Concurrently, questions of child welfare, education, and national well-being in relation to outdoor life attracted the close attention of specialist students and organizations. America was taking her out-of-doors both seriously and joyously.

The decade leading up to the national organization of 1924 was ushered in by National Park ex-
From a photograph by E. S. Shipp, courtesy of the U. S. Forest service

SUMMER MOTOR CAMPERS IN NEW HAMPSHIRE
From a photograph by H. N. Wheeler, courtesy of the U. S. Forest Service

BOY SCOUTS' CAMP IN NATIONAL FOREST, COLORADO
pansion awheel. We have read the story in a former chapter. In other chapters we have found the spectacular evolution of motor touring working similar wonders, notably in National Forests, but in National Parks its swiftness and romantic character centred the national gaze. The readiness of the entire country for the "discovery" of this system, the eagerness with which the news was received, and the enthusiasm with which people of all kinds and conditions in most of the states of the nation hastened to the support of the new prophet, Stephen T. Mather, is one of the astonishing revelations of our national psychology. It amazed and puzzled us at the time. After these years, its meaning is plain.

During the latter years the remarkable development of private organization for accomplishment of public purposes had swept into full tide, and outdoor causes, both social and conservational, because they appealed to the universal American mind, profited more than any other. Educational organizations, for example, had their playground committees, patriotic organizations their scenic and historic landmark committees, scientific societies their wild life preservation committees, shooting clubs their conservation committees.

In fact, as wild life conservation became a nation-wide desire, many thousands of organizations for vastly different public purposes devoted time and energy to this and other departments of conservation activities, and, when the fights were on in Con-
gress to defend National Parks, conservation organizations of very many kinds, with memberships aggregating four millions, leagued in active work; in fact, this alliance of defense could have been extended to several times its size had there been need. Every blow struck in this fight (and there have been hard ones) had behind it, unrealized, the inspiration and power of the whole from the beginning.

It was this fight which completed the definition begun by Roosevelt. The principle of conserving our natural resources for the prosperity of the future had long since become an axiom; conserving some of them for pure preservation sake aroused antagonisms. The distinction had not been widely clarified, and able men who attempted in Congress to break down the conservational barrier of the National Parks System were quick to charge that those who defended conservation for preservation were opposing the development of our natural resources.

The argument destroyed itself by driving conservationists to definition. The National Parks Association called our National Parks national museums of nature's creations and processes, and the trick was done. Popular imagination needed no better handle for this new concept. What if there were water power opportunities in some of our National Parks? The country was rich enough to keep these special places for exhibits of original wilderness. What if it did cost more to dam irrigation waters outside than inside National Park boundaries?
These national museums must at all cost be preserved. It was another instance of the educative power of a phrase.

Another interesting reaction followed the early charges that the struggle lay between "eastern sentimentalism and western progress." Alternate indignation and tears choked the voices of Congressmen describing the heartlessness of long-haired eastern professors and spectacled club-women in condemning to starvation western farmers whose crops, apparently, would not thrive except on waters dammed inside National Park boundaries; and several western newspapers assaulted eastern National Park defenders by name with expletives reminiscent of old-time frontier journalism; the writer was himself for awhile the target of the Rocky Mountain press. The reaction was the swift spread of conservation sentiment through the West and its active expression to Congress. In one western state National Parks conservation elected a Congressman while all his running mates were soundly defeated.

The long struggle, emphasized here and there with sensational episodes and concentrating powerfully for a time in this western state or that, sensitized the public mind throughout the country, preparing the way to swift results. Concurrently, in this favorable atmosphere, conservational activities of many kinds have prospered. Game preservation, the earliest of all nature conservation causes and perhaps the most highly vitalized, has enormously ex-
tended organization and passed from achievement to achievement. Forest conservation has spread from nation to state and produced legislation in the last session of Congress which may mark the turning of the tide at last toward the rehabilitation of our forests. Wild flower preservation, the garden club movement, bird conservation and nature study organization—all have made long forward strides. The United States Biological Survey, the United States Forest Service and the Conservation Departments of state governments have entered into periods of unprecedented activity and achievement. Game refuges have increased. The State Parks Movement became formally organized and has developed a co-operative spirit.

Not that National Park events, creative and defensive, were in any sense a cause of these increased conservational activities of other kinds. They constituted merely another manifestation of the same general current, a swift new confluent which helped swell and speed the whole.

Looking back over the steps immediately leading to the recreation conference of 1924, and in detail at the workings of young Mr. Roosevelt's executive committee, of which I was a member, which planned and effectuated it, I perceive that even the farthest-seeing and most expectant of us did not, at the moment, realize the fulness of our opportunity. The Conference had been proposed by Charles Sheldon whose immediate object was game conser-
vation. It was effected by one who saw social advantages to the masses in out-of-door recreation. The committee consisted mostly of specialists not particularly interested in each other’s objectives. The most optimistic of us hoped at best that a beginning toward a union of many movements related only in their use of recreation might gradually be brought into co-operation.

Once assembled, this astonishing conference set its own pace. That it started with a rush, that it produced in amity, enthusiasm and unanimity a creed covering the most advanced positions in the relations of conservational and social movements toward the use of out-of-doors, and that co-operative organization was started on a national scale, evidenced that the motive power was mass sentiment. Twenty committees worked in separate rooms during sessions and at night to produce the creed which was passed with applause at the last session.

The permanent organization adopted was simple. Under the comprehensive title of National Conference on Outdoor Recreation were balanced a popular and a governmental wing, each wholly independent of the other. The former, called the Council on Outdoor Recreation, was to consist of representatives chosen by the national organizations of the people to promote unindustrial outdoor opportunities and conditions of all kinds throughout the country, developing a national policy. The latter, a committee of Cabinet officers to be appointed by the Presi-
dent, was to consider federal areas and functions, and general legislation, from the same point of view. The Council (through its executive committee) and the President’s Committee were to confer from time to time, working together so far as practicable. From time to time bills were to be introduced in Congress, or bills introduced in Congress by component organizations were to be supported; harmful bills were to be opposed; and it was hoped that in time a well-studied policy would emerge which would command recognition by national and state administrations, Congress and the legislatures.

The original planners had expected that the popular wing, the Council, and the governmental wing, the President’s Committee, would preserve each its complete independence of the other. The popular wing would preserve, as a most precious possession, an uninfluenced attitude toward politics, which of course might not always be possible with the President’s Committee. It was expected, also, that the Council would not in the least interfere with component organizations, but would remain in the fullest sense the council body of all, retaining only the function of policy formulation.

To this end, the first act of the Council was to assign fact-finding duties to various associations looking to the bases for policy development. Those on state parks by the National Conference on State Parks, on playgrounds by the National Playground Association of America, and on recreational oppor-
tunities in Federal Lands jointly by the American Forestry Association and National Parks Association have been completed at this writing.

At this writing, after four years, it is as certain as it seemed to be in 1924 that the act of organizing the National Conference on Outdoor Recreation marked the end of the old individualistic and often competitive era in nature conservation and the beginning of a new co-operative era.

That the very first try for a new order should solve its complicated problems was scarcely to be expected, but at least it was amply proved that close and effective co-operation between government and citizen organizations is possible on a really national scale, and that readiness for such co-operation has come. If organization had accomplished nothing more, the knowledge of this alone would fully have warranted the building. But it did accomplish certain very definite achievements. In its so-called "Park-Forest Co-ordinating Commission" which composed rivalries of long standing between the National Park and National Forest Services, a form of practical co-operation has developed probably capable of handling the most complicated human situations.

The tendency of the times is strongly toward recognizing one soundly-handled highly-specialized national citizen organization in each field of work, strengthened financially to supplement the work performed by the government bureau in the same field.
Either to build a new general organization better representing individual organizations, or to reorganize the present National Conference so as to eliminate its weaknesses, defining and emphasizing the relations between the grouped popular organizations on the one hand and the grouped administrative departments on the other, will be the natural evolution of the future. Success will only attend organization which literally represents its public.

Attempts in realization of long ripening causes may be diverted or delayed, like this, by chance human obstacles, but in the end the gathering current will surely clear its channel. We may be confident that Charles Sheldon's vision of popular and governmental co-operation in achievement of nature conservation's sound fruition will be realized.

**WANTED: a NATIONAL UNINDUSTRIAL LAND POLICY**

The co-operative spirit of the day which devised the Recreational Conference as a mechanism for achievement is not waiting for it to perfect itself, but, now far in advance, calls to common effort all interested in beneficent unindustrial uses of land. Innumerable are the interested clubs, associations, leagues and federations, the individuals many times as many. The ultimate problem in evolution is procurement of a policy upon which all may unite.

"A national recreation policy as conceived by the Joint Committee on Recreational Survey of Fed-
eral Lands," writes Ovid M. Butler in the report of 1928, "must project far into the future. Present day problems are insignificant compared with those that must be met forty, fifty, or a hundred years hence when our population will have greatly increased and demand for recreational outlets will have become many times intensified. A policy formulated now to meet these future problems must be based upon a permanent foundation of co-ordinated use.

"Recreation as a recognized use of Federal lands has grown under conditions of opportunism and departmental individualism. Its dominating growth factor is economic pressure rather than co-ordinated planning and development by the departments of the Government. But it is an inescapable fact that recreation as a public use of Federal lands cannot be turned aside. Almost a quarter of our population is turning to-day to public reservations for outdoor recreation. Federal land is their property. They demand participation in its use to satisfy their recreational wants, and their demands must be met. Sooner or later the Federal Government, as an obligation of its stewardship, must plan and provide in a forward-looking way for a clearly defined adjustment of recreation to the other uses of these public reservations.

"Analysis shows that the Federal land holdings of to-day embracing recreation resources which warrant some form of particularized and permanent Federal administration and development for general
public enjoyment are largely confined to the national parks, the national monuments, the national forests, the national bird and game reservations, the unallotted Indian lands, and restricted areas of the unreserved and unappropriated lands of the public domain west of the 100th meridian, that is, a line drawn south through the Dakotas. Other classes of Federal lands, while they may be of value for recreation, cannot be used for such purposes or the values, if possible of development, are not of national importance but of sectional or local significance, demanding development by the states or minor political units.

"Nevertheless the Federal recreation resources of national significance are of supreme importance for they are unique and generally of a character that complement but do not duplicate the recreation resources possible or under development by states, counties or municipalities. The Federal lands of national significance from a recreational standpoint are the wilderness areas of the high mountain ranges, restricted areas of the plains and the arid deserts of the West; the headwaters of the Mississippi, and the highlands of the northern and southern Appalachians, and of the Ozarks of the South. These are the lands now generally included in the national forests and parks, or passed over in the rapid exploitation of the public domain.

"Cities can make possible adequate playgrounds and parks to meet local needs, and counties and
states can provide large parks and forests for transient enjoyment and relaxation out-of-doors, but man cannot replace the wilderness, and the remaining wilderness of America, modified as inevitably it has been is now found only in Federal ownership. It is then the great responsibility of the Federal Government to provide those forms of outdoor life and recreation which it alone can give and which are associated only with the wilderness.”

In spite of four recent years of bitter contest in Congress to save National Parks from industrial invasion; in spite of attempts still making to destroy standards in the interest of local profit; in spite of two recent years of raiding National Forests in the interest of cattlemen; in spite of four years defeating of bills to save breeding waters for disappearing aquatic fowl; in spite of the revival of the reactionary demand that federal properties shall pass into local ownership; nevertheless we are fortunate in the period of our participation in the inspiring work of saving for the future something of America as God made it.

It is in Congress, very seldom nowadays in administrative office, that assaults originate against the land policies and institutions of the nation. Local demand for federal property, local greed for profit and appropriations at national expense, and, on the part of legislators, the ever-present need to strengthen political fences—these are the usual motives of attack. But opponents are fewer to-day in
Congress (as their constituents grow wiser) than ever in the past, and are becoming fewer every year; and friends of conservation are increasing constantly in number, interest and courage. Our mission is solely public education. We fight only those whose impetuous onslaughts upon national idealism in the name of localism and politics, demanding instant satisfaction, will yield to no other persuasion than the prompt emphatic negative of the popular will. From this there can be no appeal.

To serve faithfully during our time, unyielding in defense, as Grinnell, Powell, Hough, Walcott, Pinchot, Lacey, Merriam, Maxwell and Roosevelt served in creation, is to play our lesser but no less crucial rôles in a very great drama of civilization. It may be that, with to-day's nation-wide co-operation, we shall even see realization assured.

As I write the concluding words of a book which records the beginnings of an evolution in transportation which, in a single decade, has changed America and American life beyond belief, I hear the ominous prophetic roar of an airplane thousands of feet above my head, lost in clouds. Prophetic of what? Did the honking of an automobile seem prophetic in 1915?

To several of us in Yosemite National Park twelve summers ago, wondering at the slender patronage of a spot so marvellously beautiful in a land so great and rich, the presence of adventurers by automobile from distant states stirred no apprehen-
sion within us of the deluge of travel to come. To the common thinking of that time, motor touring seemed too dangerous and expensive a sport ever to affect the destiny of places so distant and difficult of access. Even the railroads feared far more the competition of steamships than of automobiles, and advertised National Parks against Europe hoping to keep transatlantic travellers at home.

Ah! There I see it now, emerging from that heavy bank of cloud in the north. What an infernal noise from so small an insect! Speeding like a dragon fly! No doubt the New York mail!

I wonder what, twelve years from now, the airplane will have done to the lands I have here described!
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