

RECREATIONAL FORESTRY
AS A CAREER

by

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RECREATIONAL FORESTRY AS A CAREER

INTRODUCTION

Reasons for Choice of Subject

The subject for this thesis was chosen because of the small, existing, amount of published material concerning the field of recreational forestry. Throughout more than two decades, during which the writer has maintained interest in the subject, difficulty has always been encountered in attempting to secure adequate information. This, however, is true of any new occupational field. It is hoped that a contribution may be made, through the medium of this thesis, to the available information in regard to the subject.

The body of data, about which the thesis is built, has been accumulated over a much longer period than that represented by the two years of graduate study spent here, at Oregon State College. Interest in the subject and effort toward gathering the material really began as early as the year 1916, when as a boy of ten years, such inspiration was found in the forested foothills of northwestern Pennsylvania's Allegheny Mountains, that it was felt that nothing greater could be desired than the realization of an opportunity to work, out-of-doors, in the forests, after

"growing up." Although no one will deny the basic importance and necessity of the management of forests for commercial purposes, this was not the type of forest work which held fascination for the writer. The desire, rather, was to work on forest areas whose chief purpose was to serve inspirational and recreational needs.

Recreation has not been generally recognized as one of the four major products of the forest until relatively recent years. Residence of the writer, in the eastern part of the country, was a disadvantage because governmental administration of forest lands has not been extensive there. It is under public ownership that recreational forestry has its greatest possibility of development. Eastern national parks and forests have been, and are, as yet, few in number.

Search for formal recreational forestry training began immediately after high school graduation in 1924. Although confidence was felt as to the type of forestry work desired, "recreational forestry," as a term, was unknown, to the writer, at that time. The occupation of Forest Ranger seemed to hold promise. Opportunities were remote, at that time, for a person, living in eastern United States, to observe field practices within national forests and parks. However, a visit was made to the New York State Ranger School and a study made of its curriculum. All courses

pointed toward preparation for purely commercial forestry practices (23) and most students there looked forward to future employment with the International Paper Company.

The above experience, together with later investigation indicated, to the writer, that the forest ranger is really a highly trained business executive. His office is often the center of one of the most important, if not the most important of commercial enterprises existing within the community in which he is located. Much of his time is spent in his office working with records and accounts. It appears, to the writer, that the term Forest Ranger is inappropriate for an occupation of such scope and magnitude. Forest Manager, or a similar term would seem to be more applicable. This contention is partially supported by the fact that popular opinion designates the lookout-observer or the fireguard as a Forest Ranger. The connotation of the term would indicate an occupation devoted largely to field operations, especially of a protective nature.

Forestry training was not undertaken in 1924 because the writer could not find a school offering preparation for anything other than commercial forestry. Although the desired training was still undiscovered in 1939, rather than miss, entirely, the opportunity for some kind of forestry preparation, routine training was undertaken at

the Forestry School of a large southeastern university. Before completion of the first year of study, however, a reference to recreational forestry training was found, through happenstance, in the Journal of Forestry (8). Later investigation showed (and it is true at the present time) very few forestry schools in the entire country as offering this type of preparation. One of these proved to be located at Oregon State College where transfer was made and where completion of the long sought training in recreational forestry is about to be accomplished (1942).

The above account of personal experience is given to show how difficult the task has been to secure information and training in this newly recognized occupational field. A final citation will give further illustration. Before undertaking forestry training in 1939, a final effort was made to learn of the scope of possibilities within the field through an attempted careful analysis of a vocational bulletin issued by The Institute of Research of Chicago, Illinois (14). This bulletin is called "Forestry as a Career" (latest edition 1940). The Institute is known for the excellent quality of its vocational bulletins and the research involved therein. One would expect that such a bulletin would cover all of the important phases of the field of forestry. Yet, in spite of the fact that forest recreation has been increasingly recognized for the past

twenty years and now ranks among the four major purposes of forest management, this bulletin devotes little more than one complete sentence to the subject.

It is obvious that the difficulty of securing adequate information concerning the field of recreational forestry has resulted in the loss of an enormous amount of time and money on the part of the writer.

Major Objective

In view of the fact that a nationally recognized research institute has published a vocational bulletin of restricted information called "Forestry as a Career," justification is felt for an attempt to supply as much of the missing information as available facilities will permit, under the title--"Recreational Forestry as a Career." Such is the objective of this thesis. It is sincerely hoped that some students who may be groping for information concerning recreational forestry may find herein some measure of contribution which may assist in the formulation of a decision for or against effort, on their part, toward recreational forestry as a career. Adequate information which may contribute to a basis for such a decision is of much greater concern, to the writer, than the direction of the decision itself.

Procedure

The plan used in writing the thesis is merely that of formulating pertinent questions concerning recreational forestry, as an occupation, and attempting to answer them, as well as possible, through an analysis of available supporting data.

It should be emphasized that the prevailing viewpoint with which the thesis is written, is concerned with the recreational forester, as a specialist. This fact must be constantly kept in mind if understanding of major points and conclusions is to be realized. For instance, abundant facilities for recreational activity have been provided in our national forests, yet, opportunities for the employment of recreational foresters, as specialists, are relatively small. There are good reasons for this situation which are discussed elsewhere in the thesis. It should, also, be understood that such possibilities for employment for the recreational forester, as are designated, will be partially dependent upon the availability of compensation, in such amount as would be worthy of consideration by college trained men.

When parks are mentioned it should be understood that reference, of course, is made to forested municipal, county, state, or national parks, whichever the case may be.

WHAT IS RECREATIONAL FORESTRY?

Definition of Terms

A specific definition of the term, recreational forestry, has not been found. However, this definition may be readily built from the definitions of its component words.

Webster (12) defines the following words in this manner:

Recreate--To refresh. To take recreation. (To engage in an activity through which recreation is obtained.) Statement in parenthesis mine.

Recreation--Act of recreating. State of refreshment of body or mind. (Latter statement serves best to distinguish from recreate.) Statement in parenthesis mine.

Forest--An extensive wood. A large tract of land covered with trees. A tract of woodland or waste land set apart for keeping and hunting game.

Forestry--The art of developing or managing forests.

Definitions of the following terms are built from those of the above words:

Forest Recreation--State of refreshment of body or mind achieved through activity within a forest area.

Recreational Forestry--The science and art of developing or managing forests for the purpose of providing means for the achievement of recreation.

Coffman (8) and Arnold (1) give very interesting analyses of the duties and attitudes of a recreational forester.

Thus we see a difference between the act of recreating and the state of recreation which is achieved thereby. We also see a difference between "forest recreation" and "recreational forestry." The former is a product of the latter which is the means through which the facilities for forest recreation are provided.

Background, Importance, Value

Albert Davies, in his thesis of May 29, 1936-- "Recreational Forestry," (11) makes the following statement: "Forest recreation (probably the oldest of all forms of forest use) is the last of the major forest uses to have been recognized and provided for by the Forest Service." First of all I do not believe that forest recreation may be properly defined as a "use." It would appear, to me, to be more correctly defined as a "product." The activity through which recreation is achieved would fall more appropriately under the category of "use." If it can be assumed (which is likely) that Davies meant that recreational activity is the oldest of all forms of forest use, it would seem that this, too, is questionable because general observation will show that the first concern of the individual is directed toward the procurement of the material necessities of life.

The newly born child must have air and soon thereafter

it must have food. Perhaps a little later, after these necessities have been supplied in sufficient quantity, the child may resort to random activity of various kinds. I believe that the well known biogenetic law--"Ontogeny recapitulates phylogeny" (13)--is correct and that primitive man, too, was first concerned with the material necessities of life, namely, food, clothing, and shelter. The forest supplied them abundantly. After these were obtained with some degree of adequacy, he, no doubt, found some time and inclination for recreational activity. Both the material necessities of life and recreation were first secured without need for the deliberate management of forest lands to that end. However, when material utilization of the forest had reached such a state as to endanger the harvesting of both timber and recreation, controlled use through forest management was resorted to. I am happy to say that, at least in the United States, the forest recreationist has been highly instrumental in stimulating the adoption of forest management practices. Some will say, "Yes, but the forest recreationist is prone to be extreme in this regard. He often becomes a 'rabid conservationist'". There is much truth in this accusation and it is hoped that education will serve to "bring home" to such misguided individuals a well rounded picture of conservation as a whole. Incidentally, it is, no doubt,

also true that some individuals, engaged in forest utilization activities, could stand similar enlargement of their conservation concepts so as to include something of the importance of forest recreation.

Indications point to the fact that forest recreationists were instrumental in promoting forest management practices, not only in the United States, but in other parts of the world. "King's forests" were set aside (11), in early England, so that the nobility, at least, could be assured of hunting and fishing opportunities. This was an example of recreational forestry management practice.

I agree with Davies, that forest recreation is one of the four major products of the forest. I would not, however, place it ahead of timber, forage, or water, as far as importance is concerned. These material necessities of life must be supplied. However, forest recreation becomes of increasingly greater importance as our civilization advances and becomes more complex. As our physical necessities become more abundantly supplied, working hours become shorter and we have more time and inclination for recreation. Its degree of importance is dependent upon the status of society and the degree of effectiveness with which material necessities are being supplied. War periods, for instance, will bring a lessening of recreational activity of all kinds, on the part of the

general populace. However, the stress and strain of such periods serves to place a great deal of importance on whatever amount of recreational activity the people can find time to engage in. I am confident of the importance and necessity for forest recreation and, therefore, have specialized in recreational forestry training. However, I also believe that all specialists should attempt to view their particular occupational field with as much perspective as possible.

Recognition of recreation as a major product of forest lands has been developing with ever increasing momentum for the past twenty or more years. The entrance of the United States into World War II may serve to check its popularity but indications point to its continuance after the "duration." Our state park areas have been increased. Vast national park areas have been set aside. The United States Forest Service has given recognition to the movement by making extensive provisions for recreation on our national forest areas.

Recreation is sought by everyone. It may be secured through constructive or destructive activity, the latter resulting in any of the various forms of dissipation. Most forest recreational pursuits, however, may be classified as very constructive and wholesome.

The importance and value of anything may be indicated,

to some degree, by the amount which people are willing to pay for it, either directly or through the government. Thus one measuring stick which could be used in determining the importance and value of recreational forestry would be the extent of governmental appropriation for its existence. The federal appropriation for the National Park Service was a little over \$5,000,000 for 1942 and this agency manages lands which are devoted almost exclusively to recreation. A large portion of these lands are forested. The United States Forest Service has a recreational program which has been expanding year by year. It has classified its forest recreational areas into many types. It was no doubt intended, before outbreak of the war, that a substantial portion of its 1942 appropriation of \$18,000,000 would have been earmarked for recreation.

Another useful measuring stick would be the use of records compiled by the various governmental units concerned with the management of forest lands. The Forest Service boasts of many millions of forest visitors last year. National park visitors also run into the millions yearly. Smaller, but, attractive state parks accomodate thousands of forest visitors over single week-ends. Avery Park, owned by the city of Corvallis, Oregon, although containing only about 80 acres, sometimes entertains as many as 4000 visitors on week-ends.

Robert Marshall in "A National Plan for American Forestry" 1933, (28) has described four methods by which the tangible value of forest recreation may be measured (and consequently the value of recreational forestry):

1. Determine the number of annual visitors to a forest and ascribe, as the average value of a single visit, an amount equivalent to the value of the pleasure each person would derive from a two hour movie show, placing it at the very conservative figure of twenty-five cents. On this basis, using 250,000,000 man-days as the annual time utilized in forest recreational pursuits, he ascribes a value of \$62,500,000 to the nation's annual forest recreation.

2. Estimate the amount of money invested in forest recreation in the way of lands, equipment, and services.

3. Figure the additional taxes which are due to the recreational use of the land.

4. Calculate the amount of money recreationists spend in traveling to and from the forest and in expenditures for equipment to be used in recreational pursuits.

All of the above methods would serve to indicate tangible value of recreational forestry. There are how-

ever, criteria which indicate intangible values. These values are not at all readily measured. For instance, no one can measure the extent to which the feeling of class distinction may be lessened through contacts made on forest recreational areas. This is certainly of practical value to the well-being of our communities and nation. The amount of benefit, to communities and nation, resulting from the lessening of child and adult delinquency would also be difficult to gauge. The occurrence of mental disease is also, no doubt, lessened.

It has been suggested that the value of forest recreation to the individual could be ascertained by the measurement of his emotional response to the sight or mention of scenery or activities involving forest recreation. This measurement would be taken by an instrument operating on the principle of the lie-detector. This is a novel idea and is worthy of further investigation.

Paul V. Brown (5) of the National Park Service states, "Some of our unofficial formulas, for instance, would indicate that even an average recreation area would influence annual tourist expenditures at the rate of \$400 per acre per year. Less conservative formulas, using a recreation hour factor in combination with tourist expenditure would give some of our national parks a \$15,000 per acre value. But whatever the tourist expenditure, or

whatever the cost to the government in acquisition, development, operation, and maintenance, it is our contention that finances involved do not and cannot measure the value of parks and recreational facilities or of outdoor recreation itself." "Volumes of carefully prepared cost figures may add up to a tremendous sum in dollars and cents as having been expended in the acquisition, development, operation, and maintenance of a national park, but that amount does not indicate the value of that property to an individual or to a nation. One life stimulated or perhaps saved from mental fatigue and physical exhaustion through a visit to such a park may influence a social progress that would outweigh many times the cost in time and energy and certainly the arbitrary relative value of gold." "More than at any time in its history the nation will soon need the restorative function of outdoor recreational resources. Democracy is now being tested to determine if it can exist among other types of governments. It is destined to receive philosophical shocks and impacts that may rock its very foundation." "The national and state park systems of our democracy must inspire and sustain our morale. What then is their value? Is it measurable in terms of dollars and pennies? Is man's love of country; his faith in God; his social concept and benefaction; his leisure and his strife; or all his joys and woes; exultations and sorrows;

his future hopes and past regrets; are these things measurable by a substance that has no life or inherent value of its own? To measure the purpose of living; the cost and worth to compare; look into the heart of a child--the value of living is there." (Place a monetary value on it--if you can) Parenthesis mine.

Although many ingenious devices may be formulated in order to place a monetary value on recreation, I believe that Brown has adequately expressed the futility of any such attempt. We do not pay for the air which we must breathe. No one would question its very great importance and value, nor would anyone attempt to measure this value by monetary standards.

WHAT ARE THE DUTIES OF A RECREATIONAL FORESTER
AND WHAT ARE HIS ATTITUDES TOWARD THE FOREST?

Duties

In all fairness, it must be said, that the scope of the recreational forester's duties is largely determined by the particular administrative "set-up" under which he is employed. In the larger forested national parks the field administrative duties are divided between park rangers (recreational foresters), fireguards, lookout-observers, landscape architects, and ranger-naturalists. However, in the smaller administrative units, such as forested national monuments, state, county, and municipal parks, the custodian or caretaker (recreational forester) may be called upon to perform any or all of the duties delegated to the various specialists mentioned above. Thus, he may be called upon to guide a group of hikers, give a lecture, lay out a camp ground, repair machinery, or fight a fire.

The national park ranger may be cited as an example of a recreational forester. The United States Civil Service announcement of the Park Ranger examination of March 1937, describes the duties of the park ranger as follows:

Under general supervision, to be in responsible charge of a ranger district in a

national park or monument, or of specific units of work in a ranger district, or to act as assistant to a park ranger in responsible charge. Such duties involve protection of the forests from fire; fire prevention and insect control; protection and study of scenic features, flora, and wild animal life of the park or monument; planting of fish; giving of reliable and authentic information to, and the protection of, the public visiting the park or monument; preservation of law and order; prevention of accidents; registration of visitors and issuance of automobile permits. The duties require men of strong physique, who must fight fires in summer and patrol the parks through heavy snow in winter.

Just as the regular forester manages the resource so that timber, forage, water, or recreation may be harvested, the recreational forester manages the forest so that recreation may be achieved. In each case, the forest, as a resource, receives emphasis. The forester, whose forest, produces timber as a product, does not consider the harvesting activity--logging--as his special province. His main concern is centered in the resource. It is his responsibility, of course, to see that the logging is carried on in such a manner as to safeguard the productive capacity of the forest. For this reason he does not hesitate to oversee the logging activity to the extent that the above objective is assured. The actual logging is carried on by a specialist--the logger--whose chief concern is centered in the harvesting operation.

Similarly, the recreational forester is primarily concerned with the forest. He is responsible in seeing

that the harvesting procedures (recreational activities) are carried on in such a way as to insure the maintenance of recreational values within the forest. Therefore, he does not hesitate to oversee recreational activities just as the regular forester oversees logging activities.

Planning of facilities for recreational activities, such as camp ground layout, trail location, etc. are among the duties of the landscape architect, who, in this case, is really a recreational engineer. As far as the actual recreational activities are concerned, the recreationist is further aided by still another specialist--the ranger-naturalist--who assists in the interpretation of nature and thus aids in the "harvesting" of recreation as a "product." The actual "harvesting" activity is performed by the recreationist.

Generally speaking, we may say that, the recreational forester, first, manages and protects the forest. Fire protection is a large item here. He is also alert to damage from insects and fungi. Secondly, he sees that facilities are provided for the recreationist. Thirdly, he protects the recreationist. Fourthly, he oversees the activities of both recreationist and recreational engineer.

In order to protect the forest the recreational forester should be continually concerned about the well-being of trees, other plants, and animals therein. He

should be well acquainted with prevailing growth conditions and possible disturbances. In addition to a day-by-day general observation of the forest, intensive, periodic, ecological examinations should be made so that insect or disease attacks may be discovered before an epidemic stage is reached. A sample plot method is suggested for these examinations. Following is a copy of a report of this type of work in which an examination was made of the old-growth Douglas-fir forest in Silver Creek Falls State Park near Salem, Oregon:

**Ecological Factors and Growth Conditions
Within the Old-Growth Douglas-fir Stand in
Silver Creek Falls State Park, near Salem, Oregon**

March 18, 1942

Eugene McKeown

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*This paging is from the original manuscript.

Introduction

It is generally conceded that the forest cover is an invaluable feature of most recreational areas, including state parks. Although the nine beautiful waterfalls located within Silver Creek Falls State Park are correctly considered the main feature of the area, the forest setting also makes a substantial contribution to its attractiveness.

Those in charge of recreational areas, because of the unquestioned value of the forests, therein, should be well acquainted with such items as composition, general growth conditions, and the existence of or possibilities of encroachment by fire, insects, disease or other disturbances.

With the above thought in mind, C. H. Willison, professor of forest recreation management at the Oregon State College School of Forestry and the writer, a graduate student in recreational forestry, formulated and carried out a plan of procedure for periodic examinations of recreational forest stands.

The old growth Douglas-fir forest of Silver Creek Falls State Park, consisting of approximately 80 acres and located just north of the South Falls recreation area was selected for the study. Six quarter-acre circular plots were chosen at random and layed out for intensive examination.

History

Annual growth rings were counted on the stumps of several old-growth, down, trees and ages were found to vary between 250 and 325 years. The probable life history of this particular forest is indicated by a review of the main points of Thornton T. Munger's description of the life history of a typical Douglas-fir forest in the N. W. Oregon section of the Douglas-fir region (21). Douglas-fir is not the climax type over much of the Douglas-fir region (including N. W. Oregon). It has been maintained as a sub-climax species for centuries in the Pacific northwest by reason of the periodic occurrence of severe forest fires. Following is a brief century-by-century summary of the life cycle of such a forest, as revealed by Munger:

1st Century

In the new Douglas-fir "fire forest," hemlock, cedar, and balsam fir are sometimes absent for a few decades. More often there are a few scattered members of these species present. As growth continues they make their appearance in the understory, at the end of the first century these tolerant conifers are conspicuous in the understory. Douglas-fir reproduction cannot survive because the required amount of light is not available.

2nd Century

Douglas-fir specimens thin out. The tolerant species take advantage of every opportunity to utilize space made available by Douglas-fir casualties due to wind, insects, or disease. The invaders win a definite place in the main stand at the close of 200 years.

3rd Century

Encroachment by hemlock, cedar, and balsam fir continues until these species may outnumber the Douglas-fir at the end of this century. Douglas-fir has reached maturity. Growth is very slow and casualties slowly continue.

4th and 5th Centuries

Douglas-fir has reached a state of senility. Elimination from the stand proceeds at an accelerated pace as a result of long years of onslaught by weather, insects, and disease.

Thus, it is seen that if the Douglas-fir forest is protected from disruption influences it will be supplanted in time, by a climax forest type. This will be an uneven-aged stand of hemlock and other shade tolerant trees.

From the above typical life cycle it is seen that the

present old-growth Douglas-fir forest at Silver Creek Falls has reached the middle of its life cycle. Maturity has been reached. The findings of our study coincide with Munger's description. The forest probably received its start after a fire some 300 years ago. Evidence of this particular fire, is of course, no longer apparent. However a disastrous fire did occur about 50 years ago, which wiped out most of the Douglas-fir timber included within the park. The tract under examination, alone, being saved.

Douglas-fir reproduction was not found within the area. The encroachment of hemlock and white fir was very apparent. This trend will continue as long as the forest is successfully protected from the disruptive occurrence of fire or other disturbances of similar magnitude. However Douglas-fir will remain as the dominant species for, perhaps, 200 years, since the life cycle of such a forest may last for five or six centuries.

It is interesting to contemplate the fact that some day, barring great disturbance, the forest will be dominated by hemlock rather than Douglas-fir. Although hemlock is a shorter-lived tree, replacement of old trees will be continuous and the climax type will be maintained.

Some may question the recreational value of a hemlock forest over that of Douglas-fir. In the writer's opinion, its possibilities as a dominant in a recreational forest

are even better than those of Douglas-fir. The foliage of hemlock has a "lacey" pattern which gives the tree a more graceful appearance. At any rate, the final change will be of little significance to anyone now living. An important aspect of the situation concerns itself with whether or not the average recreationist is aware of the forest as a community within which fascinating growth, development, competition, and succession of species are continually going on. Herein, lies the opportunity for interpretative assistance by those who contact the visitors. Ecological aspects of forest development may be illustrated just as well by any forest whether its stage of development is sub-climax or climax.

A very small portion of timber in the central portion of the area was found to have been subjected to logging. Sharply accelerated growth in near-by trees, revealed by increment borings, indicated this as having occurred about 33 years ago.

Composition and General Growth Conditions

Composition

Overstory

The overstory consists of Douglas-fir (*Pseudotsuga taxifolia*) in the dominant position with western hemlock

(*Tsuga heterophylla*) approaching co-dominance in a few individual cases.

Understory

The understory is made up chiefly of western hemlock, white fir (*Abies grandis*) and a sparse amount of Red Alder (*Alnus rubra*).

Underbrush

The following species are prominent:

Vine Maple (*Acer circinatum*)

Red Alder (*Alnus rubra*)

Ocean Spray (*Holodiscus discolor*)

Pacific Yew (*Taxus brevifolia*)

Reproduction

Western hemlock and white fir reproduction is present but sparse in occurrence. The absence of Douglas-fir reproduction was noted, which is obviously due to the density of the canopy.

Ground Cover

Salal (*Gaultheria shallon*), Oregon grape (*Berberis aquifolium*), sword fern (*Nephrolepis* spp.), and mosses (*Musci*) are prominent in the ground cover. Swordfern is profuse in the denser plots, while salal is dominant as a ground cover in those plots having greater openings in the

overstory.

General Growth Conditions

Although comparison of the inner and outer growth rings of several old-growth trees reveal an expected drastic "tapering off" of growth, the trees of the overstory are surprisingly healthful. This is further indicated by the small amount of insect and disease attack, which prevails, as well as the healthful appearance of the tree crowns. They still hold forms which are quite sharply tapered, for trees of this age.

Scattered specimens of hemlock, characterized by a definitely stagnated condition of growth, are present in the understory. This condition, however is quite normal for old-growth forest stands.

Vine maple is plentiful, as an underbrush species, in the greater number of plots. Red alder is present in the understory in one plot only. For the most part it grows as an underbrush species in this stand, and shows the effects of severe competition by its smallness of size and grotesqueness of shape. Ocean spray is relatively abundant, while Pacific yew is of sparse and scattered occurrence.

Disturbances

Evidence of disease attack is surprisingly small. In fact, conks indicative of a diseased condition were found on two trees, only, of the six plots examined. The first infected tree was a hemlock found in Plot 1. The other was a Douglas-fir in Plot 2. The conks were determined as the fruiting bodies of Conk (Pine) fungus, (Fomes (trametes) pini). (4)

The areas examined were found to be singularly free of insect damage. One dead, riddled Douglas-fir was noted just outside one of the plots.

The stand is also free of damage from visiting recreationists. Apparently few people have visited the area thus far. This is probably due to the lack of emphasis in regard to its presence in the folder describing the park. However, a new road is being built which will make this area more available to visitors.

The occurrence of a small amount of logging activity about 33 years ago was mentioned in the historical part of this report. Damage from other biotic factors, such as deer, has been of little consequence.

Fire Danger

Administrators of forested parks are generally fully

aware of the importance of fire control planning. This should be especially true in the case of areas containing unbroken stands of virgin timber. Fire danger in the Pacific northwest forests, during the dry summer months, is very high. Fire hazard under these conditions is a matter of concern because of the abundance of litter and profuseness of growth of ground cover. Fire risk may also be greatly increased if, in addition to natural ignition factors such as lightning, the area is subjected to heavy recreational usage. Under these conditions the administrator may well ponder the problem of whether or not the value of his old-growth stand, as a recreational feature, is largely nullified by the fire danger within the stand and the probability of the spread of fire to other forested portions of the park.

However, the virgin timber stand in Silver Creek Falls State Park seems to possess several factors in its favor as far as the fire danger problem is concerned. In the first place this particular stand is characterized by apparently good growth conditions. The presence of snags is fortunately very small. Other favorable aspects are indicated by the presence of open land south and east of the area. The developed portions of the park are lower in elevation than the old-growth stand.

The fire risk is, of course, dependent to a great

extent upon administrative control of visitors to the area. A lighted match, cigar, cigarette, or burning pipe tobacco thrown into the forest from road or trail, would be very dangerous.

Volume and Site Quality

Although recreational forests are not managed for timber production, the total volume of such forest stands is always an interesting figure and helps to satisfy the curiosity of the recreationist. The data obtained from the six quarter-acre sample plots (comprising a total of $1\frac{1}{2}$ acres) was used to plot a curve showing total tree height over diameter at breast height. Heights not actually measured were determined from the curve. By use of volume tables, (18) and (19), the merchantable volume of the $1\frac{1}{2}$ acres was determined as 189,498 board feet. Therefore, the volume per acre would be 126,332 board feet. The 1940 master plan for Silver Creek Falls records the total area of the old-growth stand as 80 acres. Using this figure, the total volume in the standing trees was found to be 10,106,560 board feet.

Recreationists often manifest an interest in the volumes of individual trees, also. This is especially true of the larger trees. The largest Douglas-fir, measured 84 inches, d. b. h. and was 210 feet in total

height. The merchantable volume of this particular tree was found to be 14,275 board feet. It would provide sufficient lumber to build two six-room houses.

The site quality for the area was determined by use of McArdle's chart (17). It was found to be No. II (low). The site index was determined as 160. This figure indicates that the site will produce trees of 160 feet average height within a one hundred year period.

Recreational Value

The old-growth Douglas-fir forest in Silver Creek Falls State Park can be classified as a very important special feature. Several trees are as large as seven feet d. b. h. and they vary from 190 to 210 feet in total height. Although there are many places in the west where trees of much larger size may be viewed by the recreationist, the opportunity for observation of these trees would nevertheless, serve as a source of appreciation. This particular stand of timber should continue to serve as an example of primitive forest growth characteristic of the western foothills of the Cascade Mountains. As the prevailing old-growth timber continues to be "cut-out" in the Pacific northwest, the value of this small area will increase.

Recommendations

It is recommended that this area be designated as a "natural area" in the descriptive folder of the park. A brief summary should be made of the fascinating drama of succession of species which is being enacted within the forest. This should be of added interest to all.

The importance of the area, as a park feature, seems sufficient to warrant the planning of the loop trail so as to pass through it, if the general topography will permit.

The largest trees along the trail should be labeled and dimensions given. Signs should be placed at one or two points where ecological changes are most obvious. Brief descriptions should be given at these points.

It is recommended that adequate warning be given of fire danger and that trails within the forest remain few in number. The possibility of fire passing through this area from the surrounding second growth should also be considered. The establishment of a fireline or firebreak together with the placement of pump chances at strategic points may be warranted.

It is finally recommended that this stand, as well as other parts of the forest should be subjected to periodic, intensive, ecological examinations so that a reasonable knowledge of general growth conditions and of prevailing

or possible encroachment of various disturbances will
always be at hand.

Attitudes

The attitudes of the recreational forester toward the forest can be excellently illustrated by contrasting them with those of the commercial forester. Arnold (1) makes this contrast so very vivid that the following quotations are made:

"All dead and deformed trees and predatory animals are not objectionable." "He (the recreational forester) maintains a live and let live attitude toward all things native." "He permits natural selection through survival of the fittest and looks upon the forest as a natural reservation devoted to the preservation of native flora and fauna in their natural ecological environment." "He sees the forest as a living community which is both harmonious and competing within itself, at the same time, but which competition he has no desire to relieve." "He recognizes the many and varied ecological inter-relationships whose sensitivity brings response to every stimulus, and whose delicate balance may be disrupted by thoughtless acts of man or by other exterior influences." "He has no pre-conceived prejudices and makes no discrimination between one native species and another." "The vine is not taboo because it chokes the tree." "He resents the intrusion of the exotic."

"As a recreational forester he comes to realize 'that

forest stand improvement' is not an appropriate or necessary form of treatment in the forest that is to be preserved for natural features." "The wolf tree is not girdled and removed." "The stag-headed tree is not felled." "No native tree is outcast from the forest because it is too stunted, misshapen, or deformed." "On the contrary, it is usually trees of this nature which are most interesting to the visitor, lending character and richness to the landscape by their grotesqueness."

It is readily seen from the above that the recreational forester's attitude toward the forest is often the direct opposite of that of the commercial forester. The latter is in reality a "tree farmer" who guides the growth of the forest in the direction desired. Thinnings are made. Wolf trees and misshapen trees are removed. Selected species are favored over others. Let it be said, here, that no reasonable person will deny the great need for and importance of this type of forestry practice. The basic forest needs of the country are material ones. The recreational forester of adequate perspective, will realize that without successful, sustained-yield, forestry practices the entire economy of the country is endangered. He will realize that we must have successful commercial forestry in order to insure the continued maintenance of certain forest areas, selected to serve recreational and

educational needs. The contrast in attitudes is made merely to show the difference between two distinct types of forestry practice.

WHAT ARE THE EMPLOYMENT POSSIBILITIES
FOR THE RECREATIONAL FORESTER ON THE
VARIOUS ADMINISTRATIVE TYPES OF FOREST LANDS?

All forest lands, open to visitors, will be found to supply some degree of opportunity for recreational activity. This may take the form of the fleeting glimpse of appreciation with which a logger might view a particularly splendid piece of timber. It may take the form of a nature study hike in the wilds of a national park. Various forest land ownerships serve to indicate the major administrative types of forest lands. It will be found that these types are characterized by a difference as to viewpoints and methods used in the management of the forests for recreational purposes. The principles underlying the management of a given forest area often serve to determine the possibility of employment for a recreational forester. The following list of administrative types of forest lands would seem to be sufficiently inclusive:

1. Private forest lands
2. Public forest lands
 - a. Municipal forests and parks
 - b. County forests and parks
 - c. State forests and parks
 - d. National forests and parks

Private Forests

The United States Forest Service estimated, (28) in 1933, that the total forested area of our country contained 615,000,000 acres. Two hundred seventy million acres of this area were privately owned. Farm woodlands were not included in the latter estimate. No doubt a vast amount of recreational activity occurs on these lands but it would be safe to say that participation, by large groups, is not, as a general rule, encouraged and visitors are refused admittance to some areas, altogether. There are several good reasons for the failure of the private owner to encourage recreational activity on his lands. First of all it is difficult for him to provide recreational facilities because he cannot charge a fee sufficient, in amount, to cover their cost. This is due largely to competition from the free, or low-cost public recreational areas. For the same reason he cannot provide the necessary administrative personnel and equipment to meet the increased fire danger. In spite of these disadvantages, we have an example of limited provision of recreational facilities on private forests in western Oregon. The Eastern Lane County Fire Patrol Association is experimenting with the provision of small picnic areas in selected places in their Mosby Creek area. The association feels that the fire danger is less if picnic areas with fireplaces are provided. The rec-

reactionists are, otherwise, more likely to wander at random over the area and build fires, for meal preparation, in dangerous places. This action on the part of the association, then, is not, at all, motivated by a desire to encourage recreational activity but rather to control such activity as exists or will occur. This attitude seems to be perfectly justifiable, under the circumstances.

Some few private forest areas are managed for recreational purposes. Those areas owned by hunting and recreation clubs would fall in this classification. So-called, Dude Ranches are often established in a forest setting. The emphasis in management, here, is placed almost entirely upon recreational activity itself rather than management of the resource for the provision of recreation.

It may be possible for a recreational forester to secure employment as a manager of a forest area owned by a hunting or recreation club, or similar organization. However, the field is not of sufficient size to warrant a great deal of dependence upon it. Certainly, it is plain that there are little, if any, opportunities for employment for the recreational forester, as a specialist, on the regular private forest areas.

Public Forest Lands

These areas offer greatest opportunity for recreational activity and for employment for the recreational forester. The reason is obvious. The areas are usually tax free and are supported by governmental appropriation.

Municipal Forests and Parks

Several hundred towns, counties, boroughs, and cities in the United States today own forest lands which are subjected to varying degrees of forestry practices. These are equivalent to the communal forests of Europe, and were acquired in part, because of the successful manner in which the European forests have served as recreation centers, game and bird sanctuaries, and sources of wood products sufficient, in amount, to pay local taxes.

Among the early states to specifically authorize acquisition of municipal forests we find: (28)

Massachusetts	--	1882
New Jersey	--	1906
Pennsylvania	--	1909
Minnesota	--	1913
New Hampshire	--	1913
Indiana	--	1913
Vermont	--	1915

Prior to specific legislation however, there are records of town-owned forest land. One outstanding example of these is the town of Danville, New Hampshire.

Since 1790 this town has owned and managed 75 acres of forest land from which a fund of \$10,000 has accrued.

The town forest movement has made its greatest progress in very recent years. From 1922-30 the Massachusetts Forestry Association was very active in the state in urging towns to acquire forests. The State Forestry Departments of New Hampshire and Vermont have also been active toward the same objective. New York has made the best progress, in respect to number and total area of such forests. Three-fourths of the total number in this state consist of lands surrounding city water supplies (27).

Town and municipal forests in the United States have not been developed to the extent of those in Europe. The average size of these forests is less than 600 acres. Many are less than 200 acres.

Probably fifty per cent of these forests were acquired and developed primarily for the purpose of protecting sources of municipal water supplies. Other uses are: Production of wood products, recreational activities, and bird and game refuges.

These areas are too small to justify the employment of even a technical forester to manage them. Consulting foresters are not utilized very extensively.

The town forest, in congested sections, will usually serve as a town forest park. These areas, where establish-

ed, have proven to be very popular and attract visitors by the thousands, in some cases, over single week-ends. Facilities are provided for recreation and the areas sometimes serve as game refuges.

Oregon has six metropolitan or municipal, non-urban parks. Four of these areas are under the jurisdiction of the Park Bureau of the city of Portland, and are located in Multnomah County. One is administered by the Park Superintendent of the city of Medford and the other is managed jointly by the municipalities of Marshfield and North Bend and the University of Oregon. One of Portland's non-urban tracts, Dodge Park, ranks as one of the most important recreational areas of the state.

The figures cited above do not include an interesting development at Corvallis, Oregon. Under the guidance of T. J. Starker, Professor of Forestry at Oregon State College, Avery Park provides recreational facilities for the city of Corvallis and surrounding towns. The park contains slightly more than 50 acres, about half of which supports a stately, second-growth, Douglas-fir forest. Mary's River forms one boundary of the area and provides opportunities for swimming and canoeing. Many other facilities are provided. As many as 4000 visitors have been served on single week-ends. Enlargement of the park is desired in order to meet heavily increased demands from

a near-by army cantonment now being constructed.

County Forests and Parks

These forests are not considered of great significance even for general forestry purposes except in the state of Wisconsin. Illinois, New Jersey, New York, and Wisconsin, only, have programs which promise progress toward ownership and development of such areas. The Illinois area of 36,000 acres is mostly in Cook County and is in reality a forest park for the city of Chicago. The New Jersey county forests have been established largely for the same purpose. They are recreational areas set apart for those living in the congested industrial centers. Recreation and kindred purposes is one of the three main reasons for the establishment of county forests in New York state.

Prior to 1935 Oregon law made no provision for the creation or maintenance of county parks or recreational areas. However, both the 1935 and 1937 sessions of the state legislature enacted laws giving the county courts considerable latitude in establishing, maintaining, and developing county parks.

Complete investigation of employment possibilities for the recreational forester in city and county forest areas would be of such magnitude as to serve as the subject for a separate thesis. Only such information as has been

acquired or is readily available will be given.

The employment possibilities in city parks are indicated by the number of such areas requiring, as a minimum, a full time caretaker. It is also desirable in determining employment possibilities to know whether or not the salaries paid these men are sufficient, in amount, to be worthy of consideration by the college trained man. It is known that the superintendent of Avery Park, near Corvallis, Oregon, receives compensation which, at least, approaches an amount worthy of the consideration of a college trained man who may be starting in the field of recreational forestry. It can be assumed that the larger cities, as a rule, are likely to meet this requirement with greater adequacy.

As for employment and compensation in county forest areas, it is known that Los Angeles County, California, employs men for their recreational areas and it can be assumed that they are quite reasonably well paid. Cook County, in Illinois should be in the same category, especially as regards the 30,000 acre forest park maintained there.

State Forests

The United States Forest Service has classified state forest holdings as state forests, state parks,

(forested or chiefly forested) and other forest lands (28).

State forests were defined as:

"individual land areas either specifically set aside by legislative act or established under legislative authority, contemplating their permanent retention and administration by the state for forest (as distinguished from essentially park) purposes, and organized in definite units of administration." The total area in state forests was given as 4,395,549 acres with 2,231,636 acres of land in process of acquisition.

From the above definition it can be readily seen that employment possibilities for the recreational forester, as a specialist, on state forests, are quite limited. This is true because of the fact that these forests, as in the case of national forests, usually serve multiple uses, such as timber, forage, and water production as well as the provision of recreational facilities. Therefore, management of these lands requires personnel possessing broad forestry training as opposed to specialized recreational forestry training.

The State Forestry Department of Oregon, in 1941, was just beginning plans for provision of recreational facilities in state forests. Plans were under way for the laying aside of an area to be designated as a "State Forest Park." These areas have been established for some

time in the state of Pennsylvania. Should this practice become general the responsibility for management of the areas would, no doubt, be added to the duties of the regular forestry department personnel. The hiring of recreational foresters would be justified only in the event that the established areas were quite large in area. This is not likely except, possibly, in a very few isolated cases.

State Parks

State parks and other recreational areas are maintained to serve public recreational and inspirational needs, with or without watershed protection as a secondary objective, and with the utilization of commercial products either prohibited or severely restricted.

In connection with its report on land planning (22) submitted to the National Resources Board, the National Park Service has designated, on a large map of the United States, the locations of the hundreds of national and state parks and other recreational areas within the country. Names and brief descriptions of the chief features of each area are listed on the back of the map.

To indicate the number of such areas and possibilities of employment, such pertinent information as is available for just a few of the states is here given:

Oregon

35 State parks

Administration:

- 1 Superintendent
- 1 Landscape architect
- 1 Engineer
- 1 Publicity man
- 12 Full time caretakers, estimated salary
\$120 per month plus quarters (1941)

The Oregon state parks are administered by the State Parks Department under the State Highway Commission, Salem, Oregon.

Washington

56 State parks

Staff:

- 1 Superintendent
- 1 Assistant superintendent
- 1 Landscape architect--not full time
- 1 Engineer--not full time
(Clerical help)
- 25 Full time caretakers (1941)

The Washington state parks are administered by the State Parks Committee, Olympia, Washington.

Appropriations for state parks for 1941 and 1942 consisted of more than \$200,000.

California

47 State parks
3 Recreational areas

The California state parks and recreational areas are administered by the Division of Beaches and Parks under the Department of Natural Resources, Sacramento, California.

Employment in the California State Park Service is subject to the rules and regulations of the State Personnel Board. Written examinations are given at irregular intervals by the State Personnel Board at Sacramento.

The entering position in the Division of Beaches and Parks is that of State Park Custodian. From this position one may advance in the administrative organization of the California State Park System.

It is sometimes possible to secure temporary nature guide or recreational director positions during the summer season.

Pennsylvania

16 State parks
57 Recreational areas

The Pennsylvania state parks and recreational areas are administered by the Bureau of Parks under the State Department of Forests and Waters.

Ohio

33 State parks

The Ohio state parks are administered by the Inland Lakes and Parks section of the Division of Conservation and Natural Resources.

It is seen from the information given above (although it is incomplete) that the state parks of the United States hold definite possibilities of employment for the recreational forester.

The following table is part of a larger one, showing both state forests and state parks in the United States, taken from "A National Plan for American Forestry" (28). This table shows forested or chiefly forested state parks, only, together with the number of units for each state and total acreages in each.

TABLE I

Forested State Parks of the United States

Region and State	State Parks	
	Units Number	Net Area Acres
United States total	323	2,682,509
New England:		
Connecticut	34	9,246
Maine	1	5,760
Rhode Island	13	3,358
Vermont	5	1,248
Total	53	19,712
Middle Atlantic:		
New Jersey	7	13,306
New York	55	2,373,804
Pennsylvania	1	6,055
Total	63	2,393,165
South:		
Alabama	1	421
Arkansas	1	1,023
Florida	1	4,000
Georgia	2	178
Louisiana	2	318
North Carolina	2	1,464
Texas	42	4,131
Total	51	11,535
Central:		
Illinois	3	2,785
Indiana	9	10,535
Iowa	31	7,031
Kansas		1,318
Kentucky	7	4,451
Missouri	9	41,133
Nebraska		2,661
Ohio	12	5,229
West Virginia		227
Total	71	75,370
Lake:		
Michigan	49	29,277
Minnesota	8	38,900
Wisconsin	12	11,552
Total	69	79,729
North Rocky Mountain:		
Idaho	1	5,505
South Rocky Mountain:		
South Dakota	1	61,000
Pacific Coast:		
California	14	36,493

As mentioned before Oregon has 35 state parks and Washington has 56. Twenty-five of Oregon's parks are known to be heavily forested. A goodly portion of these contain stands of virgin timber.

National Forests

There are about 160 national forests distributed in 43 states, Alaska, and Puerto Rico. They cover more than 170,000,000 acres (14). K. O. Maughan (16) has written, in great detail and length, an excellent thesis on recreational development in the national forests. Example areas are cited with maps and management plans for each. The United States Forest Service has given recognition to the great demand for recreational facilities in our national forests. Millions of recreationists visit these areas every year. Superlative, primeval, wilderness, roadside, camp site, residence, and outing areas have been established.

Since a great deal of material has already been published on the subject of recreation in national forests, the item of chief interest here concerns itself with possibilities of employment for the recreational forester, as a specialist. As in the case of state forests, the nature of the management of national forests is such that there are little employment possibilities except on a very few areas as in the case of Mount Hood, in Oregon.

National forests are theoretically managed in accordance with the principle of optimum land use, which, of course, should be true of all of our land areas. In the case of the national forests, as in state forests, however, this management is most often justifiably aimed at the provision of facilities for multiple uses to which the forests are subjected. Thus, logging, grazing, and recreational activity may occur on the same area or on closely associated areas. The forest rangers, who are in reality the field administrators, must possess a very wide range of forestry training. They must be able to intelligently handle the forest for the production of timber, forage, and water as well as for provision of recreational facilities. Thus, here too, there is little room for the recreational forester as a specialist. It is true, however, that such specialists as landscape architects do find employment on national forests. Recreation guards are also employed, on a temporary basis, in the summer time. *from home near + work*

National Parks

Marshall (15) estimated, in 1933, that the national parks of the United States proper contained more than 4,000,000 acres of forests, a total of less than one per cent of the forested acreage of the country. There were 22 national parks at that time, including Mount McKinley

and Hawaii. Deducting the forest areas of the latter two parks, the total was still slightly over 4,000,000 acres.

There are a total of 26 national parks at the present time.

All additions have been made within the United States

proper. Olympic National Park, in the state of Washington,

whose 825,411 acres are almost all forested, was establish-

ed in 1938. Kings Canyon, in California, was established

in 1940. It contains 500,000 acres of primitive forest

area. Acquisition of lands was completed in 1940 for the

establishment of Isle Royale National Park in Lake Supe-

rior. It contains over 134,000 acres, which are largely

forested. Shenandoah National Park, in Virginia, was

established in 1935 and contains over 176,000 acres,

forested largely by hardwoods. With the additions of these

four parks we can say that over 5,500,000 acres of forests

are now contained within our national parks.

On June 5, 1940, the National Park Service of the

Department of the Interior was the administrative agency

for 26 national parks, 62 national monuments, and 51 other

recreational areas.

"National parks, always created by act of Congress,

are reserved because of some unusual quality or natural

wonder, or some historic or scientific feature of national

interest. In the field of natural wonders each park

represents the highest type of its particular feature, and

duplication of the major features of existing national parks is avoided in enlarging the system." (27)

National parks were established in order to conserve the scenery, the natural and historical objects and wild-life therein, and to provide for the enjoyment of same in such manner and by such means as will leave them unimpaired for the benefit of present and future generations.

The national parks are administered at the present time by the National Park Service as a bureau of the Department of the Interior. The objectives of this service are to promote and regulate the use of the federal areas known as national parks, monuments, and reservations, by such means and measures as will conform to the fundamental purpose of said parks, monuments, and reservations.

National parks have been administered by the Department of the Interior from the beginning. However, the assistance of the War Department was utilized for a time. Yellowstone National Park was at first protected by cavalry detachments. All of these areas are now given civilian protection by the ranger force of the National Park Service.

The personnel of each national park follows the following general pattern, as indicated by the Ranger's Manual on administration, Glacier National Park.

Superintendent--in charge

1. Ranger Department--responsible for protection of park and visitors

Chief Ranger

Assistant Chief Rangers--Forestry and wildlife
Fire protection
General

Permanent Rangers--District
Regular

Temporary Rangers
Fireguards
Lookout-observers
Camp tenders

2. Naturalist Department--provides interpretive service for park visitors, informational and educational services

Chief Park Naturalist
Assistant Park Naturalist
Temporary Ranger-naturalists

3. Clerical Department
4. Engineering Department
5. Sanitary Department
6. Electrical Department
7. Mechanical Department

The various positions and numbers of permanent employees of the entire National Park Service were enumerated by Coffman (7) in 1932, as follows:

Director--1
 Associate Director--1
 Assistant Directors--4
 Chief Forester and Senior Park Naturalist--1
 Forest Assistant--1
 Fire Control Expert--1
 Associate Naturalists--2
 Assistant Naturalist--1

Superintendents	--	26
Assistant Superintendents	--	9
Engineers	--	24
Landscape Architects	--	18
Park Naturalists	--	27
Park Rangers	--	154
Total	--	271

The seasonal employees were not listed. These include:

Ranger-naturalists
 Rangers
 Fireguards
 Lookout-observers
 Camp tenders
 Trail-crew members

The seasonal rangers in the larger parks are known to constitute at least double the number of permanent rangers. Since the above figures prevailed in 1932, the totals are no doubt, now, much larger as several large national parks have been added to the system since that time. Among these are Olympic and Kings Canyon National Parks, in the states of Washington and California respectively.

Oregon has one national park, only--Crater Lake. It has an area of 250.52 square miles. Its forests are one of its main attractions, although the lake is its outstanding

feature. The administration of national parks may be further illustrated by that at Crater Lake.

The Oregon Caves and the Lava Beds National Monuments, are managed, with Crater Lake National Park, as one administrative unit. The personnel for all three areas consists of the following:

TABLE II

Personnel of Crater Lake National Park,
Oregon Caves National Monument,
and Lava Beds National Monument

Column Number*	1	2	3	4	5	6	7	8	9
Crater Lake National Park	1	1	1		3	13	2	2	
Oregon Caves National Monument						2			
Lava Beds National Monument				1	1	3			1
Totals	1	1	1	1	4	18	2	2	1

31 altogether

8 permanent employees

23 seasonal employees

-
- *1--Superintendent
 - 2--Assistant Superintendent
 - 3--Chief Ranger
 - 4--Assistant Chief Ranger
 - 5--Permanent Rangers
 - 6--Seasonal Rangers
 - 7--Fireguards
 - 8--Lookout-observers
 - 9--Fireguard-lookouts

National monuments constitute another group of reservations similar to national parks in concept and administration. They are usually much smaller in area and contain objects of scientific or historic interest. The means for their establishment was created in 1906 by Congress when it passed the "Antiquities Act" which gave to the President of the United States authority "to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated on lands owned or controlled by the government of the United States, to be National Monuments." (27) Thus, these areas contain sites of exploration and discovery, settlement, battlefields, cemeteries, birthplaces of famous persons, prehistoric ruins and mounds, volcanic and erosional areas, caves, mountains, paleontologic, biologic, and ethnological areas. There were 82 of these areas in 1940.

It should be obvious that the Park Ranger is the "key man" in the entire national park administrative set up. He represents the superintendent in the field. He is concerned with the protection and management of the area (the resource) as well as the protection and control of the visitors. Together, with the superintendents or caretakers of our state parks, he may be said to be a true recreational forester. All of the duties and attitudes enumerated

as those of the recreational forester are characteristic of the park ranger and his work.

Employment possibilities in the National Park Service may be judged to some extent through reference to personnel figures given above. There promises to be a large demand for seasonal rangers, fireguards, and lookout-observers during the coming summers due to former employees going to more remunerative positions in war industries. The annual turnover in employment among permanent rangers in 1938 totaled 43 men. This is considered a fair annual average./

The following table shows a list of the names and addresses of the field officials of the National Park Service, as issued by the service July 15, 1941. Many of these officials will remain for several years and the list may be valuable in making of applications.

TABLE III

Field Officials of the National Park Service

Regional Directors

<u>Region</u>	<u>Regional Directors</u>	<u>Post Office Address</u>
Region One	Thomas J. Allen	811 Grace Securities Building, Richmond, Virginia
Region Two	Lawrence C. Merriam	300 Keeline Building, Omaha, Nebraska
Region Three	Miner R. Tillotson	Region Three Headquarters, National Park Service, Santa Fe, New Mexico
Region Four	Owen A. Tomlinson	601 Sheldon Building, San Francisco, California

National Parks

<u>Park</u>	<u>Superintendent</u>	<u>Post Office Address</u>
Acadia (I)	George B. Dorr	Bar Harbor, Maine
Bryce Canyon (III)	Paul R. Franke	Zion National Park, Utah
Carlsbad Caverns (III)	Thomas Boles	Carlsbad, New Mexico
Crater Lake (IV)	Ernest P. Leavitt	Crater Lake, Oregon
Glacier (IV)	Donald S. Libbey	Belton, Montana
Grand Canyon (III)	Harold C. Bryant	Grand Canyon, Arizona
Grand Teton (II)	Charles J. Smith	Moose, Teton County, Wyoming
Great Smoky Mountains (I)	J. Ross Eakin	Gatlinburg, Tennessee
Hawaii (IV)	Edward G. Wingate	Hawaii National Park, Territory of Hawaii
Hot Springs (III)	Preston P. Patraw	Hot Springs National Park, Arkansas
Isle Royale (II)	George F. Baggley	Portage Street and Lake Front, Houghton, Michigan
Kings Canyon (IV)	Eivind T. Sooyen	General Grant National Park, California

TABLE III Continued

<u>Park</u>	<u>Superintendent</u>	<u>Post Office Address</u>
Lassen Volcanic (IV)	James V. Lloyd	Mineral, California
Mammoth Cave (I)	R. Taylor Hoskins	Mammoth Cave, Kentucky
Mesa Verde (III)	John S. McLaughlin	Mesa Verde National Park, Colorado
Mount McKinley (IV)	Frank T. Been	McKinley Park, Alaska
Mount Rainier (IV)	John C. Preston	Longmire, Washington
Olympic (IV)	Preston P. Macy	Port Angeles, Washington
Platt (III)	William E. Branch	Sulphur, Oklahoma
Rocky Mountain (II)	David H. Canfield	Estes Park, Colorado
Sequoia (IV)	John R. White	Sequoia National Park, California
Shenandoah (I)	James R. Lassiter	Luray, Virginia
Wind Cave (II)	Harry J. Liek	Hot Springs, South Dakota
Yellowstone (II)	Edmund B. Rogers	Yellowstone Park, Wyoming
Yosemite (IV)	Frank A. Kittredge	Yosemite National Park, California
Zion (III)	Paul R. Franke	Zion National Park, Utah

WHAT ARE SOME PROCEDURES WHICH MAY PROVE EFFECTIVE
IN ATTEMPTING TO SECURE EMPLOYMENT IN THE
RECREATIONAL FORESTRY FIELD?

The recreational forestry field, in addition to being somewhat curtailed at the present time because of the war, is further characterized by the presence of a large amount of political control both as to entrance and as to vertical mobility within. Because of this dominant political aspect, a general and specific knowledge of political activity as it is encountered in public service is a valuable part of the training program which is needed by anyone entering the field.

The political factor is so often of great importance that it must be considered carefully by the recreational forester who wishes to secure employment on any of the various administrative types of recreational forest areas. This is true in the case of municipal and county forests and parks where opportunities for employment are relatively small, and in the case of state and national parks where the greatest opportunities seem to exist.

Municipal and County Parks

There are probably few municipal or county park positions subject to civil service requirements. Therefore,

in most cases, applications should be made directly to the city park committee, board, commission, or whatever body administers the park system. It would be well to secure the recommendations of several influential citizens of the community in which application is made.

State Parks

Positions in state park work are subject to civil service eligibility in some states, such as Michigan. In such cases political activity in securing employment is not necessary. However, if men of given technical training cannot be supplied from the civil service registry, the superintendent can then make appointments from outside the registry.

State park work in most cases is not under civil service and procurement of political recommendation is advisable in attempting to secure employment. The positions suitable to the recreational forester are those of caretaker, and higher administrative positions up to and including the position of superintendent.

Although it is emphasized that the political aspect of employment effort in the recreational forestry field should receive very careful consideration, this does not mean that those phases ordinarily accepted as requisite to the making of a good application should, by any means, be

neglected. Effective letter writing, for instance, is always very important. This constitutes the "entering wedge" and makes possible the bringing to play of other phases of the effort. To illustrate, the writer has recently received consideration from the director of state parks of an eastern state, through the medium of a direct application only. That is, the interest, at least, of the director has been aroused. However, the very first letter to the applicant has requested a clarification of political status. The opportunity for clarification of political status would not have been available without an application letter of some degree of effectiveness.

Seasonal positions in state parks are sometimes available and full information may be secured through correspondence.

National Parks--Permanent Employment

All permanent employment in the National Park Service is subject to civil service eligibility. The recreational forester usually enters as a park ranger. From this position he may advance upward through the administration of the service.

The last Park Ranger examination was given in 1937. It is not given at regular yearly intervals as in the case of the Junior Forester examination of the Forest Service.

Placements on the job from the registry are taken from the men having the three highest ratings. Political activity then, in the case of entrance to permanent employment as a Permanent Park Ranger, is not of great importance. However, after employment is secured, it may be of great influence in advancement.

National Parks--Seasonal Employment

Up to the past year or two, fireguards and lookout-observers were appointed by the superintendents of each park. They were usually chosen from the ranks of local people. Such appointments were often made possible through political activity. At the present time, however, fire-guard and lookout appointments are subject to civil service eligibility. Nevertheless, each park superintendent retains the power to appoint a given number of these employees.

Seasonal ranger employment, however, has never been subject to civil service. The party in power in Washington makes the vast majority of these appointments. Sometimes the park superintendent is given the opportunity to make a very limited number of appointments. The applicant will find it very advisable to secure the recommendation of congressmen (belonging to the party in power) from his state.

Application is made direct to the superintendents of those parks where work is desired. The superintendent will then send two application blanks, one of which is to be returned to the park and the other to the Secretary of the Department of the Interior. It is desirable that the application be made soon after the first of the year and not later than February fifteenth, preceding the summer in which employment is desired.

WHAT WOULD CONSTITUTE APPROPRIATE TRAINING FOR RECREATIONAL FORESTRY WORK?

There has been little indication, in the literature, of the content of a well-defined program of training for recreational forestry work. Students who wish to prepare themselves in this field are often perplexed as to where suitable training may be obtained or whether or not the particular program which they may be following is adequate. One would naturally look to educators and men who have had field experience in this work, for suggestions and information along this line. Schools of forestry seem to be logical places to look for possibilities of such training.

John D. Coffman, Chief Forester, of the National Park Service (8) has shown a great interest in the subject of preparation for National Park Service work and has published a suggested program of study. The writer has fortunately had the privilege of rather extensive correspondence with Mr. Coffman on the subject. On January 6, 1940, Mr. Coffman stated, "I am sorry to say that there is no forestry school which now offers a curriculum such as I have suggested as being most desirable for preparation in recreational forestry. The New York State College of Forestry at Syracuse and the University of Michigan possibly come closest to it, but, I agree with you that the Landscape and Recreational Management course at Syracuse

leans further toward landscape engineering than is necessary or desirable for a strictly recreational forestry course. The University of California includes some but not all, of the recommended courses in its forestry curriculum, and last year I understood that Oregon State was inaugurating a recreational forestry course, but I have not had an opportunity to study their catalog in this respect. I understood, too, that the University of Georgia also intended to include such a course in its forestry department."

A committee, consisting of the Chief Forester, Chief Naturalist, Chief of the Historic Sites Division, and the Personnel Officer of the National Park Service, has recently been appointed. It has been the assigned job of this committee to compile a list of suggested courses which the Service would recommend be taken by one who desires to prepare himself for National Park Service work. Through the courtesy of Mr. Coffman, a copy of a preliminary statement to the committee, regarding a suggested program of study, has been received. Although it should be emphasized that this program has not, as yet, (September 1941) been adopted by the committee and will undoubtedly be subjected to revision, it is felt that a goodly number of the suggested courses will eventually be accepted, as official, by the National Park Service. The statement is

quoted in its entirety:

(Rough Draft of a Suggested Report as a Basis for Consideration and Discussion by the Members of the Committee. Suggestions for Improvement, or Substitute Statement by Any Member of the Committee will be Appreciated for Committee Consideration.)

This Committee has been assigned the job of compiling "a list of suggested courses which the Service would recommend be taken by one who desires to prepare himself for National Park Service work."

To cover the entire field of specialized training represented in the Service would necessitate the inclusion of law, engineering, landscape architecture, architecture, history, archaeology, forestry, biology, geology, wildlife management, museum preparator, personnel management, journalism, accounting, and so on, which would involve a field too vast for reasonable accomplishment by this Committee. It is therefore assumed by the Committee that its assignment is to list courses which can be recommended to students who state that they are interested in preparing themselves for park work and desire to know what subjects will best enable them to obtain a good foundation for general ranger and administrative work, with entrance into the Service principally through the park ranger civil

service examination.

The primary functions of the National Park Service are the dual responsibilities for preservation of the areas entrusted to its care and making them available for public use and enjoyment. These constitute a very important phase of land use management on areas of the highest values. To protect these areas and values most effectively, one should have a well rounded knowledge of the things with which such protection deals--i.e., flora, fauna, and natural phenomena. In order to deal most effectively with the use and enjoyment of the areas by the public, one must be capable of handling public contacts advantageously, and for this purpose likewise a knowledge of things which the park visitors come to see and enjoy facilitates and improves public contacts. A knowledge of the natural sciences therefore serves in land use management, protection, and in interpreting natural phenomena to park visitors.

In order to be properly qualified for eventual advancement to high administrative positions, the student needs a thorough foundation in English to enable him to write most effectively both for normal correspondence and preparation of reports, and for writing for publications. He should in addition have a reasonable background in the broad cultural subjects such as literature, history, civics, economics, and psychology. The student should

likewise have completed courses in algebra, plane geometry, trigonometry, geometrical drawing, inorganic chemistry, and physics, and at least one foreign language, part of which may have been accomplished in high school.

For undergraduate collegiate courses the following subjects are recommended:

Physical geography and geology

Soil Science

Botany

Chemistry

Physics

Plane surveying and mapping, including topographic and type mapping

Elements of landscape design, or at least an appreciation of naturalistic landscaping

Zoology, including vertebrate zoology

Forest and wildlife ecology

Forest entomology

Dendrology

Forest Pathology

Forest fire prevention and control

Land use planning

Forest improvements

Forest economics

Wildlife management

Recreational administration, including policies, administration, public relations, and rec-

reational uses

Public speaking

First aid

Business Administration

Photography (optional)

Practically all colleges require students to register for a major if a degree is to be obtained. It is the hope of this Committee that eventually park and recreational management will be recognized as a profession on a par with other professions such as those of the biologist, physicist, naturalist, forester, wildlife manager, etc., so that a professional degree in this line can be offered. Until such recognition is given by educational institutions it is necessary that students aiming to enter the park and recreational field adapt their curricula to those of established majors in order to secure a college degree. It then becomes necessary to appraise existing schools and courses in order to determine where such adaptation can be made to best advantage.

The bulk of the subjects indicated as desirable are included in standard forestry 4-year curricula, and a number of forestry schools have already established courses in park management for the express purpose of preparing students who wish to enter the park field. While it is not necessary that men entering the ranger organization be

professional foresters, except for the few positions requiring such technical training, a number of outstanding forestry colleges which have been endeavoring to prepare men for our field of work appear to come closest to meeting the needs outlined above. Some of these schools, however, still require all students majoring in forestry to include certain subjects which are not essential for general park work, such as forest mensuration, lumbering, wood technology, and wood utilization, for which the park aspirant could profitably substitute recreational management, wildlife management, and appreciation of landscape values if he were permitted to do so.

Quite a number of forestry school deans who recognize the need for special training for those planning to enter park work believe that the student should conform to the standard forestry curriculum in order to have professional forestry training and standing, and then, in a fifth year of study, elect those additional subjects especially needed for park work. This, of course, requires a greater expenditure of time and money, but does have the added advantage of preparing a man both for professional forestry and park management, so that he will be equipped to enter either field.

To a lesser degree a similar arrangement is possible under a major in biology, although such majors do not

ordinarily include the engineering courses and certain other desired subjects commonly taught in forestry schools.

For the student who wishes to specialize in some professional subject preparatory to entering the National Park Service as a specialist, as for instance in engineering, landscape architecture, history, archaeology, wildlife management, geology, etc., but also wishes to have a broad grasp of the park land use program, we would recommend that so far as possible he select his electives from among those subjects suggested for the prospective park ranger and administrator. A goodly number of such specialists will undoubtedly continue to enter the Park Service through the park ranger examination; in fact, in many instances men trained as historians, archaeologists, geologists, etc., will be sought from the park ranger eligible list to fill positions where their special training will be a valuable asset.

This Committee wishes to recommend further that cooperation be established by the National Park Service with colleges of recognized standing that are endeavoring to give the type of training desired by this Service. Such cooperation should include the furnishing to the schools of all available information that will be useful in their courses on park work and park management, and also the selection of outstanding students, who are training for

park work, for filling temporary ranger, ranger naturalist, and fire guard positions. This will assist the Service in recruiting men who are receiving the type of educational training recommended by the Service and who wish to make park work their vocation, and at the same time the training and experience they obtain during their summer employment will be of lasting value to them and to the Service when they become permanent members of the Service organization.

If and when it becomes possible, occasional lectures by members of the Service before student convocations and seminars would be a highly desirable means of interpreting Service methods and objectives and might become an important adjunct of a recruitment program.

The program of training recommended above has been prepared specifically for National Park Service work. The national park ranger has been described, in this thesis as a good example of a recreational forester. It would seem that one contemplating eventual work on municipal, county, state, or national park lands, would do well to consider the above suggested training.

Since the suggested curriculum will, no doubt, be revised the writer will venture to suggest that practical field experience consisting of two summers of work, on a recreational forest area, be included as a requirement of the training program.

A general survey course which could be designated as Park Forestry would seem worthy of consideration also. A review could be made of administrative methods used in municipal and state as well as national parks. Instruction could be given in tree care, including tree surgery. This is especially important in municipal and historical parks. Some instruction would be appropriate in general horsemanship, including the riding and packing horses, as a phase of the Park Forestry course. This is often of great importance in national park work. Oregon State College, School of Forestry, has inaugurated a Park Forestry course this year (1942).

SUMMARY

"Recreational forestry as a career" was chosen as the subject of this thesis because of the very small amount of available material published in regard to all important phases of the subject.

The major objective is that of attempting to supply and interpret such information as may serve as a definite contribution to knowledge of the field. It is hoped that some students who may be considering entrance to a program of training for a career in the field of recreational forestry will find, herein, some measure of assistance in the making of a decision.

The procedure is merely that of visualizing and formulating pertinent questions, in regard to the field, and attempting to answer these questions as well as possible in the light of available information and data. The questions concern definitions of terms, importance and value of recreational forestry, duties and attitudes, opportunities for employment; employment application procedures, and training for recreational forestry work.

A terminology for the field is developing. The average person is prone to look upon the words recreate and recreation as somewhat synonymous. However, if the use of the word recreate is confined to the recreational activity and the word recreation is used to denote the

refreshed state of body or mind achieved through the recreational activity, the obvious difference is readily seen.

Similarly, the pointing out of a significant difference between the terms, "forest recreation" and "recreational forestry," is more than mere "play" on words. The latter term refers to the management of forest lands for the provision of the former, as a "product."

As in the case of other major forest uses, forest recreational activity existed long before forests were managed for the deliberate provision of facilities for recreational opportunities. When material utilization of the forests had reached such a state as to endanger the "harvesting" of both timber and recreation, forest management practices became necessary.

Recreational forestry is highly valuable and important to the community and nation. Several rather ingenious attempts have been made to evaluate forest recreation on a basis of monetary standards. However, recreation is so essential to the health of the individual and community, that it seems obvious that such attempts are futile.

The duties of the recreational forester on the larger administrative types of forest lands, such as national parks, are concerned chiefly with the protection of the forest resource, the visitors, and the overseeing of the

activities of the latter. The park ranger serves in this capacity. Other duties such as camp ground layout, trail location, etc. are performed by the landscape architect. He is concerned with the placement of those facilities which will enable the visitor to achieve recreation. It is the responsibility of the park naturalist to assist the recreationist in the interpretation of nature. The recreational forester must, however, be prepared, at all times, to answer visitor's questions and, on smaller administrative types of forest areas, he may be expected to perform any of the duties mentioned above. Periodic ecological examinations of recreational forest areas should also be considered among the important duties to be performed by the recreational forester.

Attitudes of the recreational forester toward the forest are, in a good many cases, the direct opposite of those of the commercial forester. The latter seeks to guide competition within the forest so as to favor chosen species. The former maintains a policy of "live and let live" toward the component organisms within the forest.

All forest lands, open to visitors, will be found to supply some degree of opportunity for recreational activity. The major administrative types of forest lands are indicated by the various types of ownerships:

1. Private forest lands
2. Public forest lands
 - a. Municipal forests and parks
 - b. County forests and parks
 - c. State forests and parks
 - d. National forests and parks

Management policies on these areas differ as to viewpoint and methods used. All of the areas are, theoretically, managed according to the principle of optimum use. The management of private, municipal, county, state, and national forests, however, is most often directed toward provision for "multiple uses." Thus on these areas, timber, forage, water, and recreation "production" may occur on the same or adjacent areas within a forest. Personnel charged with the management of these areas should possess a very wide range of forestry training. Therefore, the recreational forester, as a specialist finds few opportunities for employment.

While municipal, county, state, and national parks, too, are theoretically managed under the optimum use principle, they are dedicated largely to recreational use. They also serve watershed and research needs without the necessity for specific management procedures for these purposes. When the optimum use is a single one, such as is characteristic of recreational forest areas, the personnel responsible for management may well be specialized in training. Thus, it is not necessary that the recreational

forester receive intensive training in such forest utilization practices as logging, mensuration, etc. It is obvious that opportunities for employment of the recreational forester are greatest in municipal, county, state, and national parks. This is especially true of the last two administrative types of forest areas.

Some recreational forestry positions are subject to civil service eligibility, while others are not. Procedure for securing employment in the former case, is clear. Qualification should be made for the particular examination leading to the position and an attempt made to pass it with a high score. In regard to the latter case, careful attention must be given to the political aspects of the situation. Recommendation from members of the party in power are often essential to successful application for a position.

A well defined program of recreational forestry training has not, as yet, been given authoritative acceptance. John D. Coffman, Chief Forester of the National Park Service, has been active in the investigation of and contribution to this subject. Mr. Coffman has proposed a curriculum based largely on the natural sciences, forestry, and land use management. The writer suggests that, at least, two summers of practical field experience be made a requirement of the program together with a general survey course in Park Forestry.

CONCLUSIONS

In view of the major objective of this thesis, the most important conclusion to be reached would logically concern itself with the question of whether or not the field of recreational forestry is of such magnitude and importance as to warrant extended preparation on the part of those who may wish to enter it, as a career. It would appear that at least two major factors have great influence in the determination of a correct answer to this question. The first factor is the size and importance of the field. The second factor is the qualifications and degree of interest of the person who considers the field as a vocation.

Information gathered during preparation of the thesis, indicates that although the field is quite restricted as to size, its importance and value, to the nation, are very great. Therefore, it is worthy of well trained men. Since it is a newly recognized field, many of the present employees have not had specialized training and therefore, the need for trained men is great.

The interest of the prospective recreational forester should be sufficiently great as to tolerate the many drawbacks, likely to be characteristic of any new profession. Attitudes of disapproval will often be encountered among

members of the regular forestry profession. Salaries will be very modest, especially at the start. Employment, in a goodly number of cases, will be subject to political control. Early assignments in the field are likely to exist under conditions of isolation. The park ranger is often stationed many miles from the nearest community or railroad. The communities are usually very small and of the "backwoods" variety. However, the invention and development of the radio has helped alleviate this situation. The state park custodian is also isolated but to a lesser degree. Winter offices are maintained in fair sized towns by the higher officials of national parks. Higher officials of state park systems are usually located at the state capitols.

One who contemplates the undertaking of training for recreational forestry work should, because of its nature, possess very good physical and mental qualifications. He, who possesses these qualifications, together with an interest great enough to tolerate the drawbacks likely to be encountered, would do well to consider the field as a career.

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