PROCEEDINGS

of the

SECOND PARK NATURALISTS CONFERENCE

Held at

GRAND CANYON NATIONAL PARK

November 13-17, 1940

148673

INTRODUCTION

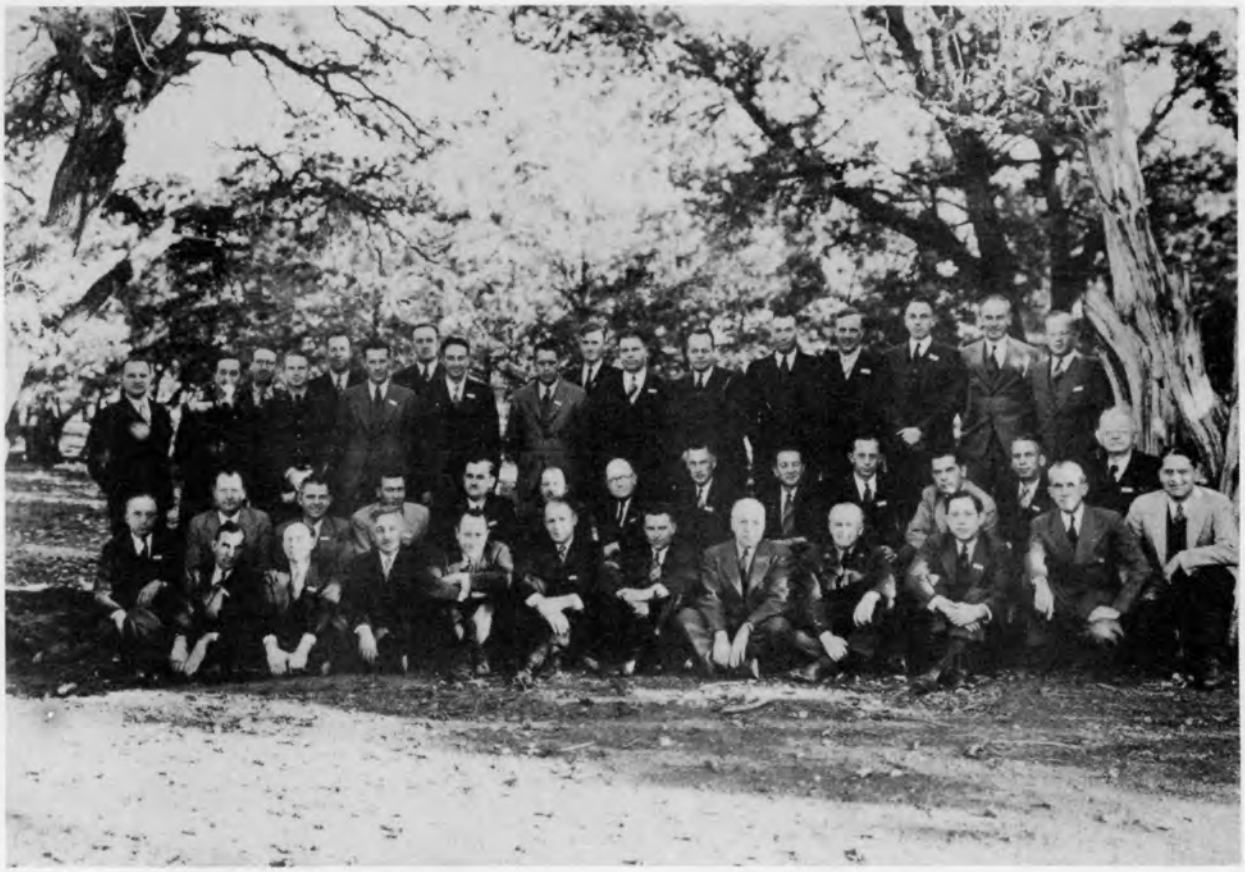
The papers and discussions here reproduced are significant in defining the trends of public use and enjoyment of the natural preserves in the United States. They point to the fact that park visitors look upon the interpretation of park values as a vital part of the service rendered by park staffs; that the interpretive officers of the National Park Service recognize their opportunity to help in unifying the thought of the people of America and that they strive to play a part in strengthening national pride and patriotism.

I think that the distribution of the papers and notes which make up the Proceedings of the Naturalist Conference is timely for they contribute to the definition of Service functions and make for common understanding of our responsibility in maintaining the standard of inviolate protection involved in the trusteeship that we hold. I am glad to make the Proceedings available to all field officers for the questions of functions and methods are of prime importance to all of us. They call for continuous study.

Newton B. Drury

Director.

GREAT SMOKY MOUNTAINS NATIONAL PARK GATLINBURG, TENNESSEE RECEIVED JUL 10 1941



Park Naturalists' Conference, Grand Canyon National Park,
November 13-17, 1940

Front Row, left to right:
Gregg, Sullivan, Bauer, Yeager, Oberhansley, Gale, Eppley,
Kittredge, Robinson, Tillotson, King.

Second Row, left to right:
Doudna, Jepson, Walker, Fagerlund, Burns, Schellbach, McHenry,
McDougall, Watson, Stupka, Neasham, Presnall, Williams.

Third Row (standing), left to right:
Rothrock, Brown, McKee, Stagner, Chick, Doerr, Swartzlow,
Russell, Maxwell, Lix, Brockman, Dodge, Saari.

Back Row, left to right:
Herschler, Beatty, Condon, Jackson.

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SECOND NATURALISTS CONFERENCE

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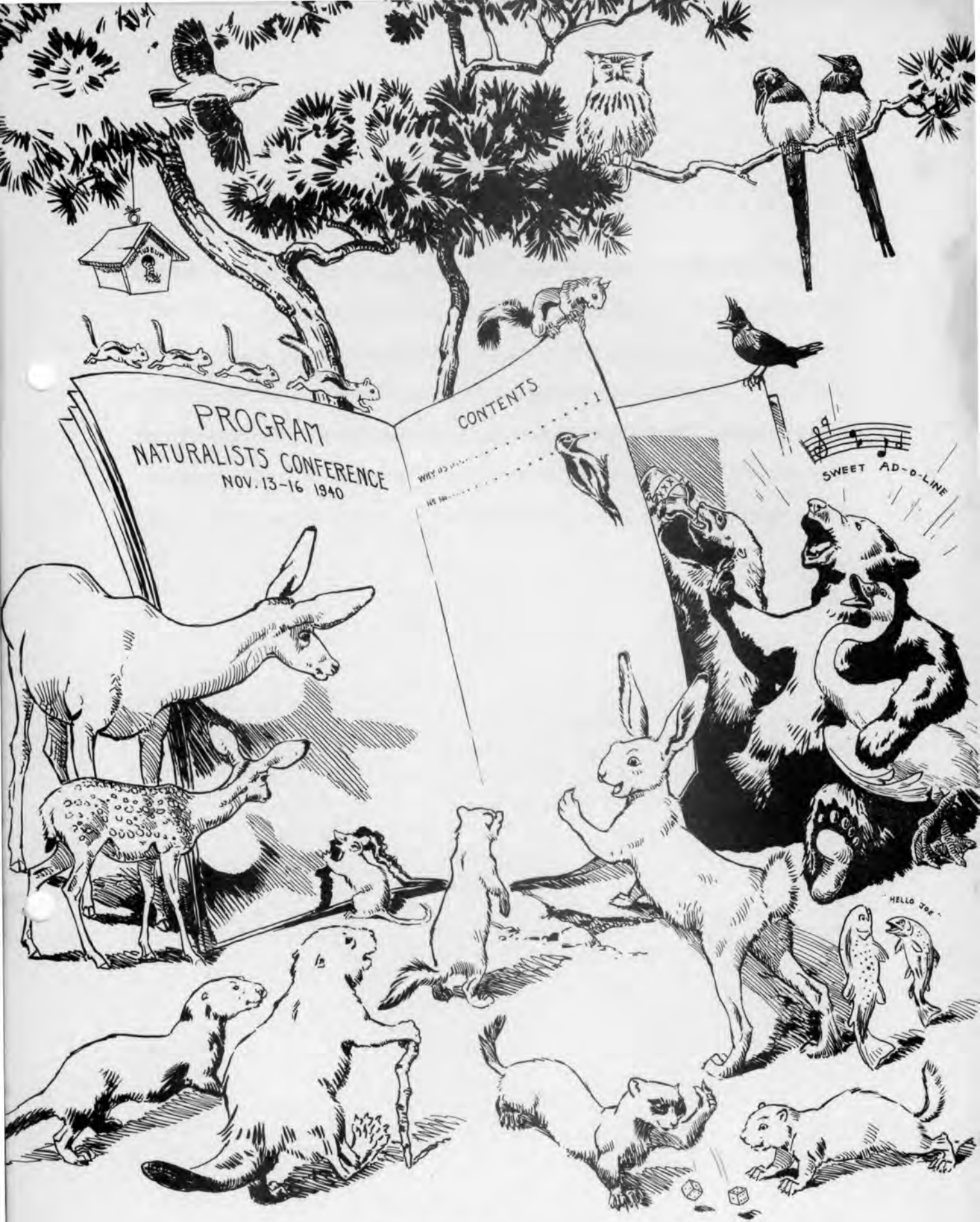
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ACKNOWLEDGMENT

The Naturalists are indebted to Walter A. Weber for the concept of the "Naturalists" Conference which appears on the adjacent page. We assume that all resemblances of figures or inferences of actions in the drawing to the persons photographed in the frontispiece or to situations arising during the Conference are purely coincidental. Whether or not this is true, the picture is accepted as a sympathetic interpretation and is presented here as an appetizer for the pages which are to follow.



GREETINGS FROM
WALT WEBER

NATURALISTS CONFERENCE

Wednesday Morning,
November 13, 1940.

The meeting was called to order at 9:15 A.M. by Dr. Carl P. Russell.

DR. RUSSELL: The Second Park Naturalist Conference is convened to transact its business.

The Naturalist Conference held in 1929 was called by Mr. Ansel F. Hall, and was held in Berkeley, California, on the campus of the University of California. At that time there were six naturalists present--Harwell, Yeager, Ruhle, Brockman, Been, and McKee. There were seven other delegates: Ansel Hall, Carl Russell, George Wright, John Coffman, George Grant and George Collins. Out of that group of the 1929 conference there are several attending this conference. We have, as you know, a number of representatives from various branches and field offices about which I will say more presently. A number of people have worked very hard in preparing for this meeting. The Washington Office has called upon Mr. Rothrock to do much of the preliminary work, and he has been alone in his work since Mr. Trager vacated the Chief Naturalist's office. Mr. Rothrock has been handling Mr. Trager's work and his own work and arranging this conference as well.

Here in Grand Canyon a number of people have been busy with conference matters. You will all agree that we have been nicely taken care of here and I feel that the Grand Canyon staff has been exceedingly generous in extending cooperation.

We have heard a great deal from Mr. Kittredge as Chief Engineer, Regional Director and Grand Canyon Superintendent. He has been very cordial in extending the invitation that brings us here, and now Frank we would like to hear from you in person.

A Word of Welcome

Frank A. Kittredge,
Superintendent,
Grand Canyon National Park.

Mr. Chairman, ladies and gentlemen. Although as Carl says we had a Naturalist Conference in 1929, this is really the first service-wide naturalist conference we have ever held, I believe. It is the first time that the naturalists have been called from the four corners of the nation in one place to discuss their problems. It is the first time, so far as I know, that the naturalists of the Park Service have gotten together to discuss service to the people; to discuss interpretation. We have had Superintendents' Conferences and others but this is the first time that interpretive officers have gotten together in mass group, - and it is a mass group as I look out over this gathering here, contrasted to the few that Carl has mentioned. We are happy that you have selected Grand Canyon for your meeting. We are mighty pleased that you thought of Grand Canyon and we hastened to make the invitation as strong as we could. As far as facilities are concerned we do not have some of the things you would like to have; we do not have the Yosemite Museum; we do not have a museum such as at Coolidge; but these are things that we are looking forward to for the future. Perhaps you people are going to help us get them. Mr. McKee and Mr. Schellbach have done a great deal of work along this line. Then there is the Natural History Association which has been very busy with its part in the program. They have always been busy in their own lines and this evening they are providing some entertainment for you which is strictly their affair. Tomorrow Mrs. Kittredge and I hope that you will all be over to our home. The announcement calls it a tea but in looking at the schedule afterwards we realized that there was not very much time between the tea and the eight o'clock show, so a little more will be thrown into the pot so you won't be hungry when you get to dinner.

I am reminded that about eleven years ago the Park Service had a Superintendent's dinner and they had buffalo from Yellowstone. If the Superintendents rate buffalo I don't know why the naturalists don't rate white-tailed squirrel or ringtailed cat or something like that--so you may find something of that kind at the house tonight. The ladies of the park are helping Mrs. Kittredge, and we are all looking forward to seeing you.

Besides these prearranged events, you are reminded that you are having your conference beside one of the greatest wonders in the world and that in itself is an inspiration. We don't want you to stay at the meetings all the time, but we want you all to get out on the rim and see the Canyon. In these times of turmoil and unrest, it seems quite proper that we should take cognizance of the times not only in our meetings here, but when we return to our areas, and in years to come.

There is an opportunity for the Naturalists to spread a little of the gospel and a little of the inspiration that comes from the Canyon. You Naturalists and Rangers during the coming year are going to usher into the parks and are going to visit with over sixteen million people. This is a wonderful opportunity to tell these millions of people of the national park ideals. You are going to have an opportunity to tell them of Stephen T. Mather's ideals not merely by mentioning his name but by getting over to them all that Stephen T. Mather tried to impress on us in those early days.

This is a chance to get over the National Park personality to sixteen million people. Whoever heard of such an opportunity? There is not a bureau in the Government service that has the opportunity for public contact that we have. If I were to say anything as a keynote for this conference I would give the Grand Canyon and the story it tells us. If you people can take hold of the idea that you are going to tell the story of nature and that you are going to impress people with the full import of this story, that in itself is a message to these sixteen million people. In doing that you will be rendering them a grand service.

There was no branch of the Service that Stephen T. Mather loved and tried to develop more than that of the Naturalists and the Rangers.

You people have done a grand job. The fact that you have grown from the mere handful that has been mentioned to the number we have here is an indication of the grand work that has been done by the Director, the Washington staff and those in the field.

Yes, you have done a fine job, but there never was a time when there was a bigger job to do than now. It is a chance that the Service has looked forward to and it is a chance that the Service is depending upon you people to carry forward.

I am happy that you people are here and if there is anything that you think that we can do to change or improve our park activities, please be sure and let us know.

DR. RUSSELL: Thank you very much Superintendent Kittredge for your encouraging words. I know that I express the sentiments of this entire group when I say thanks to you and James V. Lloyd and Eddie McKee, Louis Schellbach and the other members of your staff whom we know have worked to make this conference a success.

We are fortunate in having here today a man who has done a great deal in bringing about an integration of interests. We will appreciate it if the Regional Director, Mr. M. R. Tillotson, will lend his words in opening this conference.

MR. TILLOTSON: I didn't have an opportunity to see this program until I got here this morning, and in looking it over rather carefully then I did

not see the name of Tillotson on it in any place so I wonder if the chairman has not made a mistake in following the program. Furthermore, perhaps he made a mistake in calling on me because I don't always say just exactly the things that I am expected to say. I recall last spring in Region One, that I had occasion to open a conference of Historians. I am quite sure that they expected me, in doing so, to say something along the lines of Frank Kittredge about the grand job they were doing. I did not tell them that at all. I told them that they were doing a pretty poor job in interpreting the areas in Region One to the visiting public simply because their interpretation was one that might appropriately be given to historians, to students of history, or to students of military tactics who were visiting the area and that they were not giving the story as the layman should have it. They were doing it with too much detail and they were entirely too technical about it, with the general result that when the average visitor left, his head was so confused with a mass of data and figures and names and places and dates that he did not get the story of the particular battle or site as I thought he should have gotten it. I don't think they liked that very well but I know that it did give them a good bit of food for thought and I know that much of the conference was devoted to ways and means of giving a more popular, a more easily understandable interpretation of the areas.

I don't think that such a criticism applies to quite the same extent to the naturalists and naturalist programs in the various parks for the simple reason that all of your naturalists are not schooled in exactly the same subject. Some of you specialize in geology, some in botany, some in one line of work and some in another, but each of you has to tell the entire story of the park to the visitor. Consequently, you are able to give the story in a somewhat more popular form and I do think that the naturalist program, in general, is being carried out in a manner that is more easily understandable to the visiting public than were the historians' programs, because they are all historians, trained in that one particular subject and thinking aloud on that one particular line. They don't have the diversified activities that you naturalists have. But I do think that something constantly to bear in mind is the fact that, in meeting your public, you are not dealing with a group of archeologists, geologists or other technicians, but that you are dealing with a group of laymen and that you must interpret the story in terms that the laymen can understand.

Speaking about interpretation, I don't want to overlook this opportunity of expressing my appreciation to whoever it was that put over the idea of changing the name of the Branch of Research and Information to that of Research and Interpretation. That has been sort of a pet scheme of mine for a long time and I know that many others have had the same idea. I know, too, that it has been the subject of resolution by various bodies such as the Superintendents' meeting. It seems to me that it is a much more appropriate name and I want to express my appreciation to whoever it was that was finally able to effect that change of name. I always felt that it did not require a branch to secure information. The

information is already available. Take the Grand Canyon for instance, the story is right there in the rocks; all the information clear down to the earliest chapter in earth's history. No one has to go out and gather it. The information is lying right out there for anyone competent to do so, to see and to read. It is up to you to interpret that information. This is the primary function of the Branch, as I see it. The Good Lord gave us the information when he sliced the earth's surface for us to reveal the various strata of rock, one on top of another. It is a question of being able to understand this available information and interpret it. Consequently the name as it now stands is most appropriate.

I was here in this park for nearly seventeen years and I knew, of course, a lot of the stories and the background connected with it, but I heard, only yesterday, an incident that I had missed in my 17 years. I stopped yesterday in Winslow and had lunch with my very good friend--Mary Jane Colter, the woman who has been responsible for the interior decorations and the architecture of the fine Fred Harvey developments all along the Santa Fe system. She told me of one of her trips in the Canyon with Earl Shirley. Anyone who knows anything about Grand Canyon, knows Earl Shirley. Earl came here some thirty years ago as a stock feeder and then he was promoted to the position of chambermaid for the mules. He finally got to be a guide, later barn foreman and now he is the Superintendent of the great Fred Harvey Transportation system. He pulled himself up right by his own boot straps. Earl is one of the finest men I know and he has a philosophy of his own and an insight into things that lots of people don't have.

Well Miss Colter was telling me of a trip she once made across the old Tonto Trail with Earl Shirley. That is the trail that leads across the Tonto Platform, heading each canyon and rounding each point. It is a most tortuous trail, twisting this way and that along the plateau. Traveling it you see some feature in the distance and then ride for hours before reaching it because of the way you have to wind in and out.

Mary said she was riding along with Earl, who was in the lead and, as they started to round one of these many points he turned to her and said, "Mary, I have been riding these trails for a good many years but I never go over this one and I never go around any of these many points but that I expect to see God on the other side of the point."

We spend a lot of time as a result of research and study in telling the visitor about the geological features of Grand Canyon. Of course geology is the main story here--that is why I pick this as an example. I think we have men who are sufficiently trained in geology so that no one could do a better job than they, but to my mind, there is a lot more to Grand Canyon than the story of geology; there is a lot more than the Vishnu Schist, the Coconino sandstone and the Bright Angel shale. There is much more than the story of erosion and the manner in which the Canyon was formed. There is the beauty and the grandeur and the immensity of

the Grand Canyon. There is its gorgeous coloring, its beautiful sunsets, and its ever changing lights and shadows.

My old friend Gunnar Widforss, who died a few years ago, did just about as good a job of interpreting the Grand Canyon as any naturalist we ever had, because he saw the beauty of it and put that beauty on canvas. I don't think that we take time enough to consider these aspects of the Canyon. I think it is just as important that a person gain appreciation of the aesthetic values, - the glory of the Canyon, the beauty of Crater Lake, and of massive Mount Rainier - as it is that he learn all about what caused the Canyon and about the various strata that go to make it up - why Mt. Rainier grew to be a mountain and how Crater Lake was formed.

I don't know whether I am getting my point over or not, but it seems to me that some thought should be given to the development of our naturalist program along these lines. I don't know how to do it. You are the naturalists. You are the people to develop the program in some way so that the visitor could be helped better to appreciate the aesthetic values involved.

If our naturalist program could be worked out in such a way that the visitor could be helped to "see God around the next point" I think that it would be much more successful and that the national parks would more nearly play the part that God intended them to play in service to the nation.

DR. RUSSELL: Thanks very much Mr. Tillotson.

DR. RUSSELL: Mr. Tillotson has given us a word of warning concerning our techniques. We don't want to get so interested in putting a high polish on our naturalist methodology, not so much interested as to forget the real objective of our work, and I think his remarks are timely. We are really obliged to you, Tilly, for introducing that thought, for on occasions like this we may tend to place our techniques on a pedestal. You have given us something to think about.

I don't want to make this opening session too long because we have a number of important papers to be discussed this morning, but I am going to take a few minutes to sound a few more keynotes.

Ansel Hall, in addressing the 1929 Conference said, "Each Park Naturalist as an administrative officer, handles such a complicated program of service to the public and of scientific service to the park that the multitudinous details * * * might very easily surround him and exclude the distant view of the potentialities that lie near the horizon." He was warning us then of the same dangers that I think Mr. Tillotson has in mind. Mr. Hall called his opening address "Perspective."

We are striving for a perspective now also. In addition to discussing the practical problems that concern us in our every day work in the

park we have another thing to do, tomorrow and the next day, and that is to adjust our naturalist program to the surge of activity that has developed in the branches next to us. I think we are striving for an integration of interests and coordination of action. I suppose a good many of you have heard of some fears expressed for the Park Service by a group of its critics. They say, "Why, you have developed a program with such a variety of activities that you have diluted your administrative strength. You are getting lost in the woods of variety." I don't think there is any basis for such fears. If these people who make that charge would become well acquainted with what is going on in our Washington Office, in our Regional Offices, and in the field generally, they will know that there is no dilution of administrative strength.

I said a while ago that Mr. Tillotson had already done a great deal to bring about integration of interests. His activities in this regard, serve as a typical example of a Regional Director's success. If some of you could come to the Washington Office and spend a few weeks (as a few amongst you have done) you would become acquainted with the fact that there is not the confusion that has been described and that the variety of service activities are well coordinated. We must answer the critics who say that there is a dilution of administrative strength, answer with the force of our own convictions.

Today we have representatives here from the Branch of Recreation, Land Planning and State Cooperation; Mr. J. B. Williams, and Mr. Robinson of the Region One Office. The strong Branch of History that has developed in the past few years is represented by Mr. Nusbaum, Dr. Neasham and Erik Reed. Forestry is represented by Mr. Saari. We have anticipated ways of relating the naturalists' program to the foresters' program. Mr. Maxwell represents the Geologist group; Mr. Rothrock, too, represents the geologists as well as serving as Chief Naturalist; Mr. Burns and Mr. Yeager of the Museum Division are here. The Wildlife Division while it is no longer included in the Park Service organization, still has in it Mr. Presnall and Dr. McDougall, and there is nothing that a transfer can do to change the attitude of men who have their background of National Park experiences. They are still Park Service men in spite of their transfer to the Fish and Wildlife Service and they are present today. From the Southwestern National Monuments we have King, Dodge, and a number of custodians. I notice Earl Jackson and David Jones are here. The Editor-In-Chief's office is represented by Mrs. Dean. It is going to be possible for us actually to become acquainted with people and the objectives of these other branches that are conducting work that is related to the Naturalist program.

Many of the papers to be presented here have been written with that in mind. We are going to try to coordinate our interests with other interests that impinge upon the Naturalist program. If we fail to do this I think our meeting will not be wholly successful.

A Forward Look at Park Naturalist Programs

Carl P. Russell,
Supervisor,
Branch of Research
and Interpretation.

ABSTRACT

Experiences of the past twenty years have demonstrated that interpretive work is a vital part of the service rendered by National Parks. New currents of interest and new forces within the National Park Service have modified the original picture of the bureau; its administrative framework has changed greatly and the scope of its activities has grown. Basic principles, however, have not been altered and the interpretive function receives full recognition as a prime objective, and grows accordingly.

The interpretive work of the future will be a much broader program than is the present activity. In conducting it administrative officers must seek every advantage that organization schemes afford for proper coordination of the varied activities. Park Naturalists must be conscious of regional plans for presenting park stories and will relate their local methods and problems to the wider activity of the Service as a whole. Means of integrating the work of the Naturalist with the programs in history, archeology, ethnology, forestry and recreational leadership must be perfected. The 1940 Naturalist Conference is expected to make recommendations for practical steps to be taken in bringing about that integration.

For twenty years the naturalist program in national parks has been making a certain impression upon American conservation and national culture generally. We are conscious of a tremendous growth in the extent of the program and we feel a security in the success we have attained. We know from experience that the work we are doing is a vital part of the service rendered by national parks.

All of us are conscious of new currents of interest and new forces of action that have changed the National Park Service picture during the past ten years. We have witnessed the birth of a great recreational program within the administrative set-up of the Service; a program that reaches out from the realm of Federal areas and extends a most important cooperation to parks of State, county and metropolitan status. We have seen a strong Branch of History come into existence; a branch of Service activity which parallels, and, in the field of museum work, overlaps upon our own program of research and interpretation. Work in forestry has taken a mighty swing upward and we have anticipated ways to relate our naturalist activities to the program of the foresters. Within the Branch of Research and Interpretation three new units have been created--the Museum Division, the Geology Section and the Section on National Park Wildlife. The last unit, as you know, has been transferred, to another bureau, the Fish and Wildlife Service. Its personnel remains, however, in the same relationship as existed prior to the transfer and its governing policy has not been modified.

Other notable changes have taken place in the Service,--Parkway programs have developed, national memorials have become an administrative unit, national recreational areas have given us a new classification of Service lands and a National Park Service Advisory Board plays an important part in shaping certain Service policies. The so-called "emergency programs," CCC, PWA, ERA and WPA have changed the entire aspect of the Service picture and have resulted in a mighty surge of activity that has carried the parks program far beyond the goals set up ten years ago. In an attempt to keep abreast of the flood of progress a regional scheme of administration has been adopted. A scheme that has relieved the pressure on nearly all units of the Washington office except the Naturalist Division.

Those of us employed in the regional offices and in Washington have a fair chance to keep oriented in the constantly changing scene of Service activity. The Park Naturalist held to a field job does not have opportunity, usually, to observe the tides and eddies in the sea of Service action. One thing that this conference should do is to inform all participants of the trends in Service affairs. It should answer the question that many ask: "Where do we go from here?"

Getting down to specific cases here are some of the questions that should be answered in order that better definition may be given to the policies upon which administration of the Branch of Research and Interpretation is based. I am not pointing to these particular questions as the only important problems to be dealt with here but they are questions that should be answered to facilitate the work of the Washington office. The recommendations of this conference will be a first step in obtaining the answers.

1. What are the responsibilities of the Park Naturalist staff to research?

Statements to be made during the next few days by Kittredge, Walker, Presnall, Rothrock, Reed, McKee and Schellbach will bear upon this question. Discussions of their papers should reveal both the opportunities and limitations which the parks' staffs must meet.

2. To what extent should the naturalist staff engage in writing and publication?

This question is linked with the first. A review of our bibliographies reveals that wide differences exist between the literary industry of the permanent naturalist. Should we look upon the record of publication as a criterion of the success of a naturalist staff?

3. Can the work of recreational planners be integrated with the interpretive program?

The very fact that Williams, Robinson and Eppley of the Branch of Recreation and Land Planning are present at this conference indicates that there is a relationship between interpretive work and recreational leadership. To the park naturalist always busy with his local problems there may seem to be little overlap of his program upon the work of recreational planners. To those of us concerned with the coordination of public interests in National Park Service work it is brought home quite emphatically that interpretive work and recreational leadership should move in a kind of partnership through the lanes of conservation progress. Recreational planners are organized to coordinate their own programs; naturalists conducting programs in the out-of-doors are not so organized. The result is a subordinate part for the naturalist so far as the nation-wide programs of recreation and nature-interpretation are concerned. The field naturalists have not caught up with the recreational planners in the work of the great organizations such as the National Recreational Association, for example. Because of this lag the National Park Service in an unfortunate moment was left in the lurch without regional naturalists. I think that Mr. Williams, Mr. Robinson and Mr. Eppley will all agree that coordination of naturalist activities is essential to good regional administration of State Parks work. Mr. Robinson in Region One and Mr. Eppley in Region Two are doing constructive work in bringing loose ends together. As a matter of fact their exploratory work has done more to show why there should be regional coordination of State Park naturalist work than has any other accomplishment.

It is my personal opinion that the work of naturalists in national parks, too, must be coordinated on a regional basis. Opportunity will be presented in the course of this conference to express our views as to whether or not regional naturalist positions should be established.

budgets as they affect the naturalist's program and a committee under his chairmanship, and including both naturalists and superintendents in its membership, will draft recommendations which, I hope, may lead to better understanding of naturalists' needs throughout the Service.

I might go on at some length outlining the questions that call for answers but I have taken time enough now from our limited hours. In order that time may be conserved and to make sure that questions are not slighted, we have appointed committees to consider the questions raised by each paper and the discussion that will follow it. Copies of the committee assignments should be in the hands of each person here. Mr. Rothrock will have more to say about the committees and their work before the scheduled speakers start their program. Much of the success of the conference depends upon these committees and their ability to draft recommendations that represent the sense of the conference.

DR. RUSSELL: The Secretary of the Interior has called for a meeting of park Superintendents to be held in Washington in January. We shall wish to present to that conference the recommendations that you may make here.

In launching this Conference of Naturalists we have been fortunate in a number of respects. One of the matters of great good fortune is the presence of Mr. Newton B. Drury, Director of the National Park Service. It is a privilege, Mr. Drury, to introduce you to these officers of your organization working in a field of activity in which I know you have a personal interest.

MR. DRURY: Just what I am not going to do, Dr. Russell and co-workers, is to make a speech. You have had three fine keynotes struck already and I have found some response in my own mind to the points that have been expressed by all three of them. The most I expect to do is for a few minutes to think aloud on subjects that interest us here.

I like the thought of informality in this kind of gathering. In fact I think the ideal thing in a conference of this sort is not to arrange everybody in formal rows of seats as in an audience, listening to a speaker, but rather to group them around a table, with free interchange of thoughts in discussions as at a directors' meeting.

All of you have been in this interpretive field so long that I think you will recognize the truth of something the late Elihu Root said about the whole subject of conveying ideas to people through the medium of speech. When they were planning the new auditorium of Carnegie Institution, the question of size came up and Mr. Root, Chairman of the Board, finally prevailed in having it made comparatively small and informal for the reason that he had observed that it was very difficult for one to tell the truth if he had to raise his voice to do it. I think that is somewhat true about this sort of meeting.

The thing I like to do when I get around to the different parks, (and I have the privilege of doing a great deal of it already), is to get into an automobile with one man--the Superintendent of the park, the Regional Director, or the head of the Naturalist Department, or the Chief Ranger--and have the opportunity of talking informally back and forth. The more of that sort of thing that a conference of this kind has the more we advance toward getting a real understanding of what the whole program is about.

I was very much impressed with the thought that was expressed here as to the need of analyzing what we are trying to do. Of course, it is partly a defensive attitude on my part, coming into this very complicated structure as I have, but my whole motive in approaching the many phases of the National Park work, of which this is a very important one, is to try to simplify all along the line, to try to see where instead of complicating things there might be some way of reducing objectives to a simpler formula than they now appear to be in. As I say, that is partly for my own protection. I think it is also for the good of the enterprise. The naturalist program as I have observed it over a number of years holds much interest from the visitors' standpoint, but in the naturalist program as also in the administrative program, sometimes it seems to me that you can be brought into a situation where it is difficult to see the woods for the trees. That at least is the position in which I have sometimes found myself. Wherever we can simplify and wherever we can establish clear cut objectives we are that much better off.

I was interested in reading one of Dr. Russell's publications in which he commented on the fact that one phase of the interpretive program was spoken of by some individual as being "naive." He immediately turned this to advantage, saying that far from being a criticism he felt that it was really a tribute, in the sense that this particular piece of interpretive work had been so simplified that it really attained the only end that is worthwhile, namely to leave with people the thought that you are dealing with.

I am very much interested in every phase of what is going on here, and I wish that I could stay for the whole conference. It is a great advantage to me to come here and to be able to think aloud and get the benefit of hearing some of you think likewise. I am particularly impressed right now with the importance of the entire interpretive program, largely for the reason that has already been suggested by Dr. Russell and Superintendent Kittredge, the fact that in these troublous times, in days when the minds of the people of America are disturbed and there is need for developing unity of thought in our people, there arises a great opportunity before the interpretive forces of the National Park Service: to help in unifying this thought, to help in elevating concepts of life, to help in building up a real sense of national pride and patriotism. I won't particularly try to develop that theme now, because I know that you have it as the climax of this entire gathering.

There is one other phase which I think is equally important in the light of what I have been able to observe in the past few weeks. In trying to analyze how I might be able to contribute something toward the progress of this great institution of the national parks, it has occurred to me that there is one other phase that is particularly your function as interpreters. I don't want to fall into the spirit of lecturing or preaching to you, but I do want to speak of a very important function, the greater portion of which will rest with the interpretive staff.

I don't think it is true that the quality of the standards of the National Park Service has been unduly diluted by the expansion and complication of its functions. I think you are right, Dr. Russell, that there has not been any undue dilution. I do think, however, that there is that danger, always before us; I do think that it is true that we can unduly complicate our affairs; that we can spread outselves out so thin that we may fall short of the primary objectives which, as far as I can see, still are the main things that the National Park Service should stand for.

The more we can simplify our objectives in this kind of work the better off we are. When that has gone as far as it can, the next task that we have before us is that of recognizing the complexity of what we are doing, and clearly differentiating the various fields into which our efforts have expanded. I am thinking particularly of the recent developments that have led to the new concept of the "Recreational Area."

I could talk for quite a while on that whole subject, on the misgivings that I have in my mind with respect to the trends that this concept may establish as to standards of use and protection in the primary national parks and monuments. Unless all of us, and this group particularly, can define functions very clearly and very simply in such a way that the average man can understand them, in setting up this new category permitting non-conforming uses that are not a part of previous national park policy, we may appear to be relinquishing in some respects the standards that have been set up since the day of Stephen T. Mather and continued through the days of Horace Albright and Arno Cammerer. The only hope lies in making clear the fact that while in this new category a changed standard of uses is necessitated by circumstances surrounding the establishment of these areas, there still remains the standard of inviolate protection which is involved in the primary trusteeship that we hold to the National Parks and National Monuments.

I wish that there were time to be more concrete. This question is something that we can all well be concerned about, can continue to study, and can all take very seriously.

DR. RUSSELL: Director Drury is modest in describing his background of experiences in the work with which we are concerned. For many years he has been a national leader in park affairs. He has powers of discernment that all of us in the Washington Office have been made aware of very quickly. The fact that he would come and address us today is significant. Everyone of us, I know, is very grateful that we could hear what he has just said.

We should not go on with these programs without a reference at least to those who have worked ahead of us. I think it fitting at this point that I should say that this work that we are talking about is built upon the foundations laid by Mr. Stephen T. Mather. Itgrows out of his insistent determination to present the story of America as we are attempting to present it now in the National Parks.

We should take cognizance of that primary work that Ansel Hall did; the very real support that was forthcoming as a result of C. J. Hamlin's interest in the program. The first notable financial support came as a result of Mr. Hamlin's action, from the American Association of Museums, and Mr. John D. Rockefeller, Jr. Harold Bryant's work in guiding people afield and later in organizing the administrative structure upon which we work today will stand, always, as unique and nationally important. We should recall, too, the work of Dr. H. C. Bumpus, Dr. John C. Merriam, Dr. Frank Oastler and a number of others acting in an advisory capacity; it was their original thinking which resulted in the establishment of a great program of adult education, - the interpretive work of the National Park Service.

We could elaborate on the history of our work but I must be content with this inadequate recognition of the founders of our program.

The first paper that we are to hear is presented by the Park Naturalist of Lassen Volcanic National Park. Dr. Carl Swartzlow has written one of six papers now available on recreation in national parks. I think that he is going to introduce two major points in the paper that he is to present; one has to do with the Naturalists' relationship to the Park, Parkway and Recreational Area study and the other to our recreational responsibility and limitations in the national parks.

A Reasonable Balance Between Recreation and Interpretation

Carl E. Swartzlow,
Associate Park Naturalist,
Lassen Volcanic National Park.

ABSTRACT

A new impetus toward outdoor recreation has been provided by the "Park, Parkway and Recreation Study Act" and an appeal is made to provide an interpretive service for those who cannot visit the national parks. The several elements in the title are analysed and defined and the objectives and policies of the Branch of Research and Interpretation are reviewed. Problems of balancing educational facts with recreation and interpretation are discussed and recommendations made to harmonize recreational and interpretational features."

The original conception of the National Park Service was that of a Service which administered to the needs of what are considered the "Old Line" national parks and monuments and the problems pertaining thereto. There are people both within and without the Service that would like to see the National Park Service as a closed corporation and would wish to confine its jurisdiction to these typical "old line" parks and monuments. However, during the past decade, this country has passed through a period of change that has altered the social aspect of leisure time. People have been urged to travel, to get at least some distance from centers of population, and if at all possible, to patronize those areas that afford a rustic type of recreation.

The need for outdoor recreation for large numbers of city dwellers has long been recognized, but it has remained for the present administration to make any concerted effort to meet this need. Probably the most important legislation toward this end was the "Park, Parkway and Recreation Study Act." This act made it mandatory for the Service to cooperate with state and municipal agencies in developing their recreational programs by providing technical assistance in establishing state and municipal parks. This task has been carried out in an admirable manner by the Branch of Recreation, Land Planning and State Cooperation. One has but to observe the wide use of state, municipal and local parks to find evidence of success for the efforts of this branch of the Service.

Today, there are over 1000 areas whose primary objective is to provide wholesome outdoor recreation, and many millions of people have approved by taking advantage of the opportunity. Physical recreation is available, but in only 279 areas, including the national parks and monuments, is there opportunity for guided mental rehabilitation.

The Branch of Recreation, Land Planning and State Cooperation, working with other branches, has provided the physical plant, but the National Park Service should provide, at the earliest possible opportunity, some means of coordinating the interpretive programs within the state and municipal parks. The recognized benefits of these programs in our national park areas can and should be made available to the millions whose travel budget does not permit them to visit the national parks.

This need, under the Act, can be met only by expanding the Regional staffs so that the naturalist program as a whole can be coordinated and integrated. If the National Park Service can encourage an expanded interpretive service in state and municipal parks, recreation will take on a new and richer meaning for millions of citizens.

It is not the purpose of this paper to discuss ways and means of inaugurating an interpretive program in all state and municipal parks, but it is proper to recognize the need for such a program. It is the purpose of this paper to restate and recall the primary functions of the park naturalists.

The subject to be presented has given rise to a number of challenging ideas that required intensive study. The title "A Reasonable Balance Between Recreation and Interpretation" might be construed to imply that these two features are opposed to each other or that certain phases were not in harmony. After a careful review of the objectives and policies of the Service and a perusal of what has been written concerning recreation, the thesis which seemed to me most significant is that recreation in our national parks is an important part of the interpretive program. If this is not the case, then the basic structure of the Branch of Research and Interpretation should be revised, its objectives redefined and its policies changed. It is not the purpose of this discussion to give a ponderous enumeration of the obvious shortcomings of some of our interpretive programs, including my own. If that were so, then my time as well as yours would be largely wasted. It is true, though, that some mention should be made of the factors that tend to dilute the effectiveness of our programs and they will be discussed later.

The first objective of our branch of the Service is:

> "To develop and maintain a program devoted to the interpretation of the typical features within the Service areas so that visitors may obtain the maximum of understanding, appreciation and enjoyment therefrom."

Next, let me call your attention to three Branch policies: First, "To conduct the interpretive program on the highest attainable plane with respect to the accuracy of fact and to the dignity and clarity of presentation;" Second, "To keep the public informed regarding the latest thought on natural processes exemplified in the national parks so that these areas will serve their highest function of inspirational appeal"; and, third, "To instill in the visitor a love of nature by actual contact with its manifestations, emphasizing its beauty and orderliness, its inspirational and educational values and thus engendering an appreciation of and interest in its conservation."

Please note that certain ideas consistently recur or are otherwise emphasized, "appreciation and enjoyment", "dignity and clarity", "inspirational appeal", "love of nature", "inspirational and educational values", "appreciation and interest", and "conservation". These, then, are the keynotes to the objectives of the Branch and should be kept constantly in mind.

It is pertinent here to recall the primary Service objective: "To preserve and maintain the areas administered by it in as nearly an unimpaired form as possible for the enjoyment of the people of our own and future generations". "The only simple element in the mandates of the Organic Act is that developments must be conducive to the enjoyment of the objects to be preserved whether those objects be wilderness scenery, geological phenomena, historic sites and buildings or outstanding biological communities". Note that the areas are to be <u>enjoyed</u> and this implies that the people who visit them may do so in a manner that best suits the individual taste. I shall refer to this later.

We should now define <u>balance</u>, <u>recreation</u> and <u>interpretation</u>, keeping in mind the objectives and policies mentioned above. Balance, in this discussion, does not mean a device for weighing, but rather to compare and adjust or to harmonize two diverging points of view. In other words, to harmonize ideas concerning the relationship between recreation and interpretation.

Frequently dictionary definitions are brief and inadequate, but Webster's statement that <u>recreation</u> is the "refreshment of strength and spirits after toil" comes fairly close to expressing my view. However, there are certain elements not mentioned in this definition that should be considered and discussed. For instance, need a man be weary, either mentally or physically to have true recreation? I don't think so. But I do believe that the highest form of mental and physical relaxation can come only through a new or revised outlook that has been stimulated and inspired by intimate contact with scenes of great historical significance or scenes of timeless beauty and grandeur as exemplified in our national park areas.

On January 20, 1938, Superintendent Rogers of Yellowstone National Park addressed the Conference on National Parks, called by the American Planning and Civic Association, on the subject "Present Uses". Mr. Rogers stated that "Recreation is a by-product of some activity or state. An activity, physical, mental or spiritual may be recreational. It is not what is done: It is what is assimilated that makes an act recreation." There may be some purely academic disagreement with the last sentence but it is difficult to visualize a man in a state of physical or mental relaxation who has not acquired a new thought, idea or viewpoint. We should assume, then, that our visitors have had no true recreation unless they have made some new idea a part of their own experience.

Interpretation, according to Webster, is the explanation of what is obscure or a translation into familiar language or terms to us. This means more than a taxonomic exposition before a group of visitors. It is not important merely to state the origin of a certain type of rock, the scientific name of a flower or to identify the song of a bird, but it is most important to instill an appreciation of Nature through the medium of rocks, flowers and birds. If appreciation is developed, it is the easiest thing in the world to present the factual knowledge.

Where we are apt to fail in our duty to the public is when we "spoon-feed" vast amount of statistical matter without trying in some manner to lift them above the hum-drum routine of every-day life. If your program or mine is only an encyclopedia of facts, day in and day out, ad infinitum, then it has fallen short of its opportunities. Please don't misunderstand me. A certain amount of factual material must be presented and everything given must be as accurate as possible, but as long as the programs present facts and only facts, they will not be as "tongues in trees, books in the running brooks, sermons in stones and good in everything".

Let me attempt an illustration. Imagine yourselves on the crest of a high ridge with one slope nearly vertical and extending laterally and unbroken for many miles. The back slopes are more gentle but interrupted by canyons and gullies. The steep slope has buttresses of crags that seem ready to tumble at the slightest disturbance. At the base of the cliff are piles of rubble that are remnants of crags that have fallen. The trained naturalist recognizes that he is looking down on the scarp of an extensive fault, that the displacement has been recent and that there had been considerable erosion in the area previously. The naturalist can supplement the above facts by stating the elevation, the geologic age, identifying the rock and a few trees and animals observed along the trail. Technically, the repetition of these facts to his nature party fulfills his obligation to the public, but actually, if he merely states these facts, he has failed miserably.

The naturalist who has a true feeling for the purpose of the National Park Service has used this opportunity not only to supply the factual material but also to arouse in the visitor a consciousness of the vast forces of Nature constantly at work, to have him recognize the adaptability of life forms to a disturbed environment and to show him that from the work of the geological processes an unusual type of scenery has been produced. The leader of this group can present those poised crags so they can be seen through the eyes of the poet:

> "Where the torn rock like some spent giant clings
> Before the last and fatal shaft is hurled;
> I muse how from this frightful conflict springs
> The vast unconscious beauty of the world."

If the naturalist has presented the scene so that some faint spark of appreciation has been caused to glow, or if the visitor has been lifted ever so little above the monotony of everyday existence, then his program has provided the highest form of recreation through the medium of interpretation.

It is impossible to generate this feeling in the visitor if the naturalist does not experience it himself. He first must appreciate the meaning of the disturbed environment and see beauty in the torn rock before he can pass it on to the visitor. I have in mind the leader of a party who tries to identify as many birds as possible and gives no thought to, or reason for, the presence of so many species. Such neglect to utilize an opportunity may show either that the naturalist has not felt the appreciation or, having felt it himself, has failed to pass it on to the party. In any event, he has come short of the goal as an inspiring leader. In my own park, we have an unusual number of conifers within a very small area. It is easy to spend the entire morning simply learning the diagnostic features of the trees and neglect even to mention the causes that brought the assemblage together. In the last analysis, the difference between an educational program and an interpretive program is the difference between teaching the names of rocks, birds and trees and teaching the meaning of their presence.

At this point it might be well to consider some of the adjuncts to our interpretive programs that add nothing to either recreation or interpretation. I refer to things that may be classed as diversions or entertainment and yet actually detract from the park itself. But, you may say, visitors want them, they are necessary for a complete vacation. Earlier in this talk, I mentioned that the visitors should be permitted to enjoy the parks in a manner that best suits the individual taste. They should be permitted to do this but I would like to submit that if the objective of the visitor is merely to be entertained by motion pictures, vaudeville, golf, dancing or community singing, he is not there to enjoy the park. The lengths to which some people would have us go to place Coney Island devices in our national parks is sacrilegious. It is as though one recommended that the directors of an art gallery place a Rube Goldberg cartoon at the lower left hand corner of de Vinci's Mona Lisa.

Artificial recreation is always at hand in Pittsburgh, Los Angeles, New Orleans, or in the town from which the visitor comes. But he does not have an Acadia, a Morristown or a Crater Lake at his back door. He has no Giant Forest or Half Dome, no Carlsbad Caverns or Old Faithful, no Saratoga or Yorktown in his municipal park. Therefore, if we can bring him to realize that the setting of his priceless heritage should be kept for future generations and not be cheapened by tawdry, artificial amusement devices we have made him receptive to our interpretive program.

Why then, all this sound and fury about artificial recreation? Just this, in our weaker moments we have listened too intentively to pressure groups. We have spent too much time and energy to assembling talent for entertainment. We have given too much thought to artificial recreation. We have been too much inclined to select our temporary staff on a basis of ability to appear entertainingly before the public and, Heaven help us, because of these things we have tended to lose sight of the ideals and objectives of the National Parks.

It appears to me that, as far as our evening campfire program is concerned, we are inclined to devote too much time to group singing, vaudeville, stunts, tall stories and the like. There is no objection to the singing of a few old-time songs to generate a friendly spirit among the visitors or to the reading of serious or even humorous Nature poetry to set the scene for the talk to follow. However, I do object to the "tail wagging the dog", to the over-emphasis of horseplay as a prelude to the lecture. If the visitor is fed too much entertainment, the idea may become fixed that he is to be continuously entertained and that the lecture is merely an irritating interlude.

A danger to be reckoned with is the super-salesman type of naturalist, who, because of his gifts as an entertainer, tends to sell himself rather than the park to the audience. To the shallow-minded, such a person deserves undue position. I know of several instances where ranger-naturalist John Doe was addressed as the Chief Ranger. When corrected, the reply was, "Well you ought to be, you tell the funniest stories".

In some parks, where the entertainment problem is acute, the selection of temporary personnel may be actually based upon the ability of applicants to lead group singing or play some musical instrument. I know of cases where men of outstanding scientific achievement have shunned summer naturalist work because they would not face the embarrassment of conducting an entertainment portion of a program. It seems to me that the least we can do when considering men for temporary appointments is to be honest in our appraisal of the merits of the individuals concerned. The naturalist who can instill in the visitor a true appreciation of Nature is priceless and no thought of trivialities should influence selection.

I believe that there is no place for horseplay as a prelude to conducted hikes, caravans or museum lectures. To emphasize this by gross exaggeration, imagine the naturalist at Glacier Point prefacing his talk by asking someone to do a hand-stand on an overhanging ledge of rock. Or here, in this park, what would your reaction be if Mr. McKee were to give the lecture at Yavapai Point and begin by announcing: "Ladies and gentlemen, before I begin my talk on 'The Origin of Grand Canyon' let's all join in and sing 'Roll Out the Barrel' and the basses come in strong on the chorus"? It would be sacrilegious to ask for any type of singing. Any song, no matter how sacred the words or symphonic the music would only shatter the spell of wonder and sublimity of the scene before them. Irrelevant remarks may be equally out of place.

In contrast to the Orpheum entertainer is the naturalist who is an aesthete and who sees high inspirational appeal in almost everything. He represents a state of mind that can be achieved only after deep abstract philosophizing on the meaning of beauty. The visitor who can best enjoy Nature through a passive approach would probably delight in being with such a person and would abhor the robust or active type of program. The visitor of this type should be left pretty much to his own devices. He would probably thank the naturalist for leaving him alone.

A program stressing pure aesthetics may be as disastrous as the opposite. I feel that for the large majority of visitors too great a stress on aesthetics will dull the inspirational appeal of even the most beautiful scene. It is given only to a few rarely endowed men to understand and appreciate beauty in the abstract. Most mortals need a more earthy presentation.

What, then, is a reasonable balance between recreation and interpretation? Obviously that which produces an optimum of both physical and spiritual regeneration. Enough factual material must be presented so that people can understand the component parts of the scene and the relative amount of time devoted to this depends on its complexity. But no group should leave the scene without having been led to appreciate its meaning. The visitors who participate in our program are not expected to hike along the trails or to climb mountains only to renew their physical vigor - this renewal is achieved unconsciously - neither should we expect them to become zealots. Any gymnasium can build muscle and cultists can be recruited far from our national parks.

Ours is not the responsibility of supplying inspiration and recreation through artificial stimulation. The natural stimuli are present in the grandeur and historical significance of our national parks: A grandeur and significance that is a constant invitation to come, to see, and to understand. Ours is the responsibility to guide, to reveal and to explain. If we as Park naturalists know the way and can lead with understanding, can see and interpret the picture with clarity, then we have achieved the ideal balance between recreation and interpretation in the National Parks.

DR. RUSSELL: Dr. Swartzlow has recalled some controversial questions. There are some tenets, however, that we would not argue about. I like that expression that Superintendent Edmond Rogers used some years ago: "It is not what is done that makes an act recreational; it is what is assimilated." As Park Naturalists we can adhere to that philosophy and keep out of trouble.

We are all more or less familiar with the pressure that is being brought to bear by certain organized groups who feel that they are as privileged to enter some of our national parks and to engage in recreational pursuits of a specialized kind as are any other citizens, organized or otherwise.

We can spend about five minutes in discussion. I invite comment on Dr. Swartzlow's paper.

MR. STUPKA: This paper is very important, so much so that I suggest that it be mimeographed and that the various national parks be furnished with copies for their naturalists and ranger-naturalists.

DR. RUSSELL: The minutes will be mimeographed. If you think it advisable to give the paper, as a separate, wider distribution than the minutes are to receive, I will leave it to the Committee consisting of Swartzlow, Yeager, Eppley and Robinson to take into consideration the number of the separates that should be prepared. We will take official action as a group when the Committee makes its recommendations in connection with the questions posed by this paper.

We have been so concerned with carrying on our program of park development and interpretation that we have neglected writing on recreation. I think this makes the sixth paper that can be recognized as pertaining specifically to recreation in national parks. Mr. J. B. Williams, we shall be glad to have some comment from you. I believe that you are one of those responsible for interpreting the requests that come from these organized groups that seek recreational facilities in National Parks.

MR. WILLIAMS: I am sorry that I have never had the privilege of being under the guidance of any of the naturalists in our great national areas. I am looking forward to such a treat with a great deal of pleasure. I remember when the naturalist service on Federal areas was inaugurated and the thing which appealed to me at that time was the thought that we should be able to go away from our visits to such areas with a greater appreciation and understanding of Nature than was possible simply by the use of museums divorced from the natural environment and setting. I am more and more convinced that those who have been the leaders and guides of recreational programs, in our national parks and those who have been primarily concerned with providing opportunities for recreation in local and more

recently in state parks, have common objectives in the field of public recreation.

It seems to me that any misunderstandings of the past are largely based upon an interpretation of the real function of a recreation program. I notice that the term entertainment is used in the previous paper, but one who is in the field of recreation, professionally or as a volunteer never thinks of entertainment in the sense of being a substitute for a worthwhile recreational experience.

Of course, there are different levels of activities in which people participate during their leisure time. Some are purely on the entertainment level, others are on that level where a person listens, and that in itself is a form of recreation; but the highest level is that in which a person expresses himself through some form of creative activity whether it be mental, emotional or physical.

My impression is that most of us are inclined to consider recreation too largely from the physical standpoint. This has its merits and is important but we fail to recognize the higher values inherent in those activities which provide mental, emotional and aesthetic satisfaction and richer experiences. I am convinced, therefore, that it is important for those who have been more active in the varied recreational program of our State and local park systems and you who have up to the present time, been personally concerned with the interpretive program on National Parks, to unify their efforts in behalf of a nation-wide naturalist service.

After listening to the preceding paper, it seems to me that we have a common objective. What recreational people are anxious to do is to make the physical things in life mean more and more in benefits and satisfactions to the individual and through recreation services to as many people as possible to make a contribution toward the improvement of community life as a whole. The latter is our ultimate goal.

If we are to go forward in service to people in the naturalist and other recreation fields it seems to me that more and more consideration should be given to coordination of our efforts within the Service and to the establishment of functional cooperative relationships with agencies at all levels of Government which are concerned with the provision of services in these fields. Many State and local agencies are giving serious consideration to the introduction of naturalist services into their programs, which no doubt would profit from more guidance from the Service. On the other hand State and local agencies have much to contribute in making our naturalist services effective in the lives of more and more people. Their participation in local programs would lay the foundation for greater appreciation and understanding of the great out-of-doors and thus would result in their coming to our national areas with more definite objectives than is evident today.

It has occurred to me that we sometimes think of our naturalist programs as related only to the sublime in nature. I think we will agree that an adult or a child sometimes gets as big a thrill from the consideration of the minutia of nature as of its most magnificent manifestations. Just to the extent that a child is enabled to become familiar with the natural life in its various forms near him just so far will he have an appreciation and understanding of the great natural phenomena of our national areas.

DR. RUSSELL: The subject of the relationship between the recreational planners and the interpretive officers is truly important and is something that will get further consideration. I notice that Mr. Williams does not appear on Committee No. 2. As chairman I will take advantage of my position and ask him to serve on that committee.

In this connection I will suggest that since there is a direct relationship between Committee No. 2 and No. 23 that these Committees should meet as one.

The next speaker, Mr. Robinson of Region One, will tell about discoveries made in a nation-wide survey of naturalist programs offered to the public.

We have been quite content for a good many years in the idea that we of the national parks are conducting the great outdoor program of nature teaching. Statistics have been compiled that I am sure will interest you very much. I introduce Mr. Robinson of Richmond, Virginia.

MR. ROBINSON: I think I am the only representative of Region One present. I know that I don't have to tell you that I am delighted to be a representative and to visit this very magnificent park. I know that I am going to get a lot from this Conference to take back with me. The thing that I would like to take back with me is the Canyon but I can't do that so I will have to get an inspiration from the Canyon and an inspiration from this Conference to carry back.

I know that it is impossible to present all of the findings of our nation-wide survey of naturalists' programs in one paper, and for the reading of this paper I am making no apologies, because when I get into it you will understand that one poor brain could not retain all the facts and figures I am going to present.

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A Nation-wide Public Naturalist Survey

Robert C. Robinson,
Regional Recreational Planner,
Region I.

ABSTRACT

The rapid increase in recreational developments has emphasized need for interpretive programs under qualified leadership. To determine to what extent the leadership has been provided, there was conducted a survey which reveals a wide range in types of organizations engaged. Seventy-seven programs in areas are now offered the public in State, County, and Municipal parks as well as in Federal areas. The Nation-wide activity, obviously, has grown out of the original work done in National Parks since 1919. What is needed now is coordination of effort to bring about a better understanding and appreciation of recreational opportunities offered by the natural environment. The National Park Service is a logical agency through which to effect the needed coordination.

With the vast increase in opportunities for outdoor recreation made possible by the rapid expansion of non-urban parks and with improved facilities for travel, the countryside and wilderness have become accessible to most of our people. That large numbers of them are taking advantage of these opportunities is evidenced by the fact that attendance at parks has tripled and quadrupled during the past few years. Most of these newcomers are strangers to the natural environment. Records of park use show that better than 90 per cent of them confine their visits to picnicking and bathing areas and that they participate almost exclusively in activities familiar to the city playground, playfield and park.

Few of them venture out on trails. To most of them, nature is like a book written in a foreign language. Use of the sort described tends to defeat the primary purpose for which parks have been established, which is that of providing people with an opportunity to enjoy nature's beauties and to satisfy human curiosity concerning the world in which we live.

How to bring about a better use of non-urban parks presents, then, a problem which deserves the fullest consideration. It requires the same careful study and planning that has gone into the selection, planning and development of such areas. Visitors' eyes must be opened to nature's

handiwork and their appreciation of its beauty sharpened. This requires a program of interpretation. The naturalist service in national parks exemplifies this type of program, but at best it reaches a relatively small number of the total annual park users. The visitors come once or twice and stay only a few days at the most before returning to their homes, most of which are several hundred miles away. No matter how well you National Park naturalists do your job, you can no more than scratch the surface of public need for the type of service you are rendering.

The program of interpretation I am talking about needs to be carried down through state, metropolitan, county and city parks into the neighborhoods where it can touch people's daily living from childhood to old age. The realization of a program so ambitious in scope requires, as I have mentioned before, careful planning followed by energetic and persistent action over a long period of years.

Planning necessarily starts with a study of the existing situation. What do we have now? What do we need? What are our resources? How can we utilize these resources to accomplish our objectives? These are the "a, b, c, 's" of planning. To accomplish the first of these steps, to find out what we have now, a nation-wide survey of naturalists programs was undertaken. A number of you here participated in that survey by filling out a form giving pertinent information on the interpretive programs you are carrying out in your various parks.

Through the Recreation Study which the Service has been conducting, The National Recreation Association, and other sources of information, a list of agencies and organizations believed to be interested in nature education and conservation was compiled. Each of these agencies, numbering several hundred in all, was asked to fill out a nature-study form if it offered a public nature program under leadership.

While the survey may be incomplete in minor respects, it does, I believe, give us an excellent resume of the scope of nature activities now being conducted throughout the country, and the contributions being made by the wide range of participating agencies and clubs.

From the several hundred forms distributed, 167 replies were received. Of this number, only 77 agencies were found to render public naturalist services adequate in scope to warrant detailed consideration. Of the remaining 90 forms returned, 22 reported no program, 17 were from schools and colleges and included only scholastic activities, while 51 were rejected because the programs were either insignificant or were not of a public character.

Of the 77 agency programs analyzed, 54 were supported by public funds and 19 by private funds. Supervisory authority included Federal, state and local park and recreational agencies, museums of natural history, sanctuaries,

botanical gardens, nature centers, garden clubs, nature clubs and socities, a hotel and a hospital for people suffering with nervous disorders. Thirty-three states and the Territory of Hawaii were represented.

Principal types of areas or centers used for nature activities included 114 parks and recreational areas, 33 museums, 126 playgrounds, 3 sanctuaries, 1 botanical garden and the grounds of a hospital and a hotel. In six instances, the open countryside was the exclusive area of operation.

Fifty-two of the programs operated the year around, while 25 were confined to the summer months.

Seventy-two agency programs were being conducted under paid leadership, while 5 were instrumented through volunteers from cooperating schools, colleges and other educational institutions. Altogether, there were 123 full time and 206 part time naturalists employed.

Eighty-nine museums were reported by 53 agencies, while 48 agencies listed 137 nature trails in use. There were 14 field laboratories in operation by 12 agencies. Nineteen programs reported 123 trailside exhibits and 2,328 trail signs in use.

Twenty-eight programs sponsored 233 nature-interest clubs with a total membership of over 118,000. Twenty-two agencies published literature regularly, 22 others occasionally, and 4 issued both regular and occasional publications. The mailing list of the 20 agencies reporting this item included 69,000 people.

Close to 6,000,000 participants were recorded by the 59 agencies listing attendance at museums, nature trails, lectures, guided trips and field trips to distant points. Of this number, two and a half million (in round figures) visited museums, 2,114,000 attended the 14,239 lectures reported, and a half million hiked over nature trails. Better than 19,000 made field trips to distant points.

While lectures and guided trips dealt with a comprehensive group of subjects, geology, plants, birds, and mammals, in the order listed, were by far the more important from the standpoint of number of lectures and attendance. That human history is being given considerable emphasis, however, is indicated by the fact that history, archaeology and ethnology were subjects of over 4,000 lectures and 6,500 guided trips.

Now I know you have not been able to get a whole lot out of my reading all these figures, but it is hoped that they have given you some idea of the scope of public naturalist programs now being carried out in the nation. To follow up, I would like to review briefly the activities of the various types of agencies offering naturalist services. Let us begin with those closest to where the people live, those that have their roots in the neighborhood and home, and work out from there to the national park program with which you are so familiar.

Probably the organizations closest to the daily lives of the people are those groups such as garden clubs, Audubon Societies, and natural history associations that people form to make possible the satisfaction of common interests. Returns in the nation-wide survey included 20 agencies of this sort, but only 11 offered what appeared to be public naturalist services. The programs offered by 9 of these 11 were under the direction of paid naturalists, with 17 full-time and 12 part-time leaders conducting regular schedules of lectures and field trips and supervising museums and nature trails. The other two agencies carried out fairly comprehensive programs with volunteers from schools, colleges, and their own membership. Subjects covered were largely confined to natural sciences with the principal emphasis being placed on plants and birds. Eight clubs operated ten nature museums, while five provided nine nature trails. A few of the clubs used parks and the countryside for their hikes and lectures.

A check with studies made by the National Recreation Association reveals (1) that there are literally thousands of recreational interest groups in the nation of the type discussed above, most of them functioning through volunteer leaders, and (2) that a majority of them sponsor outdoor forms of recreation that are closely related to the natural environment. In most cases, such groups are in need of facilities which afford them richer and wider opportunities. They also need the guidance of trained leaders. The nearby non-urban recreational area, such as the local or state park, can instrument both these needs, and, by doing so, it can extend its influence far beyond its boundaries. Such groups can become the roots through which its program of use can grow and become exceedingly rich in content.

The significant fact revealed by returns from four museums of natural history was the extent to which institutions of this sort are turning to the out-of-doors in carrying out their educational and recreational programs. Everyone of the agencies reported conducted field trips and sponsored a wide range of groups interested in such subjects as botany, geology, birds, archaeology and photography. Two museums offered leadership training courses in natural sciences. Through this sponsorship of interest, groups functioned very largely under the guidance of their own leadership, and through training courses for volunteer leaders the natural science museum is becoming a valuable community recreation center and at the same time improving its educational services.

The local park and recreation system with its neighborhood playgrounds, its city and outlying parks, offers a splendid medium for integrating nature into the daily lives of the people. Because of this fine opportunity, the fact that reports were received from only twenty metropolitan districts,

counties, and cities, was a disappointment to me. I felt there must be many other public nature programs being offered by minor civil divisions, but upon a close check against the 1935 report of "Municipal and County Parks in the United States," I found that, while many urban centers reported nature trails, zoological parks, arboretums, and wilderness areas, very few, probably no more than 25, offered interpretive leadership.

A glance at the results accomplished by the 20 agencies included in our survey reveals the possibilities of nature programs when offered close enough to people's homes for frequent participation. The 24 full-time and 23 part-time naturalists employed by these agencies reached directly an aggregate of over a half-million people through lectures, museums, and guided trips.

If all urban centers, counties, and metropolitan districts operating park and recreation programs offered naturalist services that reached the same average number of people per system, the annual total participation would approach 27,000,000 for this group of agencies alone, and when it is considered that the local recreation system is in a position to reach all age groups frequently enough to arouse, sustain and satisfy interest in nature throughout a life time, its importance in this phase of the national recreational program is further emphasized.

While its areas are not quite so close to the people as are those of the municipality, county, and metropolitan district, the state park system, if planned with an eye to the distribution of a state's people, can fit its program nicely into gaps left by its minor civil divisions. Primarily, the state can and does provide the large wilderness type of park beyond the financial reach of the average local government agency. It has a wider choice of natural resources and can, for this reason, better round out the ecological pattern of the state and its physiographic regions. Yet its areas are generally close enough to the population for that frequency of participation necessary to sustain interest in nature study, nature arts and crafts, and other activities which make for a recreational use of natural resources.

That states are beginning to recognize these values in their parks is indicated by the rapid expansion of interpretive programs in state parks during the past few years. Prior to 1938, only four state park systems employed naturalists. Now fifteen offer, under leadership, nature activities as a part of the park's public service. It should be added, however, that 5 of the above listed programs are financed wholly, or in part, by WPA. In Region One, at least 2 additional states expect to employ one or more naturalists in 1941, while 5 of the 6 now providing such services expect to expand them materially, and, in the case of one of them, to replace WPA leaders with state-employed naturalists.

In content, the nature programs now being offered on state parks include both natural and human sciences, with the greater emphasis being

placed on plants, birds, mammals, reptiles and geology. Seven of the agencies included history, three archaeology, and two ethnology. All techniques of presenting the interpretive program were employed. Twelve state agencies operated 33 museums, 11 provided nature trails, all of them offered lectures, all but 2 conducted guided trips, while 4 conducted field trips to distant points. Five issued literature regularly and 4 occasionally. Altogether, over a million state park visitors participated in nature recreation.

While it is believed that an encouraging start toward a well rounded interpretive program has been made among State park systems, it should be noted that only 50 of the 891 state parks and recreational areas now in operation provided leadership during 1940. No doubt some of these parks are too far removed from population centers and too poorly used by vacationists to warrant naturalist services, but by far the majority of them are so located as to make them ideally suited for well rounded nature programs.

To illustrate, the Swift Creek Recreational Demonstration Area near Richmond, Virginia, offers a typical state park situation, both as to resources and location to population. A nature program was started in 1938. During the year from September 1, 1939, through August 31, 1940, over 37,000 visitors engaged in one or more phases of the program. Every grade-school class in the county where the area is located was brought to museum, craft-shop, and to the beginnings of trails by school buses for natural science activities; community houses, youth agencies, and recreation departments brought numerous groups at regular intervals. Many parents who first came to bring their children have become interested participants. Thus the family is being drawn into the program which includes the following among its different activities: lectures, guided trips, bird feeding, conservation, nature crafts, basketry, pottery, wood and rustic craft, leaf printing, weaving, and braiding of natural materials.

The above results were accomplished with WPA leaders from the security wage list who had to get their training and experience on the job. Think what might have been accomplished had there been a well-trained naturalist to give the program expert supervision. What has been done at Swift Creek can be equalled or surpassed on probably a majority of the 891 state parks now in operation. And state park authorities are becoming interested. The Virginia Conservation Commissioner cooperated in starting the Virginia Institute of Natural History because he said "I'm looking forward to the day when I can have a trained naturalist in every one of my parks and I want this Institute to train them for me." It is only a matter of time until there will be forty-eight instead of fifteen state park departments offering naturalist services to those who visit their parks.

From the above resume of local and state park programs, you National Park naturalists can readily see how the situation offered on the close-by and relatively small recreational area differs from that presented by a National Park where most visitors are tourists who have come for their first and probably only time to stay a few hours or at best a few days. You have a much greater story to tell and very little time in which to tell it. You can arouse latent curiosity but you cannot sustain and carry it forward as can the naturalist in the park which is near to its public. Too, the most of your visitors are, I imagine, as ignorant of natural forces as I am of the Greek alphabet, while a large number of those who make up attendance at local park museums and trails are enthusiastic nature students and many of them might even be classed as amateur naturalists.

But you have blazed a trail along which the state and local recreational agencies are following. The techniques you have developed for presenting nature's amazing story to a curious public have been adapted to the different situation presented by the local park. During 1939, according to the records you submitted, you reached five and a half million visitors through your museums, your nature trails, lectures, and guided trips. Geology was the subject given greatest emphasis from the standpoint of lectures and exhibits, but most of you covered all the subjects listed on the report form. Three of you issued regular publications while 12 got out nature literature occasionally. Five of you reported a distribution of 22,000 issues. Two of you reported leadership training, but only 1, Yosemite, conducted an extended training camp.

And speaking of leadership training, it may interest you to know that 25 of the 77 agencies whose programs were summarized offered one or more leaders' training courses during 1939. Five forms not included in the summary were received from agencies conducting nature leaders' training camps for periods of from 2 to 6 weeks, while a number of colleges that sent in forms (also not summarized) conduct summer camps for advanced science students. The April 1940, issue of "Recreation" listed 16 such training camps that now operate annually, and this list did not include the Virginia Natural History Institute course which was started this past summer at our Swift Creek Recreational Demonstration Area. Such training camps should assist materially in providing leadership for the rapidly expanding naturalist program since the continued success of the program depends in large part on the abilities of those who guide it.

Although public schools and colleges were excluded from this survey, 15 forms were received from educational institutions and in Region One, we made a few sample studies of natural science activities in the educational systems of larger cities. From these studies, it appears evident that scholastic methods are tending more and more toward the use of living nature as laboratory material. Grade schools are doing much the best job in this connection, since they are reaching all their students; whereas, high schools and colleges only reach those actively interested. This is unfortunate in view of the importance of adolescence and part adolescence

in the formation of life interests and habits. But the trend is in the right direction. In a number of southern states serious consideration is being given to the establishment of conservation areas as a part of consolidated schools, such areas to be used by students for both class work and play and by the communities as recreational centers.

You no doubt have gathered that I am optimistic concerning the future of nature recreation in the leisure time of the nation. I believe the findings of this study warrant an optimistic viewpoint. While it is true that there are relatively few agencies actively sponsoring nature recreation - when compared to the number of sports organizations, for example - it is encouraging to note the wide range represented by those agencies that do.

They reach all age groups and make possible a rich combination of recreational pursuits: hiking clubs trying to see and understand what lies along the trails they follow; garden clubs extending their activities to include public education concerning the natural world; youth agencies using nature as an instrument for teaching reverence for the world and its creatures; schools going out-of-doors to let the student learn from nature's laboratory instead of from a dusty dead one created by man within four confining walls; resort hotels beginning to offer their guests an opportunity to get away, occasionally, from the dance floor, the bar, the bridge table, the competitive sports area, on to trails where they may exercise a long dormant curiosity concerning the world in which they live; museums, once regarded as being in the same catagory as mausoleums because all they housed were the cold dead things of nature, becoming headquarters for groups that go out where vivid life is to be found in all its natural glory; city playgrounds turning more and more to the stimulation and direction of a child's innate curiosity concerning the strange and beguiling nature of a tree, a butterfly, the frog that hops across its path; conservation agencies teaching instead of preaching conservation; park departments, city, state and national, seeking to interpret to a public, largely strange to the out-of-doors, the natural wonders and the artifacts of human history, so carefully and scrupulously set aside and preserved for it.

All these various agencies and groups stepping out tentatively into this great new leisure-time field - few now but potentially adding up to an aggregate of thousands - offer the instruments for forging a national program. They fit together nicely. The School, the playground, the garden club, the hiking club, and the youth agency have their roots sunk deep into the home and the neighborhood were dormant curiosity can be aroused, sharpened, given initial direction; the city, county, metropolitan, and, in many cases, the state park lies close by to accommodate expanding interest, to diversify and satisfy the interest, while for the increasing millions able to get to it, the National Park in all its rich and varied beauty offers the climax to the amazing story of creation which was begun back on the neighborhood playground and school yard.

Sounds like a pipe dream, doesn't it, to think that some day nature may share a large part of the increasing leisure of the American public which is now occupied with moving pictures, the radio, the automobile speeding down a road hedged in by billboards, the nation's sport fields, the hot dog stand and juke joint? Flying was once a pipe dream, you'll remember. Now it has turned into a nightmare of reality, but man flies. The democracy we are so feverishly arming ourselves to defend was also once a pipe dream, as were skyscrapers, talking machines, moving pictures, and television. Is it unreasonable, then, to predict that the masses of mankind will one day re-discover that they, like the trees, like the flowers, like the crops they grow, have their roots in the earth, that once again they will understand the proverb about dust returning to dust.

DR. RUSSELL: What Mr. Robinson has just said about the extent of the naturalist program should cause all of us to sit up and take notice. When Harold Bryant started in 1918 to conduct guided trips at Lake Tahoe he was all alone in America. Stephen T. Mather saw the possibilities that could grow from this unique method of teaching and he induced Harold Bryant and Dr. L. H. Miller to introduce the work in Yosemite. By 1920 the Yosemite naturalist program was recognized as a park unit with Ansel Hall in charge. By 1921 it had spread into most of the major national parks; that quickly did it grow in Federal areas. You have heard Mr. Robinson say that in 1938 only a few state parks were conducting naturalist programs. His survey just completed shows that today there are 279 areas in the United States offering naturalist programs based upon the same general plan that Harold Bryant and Ansel Hall devised. In talking about agencies he mentioned the figure 77. I think if we accept his 279 areas the extent of the programs is made clear. The National Park Service naturalist activities cover 25 areas;—twenty-five out of 279. We find a total of 350 professional and 340 volunteer naturalists—pretty nearly 700. Of this total we employ 35 permanent naturalists and 107 temporaries in the national parks. It is obvious that the extensive nation-wide activity has grown out of the National Park Service naturalist program. I tried to suggest the import of naturalist work at a recent meeting of the National Recreational Association. I did not attempt to review all of Mr. Robinson's findings but I did point to some significant facts, expecting that someone would take notice of the remarkable opportunity to bring together a new faction in recreational forces. Possibly it was my poor presentation, but I think also that possibly the recreational specialists are so well organized in their particular fields and driven so hard in their particular needs that they are not prepared to recognize the park naturalist. At any rate, in that group I did not succeed in arousing interest in the possibilities of organizing the naturalists now engaged in interpretive work in parks. The other technicians are organized and I wonder why we cannot expect to establish some sort of fraternity that will result in the organization of park naturalists.

I am acquainted with a number of these park naturalists outside of our National Park Service group. They are men whom every one of us would be mighty glad to claim as brothers in the business.

I went to Mr. Drury's office in the California State Parks establishment last summer and met a very capable man there who has been Park Naturalist for the California State Parks for some time. When I had been seated for a few minutes he removed from his file the minutes of the 1929 National Park Service Park Naturalists' Conference and stated, "This is my Bible." Most of the State Parks men throughout the country recognize what we have provided in the way of leadership in the Naturalist field.

How far should we go in trying to assume further leadership outside of Federal areas?

It seems obvious that if organized a great program of this kind will make faster and better progress than if it is handled piecemeal. Our relationship with State authorities is such that we may extend a service to State, County and municipal park naturalists if a practical means is provided, and, of course, if we wish to extend our objectives and add to our responsibilities.

MR. YEAGER: I have one thought on that, Dr. Russell. I am wondering how many of the national parksmen have an opportunity to be of assistance to outside agencies along this line if they do their own work. I know that when I was a Park Naturalist I had very little time for work outside of my parks. It seems to me that cooperation with State agencies would depend on the possibility of increased personnel.

DR. RUSSELL: It would be quite possible for the Park Naturalist, says Mr. Beatty of Yosemite, to extend cooperation to a state park administrative organization, in solving problems of methods and procedure, if there was need for that in California. There might be opportunities for that kind of cooperation on the part of a Park Naturalist. I would not expect him to engage in interpretive services to State Park visitors.

I may say that Mr. Robinson makes no claim to being a naturalist. But do you know that he is deeply interested in conducting the second important field school for Naturalists that is being operated by the National Park Service, - the Virginia Natural History Institute?

The recreational planners have manifested a very generous attitude in extending their cooperation and help in regional matters pertaining to naturalist work. This survey of naturalist activities in the United States, has been conducted by the recreational planners under the guidance of Messrs. Robinson and Williams. The recreational planners are organized and find representation all over the United States in our Service set-up. They have been able to establish these facts and figures because they are in touch with the State programs.

It must be admitted that there has been a lag in our naturalist developments so far as coordination of our work with outside work is concerned. When CCC came into existence the recreational interests were well organized

for the purpose of conducting their own program. What was the result? They are well represented in the National Park Service administrative organization. I don't begrudge them that. They are doing a very important thing.

There are many implications in Mr. Robinson's paper pertaining to the values of interpreting natural history to the citizens of the United States. He has the naturalists' viewpoint and he will advance our work in every way that he can. But he has a full schedule of work as a recreational planner. He cannot coordinate all naturalist programs in Region One. I think we need Regional Naturalists. Why do we not have them? We as Park Naturalists, were not thinking in broad national terms when our regional organization was devised. We were still much concerned with the Yosemite Naturalist problem and the Grand Canyon problem; we had not reached out to where we could think of things on a national basis.

MRS. DEAN: Dr. Russell, I have often wondered why we could not extend the naturalist work to schools. The success of the John Muir program suggests that the Service can accomplish much by reaching school children with the story of conservation needs.

DR. RUSSELL: I believe we can, Mrs. Dean. We have two papers provided in the program to treat with that subject.

MR. BEATTY: I think it might be possible for us to assist and cooperate with local and state organizations to a greater extent, especially in a park like Yosemite. However, we are very limited on travel funds; we are also limited as to the opportunity of going out and giving talks before local groups or of engaging in conducted trips outside of the park because of regulations prohibiting it. Whenever we ask to go to one of these natural history organizations, it generally has to be in conjunction with some other trip and if we were allowed to go out a little more for the purpose of giving talks and possibly helping to inspire some of these local organizations, I think we could help this work along immeasurably.

DR. RUSSELL: That's right, we hope that there can be a change in policy in that connection. We asked for a change in the language of our appropriation act last year and in previous years, hoping to get freedom for the park naturalists to go out of their parks in extension service. We should extend our interests and activities from parks to the surrounding country but to meet all opportunities and to keep abreast of progress in the Service we will also have to be organized on a regional basis, I am sure. There are two things involved in this connection, one is to organize the work of naturalists in national parks on a regional basis and the other is to organize this tremendous program of which Mr. Robinson has just given us a picture. One of these undertakings can be handled independent of the other but it seems logical to throw them together and to do all of it in one office.

MR. ROBINSON: In the course of our work in the field I have formed certain ideas concerning needs as related to this naturalist program. I believe that recreation, if it is considered as it should be, a creative use of leisure, certainly fits the naturalist program. There is a wide range in the public recreational program, many plans of which are now well organized through common interest associations. There is the National Recreational Association which, for a number of years, has been doing a very good job of helping the recreational program of communities. There is the American Camping Association which is doing a fine job in helping to stimulate and bring about better camping. But there is no organization, nor part of any organization given over exclusively to a consideration of ways and means of expanding nature programs. Nor is there any organization that I know of which is concerned with coordinating the nature work of the many agencies participating in this field. Nowhere do we have any organization, group, or agency concerned with bringing together this type of recreation service and it seems to me that some agency needs to take the initiative in bringing about the sort of coordination I have been talking about. The National Park Service has that authority under Act 770 1/2, through which we are operating our research and planning program in cooperation with states and local governmental agencies. Our national report will make certain recommendations along this line. But that does not take care of the need for the naturalist and those interested (the layman as well as the professional) in getting together and trying to work out their own destiny in the larger program I have outlined. It seems to me that this is one of the things that is definitely needed and the Park Service can assist materially in forming such a group.

DR. RUSSELL: Mr. Robinson recommends the formation of a National Park Service program that will embrace interpretive work in the broad undertaking of State cooperation. Mr. King of the Southwestern Monuments should have ideas on the subject.

MR. KING: I am afraid that I am going to digress. If it has nothing to do with this particular subject, it might possibly have something to do with what we talk about later. As I carelessly read the program I saw that I was going to learn a lot. I also thought that something in which I am interested was not particularly stressed. It has to do with coordination. A very poor metaphor came to mind as I was sitting here this morning.

The American public might be considered a passenger in a buggy called "Interpretation" being dragged by two or three horses toward a destination which is unannounced and dimly perceived, these horses being labeled Branch of Historic Sites and Branch of Research and Interpretation. I will confine my remarks to National Park Service matters, the highway down which this rig is traveling being a National Park Service highway. But the rig is not hooked up right, I think. There are three major faults, first of all, the horse or horses perhaps do not have a great deal of power. The horse's face may "look pale" but it is not because his blood is "diluted". He lacks the hay of manpower and the oats of money--that is probably why

he stumbles and shuffles along. The highway has been ably built. We have had men who built the highway, put in gutters and landscaped the sides and made them pretty. With all these improvements we wonder why the horse can't pull. Apparently the warehouse manager who issues the hay and the oats is not sympathetic, and seemingly does not want to be sympathetic. I wonder if the Bureau of the Budget is really interested in the horses. There is a second aspect of it. The horses are not hooked up in the proper harness. One is pacing and one is trotting. This imparts tremors to the buggy. Instead of both horses starting in the right direction their heads are pulled apart or bumped together. It seems that the whole harness of the buggy of Interpretation within our own Service is perhaps faultily designed and very carelessly adjusted. It can be corrected, undoubtedly. The third aspect I have already touched upon briefly. The whole idea of these horses pulling the public along the highway is not too well received within the Service. I don't say actually that anyone has put hobbles on the horses legs or sand in the axle grease, but there certainly is a weight of opinion which is antagonistic. We must in some way build within the minds of all in our Service the understanding, sympathy and respect which will make "horse lovers" out of them.

DR. RUSSELL: I should say that you have given quite the expression that I wanted to get. You suggest that you have been vague but you have not. You have applied yourself to the question in hand. It is true as I have said before that we don't have enough of the "horse lovers." I don't know how Mr. Drury stands on the question but I have discussed it with others in the Washington Office. There are some who do not favor the idea of a Regional organization for naturalists. There is no antagonism to historians being organized on a regional basis and they are going ahead. That is because they are well organized and can keep pace with Service progress. In some respects they have stepped out ahead of the Branch of Research and Interpretation. There is no antagonism to organizing the Branch of Recreation and Land Planning on a regional basis; such organization is recognized as necessary. We can develop more power in the Service as a whole if the Branch of Research and Interpretation is equipped to pull along with the other branches. If the administration of naturalist work is organized on a regional basis we can eliminate some of the tremors to which Mr. King referred, and I venture to guess, we can extend our service to State cooperation as Mr. Robinson advocates.

Dr. Russell introduced Senior Archeologist Nusbaum:

MR. NUSBAUM: It might be of interest to review certain of my experiences in the National Park Service. For the past 36 years, I have made my living, honestly or dishonestly, selling archeology to the public through private and public institutions; for the National Park Service for more than 20 years. Out of that long experience certain basic facts of interest to present discussion and future planning have been realized.

Research is basic to the success of any interpretive program, whether in the field of archeology or natural sciences. We can't be successful unless we encourage and conduct research for the details of research are the bases on which the interpretive program is established and erected.

Natural and historic resources of an area, in situ, are of themselves the primary exhibits which we must know, preserve and prudently use in interpreting the story of an area. When these natural and cultural values are within easy reach and understanding of the visiting public, the museum, as a supplementing means of interpretation, is not required. When these values, in situ, are not readily accessible, observable and explainable to the public, supplementing museum means are justifiable.

The need of a museum at Mesa Verde to preserve cultural values that could not be safeguarded in situ, and to promote public understanding was so justified.

This first museum in a service area was established at Mesa Verde in the spring of 1918. It comprised 5 large wall cases of related archeological materials, temporarily installed in a log cabin built as a ranger quarters. The public appreciated the exhibits but deplored the lack of proper housing. This demonstration of the values of museum development at Mesa Verde served a most useful purpose for in the absence of government support, private means furthered our museum development.

Mrs. Stella M. Levison of San Francisco voluntarily contributed $5,000 toward the construction of the first section of the permanent park museum. Mr. John D. Rockefeller, Jr., evidenced his interest more substantially by providing funds over a period of several years to complete and equip the first section, and to conduct a program of excavation designed to increase archeological knowledge and enhance the collections of archeological material for public display.

Mr. Rockefeller, Jr., frankly stated that museum development and support at Mesa Verde were properly government responsibilities but usually it was necessary for private means to demonstrate the merits of such enterprises before the government would realize these values, and their responsibility of supporting them. To advance these purposes, he wished "to chip in with others" to aid us in achieving these ends, stating that no institution wholly supported by one man ever went so far as those which arouse the interest and engender the support of the many, the public in this instance.

Museums, guided trips, and lectures are supplementing means of promoting public understanding of an area. The general public is not interested in the relation of technical details of research. Their dominant interest lies in a simple presentation of significant facts realized

through research,--the highlights. These they remember. Technical details are confusing to the public en masse. If the interpretational program does not arouse interest and stimulate independent thinking, then it fails to achieve its basic purpose, and visitors benefit but meagerly. If the public is not attracted by, and does not evidence its appreciation of the interpretational program, then the nature of the program, and the manner of presentation should be critically reexamined for something is wrong down the line.

Visitor interest lags and diminishes when presentations become too detailed and involved--and largely terminates when it partakes of the nature of forcible feeding.

The idea of employing Regional Naturalists, which we proposed at a Superintendents' Conference, was in line with the principles of regionalization. A Regional Naturalist would correlate, coordinate, and assist the work of naturalist forces in a region, and render appropriate services to those areas which lack naturalist personnel, and they are in the majority. Visits from naturalists of the Washington Office are infrequent of necessity because of distance and time factors. A Regional Naturalist would maintain more frequent and intimate contact with the problems of a region.

The protective and interpretational forces of an area must work in hearty accord. Each has an essential duty to perform--they are integrated in service to the public, and I don't know any place in any national park where the protective forces and the interpretive forces are not called upon at times by the public to render service which logically falls within the line of duty of the opposite branch.

Questions have arisen as to limiting funds for carrying on the interpretational program. This question has been a major concern to many of us. I know the problem of establishing and developing the interpretive force and program. It has been a long, hard pull, but it has won for us the greatest group of friends and a majority of the staunchest and most helpful friends that the Service enjoys. I know of no agency of the Government which makes more friends for Government of those it meets and serves than the National Park Service. Support of our interpretational program is not likely to be diminished under these circumstances.

Recently in Santa Fe in discussing our contribution to the National Defense, I stated that the indominable courage and fortitude of the English people under conditions that would defeat a less virile nation largely stems from a passionate appreciation of, frequent contacts with, and understanding of the English Countryside and its natural and human history. The values to English stamina and morale of the almost universal habit of seeking weekend recreation in the open country are markedly apparent in times of great stress.

During the past year nearly 15,000,000 persons visited those scenes of natural and historic significance to our nation which it is our privilege to preserve and manage as a national heritage. The Service has and is contributing importantly to the National Defense.

DR. RUSSELL: Thanks, Jess. I regret exceedingly that you are not going to remain through the Conference. You are one of those who have laid the foundation upon which we build.

At both the Regional Director's meeting and the Superintendent's meeting formal action was taken on this question and they made the recommendation that regional interpretive officers should be employed. I have the records here, should there be occasion to refer to them. Is there anything else to be said before this matter is turned over to a Committee who will report Saturday.

MR. SULLIVAN: Who should take the initiative in trying to coordinate this work with the State agencies?

DR. RUSSELL: You have asked a pertinent question. In the course of my daily work I find it necessary to take somebody by the hand and either let him lead me or I attempt to lead him. In that way we go along as a partnership toward one objective or another. It happens repeatedly because so many of our objectives affect other branches. I should say that the initiative should be taken by the executive officers in Washington and the regions but it will take support of the field before these executive officers can take action in any effective way. That is why the question is before us. You have heard that the Regional Directors approve of the idea of organizing the naturalist work on a regional basis. You have heard that the Superintendents approve. All I am asking is that we as the naturalist group come to a full understanding of all that regionalization implies and that a recommendation be forthcoming.

DR. NEASHAM: I think one of the greatest values of interpretive officers to the National Park Service is in our capacity as advisers. Very often, in my own work, that advisory capacity to the states and the local communities is of definite value, not only to us, but also to the states and local communities. You have spoken of the problem of coordination. There seem to be times when we have the idea that we should do more than coordinate and that we should superimpose ourselves upon local agencies to pull them our way. I have often thought that if we would encourage local communities and other agencies to go their own way, using us as advisers, we would go much farther.

DR. RUSSELL: In uniting the interests of naturalists working in State Parks there would be no reason to "pull them our way."

The demonstration has been made throughout the Service that the regional scheme of organization definitely is successful. We have observed that now for a number of years and have had expressions from a

number of organized groups of executives that are affected by regionalization. We know that the regional scheme has made it possible for the Service to unite. There is one inconsistency and that is that the naturalist program is not organized on a regional basis. Perhaps we can continue to "get by" without representation in the regional scheme but it is my opinion that we should join the rest of the Service by employing regional naturalists. Such representation will enable us to coordinate work in National Parks and at the same time enlist naturalists in State Parks in the general program of interpretive endeavors.

MR. WATSON: I would like to comment briefly on what occurs to me as one basic reason for regional organization. Referring to King's metaphor he stated that the horses go in several directions because of the obscurity of the goal. We have there the reason for the horses going in several directions, and the cause of the obscurity of the goal is not to be found outside of our own organization. The reason is traceable to our own shortcomings. As the Director already pointed out we have need for clarification of objectives; a general recognition of objectives, and as I see it this proposed regional organization of naturalists can clarify objectives. In my humble opinion the important thing in the National Park Service program is the improvement of human resources in the nation. Everything else leads to that. Naturalist programs in National and State Parks can contribute to that improvement.

DR. RUSSELL: Dr. Russell introduced the next speaker, Robert H. Rose, of Boulder Dam National Recreational Area.

MR. ROSE: When talking of proposed areas often instead of talking in concrete terms the basis on which proposals are made sometimes appear to be quite vague. It is very difficult to solve that relationship between the abstract and the real. Quite often we will spend a lifetime in doing it. Dr. David Starr Jordan was walking through the Stanford University campus after the earthquake in 1906. The statute of Louis Agassiz had been catapulted from its pedestal on top of one of its columns and there it was with feet up and embedded in the pavement. Dr. Jordan made the observation that all his life he had been dealing with Agassiz in the abstract but seldom had the opportunity to see him in the concrete. That is the way with us. All of our lives we will be dealing with these abstract matters, especially in a new field. Sometimes all of a sudden some of the more practical aspects appear before us with unbelievable clearness. That is only because we have been working and thinking the abstract. But sometimes revelations will assert themselves almost over night on problems with which we have been dealing for a lifetime.

Appraisal of Proposed Areas

Robert H. Rose,

Associate Park Naturalist,
Boulder Dam National Recreational Area.

ABSTRACT

The subject "Appraisal of Proposed Areas" is examined from the standpoint of determining those elements which should be considered in organizing interpretive and research programs in areas which have been proposed for inclusion in the Federal Park System and areas which have been newly created. Among numerous factors entering into such appraisal are visitor reaction and response to area features and phenomena; significance of features and phenomena and extent to which they lend themselves to research and interpretation; accessibility of areas; present and future routes of travel, local population and recreational needs; limitations imposed by legislation, administrative policies and accessibility of features and phenomena, making them outdoor laboratories; training and experience of staff available to such areas; and extent of published material pertaining to the areas. The function of research in accomplishing such appraisal is explained while the role of naturalists of the National Park Service in weighing and balancing the various elements constituting the appraisal is brought out.

In undertaking an appraisal of proposed areas, comprehensive and intelligent understanding of the fundamental purposes of the Federal Park System is essential. Those high purposes are national in character. While each area, actually selected, should be distinct and unique in some particular way, yet all meet on common ground in possessing qualities of superlative nature and of national import, which distinguish them from less important areas.

The relation of interpretive programs to the primary objectives of the park system is far reaching. As naturalists we are concerned chiefly with this corollary relationship. Discussion of the corollary, however, inevitably leads into consideration of the major objectives, and it is impossible to regard the two as separate problems.

Excellent progress has been male in recent years in determining where research and interpretive programs belong in the general scheme. The 1938 National Park Conference which convened in Washington, D. C., gave forceful expression to this relationship of interpretive programs to basic park purposes when it approved a recommendation of its Committee on Research and Interpretation proposing "that the interpretation of natural and human history in national park areas be considered as a primary objective". In calling for a re-appraisal of our research responsibilities in preserving and interpreting national park values, this same committee went on to say that "National Park Service problems are national in scope, relating to physical, biological and human values inherent in some of the most perishable of Federal possessions. They pertain to mental health, constructive living, social health, education, recreation, and psychology of America's population. The National Park Service is most advantageously situated to develop a national perspective in ethnology, history, flora, wildlife and aesthetic appreciation of scenery".

The 1938 National Park Service Conference, in approving the recommendations of its Committee on Research and Interpretation, not only went on record as accepting interpretation of natural and human history as a primary objective, but also emphasized organized research by members of the National Park Service, supplemented by the invited cooperation of other interested Federal, scientific and educational agencies as a sound basis upon which such interpretive programs should rest. Hence, in referring to interpretive programs throughout this presentation, let us remember that research as a basis for such programs has been receiving strong support officially and that it has demonstrated its indispensability as a part of the whole scheme of park area appraisal and public utilization. Used in this broader sense to include research as it relates to preservation and interpretation of park area values, we see that interpretive programs at once emerge as that strong, indispensable link joining the area features and phenomena with the realization of high public purposes for which they were created. An adequate program of interpretation affords the principal medium through which the inherent values of our Federal Park Areas make their most effective contribution to the general well-being of our people.

In the process of appraising interpretive worth of areas, we first seek out those inherent values in order to determine whether such values are of significance nationally. As George L. Collins of the Service's Land Planning Division stated in his paper "Identifying Areas of National Park Caliber", presented before the January, 1938, meeting of the American Planning and Civic Association, "A similar kind of traditional public service feeling forms the perspective of the parker when he discovers in a block of land those opportunities for superlative recreational usefulness that characterize one of the types of areas found in park systems. It is in this sense that the parker's work, like the sculptors, is creative".

The process of identifying and evaluating the worth of features and phenomena in proposed areas is not a simple one. Those essential values are expressed not only in the inspirational and aesthetic character of the area scene as a whole but they also exist, often unobstrusively, in the physical, biological and human history relationships presented. It is here, again, that the analogy between the appraiser of proposed areas and the sculptor can be drawn. The sculptor, living in his realm of seeking the highest expression of his efforts, produces an image from a rough block of stone. The untrained mind and eye might appreciate the sculptor's creation as a finished product but not possess the vision, skills and procedures demanded to produce it. Similarly, in appraising proposed areas, full worth of the contribution which such areas could make to the general well-being of the people of the nation cannot be comprehended at a glance. Like the sculptor with his ability to detect values relating to high standards of art expression and then through painstaking work with his mind and hands bring those values out into relief where we can see them, so it is that the appraiser of proposed areas needs the specialized talents of research workers in natural and human history to bring essential area values into relief.

To further clarify this indispensable function of the research worker in seeking out essential values, Boulder Lan National Recreational Area affords illustrations. The casual observer will see in Grand Wash Cliffs, at the western end of the Grand Canyon of the Colorado River, a striking scenic feature of vast proportions and outstanding beauty. He may even perceive it as a feature separating a plateau to the east from basins and lower mountain ranges immediately to the west. But what the casual visitor may not appreciate at once is the fact that physiographically and geologically these cliffs are one of the most remarkable features of their kind in the nation; that they mark the separation of the Colorado Plateau and the Basin and Range physiographic provinces; that they expose a stratigraphic section of remarkable interest to geologists; and that future investigation may prove that locality to be one of outstanding interest containing the solution to some important phases of the story of the Colorado River's origin.

A still simpler illustration than the above may further clarify the point. In many of our areas, for example, a certain amount of research may revise our entire concept of the values of objects and features about us. A rock which our wives would not even tolerate as a specimen for a rock garden may, as a result of research, become an interpretive specimen of utmost importance; or an object kicked around and used as a door stop perhaps has a story entitling it to a place of honor in a large museum.

The untrained individual may discern in Glacier National Park scenery of unusual aesthetic and inspirational merit. Greater powers of perception will be required, however, to identify the park's scenery as due to results of erosion acting upon overlapping portions of the earth's

crust; only through results of research have we learned that the overlap of formations is miles in extent, that geologically older rocks are thrust over the vastly younger formations, and that glaciation acting in various ways has produced many of the marvellous scenic effects so greatly enjoyed by all who visit the park. Through research as the initial step, followed by the perspective of the naturalist in identifying, selecting, and putting into a form adaptable for interpretive use, the great truths and concepts of natural and human history are made available for area visitors.

As we realize the magnitude of our responsiblities, it seems almost trite to inject a note of warning concerning the need of approaching our task with minds free from preconceived ideas and prejudices. In training himself to appraise inherent values relating to natural and human history within areas of various types, the scope of the naturalist's ability to recognize such values must be as broad as the fields of the natural sciences and human history themselves. The responsiblity of the naturalist goes beyond that of the research worker. The latter may feel he has finished his part of the job when he works out the elements of the story in phases of natural and human history, but the naturalist (who may also be a research worker) identifies and selects the scientific facts and concepts from the results of scientific work, evaluates them--mindful all the while of choosing those which lend themselves to interpretation--and finally sees that the methods and devices employed in interpretation function to the end that basic park objectives are always served.

From the discussion thus far, then, it appears that the appraisal of park areas from the viewpoint of interpretational possibilities requires that (1) the inherent values of the areas be recognized; (2) those values which lend themselves to interpretation be identified; and (3) a suitable program of interpretational activities consistent with basic values, objectives, and public needs be designed. Once these major elements are developed, the broader aspects of the appraisal will have been accomplished.

In the same sense that the old adage "study nature, not books" admonishes us to be realists in the study of natural sciences, so should we strive to base interpretive activities and devices upon real, concrete premises rather than upon abstract suppositions. Our conclusions will be of practical value to naturalists and others engaged in appraising proposed areas to the extent that we can define the worth of an area and its interpretive potentialities qualitatively or quantitatively. Is there a yardstick naturalists can use in building the kind of interpretive program a new area should have, even after the worth of an area is established and the features and phenomena which constitute the interpretive assets are pretty well known? The answer is, no. It is doubtful whether we can do more than to establish approximations, or to determine trends in one direction or another. The field of appraising proposed areas and public use of them can hardly be classed as an exact science. Compromises, balances, trends, human behavior--all of these enter into the picture as we

seek to establish standards of procedure. However, it is believed that the following factors as they apply to appraisal of interpretive potentialities of new areas, offer something tangible to the naturalist facing the task of establishing an adequate program in a new area. These, listed somewhat at random, are: (1) actual or probable visitor reaction and response to area features and phenomena as evinced at various existing or potential localities of visitor concentration within the area; (2) local, regional and national significance of features and phenomena within areas, considered singly and as a whole; (3) extent to which scientific features, natural phenomena, and other research and interpretive assets within the areas represent classic examples of their kind and the degree to which they lend themselves to utilization as such by interested laymen, students, and scientists; (4) location and accessibility of areas with respect to centers of population and important existing and probable future routes of travel; (5) trends in the locality, region, and nation with respect to population redistribution and recreational needs of society, together with changing concepts that are likely to arise with regard to land use and valuation; (6) limitations through legislation and administrative policy governing the present and future development of the areas already established or proposed for early inclusion; (7) interplay of geology, topography, climate, vegetation, wildlife, history, and prehistory and the manner in which these combine to make the areas outdoor laboratories for observation, study and research; (8) accessibility of features and phenomena within the areas themselves facilitating their ready use as outdoor laboratories; (9) training and experience of the interpretive and research staff which may be assigned to such areas; and (10) extent of the published technical and non-technical authoritative material available on each area. While some of the factors as listed are more or less self-explanatory, others will bear some further amplification.

Numerous examples of the benefits of visitor behavior observations in planning interpretational activities and devices could be cited. However, one or two illustrations will suffice. Lakeview Point is an overlook situated about one mile west of Boulder Dam and offers a commanding view of the lower basin of Lake Mead. Casual review of potential attended and unattended contact stations within the Boulder Dam National Recreational Area might lead one to overlook the importance of Lakeview Point as a contact station. However, let a naturalist, ranger, or other Service representative, whether in uniform or not, visit the station, take note of the questions to which visitors are seeking the answers, and observe the reaction of visitors to the view as a whole, and the value of the locality as a place for some type of interpretive activity or device becomes apparent. Once the naturalist or ranger begins answering questions and telling visitors about Old Fort Callville, now under some 500 feet of water, early steamship operations on this portion of the Colorado River, and other features best observed from this location, he will be constantly surrounded with visitors eager to know more about the Area as seen from that point.

Areas selected for inclusion in the park system are usually so chosen because of the national character of features and phenomena within them. Therefore, the presence of elements of such major importance as assets to the interpretive program hardly requires elaboration. The interpretational value of the great unconformity near the top of the Inner Gorge of the Grand Canyon, the stupenduous Lewiston Overthrust as seen in Glacier, the remarkable display of glaciated valleys in Yosemite and Kings Canyon, or the stately monarchs such as the General Sherman Tree in Sequoia--all features of national importance--is inestimable. Interested laymen, students, and scientists travel great distances especially to observe and study these and related features. Surely, therefore, the interpretive program of a new area will be determined to some extent by the presence of nationally-important features.

The third factor listed concerns the extent to which various features and phenomena are classic examples of their kind and lend themselves to utilization as such. This is closely related to the second point just discussed. In this connection, however, a minor distinction might be drawn. Where the former factor relates to the national significance - the superlative character - of features as interpretational assets, in this case is meant the degree with which natural and historical features and phenomena occur with the clearness of textbook illustrations making them ideally suited as outdoor object lessons. Individual features of this type may have only local importance, yet the value of many such interpretive assets may in the aggregate be very great.

Concerning the fourth factor entering into an appraisal, conditions relative to location and accessibility of Federal Park Areas have changed greatly since the inception of the park idea with the creation of Yellowstone National Park in 1872. In the appraising of new areas as well as reappraising of old ones, we are constantly confronted with problems arising out of changing patterns of travel and local population shifts. Completion of additional approach and entrance roads serving Yellowstone and Yosemite National Parks; finishing of Golden Gate Bridge and approach roads serving Muir Woods National Monument; and the opening of several trans-park roads in other park areas, have had a profound effect on travel and visitor use of these areas. Areas situated close to population centers have many special problems not present in other areas more remotely located.

A most important phase of this problem is the fifth factor which involves careful consideration of trends in the locality, region, and nation with respect to population redistribution and recreational needs of society together with changing concepts that are likely to arise with regard to land use and valuation. To appreciate this phase of the problems we have only to realize the great shift from rural to suburban and urban population that has taken place since the establishment of Yellowstone National Park in 1872. Another quotation from the article by George L. Collins, previously cited, is pertinent. With respect to population trends and changing concepts of recreational use, Mr. Collins says:

> "When the national park idea found substance in the establishment of Yellowstone in 1872, only one-fourth of our total population of forty million people lived in cities. Today, about 61 per cent of our population of one hundred and thirty millions live in towns and thickly settled suburban communities. Although our rate of growth is said to be slowing down, we are scheduled to gain another thirty million people by 1975."

Continuing his discussion, Mr. Collins points out that in the 67 years since the establishment of Yellowstone our billion odd acres of land mass has risen fabulously in value because of the combination of expanding population and improvement of communications and transportation, coupled with wide diversity of land use.

At the time the earlier appraisals of lands now included within Boulder Dam National Recreational Area were being made, the thriving town of Boulder City with a population of around 3,000 did not exist; Las Vegas with its present population of more than 10,000 was perhaps one-third as large; no recreational use, comparatively speaking, was being made of the lands now within the Area; and the region as a whole was difficult of access. The committee conducting the investigation some 12 years ago anticipated these trends in population and concepts of land use. Each year finds fuller realization and proves the soundness of their recommendations. It appears that this committee, and also another committee which made an investigation and submitted a report in early 1936 and which consisted of Guy D. Edwards, now Supervisor of Boulder Dam National Recreational Area, Emmerson Knight, at that time Assistant Landscape Architect with Region IV, and Associate Landscape Architect Kuehl, now at Region III, not only recognized wisely the potentialities of lands now within Boulder Dam National Recreational Area for recreational use but they also laid the foundations for investigations of future recreational areas that might be proposed for establishment. The naturalist and his relationship to the whole appraisal procedure has been discussed earlier in this presentation until it is now hardly necessary to stress again the importance of his part in participating in such appraisals and understanding the basic premises involved.

Concerning the sixth factor, in many instances it has been necessary to impose limitations through legislation and administrative policy governing the present and future development of areas already established, or which are proposed for early inclusion, in order to reconcile present use with conservation for future generations insofar as it is possible to do so. It is here that we are confronted with one of our greatest problems in park area appraisal and use. Dr. E. P. Meinecke, that keen student of some of our most perplexing problems of area use in a discussion at a foresters' conference held in the Regional Office, San Francisco, in December, 1936, very ably presented the problem of recreational planning and preservation of basic values when he said:

> "We must make these values available to the enjoyment of the public, and here we invariably get into a compromise, the eternal compromise between the main objective for which a Park has been created, and the principle of use and enjoyment by the people - a compromise that cannot possibly be overcome. One cannot be reconciled with the other. As in all compromises, the outcome is never quite satisfactory. One or the other side has to suffer, but we may hold on to this fundamental principle that while a certain restraint in recreational development does not render public use impossible the failure to protect essential values spells ruin to the Park itself. Half of the problems in Park Administration arise from this compromise, and nothing is more important than a constant and conscientious weighing of one side against the other in order to strike a workable balance between the two."

It seems that Dr. Meinecke has expressed the essence of a problem of profound import to naturalists and all Park personnel concerned with the task of appraising proposed areas and reappraising values in established areas.

Outstanding examples of the inauguration of policies restricting development and modes of use can be cited in Kings Canyon and Olympic National Parks. Instances of the application of restrictions on a lesser scale are to be found in Yosemite National Park, Bandelier National Monument, as well as practically all other units of the Federal Park System. In contrast with units where modes of recreational use are carefully restricted, in Boulder Dam National Recreational Area we have an entirely different situation. Through new concepts of multiple use of lands in special cases, Boulder Dam National Recreational Area becomes one of a new and distinctive type of unit in the Federal Park System. Legislation and administrative policy extend the range of programs and activities which can be put into effect there.

Utilization of areas as outdoor laboratories for observation, study and research will affect interpretational methods and facilities naturalists must employ. Interpretational worth is found in area environment. This worth in the aggregate is determined by the interplay of geology, topography, climate, vegetation, wildlife, history and prehistory, to which might be added that indefinable element of aesthetic quality growing out of a complexity of factors. Our institutions of higher learning stress distinctions among the fields of human history and natural sciences. In contradistinction to this, naturalists are ever concerned with the interrelationships among the innumerable elements comprising area environment. He is constantly seeking out facts concerning the degree of harmony and adjustment and trying to interpret them and determine their consequences.

The mere fact that an area may contain features and phenomena ideally developed for use as outdoor laboratories for observation, study and research does not guarantee their use as such. Accessibility of these elements within the areas themselves facilitating their ready use as outdoor

laboratories or as object lessons is an important controlling factor. For reasons of accessibility, the glaciers of Mount Rainier are utilized as object lessons by interested laymen, students and scientists more extensively than are the greater glaciers of Alaska. Though Boulder Dam may be eclipsed in many ways by other structures of its kind, it will likely continue to attract throngs of interested visitors because of its ready accessibility. Numerous illustrations could be given to show that accessibility operates to direct attention to some features and phenomena and to relegate others somewhat in the background. We encourage use of park area features and phenomena by institutions of learning, but accessibility of the area's object lessons of natural and human history limit the use of areas in this manner.

Grand Wash Cliffs, a significant geologic and physiographic feature within Boulder Dam National Recreational Area, has been comparatively unknown and unvisited in past years. The creation of Lake Mead by the waters of the Colorado River backing up behind Boulder Dam and the improvement of a road in the direction of the Cliffs have, of course, not modified in the least their geologic relationships nor their physiographic importance. The cliffs have been here a long time. Yet Grand Wash Cliffs are now visited for study and observation by many groups of geologists where formerly they were seldom seen nor were they known. Improved accessibility alone has within a comparatively short time projected this remarkable feature into prominence to such an extent that their utilization as an object lesson is now common and will be recognized as a classic, if not a superlative, example of their kind. Large numbers of students and scientists will come to study them each year.

Some 15 miles south of Boulder Dam, a road cut resulting from the construction of the Boulder Dam-Kingman Highway exposed a beautiful hornblende dyke. Presence of the dyke was discernible at the surface but its appearance was not striking, nor did it lend itself as a subject for observation, study, or research. Since the dyke has been exposed on either side of the road cut, not only have we taken many classes in natural sciences to see and to study it but, in addition, our staff geologist, as co-author, has prepared a paper on it to appear in a highly reputable geological publication in the near future. Accessibility alone has been the sole factor in bringing this feature into the interpretive scheme of Boulder Dam National Recreational Area.

Although the area values may be comprehensively and clearly defined and described and thus be made available to the naturalist in laying the foundations of an interpretive program, the training and experience of the area naturalist personnel and the contributions made by scientists of outside cooperating agencies will profoundly influence the program. Illustrations of this fact are found in Southwestern Monuments where bird banding and biological work in general was introduced by a member of the naturalist staff some years ago, and in Boulder Dam National Recreational Area where the results of the work of our former wildlife naturalist form

the authoritative basis for considerable attention to flora, fauna and related material in the interpretive program.

The interpretive program of proposed areas is assured of a good start if authoritative published material is available. Often no such literature is available, and the results of research are immediately needed. Some areas have had the generous support of outside agencies along these lines; others have been able to accomplish some of this work through efforts of their own staffs; still other areas have very little authoritative material of any kind available and thus do not have adequate foundations to build upon.

In an appraisal of proposed areas, we determine as definitely as possible the interpretive activities and devices required to adequately present the essential stories and interpretations. The relation of this phase to the problem of justifying funds for the functioning of a suitable research and interpretive program can now be made clear. Once we have outlined the essential stories and interpretations together with the activities, methods, and devices needed to present them, we can then translate our needs into terms of staff personnel, exhibit structures, equipment, supplies, library references, activities, schedules, and other practical terms.

Park administrative heads, budgetary officers and congressional committees are realists. They want concrete information and intelligent estimates and justifications based upon common sense premises. They have little time for unfounded guesses or "shot in the dark" analyses of needs. The naturalist will more nearly attain success if he will carry this idea of appraisal down to specific cases. In asking for additional personnel, for example, he should define the present program, describe precisely the particular expansion desired, and then by actually outlining each staff members duties, show that the developed activities cannot be assured without additional personnel.

Though efforts have been made to attack the problem of appraisal from several angles, the writer nears the conclusion of this presentation still feeling he has not done the problem justice. In view of the thoughts expressed, however, the profound importance of the subject is doubtless realized. If we do not yet fully realize our great obligation to present generations and to posterity in our task as appraisers and selectors of new areas, a thought taken from Col. John R. White's address on "Recreational Use of National Parks," delivered before a meeting of the American Planning and Civic Association in Washington, in January, 1938, will help make our feeling of responsibility more real. In dwelling upon a thought that has crystallized in his mind in his life of service amid the superlative trees, deserts and mountains, he says:

> "The things of nature remain and are the only permanent and enduring things in a world of disordered change; that the

> trees and the mountains and the desert have seen many civilizations rise to their peaks and crash to their falls; that they were unchanged except by natural processes until modern man a few moments ago in geologic time attacked them with his engines; that their beauty and their silence are more necessary than ever and may be the deciding factors in the existence of democracy if he desires to think out clearly the processes by which democracy may be preserved . . . . .dwelling on these thoughts from time to time we can return refreshed and confident of the realities of life--to the roaring tunnels of city streets or the desks piled high with papers."

Thus, to serve society in an ever-changing world, the naturalist or other park executive engaged in appraising new areas must keep in tune with expanding concepts of land use and practical human needs. He will still have a job to perform as long as human needs are to be served and concepts of use and values of lands change. As Mr. Collins states in the article thrice previously cited in this presentation:

> "We are presented with a continuing task of seeking out, appraising, identifying and here and there securing nationally important properties, such as Recreational Areas; Seashores; Historic Sites, objects and buildings; fine representative examples of plant and animal life; instructive geologic exhibits; and scenic and historic parkway routes."

In describing how areas now in the Federal Park System are unique or distinct in some particular way and the manner in which each offers a particular segment of the story of the whole national scene, Superintendent Tomlinson, in his address on "Qualifications for National Parks," delivered in January, 1938, before the American Planning and Civic Association, very appropriately stated:

> "It follows a broad well-rounded interpretive system of nationally significant areas by which such highly instructive and inspirational things as the story of the earth, the materials of which it is composed, the forces which shape its surface, the forms of life which inhabit it, the inter-relationship and interdependence of all things in nature may be told. Such a system should be one of the most far-reaching and inspirational educational forces which the nation may possess."

In view of the many gaps now present in such a system, as suggested in the quotation from Superintendent Tomlinson and as has been proposed repeatedly by Dr. Carl P. Russell and others, there is still much to be accomplished in the field of appraisal and selection of new areas. These appraisal obligations together with the fact that we occupy the center of the stage in what is perhaps the greatest movement in adult education of the twentieth century, should give us renewed enthusiasm for our work as naturalists and should constantly remind us that we have a profound obligation to society which calls for putting forth our best efforts at all times.

DR. RUSSELL: Thanks very much, Bob Rose. It occurs to me that there are two things to consider in connection with the subject that Mr. Rose has developed. In the first place, the part that the naturalists can play in helping establish proposed areas. In this work the naturalists have been drawn upon to some extent in the past. I think they can be used more. They are in a position to arrive at some worthwhile conclusions regarding ultimate values and uses of proposed areas. The second thought that occurs to me is this. When a new area is set aside even though it is important as is the case at Olympic or Kings Canyon, years elapse before a naturalist is employed. It has been asserted that the prime objective of the Service is interpretation, yet the Government will set aside a very important area like Olympic National Park or Kings Canyon and perhaps six or eight years may elapse before a naturalist position can be established. We have an example in Shenandoah National Park. I think a recommendation in that connection would not be beside the point. Is there further comments on Mr. Rose's paper? He introduced many thoughts that are worthy of consideration.

MR. ROTHROCK: Mr. Rothrock gave general instructions and announcements regarding program procedure and the function and operation of the various committees. The following telegrams were read:

> "The entire White Sands personnel extends congratulations and wish we could be with you. We are present in spirit and value greatly the principles, aims and accomplishments you men represent."
>
> (Signed) Faris.

> "Greetings and best wishes for a most successful conference. I shall be with you this week in spirit even though cannot be present in person."
>
> (Signed) Earl A. Trager.

Wednesday Afternoon
November 13, 1940

Conference convened at 1:30 P.M. with Mr. Rothrock presiding.

MR. ROTHROCK: Mr. Curry has advised by wire that he cannot attend the conference as he had planned because of an infected tooth. The committees on which he was to have served will act without him.

The last paper of the morning regarding the appraisal of proposed areas raised some questions which Jess Nusbaum would like to present at this time.

MR. NUSBAUM: Under the leadership of the National Resources Planning Board, agencies of Government, Federal and State at all levels, and private organizations and individuals are increasingly concerned in appraising the economic resources of lands, fixed and renewable, and in translating these tangible values to a dollar and cents basis for comparative purposes. The objective is to plan the highest use of lands and resources.

It is comparatively simple for engineers literally to weigh the average annual flow of a river and translate that weight of water in terms of hydro-electric energy, if the flow of a river is to be controlled and used for power development. The production of forest and grazing lands can be translated in terms of lumber and beef and the same holds true for mineral values, when proven. However, these appraisals are estimates based on current potentialities, marketing values, and demands which may be altered in the future by a number of causes.

We of the Service have talked for years of the inspirational, educational and recreational benefits of lands and resources which we manage, or desire to manage, for public enjoyment. These social benefits are recognized by all planning agencies. They also recognize that these intangible values are not subject to monetary appraisal.

For obvious reasons, and for many years, the economic benefits of Service areas have been appraised in terms of visitor travel -- 4 to 5 dollars per day per person for transport, food and shelter. This basis of appraisal has been emphasized and widely publicized by travel promotion agencies.

To provide an adequate yardstick to appraise the economic benefits of the recreational resource of lands, the Service is evolving a comprehensive formula for estimating the material values of the recreational

resource in monetary terms, which will include as elements the economic benefit of travel and subsistence within an area.

It is essential that land planning agencies and the public realize the full significance of the economic benefits derived from using the recreational resources of lands for public enjoyment. Service personnel should spread this knowledge.

MR. ROTHROCK: Has anyone any other comments regarding this matter? It is a difficult one largely because it is not quantitive and because of lack of specific standards as Mr. Rose pointed out this morning.

There is a very genuine trend toward youth nature training. Some of the work which is being done in the national parks is designed specifically for this field. Mr. Gregg will tell us about new trends and effective measures in junior nature programs.

New Trends and Effective Measures in Junior Nature Programs

Howard R. Gregg,
Associate Park Naturalist,
Rocky Mountain National Park.

ABSTRACT

The number of tenure children in some parks requires that special interpretive activities be organized. In Rocky Mountain National Park the children are divided into groups according to age, sex and interest. Field-museum studies are designed both as short recurring courses, each a coherent presentation of the field of natural history and as diversified activities, the interrelation of which is not stressed. The extension of this work to school curricula and its adaptation to radio broadcasting are described. Special methods and problems of presentation should be developed as subjects of discussion.

In the national parks, as far as I am aware, junior activities began in Yosemite, where a volume of period vacationists with children made possible a program of interpretation specialized to fit their needs. Subsequently, similar programs have been introduced in Sequoia and Rocky Mountain National Parks and National Capital Parks, and perhaps elsewhere.

Separate juvenile interpretation probably never will develop in some areas. Other parks may find at least some phases of juvenile work possible and desirable.

"Organized informality" is the theme in junior work, even more so than in the adult interpretation program. Through play, contests, activities, directed observation, and creative pursuits, children receive an insight and simple techniques in the various fields of nature study. Organization is properly confined to giving direction and purpose, rather than to regimenting the program of activity. A curriculum directed toward building a thorough fund of knowledge is hardly the function of the naturalist staff in a national park, nor would the stereotyped quality of such an effort register well with the children. Children from schools where little emphasis is placed upon nature study often have never had their eyes opened to the vast fund of future hobby, or even professional interests crowding in upon them from their natural environment. National parks, where nature manifests itself at its best, are an ideal place for awakening these interests in children, and stimulating them to expanding experiences in nature. In the child's development, perhaps the impression has been left that nature study is a pastime for eccentrics, as typified in the conventional "Nut with a net" conception of a naturalist. In the parks the child can associate with a man, who to him is a ranger, the embodiment of Kit Carson, Buffalo Bill, Daniel Boone, the Texas Rangers, and General Pershing; and learn from this man that even flowers, trees, birds, and the simple things of nature are not objects of contempt, but are matters for manly interest. Under such circumstances, the naturalist is ideally situated to impart to the child fields of knowledge, attitudes, and abilities he might never find or receive elsewhere.

As to methods of carrying out this mission, perhaps the type of programs now in use are most effective. Field trips are the basic form of activities, supplemented with lectures, museum study, observation, and practice of techniques.

Yosemite offers daily "sessions", and divides the children into age groups, I believe. With a schedule of daily meetings and a rotating program, a broad introduction to the natural features and phenomena of the park can be given in a week's time. The schedule may be repeated over and over through the season. Older children, and those with the basic "course" behind them, are given added opportunity for directed and spontaneous exploration of fields of special interest. This senior group provides some assistance to the park staff in leadership and advisory capacity, in the work with the younger, or newly-enrolled children.

I shall not try to present a comprehensive picture of the programs of other areas, not being familiar with them in sufficient detail. Later, Mr. Beatty and Mr. Oberhansley will discuss briefly some phases of their junior work. Mr. McHenry is scheduled for a detailed discussion of the specialized junior program in National Capital Parks. Thus, the rest of my time will be devoted to a discussion of our junior work in Rocky Mountain.

When we initiated junior work in 1938, only a limited amount of time could be made available for the program, so we set up a schedule of three meetings weekly, on alternate days. Where children are camped or domiciled close to the center of activities, daily meetings, and sustained attendance are easier to maintain than in Rocky Mountain, where some of the children come as far as fourteen to sixteen miles to attend. It is hard to persuade parents to bring children six times a week under such conditions of decentralization, and to meet daily would lower attendance percentage, and would overdo a good thing for the substantial number of children who remain in the park for most of the summer. An added reason for continuing the thrice-weekly schedule is the small staff and the large amount of program work to be done.

The infrequency of meetings would make it difficult to unify and correlate separately studied special subjects over an extended period, so we decided upon making each meeting self-sufficient and of general scope, so that children who come but one or two times during their stay in the park will obtain the widest possible line of contacts with park features. For children who remain in the park for extended periods, progressive achievement and sustained interest are provided in the outline of accomplishments required for earning the various awards offered. While most of the trips start in the vicinity of the museum, in the course of the summer periodical expeditions to new places representing different life zones, associations, and geologic types are scheduled. These trips supplement the learning of the continuing members and stimulate them to continued participation in the program which might wear itself thin if maintained in a small circle of territory. For the one- or two-time participant, they are just as meaningful as the outings at the central meeting point. On every trip, the leader directs attention to the largest possible variety of features, tying the objects encountered to the children's background of information and interests through object stories, questions, and elaboration of the children's own comments. Inter-relationships in nature, and the theme of unity of objects with each other in a pattern that includes man are brought out as far as possible in all studies by the junior groups. The latter part of the session ordinarily is devoted to games and competitions which involve use of the knowledge acquired during the meeting. In some cases, the afternoon program may consist of a short field trip, followed by review of specimens from study collections or displays in the museum. Now and then, when sessions are attended mostly by children who are working on awards, the whole time may be devoted to gathering up loose ends of information and experience needed to obtain the desired certificates. On rainy days, the whole period may be spent in the museum, on either general or intensive subject matter (according to the group attending on that day), making use of observation, indoor games, card exercises, or simple nature-craft work, such as making bark animals, cone owls, bone totems, etc., to supplement the discussions and interpretations by the naturalist in charge.

During 1938, we found that younger children, and girls up to twelve or thirteen years of age worked, played, learned, and generally cooperated quite well as a unit. No age or advancement differentiation was attempted, except during the period of peak attendance when the group was too large to be handled by one man, and the children were divided according to age or advancement. But we found that boys from eleven to fourteen would not come with some exceptions, remain in attendance for more than two or three sessions, before their interest began to lag, and finally they dropped from the group because the sex and age interests were not sustained by presentations adapted to the general group. By talking with some of these boys, and with the boys who kept up attendance and advanced in the school, we found that they wanted a program of trips of greater variety and strenuousness, and more emphasis upon woodcraft and mountain lore, offered for them exclusively. To a lesser degree, the same type of activity for older girls, patterned around the outdoor and nature-lore phases of scouting, seemed desirable, with the junior nature school being maintained as a function for boys and girls of younger years. In planning for 1939, we thought that we could more successfully hold and continue to serve the older girls along with the general nature school than we could the older boys. In addition, we hoped to attract a larger group, and extend upward the age limit of participants in the boys' program by offering them a differentiated activity. We, thereupon, conceived the Nature Scouts. This program is based upon graduated achievements in mountaineering, nature study, first aid, pathfinding, camping, woodcraft, and technical skills. Lines of advancement through four degrees of Pathfinder, Trailblazer, Hill-topper, and Mountaineer are set up, and requirements for the degrees outlined. As an example, the requirements for the Pathfinder, the beginning degree, were outlined as follows:

1. Make 2 all-day and 4 half-day hikes with ranger-naturalists.

2. Know and identiy in the field: 5 trees; 10 wildflowers; 5 shrubs; 5 birds; 5 mammals; 3 insects; and 3 rocks or minerals.

3. Find, identify, and make cast or photograph of an animal track.

4. Draw a map and point out the chief geographic features of territory covered on one of the hikes in fulfillment of Requirement No. 1.

5. Spend at least one hour on craft work, nature trail development, or nature museum work.

6. Attend at least two naturalist campfire programs in Rocky Mountain National Park.

7. Tie 8 knots, including square knot.

Other degrees and requirements are described in a mimeographed prospectus which we prepared for distribution.

I shall conclude discussion of the Nature Scouts by saying that it has done a great deal for the boys who have taken part in it. We found that we overestimated the amount of energy the boys would put into completing all of the detailed requirements we had set up for the degrees. In 1939, a good percentage of the boys earned certificates in the degree work, but when it came to the higher degrees requiring longer participation and some preparation and performance in things not of particular interest to the individual concerned to earn the degree, there was a slacking of achievement, at least in earned degree certificates. But with emphasis shifted to half-day and all-day trips to all parts of the park, the boys who participated developed avid appetites for mountaineering, woodsmanship, campcraft, and nature lore, especially of practical character, and most of those who participated long enough have become quite capable hikers, climbers, and outdoorsmen. The big weakness in this program is that there is a limited number of boys of teen age among the long-term visitors and residents of the area who do not have summer jobs, and the widespread location of the meeting points for the varied trips undertaken in this program makes transportation difficult for them. Thus, in 1940, there were only a few on hand for some of the trips, and there is a question in my mind whether we will be justified in continuing this program in future years, especially in view of the fact that to a considerable extent, the service offered to the boys can be given through their participation in the regular adult hikes. In fact, a majority of the boys who take part in Nature Scouting also accompany a considerable number of the regular hiking parties.

In deferring initiation of an advanced program for girls in 1939, we were hopeful that we might be able to secure an additional position which could have been filled by a woman who could carry on this phase of work, along with other staff assignments for which she would be fitted. When this position did not develop, and the 1939 season produced a group of girls of from eleven to fifteen years of age who were ready for a program of their own, it was decided to plan such a program for 1940, to be handled by the park naturalist. Thus the Girl Naturalists were organized in 1940, and filled a real need, and did, I believe, a fine piece of work for the group served. No definite program of achievements was planned, rather it was decided to experiment with a combination of hiking, nature lore, and craft activity, finding by experience the girls' interests and the best devices for promoting them. Our experience was that guidance on half-day and all-day nature hikes was the most fruitful service we could render to the group. During such trips the participants enjoyed the fellowship of others of similar age in the stimulating surroundings of mountain lakes, forests, and summits, and learned the more interesting bits of nature lore concerning the living and inanimate things with which they came in contact. To bend this series of experiences to fit some established scheme of requirements would seem to lose some of its benefits. We gave to each

girl who participated a certificate showing that she had affiliated with the organization, and for those who wanted to do independent work in a special line, such as, flower study, we prepared and awarded a certificate showing proficiency in the particular line. In fact, none of the girls had completed all of the special subject studies in the junior nature school, so we let them earn these in connection with what they learned and did as Girl Naturalists. But there was no suggestion of being one of the group for the purpose of earning certificates. This worked well. Those who wanted to go on the hikes for the recreational and fellowship values did not feel that they were obligated to meet specific requirements, yet even the most casual showed enough interest in the nature interpretation offered on the trips to get much from the trip and a good number of achievement certificates were earned. The attendance and accomplishments of this group would justify its being continued another year to determine whether it has the makings of a permanent naturalist service feature.

A number of adult visitors have suggested that we provide junior hikes starting at the same time and place as the scheduled adult trips, so that parents could take advantage of the latter while youngsters jointed the former. It is true that this would be a good service, and one that might simplify transportation problems, but there is a serious question whether the number of children would justify assignment of a ranger-naturalist's time to the supervision of this activity, unless the children could be collected from the several assembly points for adult activities, or unless these activities attract so many people that a satisfactory number of children can be separated from the group. It is possible that we may experiment with a junior hike in connection with some of the hikes which on occasions draw 75 or more people; in such instances, we might get enough children of hikers in the adult group, plus children brought out specifically for the hike, to justify the trip. Such a service is one that seems to have fine possibilities in almost any major area in the system.

I have brought some samples of certificates and objective tests used in connection with junior work. Mr. Beatty has provided similar material from Yosemite. I shall be glad to review this later, if time permits. Otherwise, if you would like to examine this material, it will be available for your review.

Yosemite has done much in developing leadership qualities in members of their junior nature school. In Rocky Mountain, we have used some of the older children to assist younger ones with their individual pursuits, but so far have not evolved a definite leadership training program. We made a start on a self-guided nature trail at Moraine Park through older girls working with and directing younger ones on this assignment. Mr. Beatty will tell you something of the work along this line in Yosemite.

In connection with hikes and other activities, some of the juniors will find or produce objects which have museum value. If space is available, such materials could be assembled, coordinated, and displayed with the necessary interpretation and elaboration worked out by the directed efforts of the children. We have installed some display and storage shelves and cabinets in the workroom at Moraine Museum, and already have a considerable number of odds and ends there. When we have this material on display, the youngsters feel some pride of achievement in it, although I must confess that so far, our junior museum has not reached any climactic high in quality. But we will, I believe, develop something pretty good out of it within the next year or two. Care in collection of articles for the museum must be exercised, and the proper sense of values imparted to the children. Furthermore, nature trails and museum exhibits prepared by children should not be made available for use until the accuracy of identifying or interpeting data is checked by the naturalist staff.

An interesting development in connection with junior work in Rocky Mountain is the "Nature Sketches" radio series presented weekly from the park during the past three seasons. In 1938, when Mr. Clarence C. Moore, program director for the NBC station, KOA, in Denver, learned of our junior nature program, he approached us with the idea of presenting short-wave transmitted field program on nature subjects, with the children carrying on spontaneously under the direction of the park naturalist while listeners eavesdropped by radio. When it was found that technical considerations were favorable for transmission of such programs, we prepared a studio transcription of a sample program for consideration of NBC. This was followed by the scheduling of a series of ten network broadcasts by NBC for the 1938 season. About the middle of the series, to test audience response, we offered some mimeographed material gisting the programs. Some 700 replies, many very enthusiastic, were received, and NBC assured us that the program was desired for 1939. In that year, the series was expanded to twelve programs. Teachers continued to request a similar type of nature study series for school use during the school year. In response to this demand, which, incidentally, was fortified by correspondence between Col. White and the NBC Educational Director, a series of 26 programs was arranged for 1940, beginning April 2, and continuing through September 18. Probably no feature of our program in the park has reached so far as this network broadcast, with some 35 to 40 stations, and the response from listeners is indeed encouraging. A surprisingly large number of inquiries for information about the park, about the children, about the subjects dealt with, even requests for quotations of rates for accommodations and as to how children can be enrolled in the junior school, are received. Unquestionably, travel promotion, stimulation of interest in nature study, and more widespread appreciation of National Parks as ideal situations for those interested in nature study have been by-products of the program. Not to be discounted is the benefit to the children who participate. And parallel with the program, the publicity in nationally-circulated periodicals has been complimentary and beneficial to the whole idea of nature interpretation in national parks.

Discussion of radio leads to consideration of other media of extension. I believe every opportunity should be seized, consistent with conduct of the regular intra-park functions, for members of the naturalist staffs to get into schools, scouts, and other reputable youth organizations with the message of national parks, and more specifically, with presentations of various subjects of national history, geology, and conservation. A similar avenue of service to the same groups would be the preparation of material on the juvenile level, either through private publication, or by means of inexpensive free-distribution mimeographed leaflets. This material could do much to present the National Park interpretation for use in schools.

Another relationship and service in association with schools and youth groups would be making available guide service for field excursions in the parks during the fall and spring terms of school. No doubt, this practice is growing throughout the parks, and is particularly well developed in National Capital Parks, as Mr. McHenry will show us in the course of the conference. I believe that through contact with state education associations, sectional education meetings of science and nature study teachers, and leaders of Scout and Campfire groups, we could effectively sell the idea of such field excursions, and considerably enlarge our usefulness in this connection. Perhaps presentation of a paper on field interpretation in the national parks, with some emphasis upon the value of field experience in such an area for juveniles, before a state meeting of science teachers would result directly in ten to fifteen groups visiting the park represented. While no well-defined interpretation program is in use at Carlsbad, it has been demonstrated that much can be done in bringing school groups long distances when the school leadership is sold on the value of the visit. The job of salesmanship of our potential service for such juvenile groups is in a large measure yet to be done, and is a challenge where conditions are favorable for such school-term visits.

Another similar line of extension service is the demonstration conducted trip for nature-study teachers and group leaders, perhaps in cities convenient to the park. Such demonstrations, or even nature hikes for strategic groups could be conducted on non-park areas. Of course, the limitation on extension activities in our authorizing legislation continues to restrict our field of influence, but as we have opportunity in connection with other duties, we should be laying groundwork for the expanding future that may lie ahead if and when we have authority for extension work in its own right.

At this time, I would like to ask Mr. Oberhansley to tell you briefly about the junior lectures that were begun in Sequoia, and any other points in his junior program that he would like to present.

MR. OBERHANSLEY: We are just feeling our way in this junior nature work in Sequoia. I never did have experience with it until I reported to Sequoia for duty. The special conditions which we have there really are unique. There are people who come and spend their entire vacation in one camp, and the

children who are there for a long period of time become quite a problem to the parents. We took up nature work as a result of the popular demand by these parents. Our field trips, I believe, are quite similar to what is going on at Rocky Mountain and at Yosemite. Due to the fact that we have two vacant places for campfire programs, it was decided to try the junior nature programs in the evenings. This program promises to be quite successful. We have tried several methods in our regular educational programs. We had talks that were adjusted to the intellectual levels of the children, and I think that the chief credit for whatever success we may have had in Sequoia is due to one of the ranger naturalists, who has a way with children. In the first place, this naturalist is an intercollegiate diving champion in addition to being a fine zoologist. He is usually present at the pool to teach the children during his free time. He is a natural program leader. We have experimented with nature games and quiz programs based on the natural history of the park following the lines similar to radio quiz programs. The programs may seem a bit disorderly when ten or fifteen children would jump up from the audience and flock on to the stage to perform their part of the program, and then be replaced by others. I don't know how our program is going to work out since we have tried it only six times. Our chief problem has been to keep adults away from the programs. We are not just feeling our way. So far the programs have been very popular with both children and parents.

MR. GREGG: I want to ask Ed Beatty if he will say something of their junior leadership training.

MR. BEATTY: Time is rather limited and I think Mr. Gregg has covered the subject adequately. I just want to add a few points in which our program differs from the others. We assign a ranger-naturalist who spends his full time with the junior nature school. In the morning we have two sessions. In the afternoon we have sessions on the handling and preparation of exhibits and projects on which they are working for definite awards. We have recently made use of the former patio that was connected with the building, and we have a CCC project for completely roofing it over so that the youngsters will have their own room, whereby they won't have to be tramping through the museum. Regardless of whether students are registered in the junior or senior portion of the school they have to complete their regular award before they can get a certificate. We have found that both boys and girls who are interested in the school will work together. Because our nature school has been functioning now for ten years, we have had an opportunity to observe results; we have had chances to see the effect of the work that has been carried on in Yosemite. I have found that a good many of our junior leaders are coming back summer after summer. I also have in mind three or four junior leaders who are now in the University of California. They became enthused over nature work through our Junior Nature School program and have as a result registered in natural history courses.

MR. ROTHROCK: I would like to go on with the discussion of this interesting subject, but we are going to have another aspect of the case presented

in the description of the naturalist program which is being carried on in metropolitan park areas. Mr. McHenry will tell us about that. Junior nature programs are a very important activity in which we should participate because the support of the parks in the future is coming from the children of today.

MR. YEAGER: I would like to ask Mr. Beatty the reaction of the naturalists to these programs. I used to dread such assignments but I am wondering if we are not outgrowing that.

MR. BEATTY: We were fortunate in setting up the job so that it would occupy the full time of one naturalist, and we selected that man from our staff who was qualified to handle children. I imagine many of us have met Ray Carlson. He made his big start in Yosemite with the junior nature school. If we were not able to pick a man qualified to handle children our program would be a total loss.

MR. SWARTZLOW: I would like Mr. Gregg, or Beatty or Oberhansley to answer if there is any limit to attendance.

MR. GREGG: Do you mean minimum numbers?

MR. SWARTZLOW: What is the best number to handle in a group of this kind?

MR. GREGG: Ten to twenty.

MR: BEATTY: We have had more than that. If the school continues it may become a two-man job. Our present sessions are divided roughly at about 55 and 35.

MR. WALKER: I know little about the nature schools but I am very much interested in them. I know it is quite a problem to sell the interpretive program to adults, but we can sell these programs to the children. I would like to have someone make a statement in that connection.

MR. DOUDNA: I can't speak in regard to Park Service work but I can speak in regard to boys' and girls' camp work and as a teacher. Mr. Walker's idea is a very good one but I feel we won't have to sell them; we can help in order that they sell themselves. I find that all we needed to do was to throw out a few careful suggestions. All you would do was to stay in the background and the groups practically conducted their own programs. I found that these groups resented being regimented. By getting away from the old stereotyped methods of procedure they got a great deal more from it and would work a lot harder. I found that girls from fourteen to sixteen years of age began to lag, and from sixteen on up they just were not interested. You could hold the boys until about seventeen. My thought in the matter is to make the program as spontaneous as possible and all you have to do is suggest it. The children will sell themselves and their parents on the idea. An indirect approach to the subject gave more opportunity for individual initiative.

MR. BEATTY: As I understand it you are trying to find how to reach the parents through their children. I think Mr. Gregg brought that out. We have found that the youngsters carry the programs home to their parents and it results in having the parents come out themselves. We allow parents to attend preliminary discussions in the museum before the youngsters go out in the field. I think that is a good way of reaching parents. In this way we will be able to make good conservationists of both parents and children.

MR. ROTHROCK: Let us continue with the program and discuss these problems in the light of the information given in Mr. McHenry's paper.

MR: MCHENRY: The preceding paper has presented the subject of Junior Nature Outings primarily from the standpoint of the national parks. I am going to try and give you a few of the things that we see in this work from the point of view of the metropolitan area. With your permission I shall briefly present the work that is being done in the National Capital Parks.

Application of Metropolitan Junior Nature Programs to National Park Areas.

Donald E. McHenry,
Associate Park Naturalist,
National Capital Parks.

ABSTRACT

During the past summer a series of 8 weekly nature walks was organized by the National Capital Parks in cooperation with the District Playground Department. The groups were made up of as many as 80 children. With the opening of school, a junior nature program was organized in conjunction with the conservation studies of the District Public Schools. Some groups were conducted personally by the park naturalist while others were under the leadership of pupils trained in this work. These walks are supplemented by training courses for teachers and by illustrated talks in assembly. Interest in national parks was introduced into thousands of homes which will form the nucleus of an ever-increasing group of appreciative visitors. There should be a place on the various interpretive programs throughout the Service for junior nature groups and teachers so that they may contribute to the study of conservation.

The National Capital Parks, although a part of the National Park Service, is essentially a metropolitan park system. Because it is so different from other National Park areas it is deemed wise to give a brief introdution to its physical nature as background for the discussion of the junior nature programs conducted in these areas.

The National Capital Parks System is composed of seven distinct types of park areas. First of these to be considered is the Mall, a formal park extending from the Capitol on the east, to the Lincoln Memorial on the west, with the Washington Monument at approximately the center. Bordering it are monumental buildings housing government offices, scientific museums and art galleries. It lends itself to the Naturalist Interpretive Program to a very limited extent.

Between the Mall and the Potomac River to the south are East and West Potomac Parks developed on reclaimed marsh land. These include the famous display of Japanese Cherry trees around the Tidal Basin, the rose garden and pansy beds. However, most of the area is devoted to public golf courses, tennis courts and a swimming pool. The Potomac Parks can be classified with typical city parks. Lafayette, Franklin, Rawlins, Meridian Hill and Langdon Parks and similar small parks are typical of this category. These latter being wooded city squares, are useful for tree and bird walks.

The third type is represented by the sites of old Civil War forts of Washington, many of them now preserved as parks. Some of the old weathered breast works are retained in their unimproved condition while the works at Fort Stevens are partially restored as an historical monument. A boulevard known as Forts Drive connecting these sites is being developed. An annual historical tour of these defenses is offered as part of the local interpretive program. These and other auto caravans are conducted with the aid of a police escort made up of Park Police who take the place of Rangers in a National Park. While the larger fort areas include considerable native woodland offering opportunities for nature programs, several of the fort parks have been developed with recreational facilities such as picnic groves, amphitheaters, and children's playgrounds.

Parks established as purely play areas will fall into a fourth category. A few of these have some native woodland which lends itself to interpretive work. Recently the Chopawamsic Recreational Demonstration Area in Virginia, 40 miles south of Washington, has been added to the system.

The National Capital Parks has, or is developing, several parkways. Most noteworthy of these at present is the Mount Vernon Memorial Highway which borders the Potomac River from Washington to Mount Vernon on the Virginia side. There are many excellent places along it for bird walks. Rock Creek-Potomac Parkway, a major traffic artery from West Potomac Park to the Zoo, is of little value in the interpretive work. The newly-acquired Chesapeake and Ohio Canal Parkway running 184 miles from Washington to Cumberland, Maryland, through the Potomac River valley, not only

preserves the history of this historic waterway but is being partially reconditioned to permit recreational uses. It is an extremely valuable area for interpretive work. Future plans include labeling natural history features along the tow path, making of it a sort of extended nature trail.

The sixth type of park includes the more native areas which usually follow stream courses. Most noteworthy of these is Rock Creek Park which bisects the residential area of northwest Washington. Although relatively narrow, it offers one the feeling of remote seclusion. Here a nature trail is maintained. The site of the weekly campfire programs is found not far from this trail. Numerous picnic groves and two play areas with swings, slides, etc., for children, are found throughout this park but so located as to leave the general native character undisturbed. Rock Creek Park is not only the largest single park of the National Capital Parks system, but most readily lends itself to interpretive uses.

Along the Anacostia River in northeast Washington is Anacostia Park. Although there is considerable development of such recreational features as golf courses, tennis courts, play fields and swimming pools, there is much undeveloped land composed largely of marsh flats. Part of this is a bird sanctuary.

A recent addition to the upper end of Anacostia Park is the Kenilworth Aquatic Gardens long famous for its beautiful display of water lilies and lotus. This area is very useful in the interpretation of aquatic biology. Smaller stream valley parks such as Glover-Archbold Park, Soapstone Valley, Piney Branch, etc., make their biological, geological and ethnological contributions to the naturalist program of the National Capital Parks. Attention should also be called to Roaches Run Wildfowl Sanctuary just across the Potomac River from downtown Washington. This, too, is important in the local interpretive program.

In the seventh class can be placed a large number of small reservations, consisting of triangles at street intersections, center parking areas, and sites of statues and memorials. Some of these areas are as small as 80 square feet.

Many geological outcroppings both in and out of the parks make possible an annually-conducted geologic tour of the District of Columbia. Up to 400 persons have attended a single tour.

Campfire programs, auto caravans, various nature walks, illustrated lectures regularly scheduled or carried on in response to special requests, training courses for Boy and Girl Scouts and Recreational leaders, etc., all present formidable year around demands upon the naturalist staff (a complimentary term) of the National Capital Parks.

There is, however, no phase of the interpretive program of the National Capital Parks which has assumed more significance than the work

with the juniors. Because of the current increase in interest in the study of conservation and natural history in public schools, the Park Naturalist has had opportunity to broaden the influence of the Service through cooperation with the local school authorities. As an example of this, attention is directed to the 12 field trips over Rock Creek Nature Trail conducted each October by the Park Naturalist for about 400 biology pupils of the Mckinley High School as part of their study in conservation and biology.

The services of the Park Naturalist are in constant demand for conducting field trips related to studies in conservation and natural history for individual elementary school classes. School children in congested districts are conducted on tree walks in Lafayette, Franklin, Lincoln, and other Parks in downtown Washington. Vegetation maps of these parks are furnished the teachers and pupils as aids. Last year, in conjunction with several public school science teachers and the Soil Conservation Service, the Naturalist helped compile an elementary field course in conservation based upon studies in Fort Dupont Park.

The elementary science department of the public schools is promoting a series of pupil bradcasts on science subjects in cooperation with Radio Station WMAL. Where the material deals with conservation or the general subject of natural history, the Park Naturalist is invited to train selected groups of pupils on field trips in park areas in preparation for these broadcasts. Plans are now under way to have the Park Naturalist broadcast directly from the Nature Trail while conducting school children on a nature walk. Class room periods are set aside for listening to these broadcasts in all the elementary schools of the local system.

There is great demand for school assembly talks on the natural history and its relation to conservation in the National Capital Parks. These lectures, illustrated by Kodachrome slides, offer a splendid opportunity to present the subject of park values and to introduce the audiences to the meaning of our national parks as a whole.

The Park Naturalist has also conducted a number of field training courses for teachers to help increase their understanding of the outdoors as represented in the local parks.

Perhaps the most significant recent development in the junior nature program has been the organization of a series of pupil-led nature walks in the local parks as a part of the elementary science school work. This was done in an endeavor to overcome the limitations of personal services of the Park Naturalist to individual groups but, incidentally, has produced more far-reaching and significant results than previously foreseen. The program calls for the selection of about 8 or 10 pupils from the sixth grade who are known for their leadership and potential interest in natural history. Similar selections are made from the fifth grade to provide understudies to replace the leaders when promoted.

These leaders and their understudies are then taken to an adjacent park area during school hours where they are introduced by the Park Naturalist to the simple elements of the local natural history. Under the direction of a teach-monitor, these pupil-leaders spend some time during the ensuing week organizing their field notes and adding desirable material gleaned from reference works. The next meeting in the park is devoted to a review of the subject matter and an introduction to some of the technique of leading groups over routes selected and numbered for each leader. The leaders are encouraged to return to the locality before the next meeting and review their material. School time is used for this also. For the third meeting, the third grade classes of their school are divided into groups, each group being assigned numbers corresponding to those of the various pupil-leaders. With no more than a most general sort of supervisory aid, these leaders conduct their groups over their assigned trails instructing them in the facts of natural history and conservation which they have mastered. These pupil-leaders are able to command a surprising degree of attention. After this field trip, lasting about an hour, the leaders meet with the Naturalist for the last time to correct any obvious flaws in technique or subject matter. Subsequent trips, on which all the remaining pupils of their school will be led, are made on the lone responsibility of each pupil-leader. With such programs being conducted in a number of schools simultaneously, the influence of the Park Service is extended to around 10,000 pupils during the spring season alone instead of the comparatively few which the Naturalist would be able to contact personally. This program has met with more than passing success. Its value in training is obvious. Plans are now being considered for the extension of this program to the junior high schools. Graduating pupil-leaders form the nucleus for high school biology clubs and contribute towards the junior membership of local scientific organizations.

The final elementary science broadcast of the season is devoted to suggestions for continuing interest in these fields during the summer vacation. Emphasis is placed upon the program of junior nature outings offered by the National Capital Parks during the summer. These outings are organized along two lines: one is part of the general naturalist schedule of the National Capital Parks, and the other is promoted in cooperation with the local Playground Department. The Junior Nature Outings scheduled as part of regular naturalist activities consist of a series of field trips confined to Rock Creek Park and follow a progressive program of natural history subjects. The program last summer included a study of the historic Pierce Mill while in operation; a tree walk; a leaf hunt; nature photography; an insect hunt; discussion of insects caught and mounted the previous week; a moss hunt; a discussion of facts and fancies of nature; a hunt for curiosities of nature; a period devoted to the study of the wild animals of the region; a bird walk; and a hunt for plant fruits. The last meeting was a nature "round-up" which was devoted to exhibition of the summer's collections and to nature games

for which prizes were offered. Two groups are organized for these outings; one for juniors from 7 to 11 years of age, meeting on Wednesday mornings, and another for juniors from 12 to 17 years of age, meeting on Thursday mornings. Some of these outings were attended by as many as 80 children. The concentration of these programs in Rock Creek Park was suggested by the previous experience of a more dissipated program in an endeavor to cover as many local parks as possible.

The junior nature outings organized in cooperation with the District Playground Department followed a similar schedule but were carried on in about 26 playground regions. Groups from various playgrounds were brought by their playground leaders to a park convenient to that particular region. In all, about 12 junior nature outings a week were conducted by the Naturalist Staff of the National Capital Parks--this in addition to other features of the regular program. Some thought is now being given to the possibility of a children's Saturday morning Nature program to be held in the Interior Auditorium.

I have tried to present a picture of junior nature activities of one metropolitan park system. This is not necessarily peculiar to Washington, for the present interest in conservation and natural history studies, particularly in our schools, is a nation-wide trend. Recognizing this, may I suggest the possible place of the National Parks in relation to metropolitan Junior Nature programs.

Among visitors to our National Parks are numerous public school teachers and pupils from many and various metropolitan areas. Many of these teachers are seriously seeking aids for their local conservation courses. In some cases this is the major reason for their trip to the park. I suggest that announcements of the interpretive programs in various National Parks carry an invitation for special meetings and walks dedicated to visiting teachers interested in obtaining and organizing such material as offered in that park. This might be, for example, every Monday and Thursday morning. Mimeographed outlines, bibliographies, and other literature prepared with the teachers special interest in mind, should be available for distribution. Forum discussion should be promoted; their attention should be directed to the park reference library. Some idea of their needs can be gleaned from an examination of the pamphlet, "Conservation in the Education Program," 1937, Bulletin #4 of the Office of Education. Many teachers, unaware of what the Park Service has to offer, are turning to other agencies less qualified to help them. This is a challenge.

Similar invitations for special meetings and field trips for juniors interested in starting a school Park Service club or conservation unit should be offered. Again the trip and material should be organized with this special interest in mind.

Another important approach to this problem of metropolitan junior nature programs, as considered from the standpoint of the individual National Parks, is the possibility of using part of the off-season time of the naturalist staff to give school assembly talks and to help leading school authorities to organize junior nature programs through their local school systems in communities within the general region of the Park. Spheres of influence for various parks could be mapped both to insure as complete coverage of the United States as is possible or desirable, and to avoid duplication of effort. Many local metropolitan school authorities usually welcome such service, if for no other reason than that the vast majority of school teachers, even science teachers, are ill-prepared to present adequate interpretation of the natural features of national areas, or even of their local communities. Naturally all contributions which the park naturalists make should point to better understanding of the principles of conservation as exemplified in our national parks, but such material should be organized with the local need in mind. Such a program would establish each national park as a center from which park service ideals and influences would emanate.

There is but one fly in the ointment, and that fly is the word "therein" in our Park Service appropriations bill. With this wording, naturalists are, at present, not permitted to use time or funds to lecture outside of their own park area. There are, of course, occasional exceptions to this rule of which many of us have taken advantage. Some naturalists have generously used their own time in taking the National Parks to metropolitan communities. However, the obvious need is to work as hard as possible to get rid of the "therein" restriction. The Soil Conservation Service employs at least one full-time director of field education to do the very thing for that Service which I am advocating for our Service.

With the present tremendous increase in park attendance we might lose sight of the fact that the vast majority of our population knows nothing of our National Parks--not even their names. Recently, in questioning a representative group of about 500 high school students, I discovered that less than 5 per cent had ever heard of a national park. If we want to increase the effectiveness of our National Park Service as an American institution we must look to this large uninitiated group for our potential visitor population. We do not want, however, an increase in our visiting public composed of people untrained in appreciation of park values and expecting only the offerings of a Coney Island. If our interpretive programs can include features designed to help teachers and pupils gain a greater appreciation of the proper relationship between park values and a program of conservation, they can carry the influence of the National Park Service to their respective metropolitan communities and thus help open the doors of hundreds of thousands of homes now closed to the ideals for which the Park Service stands.

MR. ROTHROCK: Let us have a few moments of discussion on Mr. McHenry's paper and the one preceding. Mrs. Dean, may we hear from you?

MRS. DEAN: I think that Mr. McHenry presented what I had in view. This program has become very much expanded in Washington. Several parents have told me that their children have gotten more from field trips than at school. This morning when I spoke I had in view what the Forest Service does for the campfire organizations. I think you know that was some time past. I wondered if the National Park Service could not have similar contacts and programs developed with youth organizations by the naturalists. When I read through the reports I find how much is being accomplished just because the superintendents of the areas have been wide awake and made the contacts necessary.

MR. ROBINSON: In what I have to say I am representing the many state parks in the country. The point I want to bring out is this: That the state parks and other areas of that sort are seeking to blend their programs in with the communities. In that connection the state parks are becoming outdoor laboratories for school groups. Of the city school teachers of Richmond, Virginia, for example, 100 of them met in Swift Creek in September to devise plans for encouraging this program, and they are going to get into this sort of work more and more. I think the National Park Service could do a wonderful service if its rich source of materials on nature education and techniques of presentation could be made available to the state park departments. You are getting experience at Yosemite that would be invaluable to these state park people. That is the reason I favor Dr. Russell's idea of a regional naturalist. If we had a regional naturalist it would be invaluable to these state and city parks and other agencies that are embarking on these programs. I hope this material may be made available to the state parks where they are establishing these programs.

MR. ROTHROCK: It seems to me that the naturalists should be available for consultation on the development of naturalist programs outside of their areas. Their experience would be invaluable to many organizations, and their advice should be made available through the proper agencies.

DR. RUSSELL: You heard Mr. McHenry say that it would be impossible because of legal limitations to go out and work on areas beyond his recognized station. That is so, but it is not impossible for a naturalist to travel to meetings. He can get authority for that. I told you that I went to a panel discussion in a session known as the Naturalists' Session of the National Recreation Association. There were four park naturalists present from the Cleveland and Akron metropolitan parks. Yet there were about 120 "naturalists" in that room. Who were the others? They were school employees concerned with these things on which Mr. McHenry would like us to help. It was obvious that the approach of these school teachers differed from the approach of the park naturalists. In fact, it

proved impossible to get together on discussions that would lead to a common goal. In my opinion park naturalists or regional naturalists, when they exist, should attend council meetings of nature leaders in an attempt to create general understanding of the advantages of the field method of nature teaching. Such work on our part will bring direct returns in our program of state cooperation.

MR. SCHELLBACH: We contact teachers all during our programs in the summer. Classes even come in on wheels. We get lots of teachers who are perfectly satisfied to go on our trips and observe the technique used in field education methods.

MR. BAUER: I would like to add a few remarks along that line. We don't have any record of the number of groups coming in with teachers--I mean groups of teachers and students. I feel sure that if you make an effort to get statistics on these parties--running from 15 to 25--you will find that it really amounts to a great total. Some of the universities and schools make it a regular point to visit the parks and participate in the regular programs.

MR. BROCKMAN: I think we are concerned about this limitation of going outside and making talks. In Rainier we have built a collection of about 2,000 slides and we get many requests for them. Thus we are able to reach many hundreds of students throughout the school season. I think there is a good possibility for this extension service, so to speak.

MR. McHENRY: I want to emphasize the importance of this work for these teacher groups in the parks. I recognize that some of these teachers take part in your regular programs. But the point I have in mind is that they have a program with a special point of view which would be of particular service in their work and their schools. I am referring to the program used in Hawaii in which an invitation for special trips is offered. This ought to segregate from general groups those people who want to have the work organized for their special purpose.

MR. SCHELLBACH: If we are notified beforehand, it is often possible to assign a naturalist to contact special organized parties.

MR. GALE: I would like to ask those who have engaged in junior nature work if anything has been done with respect to transient populations.

MR. STUPKA: I tried that in Acadia seven or eight years ago and I found out that there was not enough turnout to justify it.

MR. ROTHROCK: We must get along with the program. There are other problems arising from changing trends. One is the winter recreation program and Mr. Brockman of Mount Rainier will tell us of his experiences in adjusting the naturalist program to the winter visitor.

Contributions of the Naturalist to Winter Recreation

C. Frank Brockman,
Associate Park Naturalist,
Mount Rainier National Park.

ABSTRACT

The rapid increase in the interest taken in winter recreation has materially affected certain phases of Park Service policy. The future of winter use of the National Parks - now well established - depends to a large extent upon the solution of the many problems coincident with this use. The naturalist can assist in this program by making personal contacts with winter sports organizations to interpret park service ideals and policies; by cooperation with winter sports organizations in the development of means by which the abilities and experience of skiers can be improved; and by the development of the museum idea to explain the natural history of ice and snow to increase the visitors' knowledge of hazards involved.

The rapid increase in winter recreation interests, particularly skiing, has materially affected Park Service policies as applied to several of the national parks by reason of:

1. The degree of understanding on the part of winter sports enthusiasts as to park service policies and ideals as originally conceived for these areas, and their recognition of the value of these policies which are designed to maintain the high standards of these areas.

2. The character (age groups, abilities, experience, interests, and general background) of the winter sports enthusiasts themselves.

3. The relative importance of local (or regional) as compared to national interest in winter sports, insofar as specific areas are concerned.

During the early stages of development, winter sports activities in the national parks were regarded as purely recreational in character. These activities were conceived as a feature of national park use to which the naturalist could contribute nothing of visitor interest and

little of tangible value to the administrative difficulties which such use developed. This was a logical point of view under the circumstances at the time, and one to which naturalists themselves generally subscribed. Experience and observation of winter activities in Mount Rainier National Park, however, has led the writer to believe that this attitude is not in keeping with the fundamental concept of the place of the naturalist in national park administration--that of engendering a better understanding of national park ideals and principles on the part of the general public, and the development of a more widespread understanding of the varied features of interest which are exemplified by these superb areas.

Experience with winter recreation activities will indicate that the majority of the more difficult problems have their source in the first two broad classifications, as already noted in the first paragraph. During the early years of winter recreation in the national parks, when this feature had a relatively small following, many of the present difficulties were either non-existent or of minor importance. As the popularity of this activity grew, it was inevitable that the problems concerned with it would also grow in importance and complexity. By the same token we may expect continued difficulties in the future. It follows that if we are able to remedy those conditions which are responsible for difficulties of winter administration, its entire picture will be materially affected and this activity will assume a place more in keeping with its many inherent advantages; yet at the same time its development will be in conformance with basic national park policies.

Several of the facilities which come within the scope of the naturalist can be readily adapted to the problem of bringing this about. Their adaptation, however, must be predicated upon a thorough understanding of their limitations in this instance. Obviously people are attracted to an area having winter recreation possibilities solely because of the advantages which the area embodies in that line. The interests of the winter sports group are more closely confined than are the interests of park visitors at any other time of the year. Thus it seems apparent that an attempt to carry out a program that is generally similar in its approach to that which is under way during the summer will not only meet with public apathy and thus fail in its primary function, but may even bring about unfavorable reactions.

Briefly stated, the naturalist can best assist in the problems of winter recreation in the following ways:

1. By embarking upon a series of personal contacts with winter sports organizations in an effort to interpret the logic and value of park service ideals and policies.

2. Through cooperation with winter sports organizations in the development of a program designed to assist in developing

the experience, abilities and interests in matters relative to winter conditions in high mountain areas, on the part of winter sports enthusiasts.

3. By the adoption of the museum idea to winter interests and problems in which an explanation of the natural history of ice and snow would serve to develop the average winter visitor's knowledge and recognition of the principal hazards.

The logic of the first point mentioned is obvious. A proper understanding of national park policies will foster a spirit of cooperation on the part of winter sports people and will, if properly presented, develop the interest of a considerable number of additional active, influential friends for the national parks. This, of course, is dependent upon the degree of interest and the ability of the naturalist in question to enter into winter sports activities and thereby gain the respect of visitors who hold this form of activity in high regard.

The second phase of possible cooperative effort has already had the advantage of considerable impetus on the part of the park service in the establishment of semi-official advisors in the matter of winter sports policies. These, however, are carried out on a very broad plan and do not, as yet, greatly touch the minute problems of which the major difficulties are composed. Naturalists can be of considerable assistance in furthering this function by taking an active part in numerous activities bearing upon the winter recreation program as applied to local conditions. The scope of such efforts is extremely broad and ranges from such features as the sponsoring of photographic competitions to cooperation with local ski clubs in the development and dissemination of visual education materials designed to broaden winter interests and improve the experience and ability of the rank and file skier. Many outing clubs have been engaged in such activities for some time.

The third feature is perhaps the best possible medium in which to reach the greatest number of winter sports enthusiasts. The interpretation of the natural history of ice and snow is worthy of consideration for such a presentation in its own right. However, such an activity goes much further in this particular instance for in an understanding of winter natural history in all its ramifications one possesses a proper regard for all the varied winter conditions that are liable to be encountered. Thus, due regard is given for the hazards which might cause inconvenience or injury as well as ways and means by which those hazards might be recognized and avoided. Meterological conditions in winter, types of snow, snow surfaces and the conditions of winter terrain, factors pertaining to the development and recognition of dangerous avalanche slopes and cornices - these and many other factors are both of interest and of value to the safety and enjoyment of those who participate in winter recreation. Such a museum, housing adequate and attractive displays that

are linked with the specific interests of the winter visitor, will certainly get considerable attention. It would greatly assist not only in broadening the interests of winter visitors but aid materially in alleviating many problems concerned with accidents due to incompetence of the individual. Such a display would also be of value to those winter visitors who do not participate in the outdoor activities of the season.

Winter recreation in the national parks has much to recommend it as a logical function of these areas. The difficulties in connection with these activities lie largely in a misunderstanding of national park ideals which confine such activities within certain legitimate channels, and in a lack of experience and knowledge of winter conditions on the part of many who come to the parks to enjoy the winter program. The naturalist, through his experience in the solution of problems of a similar character with the general public at other seasons of the year, should be readily able to adapt that experience to the solution of many of our winter difficulties.

MR. ROTHROCK: This paper is open for discussion. Judging from the comments heard at the Washington Office, the problems of winter recreation are perplexing. If the naturalists can contribute toward their solution they will be most helpful.

MR. BEATTY: I know personally from contact with our program in Yosemite that a great number of our summer visitors do return during the winter. One family whose children have attended our junior nature schools are regular winter visitors and ski enthusiasts. They are just one of many people who participate in both our winter and summer programs. We have just completed the building of an overnight ski house at a point seven and one-half miles from our Badger Pass ski area. It was constructed by the Service but will be operated by an employee of the park operator. There are bunks for 27 people and the operator will be prepared to rent sleeping bags and serve meals, or people can come and bring their own sleeping bags and prepare their own food. Reservations will be made through the ranger on duty at Badger Pass. The skiers will have to prove to the ranger that they have sufficient skiing experience. The trails to this ski hut have been very clearly designated by signs and in addition the operator has a snow tractor that will make the trip regularly. We are considering what the naturalists can do to start winter nature tours. We realize that there is not a great deal of natural history to explain during the winter months, but we feel that we can at least get over a little idea of appreciation of the beauties of nature. We intend to try out naturalist-conducted ski tours.

MR. SWARTZLOW: At Lassen we have the two groups of visitors--those whose efforts go in the direction of the Village bar and the muscle builders who ski all day and come back so tired they just go to bed. However, there is a small percentage who get some inspiration out of the winter scene. I think the winter scene is one of the most magnificent sights the park has

to offer. The country is inspiring beyond words. But as far as our visitors are concerned in this scene, it would not be feasible to devote a man's time to do something for that small percentage. Personally, I don't ski and I don't think I will ever learn, but we are fortunate in having several rangers on the staff who have helped in the past in the interpretive program and who are well qualified. The rangers conduct this particular part of the program. If we do get a group of people who come to the park not only for physical benefit but for inspiration as well, we may have to revise our set-up to accommodate these visitors.

MR. DOERR: I just want to add a word on this question of winter activities for naturalists. If any of you have been in the bunkhouse at Crater Lake in mid-winter, you will appreciate that I would not like to attempt an evening program in that bunkhouse. But I would like to add that in Crater Lake we don't have as many visitors as Yosemite and Rainier. We know from actual count that fifty per cent come there for winter sports, fifty per cent coming for scenic-scientific values. I should like to add this thought: that I would like to see more development in terms of the interpretive program for winter. I think there will be an excellent opportunity in Crater Lake for a certain type of winter interpretation when you build your museum there because the people can see just as much in the winter as in the summer.

MR. ROTHROCK: Mr. Williams, could you tell us something of the policy as you have found it in regard to winter sports?

MR. WILLIAMS: I am afraid I am not very familiar with it, but I know we are plotting our whole concept of the use of areas during the winter. However, I am not familiar with the most recent decisions. They are not quite formulated yet.

MR. CHICK: I wonder if it would be appropriate to start fostering the attractions of the winter season during the course of the summer programs?

MR. ROTHROCK: I would suggest that you present that to the committee for consideration.

MR. WALKER: I am wondering about facilities. At Crater Lake that is our chief problem. We have large numbers of visitors, of which fifty per cent are not out to ski. Out on the rim with the wind sailing at 90 per, you could not very well interest a crowd.

MR. BROCKMAN: Your answer to that is your winter museum.

MR. DOERR: Unfortunately, I had to leave Crater Lake before you got there, Mr. Walker. I think you have an excellent opportunity to develop a museum which will provide these facilities which both you and I realize are lacking.

MR. BURNS: The idea is an appropriate one and I think everyone will agree since it is our job to interpret in every possible way. It is logical to

install exhibits dealing with safety and tie them in with seasonal displays of meterological and other timely subjects. I am doubly interested from the museum standpoint because I happen to be a member of the safety committee of the Park Service. I would like to endorse the thought Mr. Brockman advanced of utilizing museum facilities wherever possible to give visitors a better understanding of not only of the wildlife beauty of the park but an insight into the why, and wherefore of existing conditions which may directly affect their health or lives.

MR. YEAGER: While we are on this subject of skiing and safety, I think Mr. Brockman has some of those posters we put out on skiing emphasizing the need for safety. I am wondering how many of the other parks have these posters. We can make another run if you want them.

MR. BROCKMAN: These signs are fine as far as they go but our naturalist interpretation activities go farther. For instance, we have a sign near the end of the trail near a glacier and it is impossible to keep many people away from that glacier. After a while we built an exhibit explaining the movement and recession of the glacier and interpreting that particular angle of the park. We also stationed a man there to further emphasize that explanation. The problem was that after this man got through explaining this point, some of the people did not feel like entering a dangerous location. They understood the reasons for the danger there and stopped at the end of the trail. The same is true in winter. In explaining the winter scene people are going to become more familiar with the dangers and hazards involved and will act accordingly.

MR. OBERHANSLEY: Our experience in Sequoia has been quite gratifying with the winter sports fans largely because they have nothing to do in the evening but sit and loaf. Upon the request of the park operator last year we started a series of winter talks. I was quite gratified at the response. As the winter progressed I became acquainted with a large number of skiers and the operator's business increased due to our program. That, probably, is the result of having nothing to do in an evening and helps pass the time away. We are looking forward to more success this winter. We have to give our talk in an eating room and only about 80 people can be accomodated there. This winter we are going to try to take some ski tours to Giant Forest. I believe our winter trails can be made just as attractive as our summer trails.

MR. KING: Skiing is here to stay. The only thing is that the sport appeals more to local people, but I suggest we help to develop it.

MR. WILLIAMS: I can not speak definitely on the winter sports policies, but we might say, following up Mr. King's point, that skiing is here to stay and is nothing new now. A few years ago skiing was participated in by people interested in competitive sport. Today more people are participating and think of it from the recreation standpoint. As a winter sport it is growing very rapidly. We have but few places adapted to winter sports

in the United States. The Union Pacific made a study of winter sports and finally located in the west. We have only a few places in our national areas. For that reason we have to consider the demand and wants of people for that particular sport. Often I think the naturalists will find that while people in the beginning are interested in something foreign, interest in that particular phase will wane. Or it may be that the interest will eventually expand and the program of the naturalists extend to include that particular interest. Eventually those participating in that particular sport or activity often expand their interest to include a number of other things.

MR. GALE: We have no winter sports program at Grand Teton at present but we do have a mountaineering problem. I should like to second Mr. Brockman's proposal of special museum exhibits pertaining to winter activities. Our mountaineering exhibit covering climbing equipment and its proper use has proven bery popular with our visitors and, I believe, it most worthwhile.

MR. ROTHROCK: We have other special programs in which the naturalists are interested, one of which is the field of archaeology. Mr. Schellbach has prepared a paper on the subject, "The Responsibility of the Naturalist in Archaeology."

The Responsibility of the Naturalist in The Field of Archeology

Louis Schellbach,
Assistant Park Naturalist,
Grand Canyon National Park.

ABSTRACT

A great responsibility rests upon the naturalist in maintaining natural history, historic, and archeological records. Special emphasis must be placed on the preservation of prehistoric and archeologic sites and materials because their destruction is a permanent loss. The naturalist should record such sites accurately without disturbing the archeological remains unless authorized by the designated Service archeologist. The proper recording and cataloging of archeologic material are important duties of the naturalist in areas where museum curators, or staff members of the Branch of Historic Sites are not on duty.

We, as naturalists, are cognizant of the fact that it is our duty to catalog the scientific and natural-history resources of our respective areas.

This is the major undertaking, aside from the regular scheduled routine of public contact. In doing this we establish a background useful and necessary in many ways.

The reason for maintaining observation records, for carefully collecting and preserving specimens, and for gleaning material from publications that may apply to our particular area is that such material becomes the source from which information concerning the area can be secured. It provides the facts by which the scenic or spectacular features of the park may be interpreted to the visitor.

Yet outside the regular archeological areas of our National Park system, I wonder how many naturalists have given thought to their responsibilities concerning archeological material and sites within their areas? Are they familiar with the sites that are located within their park or monument? Have they recorded them? Do they know what cultures they represent? Or because no archeological investigation has ever been carried on within their areas, do they rest content that no archeological sites or material are present? Archeology is a vitally important item in our park system and it should receive the same consideration which the naturalist gives biological and geological material.

The responsibility is indeed great, for archeological sites and materials are the only records left by the prehistoric peoples of the region. As such they become tremendously important documents of the past and require the greatest of care in their preservation and protection. This sounds like an unusually strong statement, yet it cannot be too strongly stressed. Such a responsibility begins the moment the naturalist is made aware of such a site and is continued through the cataloging, the recording, the systematic investigation, the preservation of the site and its artifacts, and finally, the publication which places the work on record.

One need only to start the work carelessly, and the rare records of the prehistoric peoples of the region are destroyed. If the site becomes hopelessly mixed in its stratigraphy, it may be useless for a full interpretation by trained and skilled students of archeology. The artifacts recovered become nothing more than curios, instead of the type specimens they might have been.

We know that if we collect a bird, mammal, reptile, plant, or insect specimen for the study collection and make a poor study specimen of it, not a great deal is lost--unless it is an exceptionally rare one--for it can usually be replaced by another specimen. <u>But not so with archeological sites and artifacts</u>, for each may have distinctive features not found in other sites. Hence, when such material is once carelessly recorded and destroyed through faulty or careless excavation, no amount of searching or explaining or patching will ever take the place of the original. The responsibility is then truly tremendous and anyone guilty of such carelessness should be branded a vandal--a destroyer of the records of the

past. The significance of these records lies in the fact that they are part of the story of ourselves because we have built upon what has gone before.

The Indian relic hunter, the pot hunter, the arrow-point seeker are not aware of the damage they do in their indiscriminate digging and removal of objects from original settings. Without adequate notes and information this material is practically worthless. Such damage to our country's prehistoric records is appalling. Students of archeology are aware of this destruction and, from time to time, attempt to educate the public; they meet, however, with but varying degrees of success.

It is of importance, then, that our naturalists make themselves familiar with at least the broad aspects of archeology in order that they may realize their duties and obligations to the Service and to posterity as well, and do all in their power to locate, record, and protect such archeological remains from vandalism or hurried and careless investigation and excavation.

Outside our Service, the archeologist is primarily concerned with getting artifacts and data pertaining to past history out of a site, and when through with his excavations he may have no further interest in the location. Hence, after investigation, the site is practically worthless to future investigators. The archeologist, however, due to the ethics of his profession, preserves the record of the site and his findings in published form. In this form it is also made available to the public.

In the national parks we go a step further. Our policy requires that the site be preserved after scientific investigation. The site and excavations must remain in such a condition that they function as a visible record of the past.

I would like to add one more requirement. Should the excavations not be used for this purpose, they must be backfilled, to preserve the walls, foundations, and ground in as near the original condition as possible, minus, of course, the artifacts and stratigraphy.

Under no condition should we permit the excavation of any archeological or historical site by an individual or institution without first having an understanding as to what is expected upon completion of excavation. The site must not be abandoned; it must either be restored, stabilized, or backfilled.

Unless the excavation, for some reason, is considered necessary, it would be better, by far, to leave the site undisturbed, because the artifacts it contains have been preserved to date and will continue to be preserved for ages to come. Walls of buildings covered with debris and earth will retain their coursing and their binder material, but if uncovered and left to the action of the elements they soon disintegrate or stabilization will be necessary from time to time. A good precaution is: avoid any risk

of damaging a site by attempting work with inadequate resources or with insufficient knowledge of archeological technique. All archeological investigations of the National Park Service involving excavation require careful consideration before actual work is begun.

The naturalist should be consulted before archeological investigations are to be undertaken within his area. He should then call the matter to the attention of our senior archeologist, Mr. Jesse Nusbaum. If there is a Regional Archeologist in the region, he also should be consulted. This must be done before requesting a permit from the Secretary of the Interior. Primary items to consider before such a permit is requested are: (1) What is the necessity and object of the excavation? (2) What individual or institution is proposing to undertake the work? (3) Are the resources for undertaking the work adequate? (4) Who is to be in direct local charge of the excavations? (5) Are those directly in charge well qualified to assume the responsibility for the type of work required? (6) Are the Park Service's policies, aims and objectives concerning archeological excavation and investigation clearly understood by the party or parties undertaking the excavations? (7) What is to be done with the collections secured from the site? (8) Is there to be a just distribution of the collection? (9) Where are the collections to be housed? (10) Who is to publish the records and findings when work is completed, and how soon after completion of excavation will the report be published?

The importance of publication with reference to archeological excavations and investigations should be stressed. The material should be in printed form--not a mimeographed or typewritten report. It then serves not only as a means of preserving the record but it also directs responsibility upon the institution or individual entrusted with the work. Because this is so, the investigator is apt to be more careful in excavation, observation, and deduction.

With this in mind, it can be understood why the naturalist has a direct responsibility at the outset in carefully recording all possible sites and making his records as complete as possible.

There are many types of archeological remains in the form of sites in our national park areas. Because a park possesses a major geological, biological, or scenic feature or features in no way precludes the idea that the aboriginal man did not also live, hunt, worship, or bury his dead in the area. Because no spectacular archeological surface features are in sight it does not follow that archeological sites and materials will not be found. A number of our naturalists may have no training in the archeological field and consequently may overlook surface material which exists in their area.

Should a naturalist attempt to excavate or investigate a site in his park without an understanding of archeological technique, there is a grave

possibility that he will overlook vitally important features, thereby failing to give due consideration to objects not made by man. This was the great failure of the antiquarians, the forerunners of archeologists. They were only interested in the artistic or spectacular man-made objects of antiquity and discarded and threw aside unpretentious objects or material not made by man. In so doing they failed to gather all the clues in a site upon which rational deductions could be made and a more or less complete story ascertained.

A few examples of what was overlooked or disregarded might be stated here.

In the excavation of caves, refuse heaps, kitchen middens, and rock shelters, it was the custom to throw aside all mammal and bird bones encountered as having no value. In doing this the clue as to what animals prehistoric man hunted, ate, or used in other ways was lost. Then too, if the bones had been carefully excavated, with due consideration given to the strata in which they were found, extinct species of animals might be discovered. They then would become very important as clues to the time when man existed in the region. Such a discovery would also serve to aid our wildlife technicians by revealing the identity of species of wildlife which once existed in the region but which have disappeared from it in recent times. A decision regarding the reintroduction of that form of wildlife might well be based on such facts.

This possibility applies likewise to wild seeds, hulls, and shells. Cast them aside and food clues, ceremonials clues, and perhaps extinct plant clues are lost.

Within my own time archeologists paid little or no attention to pieces of wood found during the course of their excavations. Unless the specimen had been used by man as an implement or represented the cuttings made by a stone knife, it was disregarded. Charcoal merely indicated a fire hearth. Due to the discovery made by Dr. A. E. Douglass that tree rings preserved in such specimens may give a time clue as to the occupation of the site, pieces of wood take on a new significance for the archeologist. This, of course, applies particularly to the Southwest. However, who can tell what may be revealed from such specimens in other parts of the country? Burned ends of broken sticks, layers of grass, forked sticks broken from bushels showing no marks of a knife whatever, stray shells, bark fibers, and feathers may all be of importance when found associated with archeological sites. By close examination and careful deduction these fragments may reveal the clue that is needed to tell the story of a people of the past. Then, too, there is the important item of the association of objects. An artifact found by itself may have no significance, yet when found associated with another artifact the two may complement each other as to their use and manufacture. A drilled bit of turquoise if found by itself would be classed as a pendant, a bead or a problematical object, but if found associated with the side of a human skull it would at once be identified as an ear pendant.

In digging in dry rock shelters and caves it is not unusual to come upon human excrement. For prehistoric man was not fastidious in answering the call of nature. But some archeologists I have known would, when they came upon such remains in the course of their excavation, cast it aside with the shovel onto the back dirt. They were discarding possible food clues and not working scientifically or faithfully, for in such material there is the possibility of finding undigested seeds which again would fill in a missing sentence in prehistory.

Archeological remains are of many kinds and even trained eyes may not recognize them. For the benefit of our naturalists, I wish to list a few types which may be encountered; exclusive of the more evident house types. To be sure, all of these types are not likely to be found in any one park or in any one section of the United States.

Teepee circles are indicated by a circle of natural stones which were used to hold down the bottom of the teepee. They occur on the plains and may be found wherever this type of skin house was used. Many such circles would indicate a favorite village location. The refuse heaps invariably associated with such a site might reveal much material helpful in reconstructing the story of the site.

Hunting blinds, composed of mounds of stones, are located on favorite game trails. Their walls are roughly U-shaped in ground plan and large enough to conceal a man. Such blinds might be found along the edges of former lake beds and in the mountainous regions of the country.

Fishing stations may be indicated by numerous fish bones, evidences of fires (in the form of charcoal), fire-fractured stones, and other refuse. They are generally found along river courses, particularly near rapids.

Rock shelters and rock overhangs are found at the bases of cliffs. If such shelters are dry, particularly if there is no ground dampness, they may be of extreme importance. For where there is no moisture, nothing ever rots, and there is a likelihood of finding otherwise perishable material well preserved. Such rock shelters may show signs of former habitation by smoked ceilings, or evidences may be found on the surface of the floor. If they have not been used for a great period of time, no indication of former occupancy may be found, for the material may have been covered by the drifting in of sand and dust. In such sites stratigraphy is of prime importance, and care must be exercised in testing for habitational layers.

Dry caves. The statements above concerning rock shelters also apply to caves. I cannot stress too strongly the sacredness of such sites. Their investigation requires a well-trained personnel. Such sites are more important then the spectacular house ruins or mounds, for, due to their dryness, the preservation of prehistoric material, not only that of man but prehistoric animal life as well, has been possible.

Should our naturalists come upon such shelters or caves within their respective park areas, they have made a find that needs to be carefully guarded, and the rest of the Park Service, the rangers particularly, should be informed so that no poaching or pot-hunting takes place.

Buffalo jump-offs are marked, usually, by mounds of stone large enough to conceal a man from view. These mounds are arranged in lines forming an open "V" which converges to a point near the edge of a precipitous cliff. Herds of buffalo would drift slowly into the open ends of the "V" and when well within it the men would spring up from behind the stone mounds waving blankets in order to stampede the animals toward the cliff. The herd would then be forced to plunge over the edge of the precipice. At the base of such a jump-off there is likelihood of finding the bones of such animals as were left there after the butchering. Record such sites in your observation records. They in themselves require no excavating.

Open campsites may be indicated by the numerous fire-cracked stones, stone chips, and perhaps by pottery fragments.

Shell heaps are found commonly along the coasts and occasionally along the larger fresh-water streams and lakes. Such heaps were made by the aborigines who cast the opened remains of various mollusks on a heap.

Mescal pits are shallow depressions lined with fire-fractured stones. They are to be found in regions where the Agave plant grows.

Terraced slopes may be represented by rows of stones along a slope. This may indicate that originally the slope had been terraced for agricultural purposes and to catch the run-off of rain. These are most likely to be found in semi-arid regions where agriculture was practiced.

Check dams, remnants of which may be found across gullies, serve to indicate the diversion of water and the art of agriculture as practiced by prehistoric peoples. Usually these dams are near the site of former habitations.

Stone quarries. These were the workshops of prehistoric man where he quarried and chipped materials for the making of stone implements. The flint quarries of the East, the quartz quarries of Virginia and regions farther south, the obsidian quarries of Yellowstone and of other volcanic areas, the pipe-stone quarries of Minnesota, the turquoise diggings of New Mexico, Arizona, and Nevada, the red paint deposits and clay pits of New England--all these are examples. Indications of their having been used can easily be determined by the presence of quarrying tools in the form of hammer and other stones used by the aborigines.

Shell work-shop sites for the manufacture of shell beads and ornaments. Such sites are identified by discarded pieces of worked shell, shell blanks, grinding stones, drill points and whole shells. They may be in mound form if shells were plentiful.

Burial grounds; ossuaries. Found as a rule by accident in road cuts, irrigation canal excavations and building. Sometimes by human bones washed out by freshets and of course by trenching in archaeological sites. Eroding hillsides sometimes reveal such remains.

Mounds of many kinds, such as house mounds, ceremonial mounds, earth-lodge mounds, and effigy mounds. Hence, surface mounds that cannot be accounted for through geological deduction might prove artificial and therefore may be archaeological. Mounds of stone, not geological in formation may be the remains of a house ruin.

Prehistoric routes or trails should also be plotted and recorded. There is an excellent possibility of such being found in many of our park areas. It would be well worthwhile to be on the watchout for them.

Springs and water holes may also reveal their use by prehistoric man, in the form of sites nearby or by well-worn trails. In fact springs in favorable localities may have been used for ages by prehistoric peoples and the possibility of a vertical time sequence in stratigraphy from the earliest man to the present time will be found around them.

Cut stream banks upon examination may reveal former occupational layers of prehistoric man. The stream may have changed its course since man occupied its banks, and in so doing may reveal a site that would never have been located from the present surface indications. Examine your stream banks!

Petroglyphs or rock writings should be recognized and listed, and photographic records made. Such rock writings have a wide distribution and in our western areas have never been properly recorded.

The above and many more should be significant for you as naturalists. They constitute as important a record as a bird, mammal, plant, fossil, or other natural resource of the area.

Here at Grand Canyon, as time and opportunity permit, we have set about making an archeological survey of the park in order that we may know what we have in the way of archeological sites within our boundaries. We have enlisted the rangers and other personnel who, during their tour of duty to little-visited sections of the park, report on what they know or suspect of being archeological sites.

We catalog the site on a card, giving it a number and painting the corresponding number on a stone or stake at the site. The location is carefully determined on a U.S.G.S. contour map, and the area in question is then cut from the quadrangle and attached to the back of the site card. On the card there is entered the type of site (house ruin, rock shelter, food cache, mescal pit, garden plot, or whatever it might be), the type of culture (if it can be easily determined), the measurements

of the surface indications, its location as to the terrain (such as open glade, yellow-pine grove, sloping hillside, detached butte, cliff edge), the nearest source of water (if known), and a description and measurement of the site (rooms, walls, masonry, etc.).

A collection is then made of the archeological specimens found on the surface to prevent the site from being plundered by curio, souvenier and relic hunters. This surface collection is listed on an accession card and then each object is separately numbered and recorded on a catalog card. Both cards bear the site number from which the object or objects were collected along with date and name of collector.

The surface collection is then placed in a drawer which is given the site number. This is done so that anyone wishing to look over the material from any given site will not have to look through a stone, potsherd, textile, wood, or bone collection from that particular site. He need only go to that drawer and there will be found all of the material, with the exception of extra heavy or large stone artifacts and whole pottery specimens.

On the back of the site catalog card there is also attached a photograph of the site as it appeared when discovered and recorded.

At the Wayside Museum of Archeology there is mounted a U.S.G.S. contour map of the park area. Each recorder site is represented by a pin of a certain color, each color representing a specific culture. Blue pins indicate Pueblo sites, red pins, Basket-maker sites, and yellow pins, ethnological or historic Indian sites. One can readily see how the pins fall into definite groups. Such groups may reveal information that would not be forthcoming in any other way. They may indicate favorable locations for habitations, desirable agricultural lands, a ready source of water supply, or strategic defensive positions. By employing a system of this sort, it becomes relatively easy to determine the best places to start scientific excavation should this be necessary. It will save working around in many unimportant sites and destroying their value for future investigators. Such records will also aid in knowing just what a park has to offer in the way of archeological resources. These records are made in duplicate and kept in widely separated places to prevent loss in case of fire. To date, we have here in Grand Canyon 474 sites located, recorded, and cataloged mainly in the eastern section.

Another responsibility resting with the naturalist is the careful preparation, restoration, and preservation of the archeological material and collections. They must be protected from disintegration, from marring, from being broken, or from becoming devoured by pests. Such materials, as stated before, are not curios, but represent documents and facts to back up the statements made in public contact work, and as such must be rigidly protected and preserved.

However, the preparation, treatment, and preservation of archeological specimens must be dealt with in a separate paper, and it is hoped that such a paper will be prepared in the near future.

DR. KELLY: (This comment was made by Dr. A. R. Kelly, Chief, Archeologic Sites Division, on February 17, 1941)

Assistant Park Naturalist Louis Schellbach, Grand Canyon National Park, has adequately and concisely expressed the important points in his paper, "The Responsibility of the Naturalist in the Field of Archeology."

Every naturalist must be primarily concerned with the principle of conservation of scientific values. Mr. Schellbach argues effectively that the responsibility of the naturalist to preserve archeological materials and data, and the undisturbed source of these, is greater even than in other aspects of science--not that archeology is of greater scientific worth but that these values have the peculiar quality of being irreplaceable. The fact cannot be overemphasized. Moreover, the important corollary is made that cultural objects lose much or most of their scientific validity or meaningfulness when abstracted from their proper context in a site.

In current inter-branch discussions of the technical divisions of the Service in Washington, much attention has been given to the role of cultural objects in the interpretative story of a park area. Nothing is more clear than that the appreciation of objects, exhibited in full association with their relevant historical background, is the essential requirement; there is no place for "relics" or "curios." The collecting instinct is more than a common human trait; it is sub-human. If the educational presentation in our park museums is to get beyond the pack-rat level of comprehension of, or appreciation for, cultural objects, we must increasingly stress the importance of in situ relations of object and natural context. Careful recordation in the forms of notes, sketches, photographs, skilled repair and preparatory work in field and laboratory is indispensable.

Mr. Schellbach has also given due emphasis to a second point which is of paramount importance in the work of the National Park Service. We have to do with defined and limited physical areas. Our preoccupation must be not only with general scientific research of a period, a region, a tribe or people; with events, trends, and personalities in the abstract, but is always bound up with the study of a specific place or site. Ordinarily, the historian or anthropologist can work sporadically at different sites, sampling the original deposits in stratigraphic position for full data, later to study and synthesize in the museum or library, perhaps thousands of miles removed from the site. Our concern is always with the site or area and the story unfolded there. Archeological explorations, however intensive and protracted, and however complete in results, are only the preliminary to the ultimate goal of presenting the scientific story of life as it was lived on the spot. The thesis might well be sustained that this peculiar preoccupation with sites, comprising research,

documentation, preservation, and stabilization, methods of educational presentation, constitutes a new scientific discipline worthy of definition: I would propose the name Sitology, the study of sites.

Finally, I would like to point out that every good naturalist working in a Park Service area should not only be cognizant of the historical or archeological values; in a real sense, because he has a naturalist training and naturalist outlook, he must always be alert to human values in perceived relation to nature. In short, the naturalist must be an anthropologist, as anthropology has frequently been defined as the natural history of man. Even a primitive wilderness region, presumptively uninhabited and untouched by man, when opened to the public as a vast park presents special problems of an anthropological nature: we find ourselves immediately confronted not only with the matter of preserving natural values in a pristine condition; there is the equally important consideration of the effect of the park on our visitors. It is necessary to safeguard the integrity and authenticity of his reactions on initial and subsequent visits. The incidence of human use here precipitates a situation of imbalance between man and nature which, unless anticipated by appropriate planning measures, will destroy the very values we seek to preserve.

MR. REED: I don't think there is much to add to Mr. Schellbach's excellent paper. As he pointed out, the first responsibility would be the protection of any archaeological sites in the park areas. The second responsibility would be surveys, cataloging, and so forth. I think work of that nature is necessary and justifiable for park naturalists who are archaeologists.

MR. JONES: I would like to bring an example of a case where a geologist, who happened to be an amateur archaeologist, made a discovery. The geologist happened to be with the Museum of Northern Arizona. While he was wandering through a cinder-covered area he noticed an overturned tree and scraps of pottery close to it. He reported his discovery and it resulted in the discovery of a prehistoric house. Eventually it was determined that this eruption caused a prehistoric land rush and made possible the occupation of an area by prehistoric Pueblo people that previously was uninhabitable due to lack of moisture for farming. Thus the interpretive program of Wupatki and Sunset Crater National Monuments was greatly enhanced by the casual observation of a person who was not an archaeologist, but who was aware of its importance. It is possible that contributions similar to that can be made by naturalists throughout the Park Service.

MR. WATSON: Have the naturalists all been supplied with our cataloging cards? These cards offer the easiest and best method of marking sites. Most of the time other marks disappear. This is doubly important in areas where sites are close together. No one can pull them up. Ten or twenty years later it would still be marked there.

MR. YEAGER: These cards can be procured from the Museum Division. They are requisitioned the same as other Government forms.

MR. PRESNALL: I would like to emphasize the importance of preserving biological remains in archaeological sites. They constitute a vitally important record of past distribution. That is the basic material upon which wildlife management programs are formulated. We would appreciate having you send this information to the Fish and Wildlife Service.

DR. RUSSELL: There are some important policy matters involved in this discussion. I don't think the Branch of History would in any way resent our approach to this problem, but it is the problem of that Branch, primarily. I would like to ask how many parks have anthropological evidences of any kind. (12.) The great majority indicate that they recognize the fact that they have them. Anthropologists cannot be employed in every park; the park naturalist must assume a responsibility. I hope you understand therefore why this particular discussion comes into a naturalist conference. I think Mr. Schellbach gave us an exceedingly good and entirely pertinent paper.

MR. REED: Sites should not be excavated unless authorized by the Secretary of the Interior. Certainly we do not want any archaeological excavations by someone who is not qualified as an archaeologist.

MR. SCHELLBACH: All naturalists are interested in building up their collections, but they do not want to do things that are detrimental, such as the vandalizing of archaeological sites.

DR. NEASHAM: Dr. Russell has talked about anthropology. I would like to point out that historical remains also deserve some attention from naturalists. I know of park after park which has historic sites of great value and which will be of greater value in the future. I think the same principles which apply to archaeological remains also apply to historical remains. The same care should be taken to preserve them.

MR. KING: Whether a naturalist likes anthropology or not he should keep a watch on new developments affecting archaeological values.

MR. DOERR: Who classifies these areas? The reason I ask that question is that I have in mind Lava Beds National Monument. What I would like to know is where we record historic contacts and naturalist contacts. It is a confusing thing in working up one paper I am supposed to be preparing now. We have the problem right now in the case of Scotts Bluff, and Dinosaur National Monument.

MR. ROTHROCK: The segregation of areas into Historical on the one hand, and scenic, and scientific on the other is largely an artificial one. In some cases the distinction is easy, in some it is debatable. In the final analysis, however, it is not so much whether your contacts are reported by the Branch of Historic Sites or by the Branch of Research and Interpretation. The important thing is, to get them into the records of the National Park Service. We had an illustration of the arbitrary nature of some of

these classifications in a conference with R. F. Lee; it was decided that all the Southwestern National Monuments would be reported by the Branch of Historic Sites. We had not done this two months when Mr. Pinkley put in a protest and the Southwestern National Monuments thereafter were divided insofar as reports of interpretive service are concerned, into areas which are predominantly of historic interest and those in which natural history is the chief consideration. It is not so much a matter of who records them, but how the service is rendered.

MR. ROTHROCK: Mr. Doerr will present the next paper on the subject, "Camera Caravans."

Camera Caravans

John E. Doerr,
Assistant Superintendent,
Rocky Mountain National Park.

ABSTRACT

This paper describes the origin of the guided camera trip (caravan) and its value as a supplement to other phases of the interpretive program at Crater Lake. Emphasis is given to the trip as a method of stimulating greater appreciation of the elements of scenic beauty and scientific features, and the blend of those values as giving character to Crater Lake. The paper is concluded with a brief statement of the possible long-time values of the trip to those attending.

The origin of the guided camera trip at Crater Lake, insofar as I had a part in it, goes back a number of years. As I think of it now, those signs which appeared in Wisconsin a number of years ago and which were worded "Picture Ahead," had something to do with the experiment of guided camera trips which were conceived at Crater Lake in the summer of 1938. After passing one of those "Picture Ahead" signs I sometimes stopped to see what someone else considered as a picture.

The next step in the origin of the guided camera trip was really the result of a desire to render personal service to park visitors, rather than the result (at least at first) of conscious planning to produce pictures characteristic of Crater Lake. I used to see people trying to group themselves on the parapet wall in the Rim Village area at Crater Lake -- arranging themselves for a picture to be snapped by a member of their group. The idea, of

course, was to have a group picture with Crater Lake as a background. Such pictures always left out some one member of each group; so, as a mere service to such groups, those of us at stations along the rim began to volunteer to snap the picture so that all members of the group would be in it. Among my souvenirs are not a few prints sent by persons expressing pleasure with the attempts at group photography. One of my first efforts was volunteering my services to a young couple, apparently honeymooning; a young couple equipped with a new box camera. I need not go into that event in more detail--you have had the experience; you have received sincere thanks and have felt that warm inward satisfaction of having been of service and made others happier.

As those experiences continued we began to make certain refinements, such as making horizontal pictures when they seemed better than vertical ones. Inquiries were made as to the type of film being used. A glance at most cameras indicated the aperture and speed setting which, if they seemed to be too far off for the particular shot, we were permitted to change. The next refinement, a big step toward the beginning of the guided camera trip, came as we began to suggest that groups move a few yards one way or another along the rim walk in order that they might have foreground framing of trees or might have a background of landmarks especially characteristic of Crater Lake. And then we began to suggest certain trails along which there are especially fine vistas of the lake and crater wall, or interesting trees. Well, why not take parties to places where the elements of scenic beauty and the scientific features blend for superb pictures characteristic of Crater Lake?

One other development was a factor in starting the camera trips. During 1938 we had installed in the Sinnott Memorial Observation and Orientation Station a series of six large colored transparencies, three paintings by noted artists, and thirteen photographs. The transparencies in two groups emphasize Beauty of Place, and Moods of Crater Lake; the paintings presented Crater Lake as seen through the eyes of the artist. The photographs - framed black and white enlargements - were selected on the basis of being characteristic of the lake, and emphasizing line and form as two of the elements of the beauty of the Lake. The frequent question, "Where was that taken?" was a factor in establishing the guided camera trip. Why not take people from the display in the Memorial and show them the places so that they might produce their own photographs?

Before the opening of the summer season of 1939, several viewpoints, as well as groups of trees had been studied along the crater rim. In selecting places to be studied on the guided trips, we had in mind scenic and scientific values characteristic of Crater Lake, and the opportunities of applying the rules of good composition in emphasizing those values. I shall not list here the characteristic values of Crater Lake in view of the fact that each National Park Service area has its own individual values--values with which you in your particular area are thoroughly familiar. As for the values of good composition, I refer you to that short, interesting

and instructive article supplied by our Washington office, "Cardinal Principles of Composition", by Jack Powell. Another small book which I have found useful, "Composition Simplified," by Hermon Gabriel, is published by Fomo Publishing Company, Canton, Ohio.

Having selected the viewpoints to be visited, a series of from two to four phorographs were taken at each point. Each series represented a build-up from poor to good composition, all pictures of each viewpoint series having been taken within a few feet of each other. Enlargements of the pictures were made for use on the guided trips.

We were exceptionally fortunate, in 1939, in having on our naturalist staff Mr. Elmer C. Aldrich, an excellent photographer with a keen appreciation of the artistic; in addition he was a well-trained zoologist. During the summer of 1940 we had the services of Mr. William E. Bush, a graduate of the Yosemite Field School. Mr. Bush came to us with a good training and wide experience in photography, although he had had no previous experience at Crater Lake. I make special mention of Mr. Aldrich's and Mr. Bush's technical training in photography because that is one essential qualification necessary in guiding the camera trip. The qualified camera technician will have the respect of the experienced camera fans, and the beginner will welcome his suggestions. While it may not be possible to assign to the camera trip a naturalist with long experience in the area, that is a factor worthy of consideration. I have found that one does not get the real "feel" of an area in the short period of the first two or three months, particularly an area such as Crater Lake.

I cherish the memory of a number of Mr. Aldrich's photographs which illustrate geologic features enhanced by his appreciation of the artistic; the enthusiasm of Mr. Bush and Mr. Aldrich, and the great contributions each made to the experiment of guided camera trips.

At the start of each trip, visitors with or without cameras, some with simple box cameras, and some with several cameras and many accessories, were instructed that we were out on a search for fine views of the lake and interesting features along the rim. With that the visitors were stimulated to call attention to views that attracted them. Frequently, that resulted in a discussion of values and of composition, the naturalist encouraging visitors to compose the picture on the ground glass focusing camera he carried.

Naturally, groups were conducted to the immediate vicinity of views that had been previously studied. Usually there was no need to even mention the feature or features of interest, the visitors voluntarily seeking the best composition to emphasize the center of interest. Frequently, a discovery by one member of the group ultimately attracted the attention of others; or, when two or more experienced camera fans had "set up," the beginners, and those without cameras, were interested to see just how the center of interest was being shot. There was always a welcome appreciation of that interest.

In discussing a particular view, the naturalist made use of his ground glass focusing camera and the series of enlargements; the latter were displayed on a small easel, the enlargement of poorest composition being shown first and its faults discussed. The second picture which was displayed eliminated some of the faults of the first, and so on through three or four pictures until the best composition was revealed. At each viewpoint visitors could study the actual view along with pictures made from that point. The naturalist with his technical knowledge and equipment could offer helpful suggestions to those making their own photographic record of their visit to Crater Lake.

Fortunately, the attendance on the trips, conducted three afternoons a week during July and August, was not up to the average number of people on guided trips throughout the service. The number of points visited varied from three to six, depending on the particular interests of the group and on the atmospheric conditions. Centers of interest varied from day to day, with objectives changing during the course of a trip. The appearance of clouds, changing lights and shadows, shifting winds creating interesting patterns on the water, reflections--those are some of the variables to which one must be alert if he is to catch the moods and beauty of the lake.

The experience of the guided camera trip has not made expert photographers, but I am certain that it has given something vastly more important--something which has been taken away from Crater Lake--something that can be applied with pleasure to other landscapes. It is a keener appreciation, the realization that there are "Pictures Ahead" of nature's inspiring beauty crested by earth forces and all of nature's processes.

Jack Powell, in his article on the cardinal principles of composition, has given us something which I think summarizes the long-time value of specialized efforts of the naturalists and, in a broad sense, <u>all</u> efforts:

> "Composition is nature itself, and a study of it will open our eyes to a greater appreciation and deeper realization of the true scheme of life. The inner beauty of nature, the esoteric side, will be revealed and will yield a newer approach toward the understanding of the beauty that surrounds us."

MR. MCHENRY: It occurs to me that there is an additional value in this photographic work which we might consider. It is suggested by a desire of people to take away a greater meaning of the place they have visited by taking photographs. Taking photographs helps them in a study of what they have come to see.

MR. GRATER: I am wondering if you give out any information on using filters and otherwise help people in taking pictures.

MR. DOERR: Yes, to those people who are prepared and equipped to use filters. I did not attempt to go into some of the technical aspects.

MR. ROTHROCK: We will have to curtail this discussion and go on to Mr. Condon's paper, "Game Stalks."

Game Stalks

David Del. Condon,
Assistant Park Naturalist,
Yellowstone National Park.

ABSTRACT

Because of public interest in wild animals, game stalks are important in the interpretive program. They differ in type and objectives due to environmental conditions. It is feasible that successful game stalks can be conducted through skiing, walking, riding horseback, and by car. In guiding these parties, the naturalist may teach conservation along with his instruction regarding the fauna and flora.

A discussion of game stalks as conducted in the national parks should lead us down several different avenues of thought on this subject. Probably the first thing that should be done is to define game stalks.

A game stalk can be interpreted broadly as any trip into the open field wherein one stalks or searches for wild animal life. Game itself is generally accepted to be all wild animals. Therefore, it is possible that game stalks could be conducted by the naturalists in almost all of our national parks and monuments since in these parks and monuments there is undoubtedly some form of wild animal life which could be stalked. However, game stalks, as they are practiced in the national parks of the United States, are interpreted to be searches for the larger wild animals, and, as such, it seems that the acceptable definition would be the stalking of various species of big game animals by park visitors who follow the guidance of a naturalist.

In our educational program it is possible that we could incorporate different types of game stalks depending upon the locality in which the stalking is to be conducted. In parks such as Yellowstone, where big game abounds, it is easily possible to conduct a game stalk which would take the guided party afield at the time of day when it would be possible for them to see several species of the larger animals, and at the same time see many of the smaller ones.

Speaking from first-hand knowledge, I can say that game stalks have proven very successful in Yellowstone Park. During the last four seasons the naturalists have conducted a total of 312 game stalks, with

an average attendance of 50.1 persons per trip. These trips have not only proven successful from the attendance standpoint, but have also been highly satisfactory in the presentation of game. In very few instances has the naturalist failed to show his group such animals as beaver, antelope, and other species. At no time has a dissatisfied group of guests returned from the field.

A typical game stalk as conducted in Yellowstone Park calls for the trip to begin in front of the headquarters museum at 6:30 P.M. It is announced at the campfire program the preceding evening. It is listed on the bulletin boards as part of the program of educational activities for Mammoth, and guests inquiring at information desks are notified regarding it. All guests travel in their own automobiles with the naturalist leading the caravan in a government car. The party as it lines up prior to departure is given a series of instructions by the naturalist concerning the manner in which the trip is to be made and the things he would like them to do in order to help with traffic control. A ranger-naturalist drives the leading car, and at no time should he exceed a speed of 15 miles per hour. The party leaves punctually at 6:30 P.M. and goes over the old road to Gardiner, Montana. Along this road they seldom fail to see antelope or deer. A stop is made at what is called the beaver dams. Here the entire party leaves its automobiles and hikes up the small creek on which the dams occur. As soon as the group is assembled some instructions are given which will make for a quiet, well-behaved approach and thus insure a good result for all. After proceeding a hundred yards or so, the naturalist gives the story of the beaver as it is shown by their dams, cuttings, and other evidences. It is possible that the beaver will be seen at several different ponds and those people accompanying the naturalist are generally able to see the animals actually at work.

The party returns from the beaver area to their automobiles and continues on its way to the junction of the old road with the present highway. En route they pass a wapiti trap in which live wapiti are captured during the winter months for shipment. If time permits, the naturalist may stop at this point and explain the use of the trap and the purpose of shipping live animals for the restocking of new areas; he may give some details regarding the wapiti herd in Yellowstone and of the management program as it is now conducted.

Interesting information concerning the range, animal habits, etc., is given to the party as the opportunity and materials at hand dictate. The party then returns to Mammoth by the present highway in time for the evening campfire program, having completed a ten-mile circular tour in the field in one and one-half hours.

This briefly outlines the activities on such a trip. Undoubtedly the methods used in each park will differ, but all, probably, aim at a similar goal.

We need to know more about the value and success of game stalks. For this reason I am including here a proposed daily report form which, if properly maintained during the season, and then analyzed, would be of material aid in planning a future game stalk program for a given park.

DAILY GAME STALK REPORT

Date	Cars	People	Game Seen on Trip							Type of Day	Remarks
			Wapiti	Deer	Bear	Moose	Antelope	Beaver	Misc. Coyote		
7-6	31	92	1	0	4	2	5	3	2	Cool	Audience very attentive, group a little larger, alight traffic problem.
8-5	20	60	0	2	1	1	4	5	0	Cloudy	

Through a careful study of the information secured from these reports for the season, the relative value of given routes followed on the game stalk could be determined. A better idea of the maximum number that can be properly cared for might be revealed, some indication gotten as to just what type of game proves most popular and the general reaction of the public to the adventure it had experienced might thereby be gained.

Almost all nature walks conducted in national parks are, in a sense, game stalks. On these nature trails, as we conduct the parties in search of everything interesting along the trail, we find ourselves stalking small mammals, birds, reptiles, and insects.

In stalking big game several means of transportation may be used by those going on the game stalk. The means used is largely governed by the type of party at hand, the area it is desirable to visit, and the season of the year. Some areas are so situated that a variety of habitats can be visited in a short distance, and, as a result, walking parties guided by a naturalist can, within a short while, examine localities in which they might find a variety of interesting animals. The most popular mode of transportation has proven to be the automobile. With this mode of conveyance it is possible to travel long distances in a short period of time. If the caravan is conducted at the time of day when these animals are out in the open, pronounced success is generally experienced by the naturalist who is guiding the party. On such trips, however, it is a fact that the naturalist does not have the opportunity to come in as intimate contact with his group as he does when conducting a walking party. He often is confronted with complex traffic problems, and if the car caravan is too large he is required to spend too much time in parking automobiles and consequently cannot properly give attention to the game stalk itself. However, he does have the advantage of showing to a larger group of people some of the representative species of animals found in a park area. Care has to be taken not to advertise such a trip too much. The crowd may be so large that it cannot be cared for properly.

Successful game stalks could be made with horseback parties by conducting all-day trips into areas where people could see the wild animals. However, this type of activity would require much more time than the other types of game stalk trips and, in turn, would not provide to a large enough group of the guests the opportunity of stalking game. During the winter months in some parks where the game is concentrated in localized areas by the deep snows, a type of game stalk where the stalkers would be travelling on skis might prove to be very successful. Such a game stalk was tried on two occasions in Yellowstone Park and in both instances was enthusiastically received by the parties going on the trips. A variety of big game animals was observed in their natural habitats. The possibility of showing the guests the hardships of life which confront big game animals during the snowbound winter months was well worth the efforts put forth in conducting the trips. Other pronounced values derived from these winter trips are the first-hand impressions received by the stalkers of the numbers of animals present in a concentrated winter range area, and the forage problem which confronts the animals and those endeavoring to manage the number of these animals that the available range will be adequate.

Game stalking in our national parks, if popularized, could well prove to be one of the best agencies that we can use to teach true conservation. On these game stalk trips those people in attendance come in close contact with the animals and their environment, and it is possible for the naturalists to show them the direct relationship and interdependence between the animals seen and other animals, as well as the relationships existing between the flora of the area and the animals seen. These game stalks give us our best opportunity to show ecological relationships in helping to reveal to the public the habits of many species of animals we also serve to create a greater interest in the preservation and the conservation of animal life.

MR. ROTHROCK: I hope that the committee dealing with the interpretive program on winter sports will remember Dave's suggestion in considering the case of game stalks.

MR. PRESNALL: This is rather incidental to the topic but it just occurred to me, Dave, have you any information yet to show whether the relaxation of dog regulations has any bearing on your caravans or educational work on such caravans?

MR. CONDON; We have kept no regular forms but I am sure in general we have had few dogs around.

MR. MACDOUGALL: I was in Yellowstone when these game stalks were first started and know they were successful from the start. Personally, I wish they would be called "animal stalks" instead of "game stalks" for the reason that the animals they are seeing are not game animals. So many people think wildlife means game animals.

MR. CONDON: I want to apologize to the group. One thing I had intended to do was to suggest a better title having found that neither game stalks nor animals as such have enough romantic appeal to most people. I think we can get a better title than we now have and believe Dr. MacDougall is certainly justified in suggesting a new name.

MR. STUPKA: How about wildlife stalks?

MR. GREGG: In Rocky Mountain we call them beaver watch parties and people seem to respond very well. We also have spotlight caravans.

MR. ROTHROCK: If there are no more remarks we will continue this topic of special naturalist programs tomorrow. I hope for a big discussion on those topics under item 5 on your committee list. I will now declare the meeting adjourned. (5:30 P.M.)

Thursday Morning,
November 14, 1940.

The meeting was called to order at 9:00 a.m. by Dr. C. Max Bauer.

DR. BAUER: Under the heading of Special Naturalist Programs the next subject is Water Cruises. This paper will be presented by Naturalist Maurice Sullivan.

Water Cruises

Maurice Sullivan,
Junior Park Naturalist,
Acadia National Park.

ABSTRACT

Acadia offered five different types of water cruises in August 1940: The 3½-hour Naturalist's Sea Cruise in Frenchmans Bay; the 3-hour Historical Cruise to the Isleford Museum of History; the Schoodic Sail which includes a hike up Schoodic Head and a lobster feast; the All-Day Sailboat Voyage which mixes recreation and interpretation; and the Circumnavigation Cruise which is a boat trip around Mount Desert Island. The cruises are popular because people of all ages and physical conditions can enjoy them, and the cost is very low, the highest rate being $1.25 for the Schoodic Sail. The majority of the people who go on these trips are not from the campground but come from the cottages and hotels and thus make their first contact with the National Park Service.

For ages the only approach to Mount Desert Island was by water. Generations of Red Men paddled their birch bark canoes in and out of the coves and along the rocky shores of Mount Desert. The first white man who left a record of his visit was Champlain, who came in an open boat in one day's sail from Saint Croix River. The early invaders, the early settlers, the early visitors all came by water. Up until 1914,

when automobiles were first admitted to Mount Desert Island, visitors coming from Boston, New York, Philadelphia, and other cities, either came all the way by water or came to Mount Desert Ferry by train and thence to Bar Harbor or other Island towns by boat. The history of the region, the settlement of the entire coast, the fishing, the trading, the whole life of the region was once governed by the ebb and flow of the tides, by the wind and the wave. Boats are to Acadia what horses are to Grand Canyon--a mode of travel which fires the imagination; and while the body is being carried forward, the thoughts run backward to distant times and places, a very pleasing process for many people. Boat rides differ from saddle trips. The individual is usually able to take another boat ride the following day.

Inasmuch as Acadia is the only seashore National Park in the United States exclusive of the Territories, we try to make the most of our individuality and opportunities. In our Naturalist Program we offer six boat trips. There is a boat trip every day except Thursday and most of the Sundays. The Friday trip is identical with the Tuesday trip. Consequently, of the six trips, five are different. All but one stress natural history. Let us examine each trip individually.

On Monday afternoon we have the Historical Cruise to the Sawtelle Museum of History located on Little Cranberry Island, about two and one-half miles from Seal Harbor. In this case, the Museum is of primary interest and the boat merely a delightful means to an end. Nearly everyone likes a boat ride and the view of the mountains is fine. Views of the summer estates of John D. Rockefeller, Edsel Ford, ex-President Angell of Yale, Dr. Ernest Dane, and many other beautiful homes are of special interest. Large yachts lying at anchor or cruising by are new and different to many of the visitors. Herring Gulls in various plumages, Black Guillemots, and other more or less common birds are seen. At Islesford, where we land, there are fishing boats, lobster traps, fish houses and all that goes to make a fishing village.

On Tuesday mornings and Friday afternoons we have the Naturalist's Sea Cruise, which leaves Bar Harbor for a three and one-half hour trip south from Bar Harbor past some of the most beautiful estates in the country, belonging to people who are prominent in business and in society. Along the shore the waves have exposed the rocks, showing the old metamorphic Frenchman Bay Series laid down in layers, showing the igneous rock in contact and in mixture with the metamorphic rock. Porpoises roll to port and all rush to see these unusual mammals related to whales and blowing as do whales. All along the rocky cliffs runs a brownish-gray deposit of barnacles, extending up to the mean high tide level and able to withstand extremes of heat and cold, total submergence or emergence for nineteen-twentieths of each day. Schooner Head, Anemone Cave, Great Head have been famous for generations as points of interest and are seen in the order mentioned. Ahead spreads the open Atlantic. Our course lies northeastward past Egg Rock Lighthouse and Ironbound Island.

Captain Pinkham blows the lighthouse horn in answer to our salute. His is a life of isolation and service, his only method of reaching Bar Harbor in winter is by rowing a tossing boat over three miles of open water.

As we approach Ironbound Island the Black Guillemots laborously rise ahead of the boat, trailing their crimson legs in the water or dive beneath the surface to emerge some distance away. Herring Gulls are everywhere, Terns are occasional as are Loons and Cormorants, depending upon the season. Fish Hawks sit on the edges of their nests in the spruces and on the cliffs or fly overhead whistling and performing in fine style. The natural joint planes in the igneous rock of Ironbound and the contacts of igneous with metamorphic rocks are very well exhibited on the vertical cliffs a short distance from the boat which safely cruises in close where the water is deep.

White, black, red, yellow, and divers combinations of colored buoys mark the location of a lobster trap resting on the ocean floor. Ahead lies a small motorboat. The fisherman grabs a buoy with a hook on the end of a pole. He pulls up a rope with a weighted lobster trap on the end. He throws away the crabs, sea urchins, star fish, and snails, retaining any lobsters that are within the legal limits of size. Usually there are no lobsters.

We pass around Ironbound through the Halibut Hole, the deepest part of Frenchman's Bay. The view of the mountains is fine. Champlain, Picket, Flying Squadron, and Cadillac stand out prominently. Cadillac is the highest along the Atlantic coast of the United States.

Long Porcupine Island shelters a huge nesting colony of Great Blue Herons, the young of which sit in the tops of the trees or along the shore. Pulp wood cutters are ruining the colony now--depriving us of our birds so that we can have Adventure Magazine and funny papers.

The whitish ash beds on Burnt Porcupine Island show up ahead. The Naturalist searches the trees for the Bald Eagles which nest on the Island. Suddenly from the starboard there is a great commotion as someone yells out "What's that big bird?" Some get good views, but others only see the white tail as our national emblem flies away to another perch to await his chance to rob some unsuspecting Osprey of the fish which it has captured.

The Narmada is anchored and a line run ashore to keep the stern from swinging. Passengers are rowed ashore, and if the water is high the group hikes up to the Eagle's nest and on to the cliffs overlooking Bar Harbor and lower Frenchman's Bay. If the tide is out we explore the excellent tide pools on this unhabited island. The boys search at the water's edge for crabs and starfish. Certain pools always yield sponges, sea anemones, sea urchins, tiny crustaceans, mussels, snails of several kinds, algae,

including the edible dulse and Irish moss. Barnacles, mussels, and sea weeds compete with each other for points of attachment to the solid rock. Sea urchins and starfish are turned upside down in a pool. They slowly turn over as the hollow thread-like feet wave out for attachment. The method by which starfish feed, wrapping the stomach around its food, instead of ingesting the food into the stomach, is unique and interesting.

Glacial polish, striae, grooves, chatter marks, erratics, criss-crossed veins, chill phases are well illustrated in rocks exposed along the shore. But alas, it is time to start back to Bar Harbor. All want to wait until last.

On the way in we pass yachts, fishing boats, sailboats, and, of course, the ubiquitous gulls.

The Schoodic Sail is an all-day trip on the Narmada, which follows along the shore of Mount Desert as on the Naturalist's Cruise and then straight across the Bay to Schoodic Peninsula, part of Acadia National Park lying on the mainland. The party is divided into two groups, those who want to climb Schoodic Head and hike to Mosquito Harbor, and those who do not want to climb Schoodic Head. The hikers are rowed ashore and lead by the Schoodic Ranger up the trail. The other group stays on board the Narmada and rides to Mosquito Harbor, where they are either rowed ashore or landed on the dock at the lobster pound. The hikers desiring a lobster give their order before leaving the boat, and half an hour before they are expected to return the blackish-green lobsters are dropped kicking into boiling water to emerge in half an hour crimson red and delicious.

By three o'clock the boat is loaded for the return by a different route past Stave and Heron Islands, favorite Gull regions. The deck hands bring up the box of "chum"--chopped fish heads, cleanings, etc., to feed the gulls, which swarm in by dozens. Out come the cameras, clicking and clicking, until one wishes he had his money invested in Eastman Kodak, if he had any money to invest.

The trip in is similar to that of the Naturalist's Cruise with about the same variety of birds, but different islands.

The All-Day Sailboat Voyage on Saturdays is the most outstanding we offer. Reservations are made in advance, because there are not enough sailboats available to take all who want to go. Those signing up late are taken in motor boats. All are instructed to bring lunches, drinks, bathing suits, and one more sweater than they think they will need.

A drive of eleven miles brings the group to Clifton Dock in Northeast Harbor at nine o'clock. Boats are loaded--15 or 20 in each sloop--and away we go, keeping reasonably close together as a party. Those

who have been on sailboats know what a thrill it is to glide along before the wind, close to rippling blue water, with wind and an occasional dash of spray in one's face. As soon as the harbor's past and estates are of no more interest, we introduce ourselves and tell a story or in some measure contribute to the success of the part. Songs usually follow. Occasionally we have an accordion player along and then we are most fortunate. The usual birds are seen--Herring Gulls, Black Guillemots, Crows, Fish Hawks, Sandpipers, and, of course, porpoises and jellyfish. All too soon we have reached Little Duck Island, inhabited by hundreds of nesting gulls whose cries guide the mariners in fog, and whose white forms are visible for a great distance in fair weather. We sail on to Great Duck Island, landing in time for a swim and then lunch. After lunch we walk across the Island, an Audubon Bird Sanctuary. Under stones and stumps, or trees, or in the open are burrows in the peat. A sniff at the entrance will usually suffice to tell whether the pungent-smelling Leach's Petrel is at home or not. If he is and the burrow is not too crooked or deep, one can usually withdraw the smoky-colored individual from his subterranean retreat. The adult always seem bewildered. If you set it down, it will flutter some and move about, but does not fly away. If you place it at the entrance to its burrow, it will dive back into its dimly-lighted chamber. Early in the season, a single white egg can occasionally be found. Late in the season a dusky animated powder puff occupies the burrow.

Nests of gulls with eggs, with pipped eggs, with downy young--all stages are found. The old birds fly away, protesting vigorously, but never attacking. Soon after hatching the young leave the nest and must be sought under boulders, trees, etc., or in the water.

The lighthouse next engages our attention. One of the keepers kindly conducts us through the tower, explains how the lamp is lighted, and how it rotates and flashes, how the fog horn machinery operates, and answers many questions--personal and impersonal.

About two-thirty we start back. Singing and story-telling or just resting are in order according to the whims of the group. By this time noses and foreheads or legs and arms are turning pink, foretelling sunburns and peeled noses as souvenirs of a memorable trip.

The fifth type of water cruise is an occasional circumnavigation cruise, usually held on Sunday, so that local residents and those who work during the week can have an opportunity to join the trip. This trip is by motorboat and must be planned so that the tide is right for going under the bridge and through the Narrows separating Mount Desert Island from the mainland. This is a fifty-mile trip, and requires a full day, except for the hour spent resting and eating on some island. Birds are of special interest, and the changing views are fascinating, but there is little opportunity for studying geology. This is principally a recreational trip.

For all water cruises private boats are chartered. The man in charge of the boat collects all fares, no funds being handled by Park Service employees. In August of this year we conducted 14 boat trips with 848 present, an average of 60 people per trip. Four all-day sailboat cruises averages 78½ people per trip with a maximum of 121 on one trip. Our hikes averaged only 35 per trip during the same period, and our auto caravans averaged 77. Thus it is seen that the water cruises are more popular than any other guided trips.

Not only are the water cruises popular, but they afford an excellent opportunity for the visitor to imbibe the inspiration of the mountains, of the ocean, and of the forested shores. We can take him back in time millions of years to the period when sediments were being deposited in the area where the mountains now stand. We can show him sediments being deposited. We can show him the sediments metamorphosed, and the resistant granite which came in beneath the sediments.

The glacial erratics, the plucked cliffs, glacial striae, chatter marks make the glacier real and moving, though it was twenty thousand years ago.

Water cruises appeal to all ages, including some who can scarcely walk. The visitor who wants to see it all in a day can profitably spend a half day on a water cruise. Residents entertain their guests by taking them on a boat trip. Hotels and cottages outside the Park send guests on the water cruises.

Other parks such as Grand Teton, Crater Lake, and Boulder Dam Recreational Area conduct boat trips and representatives from these areas can no doubt contribute to this paper. Other areas with boating facilities might well attempt water cruises.

MR. DOERR: Mr. Chairman, I would like to ask one question regarding the use of private boats. I judge that you have a careful inspection of boats and that all boats are satisfactory from the standpoint of safety. I raise the question because we had some experiences at Crater Lake where we were using the operators' boats. When an inspection was made the requirements were met.

MR. SULLIVAN: Our motor boat has a big lifeboat and it is inspected and licensed for a certain capacity (86 people). The sail boats are inspected and there must be a life preserver for every person. The charge for most of the cruises is $1.00 per person. The all-day Schoodic Sail trip is $1.25. All collections are handled by the operator.

MR. DOERR: Do your boatmen cooperate with you in the trips that you plan?

MR. SULLIVAN: These are not trips that they plan -- they accompany trips that we plan.

DR. BAUER: We will have time for further discussion later when the special programs are finished. The next paper is on the "Benefits of a Coordinated System of Naturalist Programs" by Natt Dodge.

Benefits From A Coordinated System of Naturalist Programs.

Natt N. Dodge,
Assistant Park Naturalist,
Southwestern National Monuments.

ABSTRACT

Benefits accrue primarily to visitors; secondarily, to the Service. The activities of contact stations in parks, Service units in a geographical section of the country and regional units throughout the Service must be coordinated so as to avoid repetition of programs, conflicting views, and administrative disunion. The visitor will then find similar techniques but diversified offerings. For the Service, such coordination will develop clear thinking and teamwork among naturalists and help to maintain high standards when men are transferred. Coordination is based on visitor habit within a park, travel flow, close organization of the naturalists, and intelligent direction of interpretive work, generally. Undertaking of any major project of coordinating interpretive programs presupposes strengthening the Washington, Regional, and Park interpretive staffs with sufficient appropriations to render such strengthened staffs functional.

All of us, I feel sure, on numerous occasions have been embarrassed through some incident resulting from a lack of coordination in naturalist programs. I well remember the disappointment on the faces of a group of visitors who came to a campfire talk on the North Rim when they learned that "Snakes" was to be the subject. As they turned dejectedly toward their house-trailer one remarked, "We enjoyed Mr. Grater's snake talk so much last evening on the South Rim, but we expected some other subject over here tonight."

Any project for coordinating naturalist programs is certain to be more or less complex. It begins with an integration of interpretive devices at any major point of visitor concentration so that each device is devoted to that phase of the park story which it is best fitted to depict. If there must be repetition, it may be handled as repetition for emphasis. Also at any center there must be coordination of content. By this I mean that we should carefully marshal our facts, discarding the extraneous and stressing the important so that they not only interpret the major features found in the immediate vicinity, but clearly bring out great major principles of nature.

The second step in coordinating naturalist programs is between stations within one park. Again all devices enter into the picture, but in such a manner that the visitor who has been to one or more of the other interpretive stations will neither be bored by repetition nor bewildered by having been subjected to a series of unrelated explanations. An observation station established at Bright Angel Point or Cape Royal on the North Rim, primarily to serve the large number of visitors to Grand Canyon who do not visit the South Rim, should be complete within itself, and yet the interpretive techniques employed should be so different from those at Yavapai Point that persons who have just come from the South Rim will find it of absorbing interest even though it tells exactly the same story as the Yavapai Point station. On the other hand, the campfire program series might well be paralleled at both centers thus avoiding the possibility of visitors finding the same program at one campfire as they heard the previous evening at another.

But the greatest step in coordinating naturalist programs must be taken between (or among) different units of the system. For instance, a family had been greatly interested in the story of geology as presented by Eddie's boys here, and when they arrived at Wupatki National Monument, 80 miles southeast, their first question was, "What chapters do you have here?" It took Davey Jones some little time to figure out that they meant chapters of geological history. Eddie's experience has shown that the word "chapter" is a great aid in making Grand Canyon geology understandable to visitors. Adoption of the term throughout the entire Service would be a minor item of coordination, yet should prove helpful in popularizing physical geology as well as being a step toward standardizing terminology.

It seems to me that one of the great weaknesses of the naturalist service is its lack of standardization. Each park naturalist is more or less a lone idealist striving to develop his program to the best of his ability, as based upon: (1) his training; (2) his experience; and (3) the helps or handicaps imposed by the views of his superintendent. The marvel to me is that the interpretive programs at our parks and monuments are so uniformly high class and are being developed along such parallel lines in spite of the lack of coordination.

But I am getting ahead of my story, so let's go back and get a broad view of the subject before I lead you into a maze of details.

As I see it, there are two beneficiaries to a coordinated system of naturalist programs: first, our visitors; and second, the Service. We are carrying on an immense program of adult education in which we must make understandable the fundamental principles involved in the sciences to people of all ages and stages of education. To succeed, we must continually strive for simplicity--so important in making our stories understandable to an ever widening circle of visitors. Coordinated simplicity becomes increasingly important as more and more people get out of the one-park class into the three, four, and five-parks-per-summer group. Let me illustrate. Mr. Brown and family visit Mesa Verde and take the usual guided trip through the ruins. During the trip, stress may have been laid on the ceremonial aspect of kivas. The Browns become much interested and, on their way south, stop off at Aztec Ruins National Monument. In the course of their trip through the ruins they are taken into the Great Kiva where they may hear a discussion of the men's clubroom phase of kiva lore. Not only would the Browns be confused by what seem to them conflicting stories, but they may lose faith in the men in uniform. It is up to us to get together in our archeological areas and agree upon a standard kiva story, but present it in an individual manner at each area. The same is true of all areas where there is a subjective overlap. This is only one of a thousand items which might be coordinated to promote simplicity and accuracy. Fortunately the Service does have one very valuable asset in the uniform courtesy and sincerity of the men on the interpretive staffs, this serving as a common denominator which makes our visitors feel so much at home that when they are bewildered or fail to understand, most of them feel free to ask for clarifying explanations.

If our visitors would benefit through simplicity engendered by coordination, how would the Service gain? As I previously indicated, each park naturalist now works out his own individual problems as best he can. He also develops his own filing system, library cataloguing, record keeping, and other details. Suppose one of you were to be transferred to another area. Would you find there filing and record-keeping systems such as you use in your own office? Probably not, and it would take considerable time to break you in on the unfamiliar methods. Coordination of our "overhead" programs would do much to promote efficiency.

It is unjust to throw the spotlight upon our weaknesses without recognition of the several ways in which coordination has already been effected. The Museum Division, through both Washington and Berkeley, has made a great deal of progress toward standardizing several of our interpretive devices. This has been accomplished through regulations governing the preparation of exhibit plans, and through providing us with equipment and services ranging from making up projection slides, mounting and labeling herbarium specimens, to constructing study-skin cases. Regional technicians are beginning to coordinate naturalist activities in their

respective areas. Regional Archeologist Reed has issued, recently, sets of 5" x 8" file cards dealing with basic facts of Southwestern archeology, and he plans, after thoroughly covering the general archeology, to clarify specific features of individual areas. With these fact cards in his files, each interpreter should be familiar with the information being presented to visitors in all other areas and, if asked specifically regarding some feature in another park or monument, can give a reply coinciding with the statements made by the men there. Through his mimeographed Monthly Report of the Branch of Research and Interpretation, our Chief Naturalist is giving us statements of what is being done at the different areas, and in the Idea Exchange we get pointers on how it is being done. All of these methods of coordination are working and are proving how beneficial coordination of naturalist activities might be if aggressively promoted and expanded.

It is useless to stand here and point out benefits of coordination without advancing suggestions as to how further coordination might be attained. In many phases of our work we have gone too far to effect standardization comfortably or efficiently. If we use the Dewey Decimal system in our library and you use the Library of Congress methods, neither of us will graciously take on the immense task of changing over. But there are innumerable ways in which we can coordinate. For instance, when I was at Mt. Rainier seven years ago Mr. Brockman was working up an encyclopedia on the Park. Even at that time he had certain portions of this herculean task sufficiently advanced to make them available to the contact personnel of the utility operator. Mr. Brockman fully realized the importance of having naturalists and operator's guides both telling the same accurate story. Just as Regional Archeologist Reed is providing all interpreters in Region III with fact-file cards, so Park Naturalist Brockman can issue the information that he has compiled to all the rest of us. Then interpreters at Glacier, Crater Lake, Yosemite, Lassen, Rocky Mountain and other parks that have glacialogy and vulcanology will know exactly what information the Mt. Rainier staff is dispensing and they can readily fit explanations of similar phenomena in their own areas into the picture, thus broadening and deepening the visitors' understanding of geological principles rather than simply giving out the story of another park. We should use the striking examples furnished us by nature and man to illustrate part of a broad truth rather than assuming that our visitors understand the general principles involved. Through coordination we can all teach fundamental principles, using as proofs the examples found in our areas. By urging our visitors to go to other parks and monuments, they will find different and just as striking examples throwing further light on these same principles. Coordination would enable us to realize to a greater extent how each of the other naturalists is using the specific features of his area to bring out the great general truths and laws which we are all attempting to interpret. Of course, we must interpret the features per se, but we can interpret them much more clearly and accomplish much deeper and more lasting results by coordinating these interpretations in such a manner that, in the comprehension of our visitors, they dovetail to build the grand story of Nature and of Man.

For several years I have been trying to put over a project of exchanging personnel for the duration of a travel season. We find many of our custodians woefully ignorant about Grand Cayon, for instance, and, from impressions left with us by some visitors, many of Grand Canyon's seasonal personnel have never heard of some of our monuments, much less being able to tell prospective visitors what they may expect to find there. Exchange of a man or two each season would not only greatly increase our respect for one another's areas and interpretive methods, but would bring about an exchange of ideas certain to benefit the programs of both.

Following are a few additional suggestions for coordination: exchange of mailing lists of natural history associations; production and exchange of interpretive manuals; time and approval for official trips of personnel to nearby Service areas; continued improvement of the "Idea Exchange" in the monthly report of the Branch of Research and Interpretation; exchange of visual aids; attending more conferences such as this one; exchange of plans prepared for museum exhibits, and photos and projection slides of completed displays; establishment of a regional naturalist for each region; and a much larger central staff at Washington with sufficient personnel to enable at least one man to be in the field all the time as a liaison officer. Of course, I realize just as fully as you do that many years may pass before these suggestions are realized.

The interpretive problems at Southwestern National Monuments Headquarters make us realize, probably more than any of you park men, the great importance of this matter of coordination. We have 27 different areas to interpret, 21 of them with active interpretational programs. We must supervise the interpretive activities of 24 permanent and 13 seasonal men whose functions are primarily protective and administrative. Two of our areas are fundamentally biological in interest, four are historical, seven geological, and 14 are archeological. Since national monuments preserve historical or scientific features, their appeal is definitely intellectual which renders the interpretive approach less difficult than in the scenic parks where the appeal is primarily emotional. Thus many of our visitors come specifically to obtain accurate and detailed information, and in seeking to broaden it they often visit several subjectively-related monuments. Thus we are continually being impressed with the necessity for coordinating our programs. In fact, unless we do improve our coordination, we foresee increasingly severe criticism particularly from student parties and amateur archeologists.

As a step toward laying a base for an intelligently planned project of coordination in the monuments, Dale King carried out an experiment in the summer of 1938 to determine visitor travel patterns in the Southwest; to find out if definite visitor travel routes existed and, if so, what Service areas each encompassed. Although the results of this study were based on a relatively small volume of data, they were extremely interesting and served to widen our horizons by showing that Petrified Forest,

Mesa Verde, Carlsbad, Grand Cayon, Zion, Bryce and Boulder Dam must be included if coordination was to be at all complete. This gave us just a hint of some of the complications involved in developing a sound plan for coordinating interpretive programs among our own areas. Such, of course, would be enormously magnified in complexity in any coordination project involving the entire Service.

Before concluding may I advance one additional thought? Service areas are often called "great outdoor universities." As interpreters, we are the professors and our job is adult education. Yet how many of us know anything about the fundamental priciples of adult education? If we were to embark upon a definite project of program coordination, I feel that the first item on the list of nearly all of us should be a uniform and approved course of study in adult psychology and education.

To summarize: Any major attempt to coordinate interpretive programs should not be launched until it is thoroughly and carefully worked out. The more complete the coordination desired, the more thorough should be the plan. Such an effort would require careful supervision from a strong central staff working along broad lines. However, much may be accomplished in a small way among ourselves through exchange of personnel and information, and by visits and conferences which promote understanding of one another's problems. By careful avoidance of regimentation and stereotyping, such coordination should result in standardization and simplification. Results should benefit the visitor by giving him a clearer picture of the forces of Nature and of Man, promoting understanding, and lessening confusion. They should benefit the Service by broadening the viewpoint of personnel and increasing their efficiency. They should benefit our Nation by arousing in many of our citizens a heretofore dormant appreciation of and pride in our wealth of scenic and historic national resources, and stimulate their active participation in our efforts toward conservation of these resources.

Lastly, I believe that coordination would make each of us feel that he is a vital part of a strong organization rather than an individual idealist fighting a single-handed battle witnessed by disinterested, non-understanding, and frequently critical personnel of other departments. If coordination would bring us the deserved respect and cooperation of other branches, it would go a long way toward gaining for us a sympathetic administrative viewpoint which we must have for the physical development of our programs.

MR. YEAGER: I wish to compliment Mr. Dodge on that paper. I think it is one of the best things we have heard along that line. We have all had the experience of people coming into an area and saying to someone after an explanation, "I heard a talk at the other area and the naturalist did not tell me that." More often than not what is brought out is

the fact that the visitor did not correctly interpret what the naturalist said. I think the answer is as pointed out -- we must have regionalization of the naturalist program. I think the master plan interpretive sheets aregoing to be a big help along that line. A regional naturalist is a necessity in coordinating interpretive planning.

MR. BURNS: It may be of interest to you to know that very much the same problem exists in the East in connection with our historical areas and we are working toward that same idea of coordinating the whole story so that a proper chapter is told in each place and unnecessary duplication and omissions are avoided. We have as you all know most of the important areas related to the Civil War and the American Revolution, where we are working very definitely toward telling the story of American history and giving the proper emphasis in the proper places. The same story can be told in many different ways, each interesting and in no way in conflict with the other and I believe that efforts toward that end here where you have strong archeological and biological areas would apply.

There is one point that I would like to stress. I feel that good coordination could come about through establishment of regional naturalist positions. It goes without saying that everyone takes a proper pride in his area and sometimes in doing so there may be a tendency to use a little of the Chamber of Commerce attitude that there is no other place like it. That is not objectionable as long as the information is entirely truthful but it is undesirable when an implication is made which belittles another area.

MR. WALKER: I found that at Zion, Bryce, and Cedar Breaks there was duplication of the same type of lectures for several succeeding days. In attempting to avoid that situation I tried to work out a system of having a weekly program so that the public would have to stay more than one week to hear the same lecture twice. The programs were all the same for a single night.

MR. OBERHANSLEY: I think that the idea Mr. Dodge developed on the exchange of staff members is a good one. I also believe that it could be applied to the ranger naturalists and to a certain extent to our permanent naturalists. When we make a transfer we certainly get a lot of new viewpoints that are quite stimulating and it broadens our outlook. I am also of the opinion that the same thing would hold true with both the temporary and even with permanent naturalists where the transfer is not to involved. I would like to know what the rest of the group feels about that.

DR. BAUER: The exchange of temporary personnel I think should be a fairly easy matter. It is not quite so easy for the permanent personnel to move each year. You wear out your furniture and your disposition.

MR. ROTHROCK: I would like for the sake of the record to have Mr. Dodge and others tell us some of the difficulties encountered in the exchange of personnel.

MR. DOERR: I am very much interested in this matter of personnel. The question came to me years ago as the only permanent naturalist in a particular park. The question was asked many times what do you do in the winter time? Do you move out of the park? You have all had the question put to you. And in our own minds it is the easiest question to answer. I think it is sometimes hard to get the answer across to the public. The point is that I objected at the time of my service in Crater Lake to these moves for winter months because they took the naturalist away from the park and things would pile up and where would you be in the springtime? That is from the standpoint of the park. I am also interested in the comment made regarding the hardship it works on the naturalist with a family in terms of schooling and as you have mentioned in terms of moving. I like the idea of the exchange of temporary men. There are some parks where temporary men have been employed between four and seven seasons and I personally would like to see some means worked out whereby a good temporary naturalist could be moved into another park for a season.

MR. DODGE: We were asked to give a specific illustration. I think I can give one. At the Southwestern Monuments we had been trying to make an exchange between one of our monuments and the Grand Canyon. We circularized the field and two men responded. One of our men had a wife and child and he wanted to get into a house where he would not be entirely camping out, while the man who could come from Grand Canyon was a younger felllw without a family, so that his quarters would not be safisfactory for our man. It finally worked down to the point where the only possible exchange was between David Jones of Wupatki National Monument and Carleton Wilder of Grand Canyon and both knew just as much about these other areas as could be desired so the exchange was not worthwhile from the major viewpoints.

MR. YEAGER: It seems to me that a lot of you fellows have men who are working on research projects in the park. I know at Crater Lake you have a botanist. When he finishes that job why not transfer him to another area and let him start on that area? The same could be worked in any field of science.

MR. SCHELLBACH: I might say that research at Grand Canyon is going on 365 days a year, public contact is going on 365 days a year. When we get our temporaries in the spring they are busy and we do not have any available time for them to carry on research except on a very minor and volunteer basis.

MR. GRATER: I just wanted to say something but Louis beat me to it. During the summer season at zion and Bryce where there is a restricted

staff anyway we have to cut all corners to make ends meet and the men have not time to work on research without taking their own time to do so.

MR. JONES: I want to bring out the objection which arises from the fact that a considerable number of the Southwestern National Monuments are operated by a single custodian or a very small staff. Transfer in such areas would not be feasible unless the custodian were replaced by a man from Southwestern National Monuments headquarters, who in turn would be replaced by a man from the park to which the custodian was temporarily assigned.

MR. SULLIVAN: I would like to hear from some of those naturalists who can find so much time for their temporary men to do research.

MR. BROCKMAN: We do not have much time for this phase of our activity. Some of our naturalists contributed to such activities on their day off which is customarily granted about once every week. One of our men did some research in connection with a teaching position at college. The same is true of a half a dozen others who did research on their own time. They were sufficiently interested in the park to cooperate in this manner and we try to give them as much time as possible. They returned that by working on their own time.

MR. SULLIVAN: When do they do their collecting?

MR. BROCKMAN: It worked out pretty well at Mt. Rainier because we have done a part of our collecting when on hikes.

DR. BAUER: Our experience has been that during our summer season our Ranger-Naturalists are extremely busy. We have not encouraged them to do research work. We have found, however, that there are always a few who can do research and it takes men with a little experience to do research under such conditions. Of course, wherever they show the ability and an inclination we aid them all we can.

MR. MCKEE: In that connection I would like to offer another point for discussion. Research by ranger-naturalists is frequently of benefit to the Park. Results of tangible value may or may not be obtained, depending on the quality of the research. A very definite intangible value, however, is derived by the men who carry on research on their days off and in their spare time for they get a certain amount of inspiration, some new ideas and much relief from the monotony of lecturing, and, to me, these benefits fully justify having the temporary men conduct research on limited projects having general interest. Some of the results may ultimately be of considerable value. But regardless of this, the fact that the man has gotten away from his public and has perhaps gotten new inspiration and new thoughts that he can use in his lectures will usually make his talks more valuable and more impressive. He can

give results of what he has learned first-hand and not just from the study of a book. When a temporary man reports to me, one of the first things I do is to talk over with him what research he might do during the summer. I can't give him extra time for it, but I do give him a day off each week insofar as possible. Occasionally this can not be arranged, but in general even if I have to reduce my program a little, I will see that he gets a day off. Otherwise he will develop a stereotype presentation and eventually will become rundown. And this research is one of the best ways to avoid that.

MR. SULLIVAN: Do I understand that your temporary men work only eight hours a day?

DR. BAUER: We have scheduled time for our men just as if they were teaching school but there is extra time that they have to put in.

MR. ROTHROCK: I think we should return to the subject of exchange of temporary personnel. I wonder if we are not recommending one thing and doing another in this regard. Following the lead of one of your recent reports, I inserted an item in a branch report showing the advantages of keeping temporary personnel from year to year. Now you recommend exchange. However, you recommend it in principal but shrink from it in practice because of the danger of weakening your staffs. There should be some middle ground when the temporary loss in trained personnel would be offset by the broader experiences gained.

DR. BAUER: I think there should be some time limit, say 4 or 5 years and then a man advised to make an exchange if he can.

MR. GREGG: I was wondering about the suggestion of exchange. Of course, the place where a man is going has something to do with it. I am wondering if there could not be an exchange on the basis of a man's work. For instance, there may be some museum job in our place that Bert Long could do. Why could not Boulder Dam pay him to come up and work for us. I am strong and able-bodied and could go down and help guard the Dam. It seems to me that this might be a successful method of exchange.

MR. MCKEE: I think there is one other think that should be put on the records concerning the transfer of temporary men. In general, I am not opposed, but rather in favor of such transfers. However, one objection which is obvious at Grand Canyon is that our temporary naturalists usually arrive at a date much later than that when they are first needed so we can spare only a very short time for training. As a result, if we have experienced men who know the ropes coming back it is a very definite advantage to the park naturalist in getting ready during the rush season. I want to put this point on record although I am not against the idea as a whole.

MR. BEATTY: The fact is that the park does not always benefit from such an exchange. Your temporary naturalist is the one who benefits most. He might decide not to come back to work in the parks and then you have lost all the benefits involved. I think the only good solution to work out is the exchange of some permanent personnel and that would be possible only in the parks where you have two or three on the permanent staff.

MR. SCHELLBACH: It depends to some extent on the man himself. He may want to work at the Grand Canyon. He may not want to go down to Casa Grande where it gets 119° in the summer time, so what can you do about it?

DR. BAUER: The next paper will be "An Analysis of Naturalist Programs", by Mr. John E. Doerr.

An Analysis of Naturalist Programs

John E. Doerr,
Assistant Superintendent,
Rocky Mountain National Park.

ABSTRACT

The analysis embraces only one phase of naturalist work in the National Park System, namely the personal contact work including guided trips, lectures, and attended stations. The personal contact activities of 1940 are reviewed from the standpoints of general characteristics, effective use of man-power, and the progress made during the twenty-one years that interpretive work has been available in areas of the National Park System. The analysis is concluded with a brief statement relative to the effectiveness of activities as the result of our years of experience, deeper appreciation of park values, the realization of the place and value of the naturalist as an interpreter, and the increasing appreciation of the value of the National Park System in the social, cultural, and economic progress of the Nation.

At the conclusion of this conference each of us will be better qualified to analyze the naturalist programs than we are on the opening day of the session. Certainly, I should like the opportunity--in view of the discussions that will be presented in the next few days--to make revisions of and additions to this analysis.

In presenting this topic, I shall not attempt to include all phases of naturalist activities, but rather, shall endeavor to give an analysis of only those activities which represent personal naturalist service or personal contact with the public. In thus limiting this analysis, you will understand that I appreciate that a large and important part of your time is devoted to essential activities which are not of a personal contact nature. Some of these activities will be subjects of papers presented at this conference. I should like to see a list of the various non-personal contact activities of the park naturalists.

Perhaps I should give further definition to the limits of this analysis by stating that it is based on the programs of activities which you have submitted, plus information obtained from the monthly reports of the Branch of Research and Interpretation, annual reports of the Director, special reports of committees, Circulars of General Information, leaflets, and information obtained in converstion with some of you before the conference convened. If any part of this analysis seems to point toward weaknesses in naturalist programs, please understand that they are not weaknesses in your program but rather were weaknesses in the programs for which I have been responsible. Information on naturalist programs was received from twenty-six areas:

20 National Parks (less two - Hot Springs and Mt. Rainier)
4 National Monuments
1 National Recreational Area
1 National Capital Parks

The twenty-six areas are, no doubt, representative of the National Park System although they do not include all the areas in which interpretive work is carried on.

A chart showing the types of interpretational activities in each area of the system, regardless of whether the activities are conducted by naturalists or administrators, rangers and other employees of the Service, would be interesting and of considerable value. While in a general way such an all-inclusive chart would, perhaps, be little different than the chart of activities which I have prepared for the twenty-six areas that submitted information, the all-inclusive chart would give emphasis to the fact that, in addition to naturalists, or employees of similar classification, administrative officers, rangers, and other employees are devoting time and effort to activities of an interpretational character. Incidentally, such a chart would indicate that interpretational work in the National Park System is far more extensive than is indicated by data available to me at the time this paper was prepared.

Naturalist Staff

In a recent report (August) of the Branch of Research and Interpretation you can find a map showing the geographic distribution of the naturalist staff. That map indicates thirty-seven naturalists, three museum curators, two wildlife technicians, and one geologist--forty-three positions in twenty-six areas, plus one hundred and four summer ranger-naturalists in twenty-one areas of the System. If you will look around, you will see in the flesh the key men of the naturalist staff. If some years of training in public contact activities make me any sort of a judge of people, I can say sincerely that I see a group composed of intellectuals--but not intellectual snobs. Personal contact with you has brought the conclusion that you are idealists in your endeavors, and yet you appreciate the necessity of being practical. From the standpoint of loyalty, energy, productivity and adaptability, as well as from other standpoints, I am confident this group would be a credit to any organization. The demands that have been made on the naturalist staff during the past ten years have weeded out the misfits, the unadaptables, the snobs. That is no reflection on the men who have by their own choice gone into other work. There is one criticism that has been leveled at this group. When I came into the Service and came in contact with men who had been in the Service longer than I, they conveyed to me the impression that the naturalist was the "last thing over the fence". I wondered why. Certainly, it is not true of this group, but in the past perhaps there has been a failure in seeing the need for cooperation with other activities in the park. I mention these things by way of emphasizing the fact that we have apparently learned that superior academic training and mere technical knowledge are not sufficient qualifications for positions on the naturalist staff. Have you ever by chance heard W. J. Mead of M.I.T. talk on the nontechnical aspects of your profession. Take note of that talk. He rates technical knowledge as about 35 per cent and so I emphasize that statement that superior academic training and mere technical knowledge are not sufficient qualifications for positions on the naturalist staff.

Personal Contact Activities of the Naturalist Programs

The programs conducted by the naturalists consist of three types of personal contact activities, namely, guided trips, lectures, and service at attended stations.

In August, 1940, over 836 thousand people visited fifty-seven attended stations. These figures might be considered in relation to the attendance of 508,413 at 3,783 lectures during August, and the attendance of 130,816 on 3,387 guided trips. Essentially that same proportion of attendance in the three types of personal service contacts is maintained throughout the year, except during three months of the winter season when attendance at lectures jumps ahead of attended stations attendance.

Guided trips include hikes, auto caravans, single-feature trips, water cruises, and camera trips, ranking in frequency in the order mentioned. In classifying activities as hikes, I have included those conducted hikes or walks which from descriptive material apparently embrace several fields of natural history as compared with the single-feature trip on which emphasis is given primarily to a single feature. Auto caravans are likewise listed as being more than single-feature trip.

The single-feature trips include such activities as bird, flower, and tree walks; game stalks, beaver watches, moonlight hikes, and picnics. The water cruises include trips by sailboat as well as by motor launch. (Maurice Sullivan did not tell us how the schedule works out in Acadia if the sailboat is becalmed).

Of the twenty-six areas on which information was received, twenty-three offer conducted hikes varying in length of time from seven-day hikes to trips of less than two hours duration. Even if information were available as to the average length of hikes in terms of time and distance, I rather question that it would be a significant figure. Hikes of approximately one-half day duration are the ones most commonly recommended.

Sixteen of the areas schedule auto caravans, the distance covered on regularly-scheduled trips varying from a maximum of slightly more than fifty miles (52 - Grand Canyon) to a minimum of eight miles round trip.

Single-feature trips are scheduled, according to programs submitted, in six areas. The paper on "Game Stalks" presented by Dave Condon has already covered certain aspects of this type of activity. Water cruises discussed by Maurice Sullivan, are scheduled in five areas. Three areas (Yosemite, Rocky Mountain, and Crater Lake) scheduled guided camera trips.

An activity which has been presented in varying detail in several areas and which has impressed me as being of outstanding value, certainly an activity that has brought much favorable response from the public and a resultant fine spirit of cooperation between the protective staff and the naturalist staff, and which gives direct emphasis to conservation, is the conducted trip that gives the public an opportunity to become familiar with aspects of the work of the ranger staff. One example of such a trip is the caravan and hike to the summit of the Watchman Fire Lookout and Observation Station on the rim of Crater Lake. I shall not take time to describe the trip other than to say that outstanding among the values of that event is the opportunity visitors have to become familiar with forest protection from the standpoint of the lookout ranger. Those of you who are familiar with The Watchman realize that the lookout can demonstrate the use of forest protection equipment, including means of communication, and display his home under ideal conditions. While on The Watchman, visitors on conducted trips receive over short wave radio an invitation from the

fire dispatcher to visit his office where they can become familiar with the use made of the information supplied by the lookout. Never shall I forget the enthusiasm of a group of visitors returning from The Watchman, having been there during an electrical storm when they experienced not only one of nature's spectacular moods but witnessed the lookout operating, not in a demonstration, but under fire. I know those visitors gained a deep appreciation of the National Park staff, and that they learned well a lesson in conservation.

Yesterday when you were presenting your paper on Junior activities there was one thing that impressed me in visiting the lookout station. Among the people was a boy eight or nine years old who was very proud of the certificate that he had received from some particular area in which he haddone a certain thing. I mention this as a suggestion of things that will appeal to young people. If you could provide some simple certificate such as this chap was displaying that could be presented in connection with the work that you have done, it might be an added incentive.

In planning new guided trips, I suggest we consider the possibility of including aspects of the work of other departments of the park; and too, in planning fire-lookout stations, accessibility and related exhibits for the public should be considered, perhaps not in every station (in those areas having several lookouts) but at least in one, conditions being favorable.

In addition to guided trips as a major group heading of personal contact activities, there is the heading "Lectures." In reviewing the naturalist program material and the monthly reports of the Washington Office, I find that during the past year naturalist staff lectures have been recorded under the headings "Campfire," "Museum," "Lodge," or "Hotel," "Other-In-Park," and "Outside the Park"--the "Other In-Park" including talks at CCC camps, lookouts, and at special features; the "Outside" including radio along with a number of others.

Nineteen areas reported scheduled campfire lectures. Thirteen reported museum lectures, with possibly four others. Nine areas reported lectures given at lodges or hotels and the same number reported "Other In-Park" lectures. The naturalists in seven areas recorded talks outside the park. While those figures are probably not complete, they do give a picture of the extent of the lecture program.

Lectures vary in length from twenty minutes to over an hour. Illustrative materials used in lectures include slides (an increasing use of natural color), motion pictures, photographs, paintings, hand specimens, models, diagrams, charts, blackboard sketches, exhibits-in-place, and museum exhibits.

Naturalists are scheduled to give talks on a number of subjects, one area indicating that each member of the naturalist staff is prepared to give fifteen different talks. From the programs that include titles of lectures, I judge them to be appropriate for the area in which they are given. Topics are, for the most part, on features of the particular area. That is in keeping with the limitation of educational functions defined in 1929 by the Committee on Study of Educational Problems, in their statement:

> "It was the opinion of the committee that educational activities of the National Park Service should be limited to those aspects of guidance of visitors concerning particularly the use of the park areas involved. There was agreement that the educational work should not extend to the teaching of subjects not illustrated in exceptional manner by National Parks."

I am of the opinion that we have remained, and rightly so, within that functional limitation, not only in the lecture program, but also in other activities.

Lecture schedules indicate that the naturalists are using not only their own staff in lectures, but also administrative officers, rangers, wildlife technicians, and non-Service guest speakers, the latter being used particularly in those areas having a small naturalist staff and many repeat visitors. I see no indication that guest-speaker programs with speakers talking on subjects foreign to the particular area of the National Park System, are being overdone. I don't know how you feel about it but I have been of the opinion that people come into Grand Canyon to hear about Grand Canyon and they come into Mount Rainier to hear about Mount Rainier.

The naturalists in several areas are endeavoring to get lecture audiences to feel that they are a part of the program. This has been accomplished by encouraging visitors to participate in the entertainment phase of programs. Some audiences have been given the opportunity to select the subject to be presented in the lecture, and of course the question-and-answer program is used. No doubt all of us have learned from question-and-answer programs over a period of time what features arouse the interest of our visitors, and on what subjects they want information.

I had a very interesting experience in that respect. I don't know that there is anyone here that heard the program but in asking a group of 100 or 150 people to select a subject that they wanted presented, within certain limitations it resulted time and again in proving that people wanted information.

Where situations are favorable and there is adequate personnel, evening programs particularly are being handled by a member of the staff who is not necessarily a naturalist. He serves as the "master of ceremonies," makes the introductory remarks, announces the program of activities for the following day, leads group singing, introduces entertainers and the speaker of the evening, and handles the projection of illustrative materials during the lecture.

I feel that the main speaker of the evening is an important man and deserves a proper introduction. I noticed the other night (and this is not a criticism) that you took your place before the audience and I thought it would have been a fine thing if these people had known who you were.

The third type of personal service contact is being made at attended stations such as museums, information offices, lookouts, or view-points, and other places where visitors concentrate. Data available does not indicate in detail how the naturalist functions at attended stations. From experience and personal contact with you in regard to attended stations, I conclude that the attendant (a naturalist, other park employee, or, in some cases, a CCC enrollee) responds to questions asked, handles the sale of publications, conducts museum trips, and gives informal talks--the latter being stimulated by the visitors' desire for information, and being in addition to regularly-scheduled talks.

I have heard unfavorable criticism from visitors of the service rendered at attended stations, and I know that members of the staff have had some doubts as to whether some attended station services are worthwhile. My experience has been that the criticisms can be avoided and the doubts dispelled if the attendant acquires the attitude of being a host to the visitors at his station. The part of the host does not necessitate forcing oneself on the visitor, but it does embrace a friendly attitude and being alert for the opportunity to be of service. A cold indifferent physical expression enveloping the attendant fosters the idea retained by some visitors, that we are mere guards watching over the exhibits. I can't over-emphasize that. I have seen naturalists stand with an indifferent expression on their faces and by just a change of expression, receive a different response from visitors. We are not guards, we are interpreters. In visiting a number of art galleries in the east I was amused by the attitude of not a few guards whom I thought should have been replaced with interpreters. Many times during nearly five years I served in Hawaii, I thanked you for the good work you had done in mainland parks, and the favorable impressions you had made on park visitors. What a pleasure it was to have individuals tell me, by the tone of their greeting, that they had been in other parks and that they recognized the uniform as a symbol and source of friendly service for them. By way of emphasizing the importance of the service at attended stations, let me say that when the visitor approaches, let's snap shut the book, elevate the arches of our feet, and be alert for the opportunity to be of service.

In reviewing the naturalists' personal contact activities, it was suggested that some mention be made of the fact that recently in some areas programs were analyzed to determine whether the activities and facilities are designed to make the best use of the naturalist's time in rendering the maximum of service to the public. The studies can be outlined here in the presentation of several questions:

1. Does the area lend itself to personal service at central points of orientation, with self-guiding facilities in the field?

2. What per cent of time on a half-day or full-day guided trip is devoted to: (a) actual interpretation, (b) in getting from one objective to another, (c) in retracing route on the return from an objective?

3. Do conducted trips reach a climax at some point between start and finish?

4. Can a short trip or series of short trips conducted by a naturalist serve as an introduction to a long trip, or to trips which visitors may take at their leisure without the personal services of a naturalist?

5. Except for special parties and certain situations, are scheduled trips conducted if fewer than some fixed minimum number of people report for the trip?

The naturalist personal contact activities of 1940 are the result of twenty years of growth. Do you realize that we have experienced twenty-one years of activity? A look back over the years from 1940 to 1930 and beyond to the beginning in 1920 is quite a stimulating picture of growth, progress, and refinement of personal contact activities.

This year we recognize three major types of personal contact activities. That those three activities were functioning in 1920, and are continuing in 1940, is no indication that we have not progressed, but rather it is a tribute to the men and women who, in establishing the program, recognized the fundamental functions of educational activities under the National Park Service.

The report of educational contacts for 1920 shows the amazing attendance figure of 27,132 people at lectures and on field trips, not including the estimated 50 to 75 people who called at the attended station during office hours between 10:30 and 11:30 A.M.

With those figures of contacts in mind, it should be remembered that in 1920 there were nineteen national parks and twenty-four national monuments under the administration of the National Park Service. Those areas

were visited by 1,058,455 people. The National Park Service offered the visitors only four man-months of what was regularly scheduled and called, "Free Nature Guide Service." Two men, Dr. H. C. Bryant and Dr. Loye Holmes Miller, handled the interpretive activities in Yosemite. They had the part-time volunteer help of Mrs. Enid Michael. Their services included guiding field trips, giving formal and campfire lectures, and answering questions of visitors at an office, with time devoted to activities which were of a non-contact type.

In some respects, I wish the Director's annual reports of recent years were as voluminous as the Director's report for 1920. If you will refer to page 254 of the Report of the Director of the National Park Service to the Secretary of the Interior for the year 1920, you will find the following, a part of "The First Annual Report of the Yosemite Free Nature Guide Service," by Dr. H. C. Bryant:

> "The following schedule of field trips was arranged:
>
> "Adults, Camp Curry, Monday and Wednesday, 8 a.m.; Sentinel Hotel, Tuesday, 8 a.m.; Yosemite Lodge, Wednesdays and Fridays, 8 a.m.; special excursions for children, Camp Curry, Mondays and Thursdays, 3:30 p.m.; Yosemite Lodge, Wednesdays and Fridays, 4 p.m. Saturdays and Sundays were utilized for longer excursions....."

On page 255 of that report you will find listed the subjects of lectures and campfire talks given in Yosemite during the summer of 1920.

On page 55 of the Director's report for 1920 is another paragraph which gives a picture of our beginning. Under the heading, "Nature Guide Service Will Grow," is the following:

> "Camp-fire educational talks were given also at different times in Rocky Mountain, Mesa Verde, Yellowstone, Sequoia, and Glacier Parks by various nature guides and volunteer lecturers. A valuable feature of the information service in Yellowstone was the giving of free half-hour talks by Park Ranger Isabel Basset Wasson three times daily. The title of the lecture usually given was, 'How the Yellowstone Came To Be.' These talks were highly appreciated by the tourists."

What was the picture in 1930? In that year the National Park Service administered twenty-three national parks and thirty-two national monuments. In those fifty-five areas there was an attendance of 3,246,656. Twelve of the areas reported educational contacts totalling 1,684,449. Those contacts were made on 4,734 field trips, at 5,677 lectures, plus museum attendance of 690,338 people. The contacts were made by a staff of 68 naturalists, permanent and temporary.

By 1930 the personal contact activities had expanded to include, in addition to guided nature hikes, the auto caravan, this feature having been initiated in Yosemite and Yellowstone in 1929, and in Grand Canyon and Sequoia in 1930.

The first record of interpretational activity by radio appears in the report for Sequoia for 1930.

Dr. C. P. Russell's article, "The History and Status of Interpretive Work in National Parks," appearing in the "Monthly Report of the Branch of Research and Interpretation" for August, 1939, shows clearly that by 1930 the value of attended stations had been recognized, a number of such stations having been established during the period 1920 to 1930.

In 1940 the National Park Service administered 161 areas which were visited by 16,741,855 people. During the travel year 1940, almost eight million people visited the twenty-six areas represented in this analysis. Interpretive contact data for the year are not available as yet; however, the August report gives a good indication of the number of personal service contacts. Eliminating the 349,978 contacts estimated under the heading, "Unattended Stations," almost 1½ million (1,475,608) personal service contacts were made in naturalist programs in August, 1940. During August alone almost as many personal service contacts were made in naturalist programs as were made in the twelve areas reporting for the entire year of 1930. If we include the unattended stations attendance, August, 1940, surpassed the entire year of 1930 in number of contacts.

I attempted to produce data from which conclusions might be drawn relative to the average number of people in attendance at the different activities. So many factors enter into the picture, factors which should be understood in drawing any conclusions from statistical data, that I shall refrain from making the conclusions. With your records available over a period of years, you can make conclusions for your particular area.

In the areas included in the August, 1940, report of the Branch of Research and Interpretation, the average number of persons on guided trips was 38.6; at lectures, 134.3; while the attendance at fifty-seven attended stations averaged 14,673.

Onehundred and eighty-seven people did interpretive work during August, averaging almost 8,000 contacts (7,933) per man.

Reviewing the naturalist programs for 1940, there is no question but that they fulfilled the requirements of established objectives in a manner superior to that of any previous year. From the programs it may be concluded that the staff is appreciating more fully the true values of each

particular area and as personnel and facilities have increased, activities have expanded to give emphasis to those values. The staff, with increasing years of experience, has definitely attained the status of the interpreter, occupying in public contact activities that important position between the specialized technical investigator and the layman in which the interpreter translates for the layman the discoveries of the investigator. The programs have emphasized not only the broad aspects of the relationship of various sciences, but also have given emphasis to aesthetic features and the relationship of scenic and scientific values. The staff has been alert for the opportunities to be of greater service in deepening the appreciation of natural values and advancing principles of conservation. The increasing number of individuals making use of the services of the naturalist staff and interpretational facilities is evidence that the services and facilities are worthwhile. The rapidly increasing use of naturalist services by schools and scientific research institutions is also evidence of the great value and high quality of the service.

The naturalist staff has gained recognition in the fields of recreation and education. There are bigger opportunities ahead in those fields. I am confident that the naturalist program can take an increasingly more important part in the National Park Service's opportunities in the social, cultural, and economic progress of the United States of America.

DR. BAUER: The paper by Mr. Doerr is now before you for discussion.

MR. LIX: In these subjects of guided trips I don't find anything mentioned on the subject of astronomy. It might be profitable to have them in some of the parks even though it is sometimes said that the subject of star-gazing does not need any guidance.

DR. BAUER: How many use astronomy to a greater or lesser extent in your guided trips? There seem to be five or six.

MR. SULLIVAN: We have an overnight trip every week. We go to Cadillac Mountain and stay there all night and get up at sunrise. A study of the constellations is part of our activity on this trip.

MR. FAGERLUND: We schedule moonlight hikes across the Crater. The only thing is that you can't count on the weather.

MR. GREGG: As just an afterthought some of your campfire programs can include astronomy. Those naturalists who are equipped to do it can announce that those who would like a little star-gazing can stay after the campfire. This is done regularly in Rocky Mountain.

DR. SWARTZLOW: We have at Lassen a gentleman from the University of California who is a very good amateur astronomer. After our campfire program during the number of weeks that he is there, when conditions are favorable, which is most of the time, he takes the campfire group after the lecture and spends an hour or two, or whatever time is necessary, to explain the astronomical phenomena.

MR. STAGNER: I think one of the many significant points raised by Mr. Doerr has to do with the most efficient use of our personnel in conducting trips or other interpretational activities. The question has come to me several times in connection with some of the papers that were read yesterday relating to junior programs, hikes and other special activities. I wondered if that question had been considered and answered in planning these programs. I have not had occasion to answer that question myself except in one respect. But I would like to ask a question possibly to make a point and to get information for myself. Are we justified in taking a ranger-naturalist with a group of possibly 30 or 40 visitors out for a period of 8 hours, or, perhaps two days, or 7 days, when at the same time there may be a thousand or two thousand or five thousand people deprived of the personal services of the naturalist who is absent on such trips. Do we get more benefits; are the benefits to the visitor more lasting through the agency of an 8-hour hike or 6-hour hike with twenty or thirty people or from 15 minutes to a half hour spent with a number of groups totaling a thousand or perhaps two thousand people.

There is one other point also that I would like to bring up. I wonder if there is any possibility of recording our visitor minutes or visitor hours in public contact work. I think that some such method would enable us to analyze our results a little better. As it is, a conducted tour lasting a day is regarded as one event for a total of 40 people attending and a 15-minute lecture is also recorded as one event by the naturalist with say 20 or 30 people - both equal in the record, but they are not all of equal value. I think that if some such method as this can be worked out, it would be advantageous in the analysis of our programs.

MR. EPPLEY: I would like to ask whether any of the naturalist provide periods for consultation services. I believe the naturalist program can be effectively extended by offering program suggestions to various groups such as youth agencies, schools and civic clubs. In this way the general public will develop an appreciation of nature and our national park areas.

MR. GREGG: I think our responsibility would be to circulate a bibliography of material to our staffs, someone assembling it, presumably in the Washington Office, then circulating it so that we could pass it on to those making inquiry.

MR. EPPLEY: I believe that personal interview is more valuable than literature. A lot of these people have access to all that literature but they don't read it. If the naturalists could talk to them directly it would be better. I feel that literature is a substitute for personal contact.

DR. SWARTZLOW: To answer Mr. Eppley's question: In Lassen we are rather strategically located with reference to large numbers of clubs and organizations of all kinds. Only during the last three years has the use of the park grown with respect to these groups coming in and utilizing facilities of the park to further their own program, and practically everyone of the leaders of these groups has contacted me personally to help them arrange their own schedule and to get any help that it is possible to give so that they may carry on the idea of nature study in their own local community and for their own local needs. This has not crystallized into any definite program along this line. It has been largely extemporaneous on my part. But the request for this type of service has grown to such an extent that some thoroughly organized procedure should be adopted. I know that I am going to have to spend some time this winter, if and when the time is found, to organize some sort of procedure and assemble material that can be handed out to augment personal contact.

DR. BAUER: This subject might just as well have come up under the junior activities. However, it runs through the entire program of naturalists' activities. I mean by that that those who contact schools and boy scout groups and civic groups have the problem of how to give them some inspiration and how to help them carry on.

MR. MCKEE: I have a suggestion that I believe is worthy of consideration--it is that each park prepare and circulate travelling exhibits such as those at present being sent out by the Museum of Northern Arizona. These are known as treasure chests and are made up of sets of material on various subjects such as Indian arts and crafts, geology, and other aspects of natural history. These travelling exhibits are booked ahead and go from school to school and from club to club throughout the year. I don't know why the National Park Service could not get up sets of material representing different stories and have one illustrating each feature in the major parks. These exhibits could be circulated around according to regular bookings.

MRS. DEAN: We get inquiries from State Federations for material which they can use in their study groups. I think such a treasure chest would be welcomed by these groups.

MR. ROTHROCK: We did start a program such as Mr. McKee suggested when we had the personnel to carry it on. As it is, we are now constantly sending out Kodaslides to various interested parties. It is a program to be developed when we get the wherewithal to take care of it.

MR. BROCKMAN: We have been sending out slides. These are arranged in triplicate sets, on biology, history, etc. When a request comes in from a school we send them a regular form which they return to us upon receipt of the material, and then when they get through using them (perhaps in about two weeks) they are returned. This service is designed primarily for schools in small towns.

MR. BURNS: There are a large number of museums in the United States, such as the American Museum of Natural History, Field Museum, Milwaukee, Rochester and Buffalo museums, etc., which send out exhibits to schools and institutions. These are termed "suitcase exhibits" -- little boxes about the size of a suitcase containing specimens and models of natural history, ethnological, historical and other subjects. Motion pictures, lantern slides as well as large pictures mounted on cards are also circulated. This extension work has been carried on by museums for many years and developed to a very high degree of efficiency. I don't want to elaborate on it now but I would like to predict that one day the National Park Service, through its central offices in Washington, in the regions, and possibly the individual parks will engage extensively in a similar sort of work. I think it will be a logical development of our interpretive work. Of course, it will require extra personnel and funds and we can not consider it until they become available. In this connection it may be of interest to note that one museum engaged in such extension work has a Department of Education and the staff of that one museum department is larger than the regular interpretive staff of the National Park Service.

MR. EPPLEY: Would it not be advisable to enclose with these exhibits suggestions on preparing exhibits and conducting nature programs, by the organization receiving the exhibit. If this could be done each exhibit sent to the field might start a definite nature program.

DR. BAUER: The Park Service as I see it at the present time is not in a position to do very much along that line. We are limited very much as to our resources in printing and getting out such material.

MR. MCKEE: Right now we have requests for sets of rocks representative of different formations in Grand Canyon. Because of many such requests, we have built a regular bin in which to keep samples of these materials and then when requests come in it takes very little labor on our part to put them up and send them out. A certain amount of similar work could be done in each individual park. Such donations to educational institutions would, I believe, be well received and worth the effort. We might keep sets of specimens made up and ready to send out.

DR. BAUER: The next paper on "The Place of Museums and Exhibits in The Interpretive Program," will be given by Mr. Matthew E. Beatty.

The Place of Museums and Exhibits in The Interpretive Program.

Matthew E. Beatty,
Assistant Park Naturalist,
Yosemite National Park.

ABSTRACT

The purpose of museums should be to aid visitors in a better understanding of what is seen and how to see it. Exhibits should stimulate visitors' interest in guided trips. Museums, exhibits, and lectures furnish approximately two-thirds of the contacts; guided trips, one-tenth. A new basis for recording contacts should be established in order to evaluate properly the importance of worthwhile naturalist programs in the event of reduction in personnel and funds in time of a national emergency.

At the first conference of park naturalists held in Berkeley during November 1929, a paper on this subject was presented by Dorr Yeager. He treated this subject from two points of view: that of the ranger naturalist and that of the park visitor. His conclusions, in part, were as follows:

1. "The museum serves as headquarters around which a ranger-naturalist operates. It is his workshop, office, clubroom and library.

2. "The museum aids the tourist either before or after having made contact with guides or lectures in rounding out his knowledge of a subject, or assimilating sufficient interest to desire to round it out by attending lectures and going afield."

Certainly, after eleven years have passed, no one can question the correctness of these statements. It is quite evident that museums and exhibits in the national parks have an even greater importance today than was ever dreamed of eleven years ago. I can best illustrate with the Yosemite set-up as an example:

The present Yosemite Museum was opened to the public during the summer of 1926. The exhibits were designed to cover the geology, flora, fauna and human history of the area. Due to the museum's central location, it has logically served as the hub of our educational program. It furnishes headquarters for administration of naturalist activities, a

laboratory for scientific work and preparation of specimens by our staff, and houses the Yosemite School of Field Natural History, as well as a nature library and general county library for the park.

In recent years the scope and use of the museum has greatly increased. A native wildflower garden has been developed adjoining the building, incorporating an area for Indian demonstrations with a reconstructed typical Indian village. A former court of the museum building has been reconstructed to care for the Junior Nature School. During the summer months, as many as ten lectures a day are given in the museum building and adjoining grounds. A large number of the guided trips leave from the museum. These include auto caravans, flower walks, history walks, evening primrose walks and junior nature school trips.

In addition, a museum and exhibit development have been undertaken in outlying regions to meet the increased use of such areas resulting from newly-completed modern roads. In 1930, the Mariposa Grove Branch Museum was completed to tell the story of the Big Trees. In 1938, the wayside exhibits were prepared for Sentinel Dome and Glacier Point telling the story of granite and the glacial geology. In 1939, exhibits were installed in the contact station at Tuolumne Meadows, telling the story of that area. Many way-side exhibits are either in preparation or are being planned for other key spots or newly-opened areas of the park.

The Yosemite situation is similar in most respects to the development going on in other parks. There can be no doubt as to the vital necessity of museum and exhibits as the mainstay of our interpretive program. The major question then is its relationship to guided trips afield.

Much stress has always been given to the idea that the park itself is a great museum. We have counseled visitors "to read the trailside as an open book," or quoted Agassiz: "Study nature, not books." Most people, however, lack the ability to do this on their own. Through the eyes of a competent naturalist guide, a new world is often opened to them. Seemingly, then, the ideal toward which we are all striving is the development in the park visitor of an appreciation and ability to understand nature as exemplified in the area, and the desire for greater conservation of our natural heritage. Certainly, this goal can be achieved better through the combination of museums and exhibits, together with guided trips afield, than through guided trips alone. The only possible exception to this statement would be in areas where a very small percentage of visitors can be met and personally conducted to the principle points of interest. Obviously, this situation would be impossible in our larger areas.

If our museums and exhibits are to serve as keys to the park, their purpose should be to aid the visitor in a better understanding of what the area has to offer and how best to see it. The visitor is then in a position to explore the area on his own, or to accompany a naturalist guide in order to obtain further information. It is only natural that many people will desire to explore on their own, but should not our museum and exhibits

stimulate the visitors' interest to such an extent that they would greatly prefer to accompany the naturalist guide afield? An analysis of our contact statistics, however, shows this not to be the case.

Interpretive figures for the entire service for the fiscal year ending June 30, 1939, show a total of 5,593,419 contacts. This is divided as follows:

Attended and unattended exhibits	2,863,064 or 51.2%
Lectures	1,957,447 or 35%
Guided trips	772,908 or 13.8%
Total ----------	5,593,419 or 100%

The importance of museums and exhibits becomes quite apparent based on the above statistics, when it is realized that over half of our contacts are accounted for through this medium. In contrast, guided trips seem proportionately low.

By eliminating from the statistics those areas whose set-up requires that every visitor be personally guided, the proportions are still further changed. Deducting, then, guided trips and lectures for Carlsbad Caverns, Mammoth Cave, Wind Cave and the certain monuments featuring caves and ruins (but excluding the Southwestern Monuments) we can arrive at a figure which represents voluntary participation on the part of the visitor.

The revised statistics would then read as follows:

Attended and unattended exhibits	2,863,064 or 55.8%
Lectures	1,868,893 or 36.4%
Guided trips	402,828 or 7.8%
Total ----------	5,134,785 or 100%

It now appears a rather shocking fact that only 7.8 per cent of our total contacts are for guided trips in which the park visitor participates voluntarily. It might be argued that due to the variation in the type of areas administered by the National Park Service that these figures are not representative of the maximum development of interpretational work as exemplified in all of the larger parks. Let us consider Yellowstone, the largest of our parks, both in area and number of naturalist personnel. For the sake of simplicity, I will use percentages only for comparison. Complete statistics for reference use are appended to this report.

FISCAL YEAR ENDING JUNE 30, 1939

	NPS	YELLOWSTONE
Museum and Exhibits	55.8%	57.4%
Lectures	36.4%	36.8%
Guided trips	7.8%	5.8%
	100 %	100 %

It is thus seen that Yellowstone conforms well with the average for the entire service, except for a slight decrease in guided trips. In Yosemite, guided trips are still lower with only 3.7 per cent.

Apparently, Yosemite is well below the average of the Service in guided trips, and yet every effort has been made to make more and more trips available to the visitor. It is my belief that Yosemite offers a greater variety and a larger number of nature walks and hikes than any other area, yet the figures speak for themselves--only one twenty-fifth of out total contacts..

In order to complete our statistical picture, let us consider a month during the heaviest part of our travel year. The latest available report for the entire Service is for July 1940. Again eliminating Carlsbad Caverns, Mammoth Caves, Oregon, and Timpanagos Caves for the sake of uniformity with our previous statistics, we find:

NPS INTERPRETIVE CONTACTS, JULY 1940

Museums and Exhibits	64.8%
Lectures	29.3%
Guided trips	5.9%
	100 %

This would indicate an increase of museum facilities during the heavy travel season with no noticeable increase in guided trips.

Using Yellowstone as an example of an individual park, statistics reveal that for July 1940, attended and unattended exhibits provided 75.8 per cent of their total contacts. Lectures provided 19.4 per cent, and guided trips only 4.8 per cent of total contacts.

It is obvious that individual parks vary greatly from the general average for the entire service, but certainly the above example indicates the growing trend towards museum and wayside exhibits as our major contacts. In Yosemite during July 1940, lectures furnished as many contacts as museum visitors. A breakdown of lectures given in Yosemite during this month shows that 22 per cent of them were given in museums in connection with exhibits. These should rightly be included under that subject. Although data are not readily available for the entire Service, it is believed safe to estimate that approximately 20 per cent of all lectures in the parks and monuments are either given in museums or in connection with wayside exhibits. Supposing this is to be the case, it changes the percentage of total contacts for the Service roughly as follows:

Museums, exhibits and lectures therein	70%
Other lectures	24%
Guided trips	6%

Certainly, statistics alone justify the statement that the museum, with its exhibits and attendant lectures, is the most vital link in our interpretive program.

But there are still other conclusions to be drawn from these imposing figures. We have recently been requested to enlist public support for the educational effort in the parks to counter any attempt at curtailment of this work during times of national emergency. Fortunately, the response from park visitors in the form of testimonial letters has been most gratifying. While we are all unanimous in our views as to the importance of this work and the need for its continuance in times of national stress, a careful analysis of our contact statistics indicates that if drastic curtailments in allotments are forced upon us, a material saving could be made without greatly affecting our yearly contact totals. I refer now, particularly, to guided trips. Unfortunately, cold statistics do not indicate the great importance of this portion of our work in making real friends for the Service.

We are fully aware of the high value of guided trips. They offer an opportunity for close, personal relationship with the visitor, which develops the most loyal supporters of the naturalist program. An appreciation of nature is easier to arouse in the living laboratory of the out-of-doors than in the lecture hall. It is through this personal contact with nature that our most effective work is accomplished.

But to increase our guided trips to the point where they would be comparable to museum visitors or lectures in contact totals is obviously impossible. It would involve a tremendous increase in personnel. One short, well-attended lecture could easily out-total the contacts of several days' guided trips. Similarly, one day's museum visitors could easily equal the total of several weeks' guided trips.

It, therefore, seems advisable that we adopt a new type of statistics which will either replace or augment our present system of recording contacts. This new system should place proper evaluation on each type of contact. One possible method that comes to mind is the time basis. Let me illustrate: The average lecture takes a half hour, as compared with two hours for the average nature walk; therefore, the walk would have four times the value of the lecture in the final statistics. On this basis, undoubtedly, the highest value per visitor contact would be for a participant in the naturalist conducted seven-day hike, which is considered the high light of Yosemite educational programs. Each member of the party would then be listed for at least 56 naturalist hours. Some might question the high ratio for this individual visitor contact, but we in Yosemite know that such a high valuation is justified. During this week's association, the naturalist has a real opportunity to not only familiarize the hiker with the natural history of the area, but to develop an understanding and appreciation of the aims and policies of the entire Service. Believe me, no other naturalist activity provides more staunch friends for

the Service, nor more ardent supporters for conservation. Possibly, the time basis for computing contacts is not the answer, but the general idea is certainly worthy of further consideration.

According to our present system of recording contacts, there is another added importance that can be placed on museums and wayside exhibits at this time—they point the way to economy. It is my feeling that in this period of national emergency, and I think that you will all agree, drastic economies may have to be put in effect in all government non-defense agencies. The National Park Service has not, nor will it likely be designated as a national defense agency. We may as well face the fact that our own statistics point the way toward an appreciable saving.

Taking Yosemite as an example, at least two-thirds of the seasonal ranger naturalist's time is taken up with guided trips which furnish only one-sixteenth of our total contacts. This means that it would be possible, in the event of dire necessity, to eliminate two-thirds of our present temporary naturalist personnel, and still maintain around nearly 90 per cent of our present contacts. The savings thus effected would amount to a considerable portion of our total budget. Thus, through the use of a well-organized museum and wayside exhibits, we could still carry on an effective and worthwhile naturalist program.

SUMMARY AND CONCLUSIONS

1. Guided trips, though highly important in our interpretive program furnish only a maximum of 13.8 per cent of our total contacts. Eliminating the majority of those areas where every visitor must accompany a guide, this figure drops to 8 per cent, which represents those taking guided trips voluntarily. During the summer period when most of the parks augment their staff with temporary personnel, this figure drops to 6 per cent.

2. Visitors to museums and wayside exhibits account for 56 per cent of the total interpretive contacts of the service for a year. This figure is increased during the summer months to around 65 per cent, or two-thirds of all contacts. Considering lectures given in museums and wayside exhibits, the figure reaches to around 70 per cent.

3. Museums and exhibits rank first in importance in the interpretive program of the national parks based on statistics. Every effort should be made to design our museum exhibits so as to stimulate visitor interest in accompanying guided trips. Only in this way can we reach our goal of interpretation and appreciation of the out-of-doors.

4. Our statistical information should either be revised or augmented so as to evaluate the importance of the various naturalist activities in relation to each other. That is, a field trip should have more weight in the final statistics than a museum visit. Exhibits in place should have

higher rating than exhibits in museums, etc. This would require a careful study, but would result in a better understanding of the time, expense and value of all phases of naturalist endeavor.

5. It is through the museum and exhibit portion of our Service that we can continue to maintain an effective program with a minimum of salary overhead.

INTERPRETATIONAL CONTACTS FOR THE NATIONAL PARK SERVICE FOR THE FISCAL YEAR ENDING JUNE 30, 1939

Attended and unattended Exhibits ---	2,863,064	or 51.2%
Lectures ----------	1,957,447	or 35.0%
Guided trips ----------	772,908	or 13.8%
Total ----------	5,593,419	or 100%

BY ALTERING ABOVE FIGURES TO ELIMINATE AREAS WHERE GUIDED TRIPS ARE REQUIRED

	Guided Trips	Lectures
Carlsbad ----------	202,005	30,648
Wind Cave ----------	19,114	
Mammoth Cave ----------	71,232	
Miscl. monuments (excluding Southwestern)	77,729	57,906
Total Deductions	370,080	88,554

CORRECTED STATISTICS

Attended and unattended Exhibits ----------	2,863,064	less	0	= 2,863,064	or 55.8%
Lectures ----------	1,957,447	"	88,554	= 1,868,893	or 36.4%
Guided trips ----------	772,908	"	370,080	= 402,828	or 7.8%
Total --------	5,593,419	"	458,634	5,134,785	or 100%

INTERPRETATIONAL STATISTICS FOR THE NATIONAL PARK SERVICE FOR JULY 1940

Attended and unattended Exhibits ---	1,197,417	or 62%
Lectures ----------	553,923	or 28-1/2%
Guided trips ----------	183,860	or 9-1/2%
Total ----------	1,935,200	or 100%

Areas to be eliminated in revised statistics

	Guided Trips	Lectures	Exhibits
Carlsbad	43,166	9,014	-
Mammoth Cave	14,403	1,075	-
Oregon Caves	13,915	2,550	-
Timpanagos Cave	3,115	-	1,265
Total Deductions	74,599	12,639	1,265

CORRECTED STATISTICS

Attended and unattended Exhibits	1,197,417	less 1,265 =	1,196,152	or 64.8%
Lectures	553,923	less 12,639 =	541,284	or 29.3%
Guided trips	183,860	" 74,599 =	109,261	or 5.9%
Total	1,935,200	" 88,503	1,846,697	or 100%

INTERPRETATIONAL CONTACTS FOR YELLOWSTONE NATIONAL PARK

	Fiscal Year Ending June 30, 1939	July 1940
Attended and unattended Exhibits	- 915,265 or 57.4%	566,416 or 75.8%
Lectures	- 587,878 or 36.8%	145,364 or 19.4%
Guided trips	- 92,554 or 5.8%	35,790 or 4.8%
Totals	1,595,697 or 100%	747,570 or 100%

INTERPRETATIONAL CONTACTS FOR YOSEMITE NATIONAL PARK

	Fiscal year Ending June 30, 1939	July 1940
Attended and unattended Exhibits	- 358,453 or 40.6%	137,350 or 41.3%
Lectures	- 490,749 or 55.7%	183,896 or 55.4%
Guided trips	- 32,918 or 3.7%	11,057 or 3.3%
Totals	882,120 or 100%	332,303 or 100%

REVISED STATISTICS FOR YOSEMITE NATIONAL PARK (BASED ON LECTURES GIVEN IN MUSEUMS)

	Fiscal Year Ending June 30, 1939	July 1940
Museums and Museum Lectures -	481,455 or 54.6%	178,056 or 53.6%
Other Lectures ----------	367,747 or 41.7%	143,190 or 43.1%
Guided Trips ----------	32,918 or 3.7%	11,057 or 3.3%
Totals ----------	882,120 or 100%	332,303 or 100%

YOSEMITE RANGER NATURALIST ASSIGNMENTS SUMMER 1940

Yosemite Valley	Museum	Guided Trips
Auto caravan		1
Nature walks		1
All day hikes		1
Seven-day hike		1
Junior Nature School		1
Field School		1
Museum docentry	2	
Museum Wildflower Garden	1	
Mariposa Grove Museum	1	
Glacier Point		1
Tuolumne Meadows		1
Total	4	8

Total temporary naturalists 12
Permanent naturalists 3

Total Naturalists 15

Salaries of eight men @ $150 per mo. for 3-1/2 mos. --- $4,000
or 20% of total budget $19,450, which
represents salary saving only.

DR. BAUER: A very splendid paper on the analysis of statistics in the interpretive program. It occurs to me that there possibly might be something missing, and that is that the interpretive men of the naturalist staff perform a very important protective function also. That is especially true in Yellowstone Park where the naturalists are really about 2/3 of the protection force, and they attend to this duty on their guided trips, in the course of their incidental contacts, and by meeting people in the basins and talking to them there. Here is a function that we should not forget, and I think you will recall other areas where the naturalists are taking over at least part of the burden of the protective force. You might say that the rangers are making a direct approach of protection whereas the naturalists are making an appeal.

DR. RUSSELL: I would like to give the conferees as much opportunity to do the talking as possible but perhaps my word is justified here. You can't get away from the cold facts that Mr. Beatty has revealed. He did a swell job in putting his paper together and he arrived at some sensible conclusions. I want to say that if my office -- those working on the justifications, were to accept the idea that we are to undergo any curtailment it would be disastrous for my office and for your office. We are not thinking of curtailment and one of the purposes of getting together here was to expand the interpretive service rather than to meet any curtailment. Mind you, there is not one of us who would not go along on the defense program in 100 per cent manner and if we did not believe that our naturalist work contributes to preparedness of the National mind, perhaps we would entertain the idea of curtailment. It seems reasonable, however, to accept our program as a contribution to National Defense.

MR. BEATTY: I agree with you that we don't anticipate that there will be a curtailment, although a national emergency resulting from war may require it. I simply wanted to get before the group the possibility that some cold-blooded satistician might analyze our statistics as a major argument for curtailment and that he might be able to come to such a conclusion by way of our contact figures.

MR. LIX: It seems to me that in a comparison as to the values of these various types of contacts, the original cost of the museums should be included.

MR. STUPKA: I believe that Mr. Beatty's approach is much more practical than mine when I say that if there is to be any curtailment I would be in favor of cutting down on the museum program rather than cutting out field trips. I think we can render more worthwhile and lasting service in this way.

MR. BEATTY: It is your contacts that give you your money for operation.

DR. SWARTZLOW: I would like to put this thought on the record with reference to protection. When the field was circularized concerning possible curtailment of the budget, the Superintendent and the Chief Ranger met with me to discuss informally what might possibly be done. That memorandum was so much of a jolt that we thought action might be imminent. We came to the conclusion that if our temporary naturalist staff were to be curtailed to provide adequate protection for the park we could possibly eliminate only one position, but in doing so we would have to add that many more temporary rangers to give a minimum of protection to the park. We have a number of hot spring areas in Lassen similar to ones in Yellowstone and the hazard has been so great that it has been necessary for me to assign one man to that station so that he could give protection to the visitor and also provide interpretation. Our accident report to the Red Cross will bear out that his services are very vital. People will come in there and read the warning signs and then stick their fingers in or slip in and scald their legs. The fact remains that the temporary naturalist staff is a vital factor in the protection force, especially in the small parks where the ranger force is often undermanned.

MR. KING: This is a complicated subject. I think the paper that Beatty just read is diabolically clever. He talks about how an unsympathetic statistician could prove that we could cut down our staff by 2/3 and still get the same number of contacts. He also stated that contacts, as we figure them, do not mean very much. There is something wrong somewhere, although I don't protest our definition of the word "contact". I think the use of it is very unfortunate. Merely stating that so many people visited the parks and so many millions were contacted by the interpretive men does not mean anything. Many of these contacts were made by people sitting in a museum clicking a counter and perhaps doing no talking. Contacts in the Southwestern Monuments may take a full day. When you get up before one thousand campfire people for ten minutes, that is a thousand contacts. The sum total which we submit to the Director can't mean very much. We Southwestern men don't want to be painted with a tar brush of statistics -- so many minutes per party, so many minutes per trip, so many minutes in the museum, in the field, on the guided walk, etc. We do feel, however, that "contact" should be a more uniform term. "Contact", I don't like. "Attendance" would be more appropriate. If we can say there were 17 million persons in attendance I think it would have more meaning.

Another thing in which I an interested is how many minutes do my men have to spend in conversation with each visitor. If I can prove to the Bureau of the Budget that my man at Casa Grande has to spend 8½ hours actually talking with people I can prove to that hard-headed budgetary officer that I have to have another man to augment the staff. Obviously, this man has other things to do besides public contact. I am interested

particularly in two things. First, the attendance that I have already spoken about and, the other, the man-hours per month or per week of actual personal contact.

MR. YEAGER: I want to add to what Mr. King has said. I think that if our so-called contacts were analyzed correctly they would drop fifty per cent. What is a contact? One man may attend three lectures and go into two museums and that would be five contacts. In Yellowstone there are four or five museums. If he takes in all of the museums, that is five contacts. It looks good on paper but it is not accurate.

MR. ROTHROCK: I can appreciate the difficulty in the use of the word "contact". You should remember, however, that the form that we are now using is the outcome of recommendations by the naturalists themselves. Perhaps it is high time that we used a new form. Our present form does not include the time element and I think that King's recommendation should be followed to some extent. I don't agree with Mr. Yeager, however, in saying that these contacts in museums or the attendance in museums is not representative of a contact. A tremendous amount of time is spent in making these exhibits and sometimes much good is obtained in an examination of an exhibit. I think the time spent by individuals in museums or in exhibits should be recorded in the statistical table. A statistical table at best is an unyielding inadequate summary representing, largely by inference, a great amount of effort and service. Hence it is supplemented in the Branch report by explanatory material. You can take the statistical table separate from the rest of the report and the rest of the accomplishments of the organizations. Even so, however, it is difficult to represent the naturalists' activities adequately, but whatever change is made in the form it should include contacts and attendance. They represent the proportion of service that is being rendered. After all we are trying to show how much service is being given to the park visitors.

MR. WATSON: As far as I am concerned I feel that the part the museum plays in our work cannot be overestimated. It may be an impersonal contact but still if I write a label and write it carefully I am talking to every person who reads it. I am not sure who the people are and I lose that warm personal touch but when the exhibit is prepared I am thinking of the people who will read it. If I prepare it in an interesting way so the visitors follow from one exhibit to another, they will follow my thought and finish up with the story. If I had to talk with these people it would take more time than I can spend. If 10,000 people get through the museum I have reached them in an impersonal way. I have not been able to talk with them but out of it may have come a desire to get in touch with the men who can answer their questions.

MR. YEAGER: I am perfectly in favor of persons going into a museum. What I am objecting to is showing more contacts in certain parks than you have park attendance.

DR. BAUER: You are getting right to the point. Yellowstone's contacts amounted to over a million and a lot of them were not worthy of counting. We have to change our system of counting. Perhaps it would be better to say so many in museum attendance, so many personal contacts, etc.

DR. RUSSELL: In any case we have a fundamental question to which we should give consideration.

MR. PRESNALL: I would like to comment upon one suggestion that was made yesterday by Mr. Nusbaum when he requested some means of expressing the interpretive work in figures that would be convincing to the Bureau of the Budget and still adequately express the inspirational work we are doing today. I think that Mr. Beatty has approached that in his paper. We need not argue whether museum contacts are better than guided trips, but should devise a means of putting our program on the budget sheet in a form that will give the best presentation when it is brought up for consideration.

MR. BROCKMAN: I wish to raise the question concerning not counting a person say five times who patronizes five different features of our program in a single park. Let us compare it with a mercantile establishment. If you buy several articles you are charged for all and not for one. The same problem was brought up a number of years ago. I claimed that when a person listens to a lecture and then went on a hike it was equivalent of that many articles sold and we should be given credit for them. I feel that in Mount Rainier if we are one hundred per cent efficient, which, of course, we cannot be, we should have nine times the number of contacts as we have travel in the park.

MR. DOERR: I think Mr. Brockman made a point in regard to the fact that you have five museums and five contacts being counted through one person visiting these five museums. I always felt, as Dorr Yeager has said, that it was a bit of padding, yet if you will take the figures the other way it would not look so good. It is just like the store that he mentioned in handling so many people. Some of the thoughts expressed here if adopted would involve a considerable amount of additional work and I think we can devote thought to this matter before adopting the suggestions.

MR. BEATTY: I would like to have some expression as to how we are going to set up this revision. Dale King spoke about a careful study regarding the number of minutes involved in hikes and talks. I think that would involve too much office work even to consider. I think if we can count all of our nature walks on two-hour basis and all hikes on an 8-hour or 6-hour basis and lectures say a half-hour basis I think we would have a good basis on which to figure. I would be very much interested, as Chairman of this Committee, as to how we might go about setting up new contact systems.

DR. NEASHAM: There seem to be two elements concerned. One a time element and the other a place element. Perhaps in place of the word "contact" we might be able to combine the elements of time and place.

MR. ROBINSON: I think that our trouble is that we have fallen into the habit of thinking in terms of bigness rather than of quality. When I administered a program I used to go in for figures a great deal. But a lot of my people began to laugh at my growing figures. With that ridicule in mind I began to analyze the problem and I found that I could make a better impression on the people doling out the money by stating the service to be rendered and then giving the number of people participating. For example, in music I spoke of the service we were rendering first and then the number of people participating. For others I had to show that we were rendering a negligible service. Through an honest appraisal of this sort, I found that those people who are doling out the money were a lot more willing to consider appropriations than they were when I presented them with an unanalyzed batch of figures.

DR. RUSSELL: In a few cases where some careful observations have been made with museum visitors and their behavior I think we have found that they remained in and around the exhibits about twenty minutes to half an hour. Suppose you arrive at some conclusion, such as Mr. Beatty has suggested, on the basis of time spent and also a consideration of values of the work done. I think you would then have something on which to work. After hearing Mr. Beatty's presentation of the subject, I don't believe the conference need worry about the conclusions that should be reached. I would be content to await the recommendations of the Committee before we thrash out this matter.

The meeting was adjourned.

Thursday Afternoon
November 14, 1940.

Conference convened at 1:15 P.M. with Mr. Doerr as Chairman.

MR. DOERR: Continuing our program as scheduled for this morning, Ned Burns, Chief of the Museum Division, is going to talk to us on the present status and current needs of the Museum Division.

Present Status and Current Needs of The Museum Program

Ned J. Burns,
Chief,
Museum Division.

ABSTRACT

The Park Service with its 114 museums has one of the largest and most complex systems of museums in the world. The annual attendance is more than 4½ million people; nearly twice that of the National Museum and more than the combined attendance of the American Museum of Natural History, and the Field Museum. The growth of park museums during the last two decades is phenomenal and is the result of an urgent need for effective exhibits and means of interpreting important scientific and historic facts. A study of the recent Museum Division Field Survey record gives a general picture of accomplishment and the present status of the museum program, and impresses us with the existence of the need for more adequate, fireproof museum structures, improvement in the effectiveness of exhibits, the study of visitor reactions, interpretive devices along the trails, increased efforts to obtain valuable gifts, improved procedures for exchange of materials through a central clearing house, and careful planning of museum developments and coordination with the interpretive programs as a whole.

Within the National Park Service there exists one of the largest chains of museums in the world -- 114 museums, in widely distributed

areas from the New England coast to Hawaii, with a combined, counted attendance of more than four and a quarter million persons annually. This visitation is nearly twice that of the National Museum in Washington, and more than the combined attendance of the American Museum of Natural History and the Field Museum of Chicago. Only a quarter of a century ago there were no park museums, so their growth in number, size, scope, and usefulness within the last two decades has been phenomenal. In every instance the park museum has grown out of an urgent need for effective means of preserving and exhibiting significant objects and interpreting the important scientific and historical facts concerning the park areas to these visitors. The present state of our park museums reflects the conditions under which these museums have been developed -- their rapid growth in response to obvious and basic interpretive needs, but with limited funds and personnel available for development work. A study of the recent Museum Division Field Survey report gives us a general picture of accomplishments and the status of the museum program -- buildings, equipment, exhibits, study collections, records, plans, etc. This study also impresses us with the existence of a number of important needs. We see the need for complete and up-to-date museum records of attendance, costs, catalogs of specimen materials for:

More, adequate, fireproof, permanent museum structures.

Constant and steady improvement in the quality and effectiveness of exhibits, combined with frequent studies of visitor reactions to determine the effectiveness of these exhibits.

Increased use of trailside exhibits and exhibits-in-place wherever such media may prove helpful in interpreting park features out-of-doors.

Increased efforts to obtain valuable scientific and historical specimens through donations.

Improved procedures for procuring desired specimen materials through exchange between one area and another through a Central Clearing House.

Careful planning of museum developments in coordination with the development of the interpretive program for the park as a whole.

These evident needs should guide us in determining the aims, objectives, and procedures to be employed in the further development of the museum program. Mr. Yeager's paper will cover a number of outstanding needs in museum exhibit work, so I will stress only a few of the broader matters of current concern.

Constant stress should be given to the fact that park museums have a twofold purpose of preservation and presentation. Public contact work is often so spectacular and time consuming as to obscure that other museum function of equal, if not greater importance, the preservation of valuable and irreplaceable objects in our scientific and historical collections. If we never made a single exhibit for the public, our museums could still be amply justified on this function alone.

Buildings and Equipment

There is a need in many of our areas for permanent, safe buildings with proper equipment for display and storage. It is considered good business to replace a flimsy bridge as soon as possible with a sound, permanent and properly designed structure. The museum is a visitor's bridge to a new and better understanding of the beauty and significance of the park. The destruction of a museum even more so than a bridge is bound to take with it much that is irreplaceable so the same economic principle applies. Remarkable ingenuity has been exercised in altering the hand-me-downs from a previous generation, but we should look forward to substantial buildings designed for the functional needs of the park museum as a center of interpretation and preservation.

Proper Presentation

Today, the public is accustomed to good presentation. More care and thought are constantly being put into the arrangement and lighting of window displays in stores and salesrooms. Advertisements are carefully worded and invariably brief enough to avoid a confusion of thoughts or ideas. Merchandise is sold in attractive packages. Radio programs, stage productions and motion pictures are noted for a limitless patience in research, planning and rehearsal to produce a smoothly finished performance. If we are to take full advantage of our opportunities and come up to the public's expectation, we also should give our exhibits the same attention to achieve a neat presentation. The sooner we can leave behind the "stick-em-down with chewing gum and thumb tack" methods, the better for all of us. Well built cases with proper lighting and containing clean exhibits, neatly arranged and correctly labeled in an attractive room, will find a quick and favorable public response. We should not be content with a mere clinical array of specimens, or an indigestible mass of overtechnical details. Every natural and historic object has an inherent beauty which can be brought out by good exhibition methods which will stimulate the visitor's interest.

Visitor Reaction

We have heard many compliments on the park museums from people whose opinion really counts after they have visited a number of our parks, and what is more significant, they expressed these favorable comments on the

professional finish of the museums spontaneously. Every favorable comment of this kind received must represent a great number who are pleased and satisfied but do not take the trouble to write or go out of their way to comment as they certainly would do if the opposite reaction developed. Everyone in public contact work is only too well acquainted with this unfortunate custom. I think there is ample reason for our naturalists and historians in the field to take pride in their museum achievements and derive encouragement for further efforts.

The Clearing House Idea - Regional Clearing Houses

The clearing house idea has been put into practice on a regional basis within the last three years. Today there are at least three regional agencies performing some of the functions of the clearing house we have in mind. These are: (1) The Clearing House for Southwestern Museums founded April 24, 1938. Its field is definitely anthropology in Colorado, Arizona, New Mexico, West Texas, and Southern California. (2) Southwestern Conference on Museums, formed March 30, 1939, with membership open to museums in Texas, Arkansas, Oklahoma and Louisiana. Though the purpose of this organization is broader, it includes provision for clearing house activities. (3) Following the example of the Clearing House for Southwestern Museums, a Clearing House for Washington State Museums was organized in the fall of 1939.

A Clearing House for Park Service Museums

The need for a clearing house for park museums has been felt for some time by a few individuals concerned with the interpretive program in the parks. At the Historical Technicians' Conference, Region I, held in Richmond last April this need was brought before the historians for discussion. The value of the idea was recognized by those present, and a resolution was unanimously adopted by the Conference recommending:

> "That a central clearing house be established in Washington where, through the Museum Division, an exchange of surplus and inappropriate objects may be effected to secure a more efficient use of such material. Duplicate publications also are to be distributed through this clearing house."

The Functions of a Park Service Clearing House

The clearing house for Park Service museums will serve the primary purpose of developing and improving park museums through the free exchange of materials and ideas. Such a clearing house will need no new or elaborate organization for its operation. Its administration is the proper function of the Museum Division. Specific functions of the clearing house will be:

1. The collection of lists from all park museums of museum specimens and library needs, and cirrulation of statements of these needs to other park areas.

2. The collection of lists of duplicate or inappropriate specimens, or publications in park museums which are available for transfer to other areas, and circulation of statements on the availability of these materials to other park areas.

3. Facilitating the dissemination of reliable information on preservation methods, valuable bibliographic references on museum matters, etc., of broad application in park museums.

4. Assistance to research men in the field in locating materials in other park museums of value to their studies.

Following the example of the Clearing House for Southwestern Museums, it may be advisable to provide for a regular monthly clearing house report, submitted as an appendix to the monthly report of the Branch of Research and Interpretation. Additional copies of this appendix may be mimeographed and supplied to those areas (principally historical areas) which do not receive the full Branch report.

There are numerous instances when a park has duplicate or unwanted objects, both of historical and scientific value, which it could well dispose of to another park and gain much needed store room. Such a series of exchanges will improve all our collections. It frequently happens that collections become available locally, which have no relation to the nearby park, but would be of inestimable value in some other area. A private collection of Southwest pottery may turn up in New England or some collection of items related to the American Revolution may be discovered in Arizona. About a year ago we came into possession of a miscellaneous lot of material from an estate in Washington, D. C., and were able to distribute among other things, Revolutionary and Civil War arms to several parks, and equipment and early Spanish church decorations to Tumacacori National Monument. When anyone hears of such possibilities, it will aid us if they write to the Museum Division in Washington so we can quickly determine the possibilities for proper placement. The success of the clearing house will, of course, depend on the amount of interest displayed by the men in the field.

Loans and Gifts

Some time ago a policy on acceptance of loans and gifts was established. The purpose of this was to prevent the Service becoming entangled in embarrassing situations with donors and lenders, as well as to avoid the acceptance of low grade specimens which would become a useless burden under annoying storage problems. Its purpose was not to discourage the procurement of valuable items needed to round out our exhibits; consequently, a continued effort should be made to ferret out valuable and significant materials. Our scenic and scientific areas are more fortunate in having near at hand ample exhibit material, which can be

prepared at little cost. Our historic areas are not so fortunate and we ask your help in this work. Many of the scenic and scientific areas have a history story to tell, secondary in importance, but important nevertheless. Many of our historic areas likewise have interesting scientific features, so the close tie-up between naturalists and historians is becoming increasingly evident.

At present there is no simplified legal procedure for the exchange of surplus materials in park collections with outside institutions for specimens lacking in parks. That such a procedure should be sought is quite evident. It is general practice among museums to exchange by gift duplicate specimens where mutually beneficial. Frequently this is very desirable where two museums have duplicate specimens of different items, each of which is greatly needed by the other. These exchanges are usually made by absolute gift so that the museum will have complete control over the exhibit material in its possession.

The National Park Service has no authority to exchange duplicate specimens by gift. The same law which is applicable to other Government property applies also to the Service museum exhibits. This prevents disposal by gift and requires that it be handled by the Procurement Division where the property is declared useless to the Government and disposed of by public sale to the highest bidder. Obviously this would not accomplish the purpose desired in exchanging duplicate museum specimens.

It has been suggested that the desired results be accomplished in the round-about method of turning the specimens over to the National Museum where they would be made available to the institution with which the exchange is desired. This would be done under the National Museum's authority to distribute duplicate specimens to colleges and other institutions of learning. The Service would informally contact the National Museum in advance to be sure the material would go to the proper party. However, this would be unsatisfactory even if the National Museum were to cooperate to the fullest (which would be purely a matter of courtesy) because they do not have authority to make gifts and most museums and institutions of learning object to taking material on loan.

It is Service policy to accept on loan only the most desirable and significant items, and then only after all efforts have been exhausted to acquire them by gift. Therefore it becomes evident that the Service should have authority to deal with its museum materials in a manner similar to the best practices of other leading museums and educational institutions. We should be able to negotiate on equal footing with other institutions. The American Museum, for example, might not be very anxious to make its duplicate specimens available to the Service as gifts and receive in exchange duplicates on loan.

The only way to obtain this clear-cut authority is through legislation. No doubt this will require much time and we should, therefore, consider a start now in order that it may be obtained as early as possible. It is felt that a resolution from this conference will help to put before the entire Service the need for this legislation and thereby cause it to be sought after more diligently.

Field Manual

We regret that the Field Manual for National Park Service Museums has not been printed in time for this conference. The pressure of national defense work at the Government Printing Office has delayed it beyond schedule. We hope it will soon be ready for distribution to the field. It has been written to answer many of the questions which arise in connection with planning and preparing museum buildings, exhibits and study collections. A large part is devoted to methods of cleaning, repairing and preserving specimens, since this is one of our most important responsibilities. Since each of these specimens is truly a part of the park, it is obviously necessary to preserve each part of the park if we would preserve the whole. We hope the Manual will serve as a first aid manual since it could not be extensive enough to form a complete treatise on museum preparation.

It is our intention to build up a file of information in the Museum Division on museum methods and your help will be appreciated in keeping it up-to-date. Any general useful information on formulas or methods, things to do and to avoid will be circulated through the medium of the Monthly Report now prepared by the Branch. We have already included a few new methods of general interest and hope to continue them in the future.

Simplicity

One outstanding need of universal importance in our museum exhibits is greater simplicity, but this is far from easy. A noted educator assures me the preparation of a first grade reader requires more thought and is harder to prepare than a text book for an advanced college course. The presentation of a few simple facts in such a manner as to give the visitor an instant comprehension and arouse his enthusiasm, thus creating a desire for more is difficult, but an extremely valuable asset in all forms of interpretive work. This is particularly true with museum exhibits. Simplicity and brevity is to be sought, especially in labels, charts, and diagrams, while good showmanship indicates the display of a few choice items instead of a monotonous mass of too similar specimens.

We have already mentioned the desirability of neat equipment and workmanship in the museum presentation. The simplicity and clearness of the story is equally important. Good showmanship, salesmanship, and teaching,

all have much in common. The museum exhibit can and should be made attractive without the loss of its educational value. Efforts toward interpretation will be of little avail if they are not presented in a simple and interesting fashion.

Museum Survey

We appreciate the universal response to our requests for information in making the recent museum survey. It has proven to be of immediate value for budgetary purposes and will continue to be beneficial in long range planning and in justifying additional museum support. We hope the naturalists will continue to cooperate with the Museum Division in completing the Survey records and keeping them continuously up-to-date. Copies of records should be on file in the parks and with the Museum Division. Museum attendance records should be kept as accurately as conditions permit. The complete identification and the maintenance of all items in the collections of specimens should be consistently sought for at all times. The free exchange of information on these collections should likewise be encouraged. Figures on the cost of buildings, equipment, and exhibits are essential, and the naturalists can help in assembling them. The real value of such up-to-date information in furthering our work cannot be emphasized too strongly.

A concerted effort is being made to complete an approved museum prospectus for every park and on the basis of this to include museum developments in the Master Plan, project construction program, and annual budget estimates. These important steps toward satisfactory museum conditions depend largely on the initiative of the naturalists, who are responsible for the primary definition of museum needs in their respective areas.

Trailside Exhibits

Trailside exhibits and exhibits-in-place, which are appropriate, effective and relatively inexpensive devices, should be employed more extensively as interpretive aids in park areas. This, I mention here again to emphasize its importance. Mr. Yeager will develop the theme in greater detail later on in the program.

Studies of Problems

I also stress the universal desirability of a thorough and continuous study of visitor reaction in our museums. We want to know what they like best, where and how they circulate, how long they stay. What effect does a change of furniture arrangement, the introduction of more light in one place and different color in another have on a visitor's behavior?

Sustained observations under controlled conditions over sufficient periods of time to allow for variable factors are the most effective means of developing better exhibits in the coordinated museum program. The Museum Division is vitally interested in such studies and will do everything possible to aid in the work. We would like to see museum guide leaflets given a thorough trial, since we regard them as a potential means of increasing considerably the effectiveness of park museums.

Coordination

The museum program is an inseparable part of the whole interpretive program. If there is a separate and distinct lecture program here and a guided tour program there, while the museum is treated as a separate entity somewhere else, only confusion can result. All features must dovetail into one harmonious whole. Only through a complete coordination of museums with all the other means of public contact work can we give our visitors a full measure of service.

Extension of remarks prepared by Ned J. Burns, Chief of the Museum Division, after Historians' Conference to sum up the general policies relating to museums - May 8, 1941.

The question of central museums to serve a group of nearby monuments cannot be answered with a simple yes or no. The fear of some that our museum program is in danger of overdevelopment is hardly warranted, since our great problem is one of underdevelopment. All our interpretive facilities still have a long way to go before they can be considered adequate. Possibly some of this misapprehension arises from a lack of understanding of the underlying principles of our interpretive program. Many people confine their ideas of museums to a building containing cases filled with relics and curiosities which does apply to a number of poorly arranged museums in towns and cities, but this conception of our park museums is not correct.

The proper approach to a correct understanding should start with the realization that our two fundamental objectives are to preserve and interpret our areas. Little need be said about the obvious need for preservation, a Service program which is not confined to outdoor formations and structures. Many small objects which are an integral part of the park or monument cannot be protected in situ so they must be placed in a building equipped for that purpose. In principle this is no different from constructing a protective shelter over a large object in place out of doors.

Interpretation of an area may require a large museum building or a series of buildings for its proper function. The use of these buildings

by the public is not necessarily confined to viewing exhibits. They usually contain libraries, lecture halls, research and administration quarters and other facilities. On the other hand some areas may not need a museum building, since a few trailside exhibits and labels may suffice. The extent of development in each park and monument can be determined only by the particular interpretive needs of that area. No arbitrary rule can be laid down for "a museum in every park or every other monument" any more than the number of administrative facilities or miles of road required for each particular park can be fixed.

We regard the park itself as the exhibit and the museum building only as a functioning interpretive device for a better understanding of this outdoor exhibit. The important thing is to interpret the area on the spot through whatever means is indicated by a careful analysis of the individual needs of the monument or park. Guided trips, campfire programs, descriptive literature, lectures with slides and motion pictures have their useful functions but do not always suffice. When they are combined with the visual aid of exhibits and interpretive devices indoors or along the trails the sum total is effective.

In a few instances central museums serving several nearby areas which have the same general character and are approached from one common center may be effective. Central museums to house large collections of excavated or other materials from several related areas for study, such as Ocmulgee, have also proved to be desirable and effective. However, the separate needs for preservation and interpretation should not be confused even though they sometimes serve a double purpose as exhibits while being protected.

The use of graphic devices in close proximity to the natural and historic features of the park is essential to good interpretation. The National Park Service has a unique opportunity in this field. We place graphic devices inside buildings as a matter of convenience or necessity. The trailside exhibits, orientation maps, signs and markers out of doors are an integral part of the interpretive system. The buildings, whether large or small, one or many, are a mere incidental.

It frequently happens that outstanding examples of geological, archeological, and historical interest occur together or are in close proximity to each other in several small monuments or one large park. In determining whether or not to employ one central museum with several rooms each devoted to a separate subject or to establish several small one-theme museums, consideration should be given the interpretive requirements of each feature rather than attempt a solution by geography alone.

We recognize and are working toward a better coordination between related areas. Undesirable repetition should be avoided in our parks and monuments, but in so doing we must not forget the one-time and first-time

visitor. Occasionally repetition may bore a few "chain visitors" but this may be necessary if the great majority are first timers. We should always strive first to meet the needs of the great majority and second to provide for the requirements of those special classes who are in the minority.

There is need for a closer integration of stories in all our parks and monuments but also with related areas under other federal, state or private control. Visitors want to know about the history and scenic features of the country they are visiting and have little interest in fine distinctions of jurisdiction. In telling the story of military campaigns, routes of migration, ancient buildings, or geological formations an introductory background must be supplied by reference to other related areas regardless of their ownership. The fault is not to be found in the principle of repetition itself, but with the method by which it is done. The same story can be told in many different ways with emphasis on a new and interesting angle each time. It is true that some undesirable repetition occurs in a few of our areas, particularly in the Southwest. Occasionally a visitor may grow tired of hearing a repetition of exactly the same story in almost the same words on dendrochronology or pottery types after visiting the third or fourth archeological monument. The trouble lies not with the subject, but with the stories themselves which can be made dramatic and interesting by a varied presentation for the benefit of the repeater as well as the first timer.

We are still a long way from overdevelopment, but while we are trying to build up properly, sight will not be lost of the important need for proper integration on a national rather than a local sale. This calls for comprehensive planning which must be based on a thorough study of, first, what each area contains; second, its place in relation to other areas; and third, a study of the visitors who come to see it. The number and type of visitors, what their principal interests are, where they come from, how long they stay and where they are going after they leave, are important determining factors in developing a suitable program.

Obviously the tempo as well as the type must be carefully determined. A different approach can be used in the park where the visitor stays overnight or for several days. The same person, when at leisure in the evening with all arrangements for lodging and food completed, is in a receptive mood different from that when he is traveling in great haste along the highway trying to keep to a schedule and allowing only a few minutes to see some interesting sight along the way. Many factors outside the park and beyond our control shape different attitudes in the same individual. A previous knowledge of the park obtained from friends or through publicity channels causes a different reaction from the accidental discovery of an interesting site en route. There is always a distinct reaction to the general attitude and behavior of other visitors and the "atmosphere" of the place which may provide awe and reverence on the one hand or boisterous amusement on the other. The actions of the same man at a picnic is in contrast with his changed attitude while attending a religious ceremony or a patriotic meeting.

Carefully planned presentation, good showmanship in its highest sense, is of paramount importance and should be consciously employed in conjunction with a knowledge of the unique and basic facts concerning each area. The whole consists of each of its parts and the success of our entire interpretive system will depend upon the individual success achieved in each park and monument. Sound policies have been laid down and their successful application depends on a full knowledge of the local needs and conditions in and surrounding each of our areas.

MR. DOERR: Thank you very much, Ned. In view of the paper to follow I would like to suggest that we go into Mr. Yeager's paper now and have the discussion of these two papers together. Mr. Yeager.

MR. YEAGER: As a matter of fact I have two papers to read. It happens that a few days before I left I received a memorandum to include another subject in my paper, and since I did not have time to combine the two, I shall present them separately.

Increasing the Effectiveness of Park Exhibits

Dorr G. Yeager,
Assistant Chief,
Museum Division.

ABSTRACT

The approach road, parking area, and the external appearance of the museum building set the stage in the visitors' minds and play an important part in the effectiveness of exhibits. The features comprising an effective exhibit are briefly described and an analysis of these features is given. A comparison of good and bad exhibit practices; the importance of museum plans in obtaining effective exhibits; and the need of observations even after the exhibits are installed to see whether they are functioning as anticipated are discussed.

While certain recognized differences exist between a national park museum and a city museum, the problem of increasing the effectiveness of exhibits is common to each. Undoubtedly this problem, as related to the National Park Service, is far greater than in the average city museum.

Whereas the visitor to the city museum generally goes with the expressed purpose of obtaining information, the majority of visitors to a national park museum go from a sense of curiosity. It has always been my contention that the word "education" as applied to the interpretive program is ill-advised, since we all know that our visitors do not come into national park areas to be educated. Our museums, therefore, face the difficult task of catching and holding the interest of the curiosity seeker whose conception of a museum, in most cases, is an exhibit which might appear in a Ripley "Believe It or Not" show.

Our responsibility in this respect begins not in the exhibit room but at the parking area. The approach to a museum should be inviting, the architecture and color of the building itself should be attractive, and, what is even more important, the structure should be strategically located. Unless these fundamentals are adhered to, a large percentage of our prospective museum visitors will pass by. In many cases we have failed to observe these points and, as a result, we have very few museums in national park areas that may be considered entirely successful. The first impression gained from the building itself is highly important. The museum recently constructed by the Indian Service at Browning, Montana, near Glacier National Park, is not, in the opinion of many, attractive nor inviting. It clashes with the landscape and has every appearance of a factory building. In spite of the well-organized and attractive interior, there is a strong probability that it will not receive a large number of visitors unless they know of its existence and are in search of it.

The first impression of a visitor upon entering a museum is often his final one. Psychology plays a far greater part in the success of any museum than we realize. A visitor standing in the doorway must be impressed with the harmony of the interior. As he enters and continues through the building nothing should detract from this first impression; rather he should be led on and on by ever-increasing interest in what he sees. Not only must the rooms be attractive, but the cases and exhibits which they contain should, at first glance, present a pleasing picture. A room cluttered with windows immediately gives forth a distracting note, since the visitor's attention is attracted to the source of light rather than to the museum case. The cases themselves should be uniform. The sight of a mixture of wooden cases of various finishes beside metal cases does not set the visitor at rest. While lighting in all cases cannot be uniform, it can be harmonious. To my mind, four requirements combine to make a successful exhibit. An exhibit must be: (1) Attractive, (2) intelligible, (3) educational, and (4) accurate.

An attractive exhibit is one that is well-balanced and harmonious, both as to content and color. Too little attention has been paid, especially in our "home-made" museums, to a harmony of color. I have one museum in mind which on the whole is fairly good, but the effect is spoiled by clashing colors in the cases. Many park naturalists do not

realize that detailed as exhibit plans are, the case layouts are given additional study after the plan has been approved. Much thought is devoted to color harmony, and a sketch of the case is drawn and redrawn, using various color combinations until the right one is found. A spot of the wrong color in a case may throw the visitor completely off from the sequence which we desire him to follow. Correct lighting is essential to an attractive case. Only an electrical expert can keep abreast of the rapidly changing field of lighting. To date, fluorescent lights are the best we have found for all-around satisfaction. They consume less current, give a softer light, and radiate less heat than other types.

It should not be necessary to enlarge upon the statement that exhibits must be intelligible to be successful. In spite of the fact that we admit the necessity for elementary methods in our interpretive work, many of the preliminary plans, when submitted, tend toward complicated exhibits. Certain types of exhibits may be successful and necessary in a university museum, but we have found that the same exhibits are not appropriate in a national park museum. Among these might be mentioned the famous tree of evolution and the geological column. These appear in certain of our museums, but it is safe to say that they can be interpreted by not more than ten per cent of our visitors. Whenever an everyday example can be used, no matter how simple or elementary, it should be used in preference to one which is more detailed and technical. Our contention is that nothing is too elementary so long as it puts the story across.

Whether or not we approve of the word "education", our primary purpise is to teach, and so our exhibits must be educational. Nothing is gained in amuseum exhibit by emphasizing facts which are already familiar to the visitor. Education does not consist of presenting facts which are already known, but of teaching the visitor and acquainting him with something he does not know. In this we are admittedly working at a disadvantage since we must assume that the visitor knows little or nothing of the story which we are attempting to tell. The problem is made more difficult by the fact that we deal with a cross-section of America, and that the same exhibit device must serve a man with a sixth-grade education as well as serve a college professor. In leading parties afield, I believe most of us do so with one purpose in view--that of creating an interest. It is not so important that the group can distinguish between a Wright and a Hammond flycatcher, or between a spruce and a fir, at the end of a trip. What is important is whether we have stirred an interest and stirred it deeply enough to make these people want to find out a few of the things along the trail for themselves. The same is true in a museum. If we stir an interest, most certainly, in a sense at least, we educate. It is highly desirable that the visitor learn something while he is in the museum, but if we have stirred an interest in biology or archeology, our work has been worthwhile.

Exhibits may be attractive, intelligible, and educational, yet they are worthless unless the material presented is accurate. It would be better, I believe, to have no museum at all than to have one filled with inaccurate data which give the visitor erroneous information. For this reason, we must pay special attention to accuracy, for it is surprising the number of small, apparently insignificant details which, if inaccurate, will be called to our attention and stamp the entire museum as poor by a visitor who is really familiar with the subject. Costume detail in pictures, dioramas, etc., must be authentic as to color, period, and design. The average visitor might not recognize a miniature rifle in the hands of a buffalo hunter as being of the wrong vintage, but sooner or later some one will catch this error. We at the Western Museum Laboratories have been especially fortunate during the past few years to be able to refer matters of this type to authorities. The University of California faculty has been exceedingly helpful in giving us criticism, as have the staffs at the Los Angeles and Southwest Museums. We feel that in the majority of cases the exhibits which have been turned out have been accurate. Some park superintendents might criticize us for spending funds to send an artist to a park to obtain color notes for a diorama background. We would be criticized much more, however, if the diorama arrived in his park with a background which bore no resemblance to the area which it was illustrating. We are not always fortunate enough to be able to send a man to the site to take photographs and color notes, but it is usually possible to bring a park naturalist to the laboratories so that he can give us accurate details. An artist can hardly be expected to depict accurately the color of a landscape such as the Grand Canyon, Zion, or Bryce without having seen it.

The matter of labels is of the greatest possible importance and one whose solution is far more difficult than most persons realize. In the beginning, it must be admitted that no matter how well a label is worded, nor how short, nor how attractive, a large percentage of our visitors will not read it carefully. I hope the day will come when museum technique will advance to such a point that labels will no longer be required, and that the exhibits themselves will be self-explanatory. Since such a Utopia is far in the future, we must continue to augment our exhibits with labels, and our job is to make them as attractive and readable as possible.

There is a marked similarity between the fundamentals of a good exhibit and a good label. Labels should be attractive in that the color of the background and the type, as well as the style of type used, forms a harmonious and pleasing effect. Museums containing labels of various types are confusing. I recall one museum in which handwritten, hand-lettered, typewritten, and printed labels occur. Four styles is one museum! As nearly as possible, the same kind of labels should be used throughout, either hand-lettered or printed. The lengthy label, of course, is another evil. Last year a museum plan was returned to us with criticism from the Washington Office. On the margin of one of the labels Mr. Burns had very aptly written, "This is a thesis, not a label." The label in

question was, as I recall, one and one-half typewritten pages long. Very few museum visitors would have taken the trouble to read even the first line since the length of the label itself was enough to discourage them. Label-writing is an art and one which every person connected with museum work should practice. It is no easy task to tell a story in a few words. In writing a telegram, we "boil it down" to ten words, and we are usually able to say what we want to say. Nine-tenths of our museum labels could be boiled down without eliminating much of the information they contain. In label-writing we can learn a great deal from the study of newspaper technique. We should pay just as much attention to style and composition as we do to content.

A paper of this nature would not be complete without a brief discussion of certain other features, such as circulation, museum fatigue, and case reflections, all of which have a distinct bearing on the effectiveness of park exhibits.

Reams of paper have been used up in pro and con arguments on the subject of museum circulation. Elaborate studies have been made by the proponents of both left- and right-hand circulation in an effort to prove certain points. This discussion is not aimed to settle the question, the conference is not in session long enough for that. It is aimed to point out the necessity for planning exhibits with a definite circulation in mind. The need for this is self-evident. It is just as important for a visitor to study the exhibits in proper sequence as it is for a reader to begin with the first chapter of a book. Nothing but confusion results in the visitor's mind if he begins at the end or in the middle of an exhibit. Once a circulation scheme is decided upon, the exhibits must progress from a logical beginning to a logical conclusion, and between these two points the story must unfold in an interesting and intelligible manner. No matter how carefully a circulation scheme is worked out, there will always be certain rugged individualists who will ignore it and go through the museum as they desire. Whether left- or right-hand circulation is agreed upon, there are always certain tricks which can be used to place pressure on the visitor which will induce him to follow the course planned for him. Visitors are attracted by light, movement, and color. By the use of such media, it is usually possible to direct the course of traffic. Arrows on the floor have been employed with some success, and certain barriers such as benches may on occasion be used to keep the visitor within desired paths. So important is the matter of circulation that each park naturalist should study his individual problem and experiment as to how the best results may be obtained in his museum.

The effectiveness of museum exhibits is always inversely proportional to the degree of museum fatigue suffered by the visitor. The problem of "leg fatigue" is a doubtful one in museums as small as ours. Most visitors can easily make the round of a two- or three-room museum without sitting down. Chairs and benches can, of course, be provided in a lobby. The

"stoop-squat-squint" tactics forced upon visitors in certain museums are a matter of considerable importance, and everything should be done to eliminate the necessity for this. Exhibits should be so arranged in a case that they can be studied with a minimum of exertion. Too many high labels and exhibits tend to tire the neck muscles, and small exhibits on the floor of a case force the visitor to bend over to examine them. Whether fatigue is conscious or unconscious on the part of the visitor, its presence detracts much from the effectiveness of exhibits.

Case reflections constitute a tremendous handicap to the visitor's concentration. Unconsciously his attention is pulled away each time another person passes the case, since movement is far more attention-impelling than any stationary object. Lights reflected in cases either from exhibits on the opposite side of the room or from windows act in the same way and should be eliminated.

A word should be included here on the observation of visitor reactions in national park museums. The Southwestern National Monuments have carried on a series of observations regarding reactions of visitors, as has Scotts Bluff National Monument and one or two other areas. Such observations are of the greatest importance, and the Museum Division always welcomes them. No matter how carefully an exhibit may be planned, the visitor can always be relied upon to do the unexpected, and it is often necessary to alter exhibits to conform with this unpredictable element. Only through the observations of the field men, who have an opportunity to watch the visitors in action day after day, can we hope to gain the greatest effectiveness in our exhibits, and effectiveness, after all, is the criterion of success.

As we proceed with our museum program, therefore, let us remember that the building and the exhibits are an educational unit. That the location and architecture of the former psychologically set the stage for the visitor and that the curtain rises when he enters the exhibit room. The four requirements-- attractiveness, intelligibility, educational value, and accuracy,--combine to make the successful exhibit. Labels, lighting, circulation, and museum fatigue all play their roles and are contributing factors of major importance. The possibilities for interpretation in our park museums are tremendous. We have made good progress thus far. Our exhibits are increasing in quality each year through continuous development of new methods. The future of the program is doubtful, however, unless through increased appropriations we can begin to build up a permanent staff to take the place of the emergency personnel upon which our work is now based.

(Footnote) MR. YEAGER: I just want to say a word before we start out on plans and planning procedure. I have not especially covered the subject in this paper. But I want to emphasize the necessity for the Museum Division being in on those plans. King and Dodge will tell you the difficulties they have encountered through no fault of theirs. The Regional

Office worked over the plans on the Chiricahua Museum; they were hurried through and the Museum Division did not even see the plans. A few days ago I was very much interested to learn that a museum is half built in Hawaii. We did not even know it was being built. We did not see the plans for the museum at the Painted Desert until the building was practically completed. The fact is that we believe we can help you if we see those plans. If we can get the plans before they are approved we can probably iron out a lot of difficulties that may cause trouble later on.

Self-Guiding Nature Trails

Dorr G. Yeager,
Assistant Chief,
Museum Division.

ABSTRACT

Self-guiding nature trails are unattended outdoor museums. The location is all-important. The story to be told by the trail should be kept in mind in selecting the location. The trail should tell a well-rounded story. The trail should appear natural and give the visitor the feeling of isolation. Nature trails of less than half a mile in length are the most successful. The labels used should be shorter than museum labels, and should be conspicuous and frequent. There is a definite advantage in coordinating the story of the museum and of the nature trail. The nature trail should arouse the visitors' interest in trailside features.

Self-guiding nature trails are unattended outdoor museums. They differ from outdoor exhibits in that they usually deal with a variety of features rather than with a single one. Most of us are familiar with the advantages and disadvantages of such a trail and they need only be mentioned here.

Two principal disadvantages are admitted; namely, the possibility of vandalism and the necessity for upkeep. Against these two, neither of which should present a major problem, there are a number of advantages which make such an interpretive device decidely worth while. The first and foremost of these is the tremendous number of persons such a trail

can serve. It works throughout the daylight hours unattended save for an hour or two which must be devoted to replacing and renewing labels. It serves the visitor who wishes to wander at his leisure and who resents the regimentation of conducted trips. It brings one face to face with nature to a greater extent than any of our educational devices.

For a few minutes let us discuss certain principles, many of which are well-known, that go to make up a successful trail. First, the location is all-important. It should traverse terrain which holds interest. Without interesting features, the trail is doomed to failure. Secondly, the story to be told by the trail should be kept in mind when its location is being selected. It is possible to make a nature trail without a preconceived story, but it will fall short of its potentialities. It is just as logical to make an exhibit plan for a nature trail as for a museum. A self-guiding nature trail is more than a trail with labels placed here and there. A well-rounded story should be developed in the same manner as we develop our museum story. This story may deal with one field, such as flowers, or it may embrace the entire field of natural history. The third principle deals with the appearance of the trail itself. It should appear natural and this cannot be too strongly emphasized. If the visitor finds himself on a wide, oiled path, reminiscent of Golden Gate Park, he loses the spirit and stmosphere that we wish him to absorb. He should be given the feeling of isolation; that the trail upon which he finds himself is a wilderness trail. Frequent turns should be used so that he cannot see too far ahead of him. On such a trail the visitor should be encouraged to "let his hair down" and actually study the features of the trailside. A great many persons, even with a natural curiosity, find it difficult to give that curiosity free rein when there are others close by. A trail with many curves affords the visitor this sense of isolation. The fourth principle, and one which is frequently ignored, deals with length. Nature trails that consume less than half a mile are probably more successful than the longer ones. On a short trail there is less likelihood of repitition in labels and less danger of too many uninteresting stretches where it is difficult to find anything worth labeling. And it is the labels, after all, which point out the exhibits and lead the visitor on and on. The fifth principle is of greatest importance, for upon it hinges the success or failure of the project. This is the principle of labeling. Labels should be short, shorter even than museum labels. They should be conspicuous and frequent. On a half-mile trail they should not be over 25 feet apart, since there is a tendency on the part of the visitor to lose interest if features are too great a distance from each other. The features are the illustrations in the book of the trail, and the labels are the text. It should, therefore, be extremely readable. Labels should point out things which stimulate the interest, and before they are placed the naturalist should put himself in the position of the visitor. With the story in mind, he should go over the trail to spot those features which will pique the curiosity of the average visitor.

So much for principles. I have said that the possibilities of the self-guiding nature trail have never been fully explored. Below I am listing a few suggestions which may be thought-provoking. You may have already used some of them.

1. Do you have a good name for your trail; a name which catches the imagination; a name which is inviting. Instead of just "The Nature Trail", why not a descriptive name such as "Trail of the Shadows" at Mount Rainier National Park.

2. Have you ever considered throwing a natural-appearing dam across the creek and planting a few trout in the resulting pool?

3. Have experiments ever been undertaken of dividing the trail into sections, each concentrating on a single field. For example, one section might be devoted to flowers, another to trees, another to geology.

4. A shrine at the beginning of the trail has been installed in several areas. Such a practice, it seems to me, gives a good introduction.

There are innumerable experiments in nature trail technique, and a good self-guiding trail is a challenge to the ingenuity and originality of the park naturalist.

Thus far I have spoken of the trail as an isolated unit in our interpretive work. There is a distinct opportunity, however, of which we have never taken full advantage, of tying the nature trail to the museum. This association has two definite advantages. First, each element of the association profits by the presence of the other, thus increasing its usefulness to a greater degree than if they were separated by distance. The other advantage is that the presence of a nature trail which begins at the door of the museum saves valuable exhibit space in the building. For example, there is no need to exhibit a trunk of a Douglas Fir or foliage of a Lodgepole Pine in a museum when the actual trees can be seen on the trail a few feet away. The more we can look upon a museum and its nature trail as a single unit, the greater our scope of interest can be and the more efficient our interpretation will become.

I, for one, definitely feel that a museum should not house any object which can be shown without difficulty in its natural setting. This, then, is the purpose of the nature trail: To arouse in our visitors an interest in trail side features, and to interpret these features so that the visitors may, through appreciation, gain a better understanding of them.

MR. DOERR: Thank you, Mr. Yeager. I think both Mr. Yeager's and Ned Burns' papers should result in some committee work by committees six and seven. These two papers are now open for discussion.

MR. EPPLEY: I noticed in your statistics given this morning that museums draw a lot larger attendance than your nature tours. That may be due to the fact that people are more used to buildings and artificial exhibits than walking. I have tried to emphasize to park people the fact that the museum serves as a stepping stone to the nature trails. It serves as one of the methods of interesting people in nature, especially that found in the area.

MR. MCHENRY: I think that what we practice on the nature trails at the National Capital Parks is not only a kind of idealism--but also an outright necessity. You remember yesterday I showed you a picture of one of the directional signs we use on the nature trail. It is quite a job to steal such a sign but they are stolen. Removal of trail labels is a very serious problem with us. Our nature trail in Rock Creek Park emphasizes mostly one phase of nature study, botany. Features along this trail have been marked by about 200 somewhat elaborate labels. Placing these labels required a great deal of labor and research which was made possible only with the aid of volunteer help. When we started to place these labels along the trail, a couple of youngsters wandering through the park apparently with nothing to do followed us at a distance. Whenever we disappeared around a bend they collected almost all the labels we had just placed. It took us something like three days to put these labels on the plants. When we returned to the beginning of the trail, there were practically no labels left. That continued until I decided there was only one thing to do: to place a sign with a maximum of uncollectable appeal. To do this, we stamped simple aluminum labels with just the common name of the plant and a number arbitrarily assigned to it in the District Flora. Such labels are easily and quickly replaced. To supplement these brief labels a loose leaf "Guide to the Nature Trails of the National Capital Parks" was prepared and distributed to persons seeking more information than these labels contain.

MR. JACKSON: There is a question in regard to the museum labels at the Southwestern National Monuments. At times we were under the impression that the most adequate museum is completely self-guiding. We figured out that the average visits of persons to the museums lasted twenty minutes. I don't know, and I would like to find out, how the average attendant is going to go into a completely self-guiding museum and accompany visitors through the exhibits and talk without competing with himself. At times it might be necessary to dispense with a great many of these labels.

MR. DOERR: I can certainly appreciate your point there, and I feel that where we give museum talks we have an opportunity of elaborating.

MR. ROBINSON: I would like to ask where the museum should be located with respect to area and facilities. In other words, what of the location of a museum in relation to other facilities? This is constantly coming up in our office.

MR. DOERR: I can assure you that the location is a very important thing. If your will visit Rocky Mountain you will see that a museum there is very little used because it is a hundred yards or so off the main road.

MR. BURNS: We feel that the museums should be strategically located at the crossroads where you catch your greatest number of visitors. Remember that the museum in your park is an integral part of your interpretive story and not an entity in itself. It might be described as a label on your exhibit, which is the park. Naturally you want that label where the largest number of people are going to read it. At Yellowstone, for example, it is necessary to have several museums at strategic locations to cover the various aspects of that park. Individual problems must be solved in each area. In regard to labels in the individual museum exhibits they too should be strategically located. It is quite desirable to have conducted trips through museums where the material is labeled. There are times when the guide is not around and also there are people who like to take their own time in going over the exhibits. I don't think we ought to say one kind of interpretation is good and one is bad. Both are good and each have their proper spheres. Labels plus guided trips serve the two purposes very nicely.

MR. STAGNER: One question in connection with Mr. Yeager's remarks I bring up because it may interest others too. I believe this spring we received memoranda stating that all changes in museums should have prior approval of the Museum Division. We have found it advisable to make a few changes such as new labels, new arrangement, and so forth, in our museum. After having the verbal approval of Mr. Burns, I would like to have a more exact definition of what constitutes a change.

MR. YEAGER: That memorandum quotes in part, "any major change in existing museum facilities". Shortly after it came out I received a letter from Yosemite in which the naturalist listed the fact that he had moved the secretary's desk from the north side of the room, and it had a whole list of very insignificant and minor things. They took the memorandum entirely too literally!

MR. BURNS: The purpose of that memorandum was not to make it difficult for bringing about minor changes which everyone would undoubtedly make, but dealt with major changes which take in the complete shifting of the museum exhibits. Any reasonable man can distinguish between a major and a minor change.

MR. FAGERLUND: I want to ask Mr. Burns to what extent nature trips will be included in the plans of the museum division.

MR. BURNS: As far as the Park Service is concerned the whole interpretive program should be so correlated that everything which is done to interpret the area to the public should be properly related. We regard museums in national parks as quite the opposite of city museums. A park museum is merely a label,--an effective means of telling more about that area. Trailside exhibits, outdoor signs and markers are just as important as the labels and specimens inside a museum building. Trail-side trips are just as much a part of the interpretive work as conducted trips within a building.

MR. STUPKA: About two years ago Dr. Bryant suggested I prepare a booklet on nature trails in the national parks, and a questionnaire was circularized among park naturalists in regard to statistics concerning existing nature trails. I learned that there were but few nature trails in the national park areas--so few, in fact, that it was decided against the preparation of such a booklet at that time.

MR. DOERR: Just one other thing I would like to say on this and stress the importance of museum plans. I have had experiences where members of the park staff have undertaken to find jobs for CCC camps and as a result they have gone ahead and done things without consulting museum development plans.

MR. MCKEE: That is a matter regarding which the Park Service should develop a policy. I recommend that the committee consider the matter of which of our specimens should remain in the national parks. For a number of years I have advocated that we should keep all local materials. Meanwhile our collections have grown and we now have a number of type specimens, mostly fossils. The National Museum and other institutions have called to my attention the fact that the national parks are not safe places in which to keep such valuable materials. I have held back the criticisms so far on the grounds that I have constant use for the types in identifying collections of specimens that are sent in to me throughout the year for this purpose. To have those types returned from Washington on each occasion would be a waste of time and effort and would be inefficient. Now the time comes when I am about to leave. Should those fossils remain in this national park or go to the National Museum? I am putting it up for consideration because I think the National Park Service should develop a definite policy on this point.

MR. WALKER: I think type materials should go into a depository like a national museum or some similar organization. Some should remain in our areas for our use and study, too, but type materials need a little better protection than we can afford them. They are unique specimens and are very easily lost. They are also apt to be damaged. I would like to see these materials go into one national depository.

MR. MCKEE: Just to make another illustration I am going to cite the following experience we had here. We had donated to this park a valuable manuscript--a diary concerning Major Powell's famous expedition down the Colorado River. The immediate request was for that manuscript to go to Washington. The lady donating the manuscript, who happened to be a distant relative of Major Powell, said she would not give it unless it remained here. Now that is just another angle to be considered.

DR. RUSSELL: I think we have a policy already defined regarding type specimens. The National Museum has always been regarded as the proper custodian of these specimens.

MR. ROTHROCK: In most instances I think we can obtain replicas of specimens sent to the National Museum so that we will have something which will be the equivalent of the type specimen but will not be an irreparable loss if destroyed.

MR. SCHELLBACH: How would that apply to Powell's Journal of his trip down the Colorado River?

DR. RUSSELL: There is but one answer to that. The National Park Service is sole owner of that gift.

MR. BURNS: I might throw a little light on that. In our historical areas in the East we have historical items of primary importance. I know the Powell manuscript is very important and the Park Service has other unique documents from the broad point of view of American History. Many articles were given with the express understanding that they were for the Service. We have lots of this valuable material and we will continue to receive it. Usually such documents find their best use in the areas to which they pertain but if they are held in the parks they must be accorded the care which they deserve.

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The Library Problem of the National Park Service

Carl P. Russell,
Supervisor,
Branch of Research and Interpretation.

ABSTRACT

The library needs of the Service fall in two categories, - first, the libraries for administrative use; second, the park libraries open to the public. Failure to organize and preserve the thousands of technical reports and other manuscript materials produced by staff members is wasteful; failure to organize and use the general reference material purchased, or otherwise acquired by the Service, is fatuous. Library materials are all-important to the technical and administrative staffs and library systems must be developed in the central offices in Washington and in the Regional Headquarters.

In the parks public libraries must be provided if the public contact programs are to be well balanced. Adequate appropriations for book purchases must be obtained and a coordinated program of library work devised. A position, Chief Librarian, should be established. These desired ends will be reached when Service officials unite in promoting the park library idea.

There are two distinct phases of the National Park Service library problem. Among the 16 million people who each year use the areas under our administration are great numbers of visitors who wish to refer to the literature pertaining to the areas; they wish to do some of their reading while they are in the parks. This visitor demand for information obtainable from the printed page constitutes the public library problem of the Service.

The second problem exists in the demands of National Park Service employees for authentic and complete references pertaining to the work they are doing. Some of these references exist in the form of books and periodicals and others consist of special reports preserved in manuscript form or as mimeographed papers which have had Service-wide distribution. In any case, whether the material is printed or typed, its content is needed by the active employee and should be made available to him at the

list of new positions each time that the proposal was placed before the Bureau of the Budget, - this in spite of the high priority given to the proposed position by the Service.

All of us in the Service and those interested friends outside of the Service should know that success in obtaining appropriations does not grow out of well written justifications alone. Unless the Bureau of the Budget believes that proposed increases will result in necessary service to the public the increases may not be forthcoming. In this matter of lag in developing library programs, I think that it is reasonable to say that further expression of public interest must be heard before the Bureau of the Budget will become interested in public library needs in National Parks.

As might be expected the best progress in public library service has been made in those parks where naturalists or other officials have made a special effort to determine visitor needs. Ansel Hall in Yosemite provided a reading table and a small shelf of boods in his first museum program of 1920 in the old Chris Jorgensen studio. From the very beginning in Yosemite, Museum visitors were encouraged to turn in library materials. Visitor response was noted and recorded; Mr. Hall and his associates were convinced of the importance of a library in the interpretive program, and all planning for future development included library services in the Naturalists' set-up. As a result of consistent planning the permanent museum in Yosemite Valley now offers a worthwhile public library service.

I suggest that all park naturalists make some attempt to make books available to park visitors even though organized library work can not be conducted in all parks. Determine the extent of visitor interest in library materials and report regularly on your findings to the Superintendent and to the Washington office. Evidences that accumulate as a result of these observations and reports will contribute to the justifications that must be presented in connection with the establishment of a coordinated public library program in the Service.

The In-Service Library Problem

National Park Service employees, generally, are more conscious of In-Service library needs than they are of public library needs. Each technician and many administrative officers find that they must turn to library materials constantly in meeting the demands of their daily work. In the central offices in Washington, in the Regions and at the headquarters of Coordinating Superintendents as well as in most of the parks and monuments important collections of books, journals, pamphlets and reports have been built up. Each one of us knows full well that the acquisition of reference material avails us naught if the reference items cannot be found when needed. Systematization in filing and recording is essential. In some offices great care has been exercised in installing

library systems; in other offices the lack of care in housing and cataloging these collections is, to say the least, disconcerting to the busy worker. The Washington Office is not free from criticism in this regard. Why basic tools such as library materials have been neglected during the years of growth of the National Park Service is difficult to understand.

The best progress in organizing libraries has been made in those field offices administered by men who have found it necessary in a major way to use reference works at some time in their careers. They have recognized the importance of providing an efficient system of filing, cataloging and using library materials, and have made one person in their organization responsible for library work.

The National Park Service organization chart of October 15, 1940, charges the Branch of Research and Interpretation with the duty of "promoting library facilities" for the Service as a whole. All book purchases for the Service clear through the Branch of Research and Interpretation. All library matters pertaining to the Washington Office are coordinated in the Branch of Research and Interpretation. A 30-man WPA library project devoted to the organization of library materials in all branches and in the National Park Service sections of the Department of the Interior Library now heads up in the Branch of Research and Interpretation. No steps have been taken by the Washington Office to coordinate the Library work in field offices and it is unlikely that any such coordination will be attempted until a Chief Librarian can be employed but it is not premature to advocate that Park Naturalists assume responsibility for library work in those parks where naturalists are employed. In my opinion, Regional Naturalists when and if appointed might well be made responsible for the supervision of library work in Regional Offices.

In the Washington Office it has been decided that it is not practicable to centralize all library collections in one general library. The National Park Service Section of the Department of the Interior Library constitutes something of a centralized collection but it is made up largely of duplicate items, bulky series of journals and periodicals, and materials that find infrequent use. Each branch and, in many cases, each division maintains its own library. It seems only fair and efficient to permit workers to retain their reference materials within easy reach of their desks. Books retained in each office are few; pamphlets, reprints and journals constitute the greater part of each office collection.

The scattered small libraries of the Washington Office have been unified by the WPA workers mentioned previously, who have developed a master catalog for all book and periodical collections. One copy of the master catalog will be held in the Department of the Interior Library and a second copy is retained in the Branch of Research and Interpretation. Each branch or division also, of course, maintains a catalog of the books preserved in its offices. Pamphlet and reprint collections are cataloged for each office but no master catalog has been prepared for these materials held in pamphlet boxes.

In the Washington Office the Library of Congress subject classification system in its broader aspects is used in combination with the Dewey Decimal System of numbering for book collections. It should not be inferred that the library catalogs of field offices now numbered according to the Library of Congress system of numbering must be discarded. If at some time in the future a Chief Librarian of the National Park Service wishes to prepare a master catalog of all books possessed by our field offices it will be quite possible to assemble that catalog regardless of the systems of classification and numbering used by the various small libraries of the parks and monuments. As a matter of fact the catalog cards printed by the Library of Congress bear both systems of numbering. The important consideration for the field library worker to keep in mind is that some system of classification and numbering should be instituted and orderly procedure insisted upon in acquiring, filing and using library materials. If order can be brought out of the chaos that has characterized some of the library programs of the Service, nothing further need be insisted upon by way of standardization.

A chapter on libraries will be found in the National Park Service Field Manual for Museums. A Manual of procedure in National Park library work is now in preparation. These guides will serve to encourage field men to follow certain practices in caring for their libraries but failure to observe all details covered in the Manuals will not be chalked up against the librarian. Failure to do anything whatever toward meeting the library problem has been the inexcusable weakness of too many offices both in Washington and in the field. Neglect of library materials should not be tolerated by any executive.

Conclusion

Each park naturalist should assume full responsibility for systematic handling of the library materials possessed by his department. If a public library program is practicable the park naturalist should direct it; in-service library work in a park definitely falls within the scope of the Naturalist program and park executives reasonably may ask the park naturalist to coordinate all library activities in the park. The Superintendent should not tolerate the neglect of library materials in any of the offices within his organization.

In Regional Offices and at the headquarters of Coordinating Superintendents important collections of library materials have accumulated. Not the least important of these materials are the hundreds of special reports which have been prepared by technicians and executives since 1933. A tremendous expenditure of funds and effort has gone into the studies upon which these reports are based and in many cases these investigations provide the foundations upon which will rest all future work in certain areas. Most of these reports are in manuscript form and but few copies were made. They are exceedingly valuable and should

be treated accordingly. In my opinion they should be handled as library items and not filed with correspondence. The case of reports constitute an important library problem in regional offices. Added to this problem of special reports is the usual problem of books, pamphlets, periodicals and journals. Regional Naturalists, when appointed, can do much to assist the Regional Directors in meeting their library needs.

In the Washington Office a heavy library responsibility has been placed upon the Branch of Research and Interpretation. Since the establishment of the Service library materials have been acquired in a major way through gift, purchase and in-service writing. Some 30,000 items are possessed by ten offices. Until the WPA library project of 1940 was established there was little or no coordination of library work. In some offices library materials were fairly well organized; in others they constituted nothing more than a store of material. It is the purpose of the WPA project to catalog and put all of these materials in working order. The current use of the library will be facilitated and the long-time plan for library work in the Washington offices will be founded. Further attempts will be made to obtain authority to make book purchases more nearly in accord with Service needs and justifications will be renewed until the much-needed Washington Office librarian position is made available.

Eventually a Chief Librarian should be employed whose duty it will be to coordinate all library work in the field as well as in the Washington Office. In the meantime each field office should make every effort to maintain a creditable library system. Park Naturalists should feel that they have a special responsibility in this work.

A Sample Scheme of Classification of Pamphlets

The classification outlined below is used in the office of the Supervisor of the Branch of Research and Interpretation, in cataloging the pamphlets and reprints held in the Supervisor's office. Major collections of geological, wildlife and museum materials (pamphlets and reprints) are cataloged and preserved in the offices of the division chiefs.

The catalog is maintained as a file of 3" x 5" cards. One card is made for author and filed alphabetically; one card is made for subject, and one for number. If a pamphlet pertains to two or more subjects, - for example, a Galen Clark biography which pertains in important way to Yosemite as a State Park, more than one subject card would be prepared in order that cross indexing may be possible. One subject card will find place under Biography, one under Parks, State, one under History National Parks and a fourth card will be placed in the Yosemite catalog. The pamphlet itself is given a number and filed in the box marked Biography.

Classification of Pamphlets and Reprints

One or more reprint boxes are required for each of the subdivisions shown.

ANTHROPOLOGY - Archaeology - ethnology - general.
ARTS - General
ASTRONOMY -
BIBLIOGRAPHY - Anthropology - History - Miscellaneous - National Park Service - Natural History
BIOGRAPHY -
CONFERENCES - Miscellaneous - National Park Service
CONSERVATION - General - Historic Values - Land Acquisition - National Park Service - Natural Values.
DIRECTORIES - General
EDUCATION - General
ENGINEERING - General
FORESTRY - Administration - General - National Parks - Protection - Recreation - Utilization.
GEOGRAPHY - Geographic Names - United States - World
HISTORY - U. S. Colonial - U. S. Military - U. S. Miscellaneous - U. S. Missions - National Parks.
HUNTING SPORTS -
INTERPRETIVE PROGRAMS - Miscellaneous - National Park Service
LIBRARIES - General - National Park Service - Methods and Procedure, General - Methods and Procedure, NPS.
MAPS - Miscellaneous - National Park Service.
MOUNTAINEERING -
MUSEUMS - General - National Park Service - Preparation
NATIONAL MONUMENTS - Individual National Monuments (Ackia to Zion)
NATIONAL PARKS - General - Individual National Parks (Acadia to Yosemite, a section for each)
NATURE GUIDING -
PARKS - Foreign - State - Municipal and County.
PARKWAYS - Blue Ridge - Natchez Trace.
PHOTOGRAPHY -
PHYSICS -
RECREATION - General - Studies, NPS.
RECREATIONAL AREAS - Boulder Dam
RESEARCH - Method and Procedure - Miscellaneous
RESEARCH PRESERVES -
WILDLIFE - Amphibians - Birds - Botany - Fishes - Invertebrates - Mammals - Management - Miscellaneous - National Park Service - Reptiles.

1/ National Park Service 1929. Park Libraries - Proceedings of the First Park Naturalists' Training Conference. (Mimeographed) pp. 190-195.

Russell, Carl P. 1940. Libraries In The National Parks. The Library Journal, Apr. 15, 1940, pp. 330-333.

Burns, Ned J. 1941. The Park Library. National Park Service Field Manual for Museums, pp. 240-254.

Steen, Charlie R. 1940. The Loan Library. Southwestern National Monuments Report. Supplement for April, 1940, pp. 255-262.

DR. RUSSELL: I want to announce that the present estimates are being defended this week, which include authority for four thousand dollars to be spent on books to go to the libraries of many areas of the Service. This sum represents a one hundred per cent increase. I hope you people will show your need for books this year so that it may become a matter of record in the Washington Office. This is an "authority" to expend appropriated funds for books, not an appropriation. Regardless of funds available we cannot exceed the limits prescribed by our "authority to buy books".

MR. MCKEE: One of the most serious problems in the parks is to get help to handle the libraries. I know that is the case here.

MR. YEAGER: I suggest that the meeting go on record backing Dr. Russell's suggestion regarding a coordinated library program. While I am not a naturalist I am sure all of us favor such an important project and I think we should give it the necessary backing.

MR. BEATTY: I would like to find out how this librarian would function in regard to the individual parks, that is, whether he would go out and assist the individual parks in their library programs. We have been able to have a librarian position established in Yosemite and we are now at the point where we have the making of an advisory council for our very fine library on California history. I just wondered how such a situation would work out with a coordinated librarian.

DR. RUSSELL: Prior to 1930 there arose the same question as to what would happen if the Museum Division were established. I would say that the chief librarian of the National Park Service would have his headquarters in Washington. He would be much concerned with the National Park Section of the Interior Department library in Washington. He would be concerned with the collections that are now housed in the many offices of the Service in

Washington, and he would lend such help in the guidance of library programs in the field as was necessary and as he was able to give. He would give representation to you on library questions and library programs. He would not dictate on details of park library procedure but I would expect him to shape a broad program that would make for better library practices and better support for library work.

MR. DOERR: It seems to me that the regional naturalist might serve in some respect in coordinating the work.

DR. RUSSELL: The Regional Offices have given some thought to library needs and in a few places they have come to designate some staff member as acting librarian. If Regional Naturalists were appointed I think that they should supervise library work in the regional offices and contribute to the coordination of library programs in parks.

MR. ROBINSON: Most of the books in our office are scattered in various technical branches. I know it would be a fine thing if we could get all that material together in one central library, or at least, obtain a central catalog.

DR. RUSSELL: A central system in a Regional Office might well be the same as in the Washington Office. Probably technicians will wish to retain certain needed reference works close to their desks but the regional librarian should know the where-abouts of all items.

DR. BAUER: We have collected all our books at Yellowstone and cataloged them. If any office wants a book we charge it to them on an indefinite loan. Our files show exactly where all our books are.

MR. MCKEE: In this park all of our books are issued to the park reference library and if anyone wants one for another department he simply signs a library card which serves as a record of the loan.

MR. LONG: I think this is in answer to Carl's inquiry as to why the Washington Office has not received requests for books in excess of what is supposed to be allotted for yearly purchases. All requests for new books must be drawn up on regular blanks. Those blanks go to the chief clerk's desk. If there are funds available they are sent in, and if not they come back to us marked "no funds".

DR. RUSSELL: If we get authority to use four thousand dollars for books that amount will have to cover the needs of all the branches and all field offices. Coordination of book purchases rests in my office, and my secretary, Mrs. Davis, serves very well in keeping records organized. She is not the librarian, however, that we are talking about. If we get

a librarian on the job I hope that Mrs. Davis will continue to take care of book orders. In apportioning money we take into consideration the needs in the different branches. We take into consideration the parks that have made progress in their library work. Some book purchases are made from CCC funds and are not affected by the prescribed authority. Some are purchased by Natural History Societies. Many of us feel that not enough books are purchased to fill all needs. If you feel the same way you should reveal your needs by placing orders. Eventually we will get the increase in authority to purchase but we must show justifications.

MR. DOERR: We know there is an allotment of $25.00 a year for the parks from which the naturalist department, ranger department and other departments purchase books. Do I understand that the lists that are submitted go through your office?

DR. RUSSELL: Yes, every book order is placed through my office.

MR. DOERR: Would you suggest that instead of sending in a request for an exact amount of $25.00 worth of books that we send in for $30.00?

DR. RUSSELL: If funds are available you should ask for all the books needed. Authority may be forthcoming if justifications are adequate.

MR. BEATTY: I don't know whether the situation is the same in other areas, but at Yosemite, with an allotment of $25.00 and so many departments dependent on that sum, we have voluntarily turned over the entire amount to other departments and purchased our books out of our natural history association fund. Possibly our attempt to help other departments has been wrong, but I think that it has assisted in building up our park library.

MR. GREGG: We always need more than we can get. We thought there was a definite limitation and it was all we could get.

DR. RUSSELL: Only $2,000.00 can be spent for books each year, so far. It seems obvious that this is ridiculously small but there is a strange reluctance on the part of the Bureau of the Budget to increase the authority.

MR. JACKSON: It looks like we could save a lot of money on books by possibly establishing relationships with a lending library. In that way as problems come up the particular type of book needed could be borrowed for a few days rather than purchased.

MR. WATSON: For the last two or three years we have had a librarian paid out of WPA funds. This year our WPA project was lost and our librarian request did not come through. We wrote our State WPA office about it and

they made a librarian available to us. If your State has a statewide library project perhaps you can get help by asking for a librarian.

MR. DOERR: I happen to have had the question come up in regard to books being equipment. I realize that we are responsible for these books. I suggest that Mr. Rothrock look up the information that defines this subject.

MR. CONDON: I might state that the books in Yellowstone are carried as property by our storehouse. We are responsible for that property and we account for those books.

MR. BROCKMAN: Including natural history association books?

MR. CONDON: No, those books are the property of the natural history association.

MR DOERR: That may cause a tremendous amount of embarrassment in cases of transfers. It was only by the grace of the board of survey that some of us got out of having to replace some books. Books would come in to me and the warehouseman never got any record of them. That is a matter that requires clarification.

Ned Burns, you had an announcement to make.

MR. BURNS: We are negotiating with the officials of the foreign pavilions at the World's Fair in New York in the hope of obtaining a fairly large number of exhibit cases. We expect to get them without cost except for removal and want to divide them up between the parks. We will appreciate having you tell us of your wants so as to distribute them in the most effective way. The only cost to you will be the freight from New York and a small sum for crating.

MR. KING: What type of cases are they?

MR. BURNS: They were built in France, and are mostly wall and upright aisle-type cases. The reason we expect to get them is that the duty would exceed the cost of manufacturing them in this country, consequently they cannot be sold at a profit. We expect to obtain them as a gift, duty free, and in that way we hope to come by a considerable number of fine cases.

MR. DOERR: Mr. McKee will present a paper on the coordination of staff research and sources of aid.

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Coordination of Staff Research and Sources of Aid

Edwin D. McKee,
Associate Park Naturalist,
Grand Canyon National Park.

ABSTRACT

The justification for research depends upon its relative importance to the general program of operation and development. It is based upon (1) what is to be investigated, (2) when, and (3) by whom. The extent of a research program in any area depends on the features of that area. Research should come before the development of visitor facilities in order to avoid wasteful mistakes. A few major studies and numerous minor ones can be carried on by members of the park staff, but it may be necessary and advisable to have outside specialists work on certain problems. Preliminary arrangements with collaborators should be made in order to insure that the Service will have representative sets of specimens and copies of the results obtained. The Service should give various types of assistance in coordinating the program and the naturalist should make it his duty to understand the nature of the problems.

"Research" is a word much used but frequently misunderstood by the layman. Funk and Wagnall's dictionary defines it as "a systematic, critical investigation seeking facts or principles." According to this definition, it is something that involves virtually every person for it must be employed in connection with every planned project. Researches may differ widely in quality, some being very systematic and critical, while others are at the opposite extreme, but they all have in common the aim to obtain facts. To prepare a lecture requires research and so does the construction of a skyscraper; the difference is one of degree, for scientific method must be employed for success in either case.

In his autobiography, William Lyon Phelps says of a professor in the political economic department at Yale where he studied as an undergraduate: "If you brought any bit of research to Sumner he would ask three questions: 'Is it true? How do you know it? What of it?'" This analysis should, perhaps, be applied to every study before time and effort is spent upon it at the expense of some other endeavor. No data are worth using as a basis for development unless they are true; if we cannot prove that they are true, then our foundation is shaky; and if we cannot show that they have an application, our program is not well planned.

As a working hypothesis for the National Park Service, the following statement of the importance of research is recommended: "All research, if properly undertaken, serves an ultimate, useful purpose, but its justification for any particular time or place largely depends on its relative importance to the general program of operation and development." Let us analyze the three principal ideas incorporated in this statement.

First is the matter of research being properly undertaken. It should be obvious to everyone that if investigations or studies of any type are not conducted in a systematic manner and with a critical attitude, they are not likely to give true results; if the results are false the research is detrimental. In actual practice, however, the approach to the truth, which constitutes the establishment of facts, is often a relative matter and the degree of its success is dependent in large amount on the skill and industry of the investigator. An important measure, then, in the application of research data is to properly appraise its degree of validity. Another is to recognize and differentiate between fact and theory.

The second premise to be considered in the statement of the importance of research is that all types serve an ultimate, useful purpose. It is certainly true that many features in a National Park, even if studied and examined critically, would have little or no bearing on major problems of the park administration at that particular time. The investigations might serve to mentally stimulate the investigators; they might have real importance to some broad fields of interest largely unrelated to the Park. But from the standpoint of the Park Service, it is important to recognize that all research consists of the gathering and accumulating of facts and therefore has potential ultimate value. The National Parks are natural research laboratories and so offer inducement to schools and colleges for conducting studies of various types. Thus, on the basis that all research has value, many problems of little immediate concern to a Park may still be solved justifiably through the work of outside agencies and may later be of great value to the Park.

The third premise set up regarding National Park research is that "its justification for any particular time or place largely depends on its relative importance to the general program of operation and development." This, of course, applies to research by, or at the request of, the National Park Service. It enables the development of a clear policy concerning what should be investigated, when it should be investigated, and by whom, in the general program. Inasmuch as these three questions are basic in park development, they will next be discussed, separately and in detail.

Of what research should consist, in a given area, is a question that can be answered by ascertaining what are the projects for the use of that area. Research should be a function of advance or long-range planning. It is a fallacy to conclude that the demands of certain visitors or the requests of a certain portion of the public should determine what problems are important, just because the parks belong to the American people. The National

Parks are the heritage of the American people of all generations, and not simply those of a given time and place. The situation is like that of a hospital in that the doctor and not the patient prescribes the treatment. So the National Park Service, through the process of careful planning, should determine its projects on the basis of future as well as present use, and these in turn should represent a statement of the problems to be studied. Thus, research in a park may be the preparation for an educational program, for the building of a bridge, for a program of landscaping, or for any of a multitude of other justifiable projects.

There is an unfortunate tendency among many individuals to steer shy of the word "research" simply because they have no realization of what the word implies. They may conceive of it as some harmless but fruitless hobby, satisfying curiosity but having little practical bearing on problems of the present. Or they may think of it, purely as a deep and intricate process such as can only be carried on in a laboratory and with complex formulas by a master chemist or an astronomer. Actually it should be considered the foundation upon which any worthwhile project is developed and the more important the project, the more urgent the research. With this in mind, a corollary to the conclusion that research should be determined by projects of the area is proposed. It is that the importance of the research is in direct proportion to the importance of the project.

The question of when research should be undertaken is not difficult to answer. It seems obvious that it should come before and not after the development of any project concerning the utilization of an area. To build a museum without previously determining the facts of the story to be told; to solve a wildlife problem without first ascertaining the true conditions; to plant trout in a stream without examining the suitability of the water are all in the same category. They are comparable to building a road without first surveying the route. Furthermore, the better the survey or the more able the research, the better the structure which is based upon them. Without such foundation the museum, the wildlife program, the fish planting and the road can be completed, but they may later be regretted; indeed they may even prove to be more harmful than beneficial if they are developed on the basis of actual fallacies.

Examples of failure to conduct research in advance of the development of projects are numerous. Although they are indications of incomplete planning, frequently they are difficult to avoid. Especially in wildlife problems is this true. The subject has been ably discussed in the first printed report by members of the National Park Wildlife Study Group in the statement: "Meeting existing difficulties with superficial cures might be temporarily expedient and, in cases of emergency, necessary, but if continued would build up a costly patchwork that must eventually give out. It would be analogous to placing a catch-basin under a gradually growing leak in a trough and then trying to keep the trough replenished by pouring the water back in. The task mounts constantly and failure is the inevitable outcome. The only hope rests in restoration of the original vessel to wholeness."

As director of the National Park Service, Horace M. Albright, in an article on Research written for Scientific Monthly in 1933, plainly set forth his views on research as part of long-range planning in the National Parks. He stated that "it has become increasingly evident, however, that a management plan must be inaugurated--and this necessitates, first of all, complete investigation," and at another point he quotes, "fixity to the main purpose of obtaining a perspective of the problem in its entirety has been a paramount consideration". These statements referred especially to wildlife problems, but they are applicable to almost any endeavor of the National Park Service.

The third major question, concerning research in the National Parks, which should be considered and answered with care is: "By whom should research be done?" It is apparent that in cases where Parks have staff members qualified to carry on particular studies, and sufficient time is available, it is to the advantage of the Service to have its own men participate in this work. Considering for the moment only naturalist activities, however, it is certain that Parks with but one naturalist on the permanent staff, or even those with three, regardless of the ability of the individuals, cannot hope to carry on detailed, scientific investigations in more than a few of the many fields with which this department must be concerned.

The types of research in a national park which might logically be handled by the Naturalist Department because of the specialized technical training of its men are many and varied. Among them are problems of wildlife, botany, geology, history, archeology and ethnology. The extent, or depth, and the scope of research in these fields will depend on the capability of the individual researcher and on the time available for the study. The advantages of research by a staff member, wherever possible, are that while he is gathering and accumulating facts, he is receiving excellent training and gathering data of a type useful in other phases of his work, and he is also obtaining important mental stimulus. Another advantage is that he is constantly "in the field" and therefore ideally situated to make regular and systematic observations and to check and recheck his ideas and theories as they develop.

On the other side of the ledger, opposing the carrying on of research by park members, are the disadvantages of lack of adequate libraries and equipment for most types of work, absence of fellow workers with whom to discuss problems in most fields, and insufficient time for proper study in view of the many and varied aspects of a naturalist's work. A partial remedy of this situation would be to have in each park a full-time specialist in each field represented. In a major park, for instance, there should be a full-time wildlife technician--not just a ranger or naturalist who spends a few days per month driving through the country and writing a report. There should be a botanist or forester who could personally examine and record sample plots, look into parasitic infestations, report on wilderness areas, and supervise transplanting of trees and shrubs. There should also be a geologist, an archeologist or historian, a museum technician and a leader of

education and interpretation. This is the type of staff found in most large museums throughout the country and when it is considered that most of the larger national parks are comparable in importance and in their fields of activity to a large museum, it does not seem illogical to set up such an "ideal" staff as a goal for a national park.

Inasmuch as a "complete" staff is not a reality at the present time in any national park, and even if it were, there would still be specialized problems for which outside help would be desirable, it seems practical and necessary for our Naturalist staffs to seek or welcome, as the case may be, assistance from other agencies. Sources of possible aid in National Park research may be placed in two classes. First, those who are specifically invited to work on some particular problem, and second, those who for reasons of their own, request permission to do special research in the parks. These two groups are essentially different in several respects and will be considered separately.

If a national park has a planned program, the necessary research is determined well in advance, and the possibilities of securing adequate assistance from outside are usually good. It has been a common practice for years to obtain help in wildlife problems from the Biological Survey, in forest-insect problems from the Bureau of Entomology, and so on. Nor has this generous assistance of other agencies been limited to Government bureaus, for many private institutions and individuals have given unstintingly of their time and effort to help in working out various problems. This type of research, planned well in advance of actual needs, is normally very satisfactory, especially since the naturalist and others of the Park staff can usually work with the specialists, at least enough to obtain a knowledge of the factors involved and to be able to evaluate the conclusions reached on the basis of the quality of work done.

The vast amount of research done in various national parks by outside individuals, or groups, working on "private" problems, is the natural result of the park areas offering such exceptional opportunities as outdoor research laboratories. The inducement to schools and colleges to use these areas is great and if properly controlled, can be turned to good advantage by the parks. A definite but careful control over such researches should be exercised by the Parks because any problem, no matter how distantly related to their interests of the moment, may be of great importance in the future. But in order ultimately to realize benefits from such work, two things are necessary - first, that the research be well done and second, that proper cooperative arrangements be made so that the record will become available.

Careful discrimination and good judgment should be exercised by members of a park staff before encouraging any individual or group to conduct research in a park. Of course, it is anybody's privilege to make certain types of studies, and from them to say and write what he thinks, but where the collecting of specimens is concerned, and this is necessary in most

types of research, the Park has a definite control which it should exercise wisely and tactfully through the issuance of permits. In brief, it is extremely important that preliminary arrangements be made to assure the Park Service of obtaining representative sets of specimens and copies of resulting analyses, reports or publications. When institutions of foreign nations seek permits to do archeological work in Mexico, for instance, that country is very discriminating in issuing permits and very specific in the regulations involved; in our National Parks the same care and discretion should be used to protect our heritage.

On the other hand, where competent and cooperative researchers are interested in conducting work within a park it is our duty to get a maximum amount of benefit from their endeavors. The Park Service should expect to give various types of assistance and, in order to coordinate properly any research with problems of the park as a whole, the Naturalist should make it his job to obtain as full an understanding as possible of the nature of the problem. Only by conscientious, tactful and wise promotion of all worthwhile research projects within a National Park can we hope to do justice to the task of perpetuating that area in a natural, unspoiled state for the use of many generations to come.

MR. MCKEE: (Unwritten comment after paper) I have grouped research into several categories and I want to point out what I consider to be some of the possibilities, from a practical standpoint, of applying each of these. First, there is research by the naturalists. This is important in one respect because of its aid to the individual. For that reason, if for no other, it is desirable to have men in the parks to do research. I feel that the problems studied by our naturalists, ranging from the temporary ranger-naturalist to the best scientist among us, should be definitely limited in scope. A clear picture of the problems involved is necessary.

I have four cases I would like to mention, which illustrate the types of research that can be worked out very practically. One of them, about which I don't know very much, is the measurement of glaciers. Another one is the gathering of meteorological data which is of importance to many fields of study. In this connection I have brought in a demonstration. It is called a long-period rain gauge. By using this instrument you can get your rainfall readings over any period that you like, providing the time is not so great that the water overflows the receptacle. The point is that you can get some accurate figures. In this manner you are helping to accumulate tremendously important data, the value of which will be very great when it has been gathered long enough.

The third case is in connection with wildlife. I think the men in the parks have tremendous opportunities in this field, although I recognize that their time is very limited for making studies of the type conducted by wildlife technicians. On the other hand, they have certain advantages over outsiders, because they are constantly on the ground. Here is the sample of a card which can be employed effectively in accumulating data.

WILDLIFE OBSERVATIONS

Name of Animal _____ No. _____

Date _____ Approx. Time _____

Place _____

Notes on behavior, food, conditions, etc.

_____

_____

Observer _____ Recorder _____

It gives suggestions of points to put down. We have been turning these out in booklet form to every man in the park, no matter whether he is a plumber, carpenter or ranger. Those men have been told that it is part of their duty to record this information to the best of their ability. By this method and through the course of time, we are thus accumulating a tremendous amount of data from all sources. Bringing in the data is one thing; appraising it is another. We also have the duty of putting it in a form that is useful. For that purpose we have developed a file system in which every species of bird, reptile, mammal or plant is recorded. With that system, I think we can give you every bird record as far back as 1889. Its value grows with the years. It is a step toward future development. If you are making check-lists you can bring them up to date by this method. Some animal records are not so simple to record as those of birds which I have shown you. We have broken down the deer cards into subheadings as illustrated here. In other words, if someone reports that a deer has shed its antlers, we will put it down under the subheading of antlers. Gradually we get definite information on this subject accumulated over many years. This is just another type of study that can be and should be done by every park naturalist.

The fourth illustration which I have selected to show the type of research that may best be done by a staff member is in the field of geology. Many geological problems are of such a wide scope that it is very difficult to do justice to them in the time that a naturalist has available. Such problems usually can not be completed under the circumstances,

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but, on the other hand, there are many small problems which have a definite value and whose value keeps accumulating with the gathering of material as opportunity presents itself. Those of us in the Southwest are familiar with the cross-lamination in many sandstones, a feature which is not only of interest to the geologist but also to the public in general. It is important that we find out a little of the history of these sandstones. This history constitutes a considerable story that can be presented to the public in lectures, and in order to obtain this story naturalists can easily conduct statistical studies as time permits. By recording data on the direction and slope of the laminae, the story can be worked out. I can not now go into a thorough discussion of the methods of applying it but here is a reprint describing its application to three types of formations in the Grand Canyon. What we do is to record compass readings on a combination graph as I illustrate with this sample. In the course of time, our travels cover the park area. It may be that tomorrow I will go down the Kaibab Trail and record the readings for that area. A month from now I may go down the Tanner Trail to the east of here and do the same thing and so eventually the data will be complete for the area. Any man on the staff can easily learn to do this type of work but he must be aware of the problem. He can make very substantial contributions in the course of time. Doing it as a side product he ultimately brings together extremely important data which can be used in many aspects of our program.

So much for the research done by the naturalists. Next I want to call your attention to a thing which I believe has possibilities for the parks, -- research through grants. In the last two years our Natural History Association has been rather fortunate from the financial standpoint. In trying to consider how we should best use our funds we have decided that the giving of research grants is one of the best ways in which to spend our money.

I have listed five projects that we have carried on in the past year in this connection. One of them was a project for historical studies. We had a ranger who was well qualified to handle this work, but he did not have the finances necessary for various expenses involved. The Natural History Association set up a grant to carry on this work. This man took up a particular aspect of the history of the park, -- the pioneer history. He went to the neighboring towns and gathered a tremendous amount of data from newspapers and other sources. We paid his expenses and we made him feel that we appreciated his efforts. We have that data in bound form now and it constitutes a valuable permanent record.

Another case is in archaeological research. One of our ranger-naturalists had a problem for a master's thesis consisting of a survey of one of our western areas. We encouraged him by setting up a small fund to pay his travel expenses from the park headquarters to that area.

The most important of all of our recent projects is the botanical work that has been carried on. Most of you have met Mrs. Collom, who is doing voluntary work on the Grand Canyon herbarium. She has done a wonderful job. It is a first-class herbarium and if you want to see the results, Mrs. Collom will be glad to show you.

Another project is the library upkeep. Last summer the wife of one of our ranger-naturalists worked long and hard on our library. We did not have any expenses in that case, of course, but in order to encourage her we decided to give her an honorarium and so paid her a small sum, -- enough to make her feel that we appreciated it.

The same thing was done with a young Ohio State geological student. I gave him the job of going over our mineral and fossil collections, and he got work done that we could not have done ourselves.

Other types of research in the Parks are through loans of collections. In other words, if you build up your collections you are going to get lots of help. It has been gratifying to have requests from foreign countries as well as from recognized American universities and colleges to borrow specimens of this and that. Through this means many specimens are given increased value and contribute to major studies. We have loaned fossils, reptiles, mammals, birds and plants to a number of institutions.

When an institution comes into a park to work it is the duty of the Park Service to help as much as possible. This subject also deserves careful thought and consideration.

DR. RUSSELL: I wanted to get in a word to assure everyone that a great deal of interest has developed on the subject Eddie has covered. The new Director has shown a personal desire to get a better definition regarding the possibility of the park naturalists conducting research work generally, and one question he is going to expect to have answered in these minutes is that of research.

MR. DOERR: I am sure that this paper is going to bring up a number of questions and very interesting discussions. The paper is now open for discussion.

DR. BAUER: I would like to say that the thoroughness of this paper covered by McKee and the manner in which it has been presented has been very inspiring to me. Most of you have felt, no doubt, that in your research work you are playing a lone hand. You want to know what the other fellows are doing but you don't know what's happening.

DR. SWARTZLOW: There is one point Mr. McKee has neglected to mention which may be of value in some parks. There are some graduate students

who would like to carry on research work in some areas but lack the funds with which to do it. Couldn't we put them on a dollar a month or dollar a year basis whereby they would have access to certain park facilities that would not be available otherwise? By putting them in such a category would they have access to our equipment and to the Government mess? This would be a great help to graduate students who can't pay their entire way.

DR. RUSSELL: There is a small appropriation for that, -- one of those recurring items. They have cut it so as to give us half; the other half goes to the historical branch. We used to get $1,000.00. Now we get $500.00 and the Branch of History gets $500.00, and of course there are a number of projects in sight that have been planned for some years.

MR. ROTHROCK: The salary that is paid the collaborator is $12.00 a year. The collaborator fund is not used for salaries but for materials usually and per diem. Rocky Mountain, Boulder Dam and Scotts Bluff had the benefit of it last year. The appointment of the collaborator is made by the Secretary's office on a justification or application which the field or the Washington Office supplies.

MR. GREGG: Isn't there some way that gifts can be received and earmarked by the donor for expenditure? In that case the Natural History Association could donate the $12.00 and designate how it shall be expended.

DR. BAUER: I might give a little light on the experience we have had. We have tried it both ways, through donations and through the $12.00 a year straight payment to a man who was appointed as research naturalist. If you are particularly fortunate you may have some success, but such arrangements have not proved satisfactory to us. You get a man on an appointment like that, or else money is donated to the Park Service to hire a man on a small salary and you have a baby on your hands. Unless you have the right man you don't know what you are getting into. He just goes ahead and does what he wantsto do. Our experienceshave not been the best along that line. The best results we have obtained by cooperative research is by encouraging the Geological Society of America or some other national society to make a grant to a group of students they feel qualified and specify they will have to work with the park organization. The grant may be two, five or six hundred dollars a year. Those boys have so far produced very good results.

MR. BROCKMAN: I had not heard about this arrangement until now. How do you go about getting these dollar a month or dollar a year men?

DR. RUSSELL: If you can justify a research program the justification would clear through my office; if it pertains to geology, it goes to Rothrock's office; museum development, to Burns' office; but you would have to set up a recognized program.

MR. BROCKMAN: I am thinking of my own appropriation. Suppose I have fifteen or twenty dollars and I want somebody to study park waters for fish planting?

DR. RUSSELL: If you will establish a program we may be able to obtain appointment of additional collaborators. Your project would be considered when collaborator budgets are prepared. Your request should be written in cooperation with your regional biologist and regional naturalist.

MR. WALKER: That matter has just come up at Crater Lake and I believe Region Four has adopted a precedent dealing with that work.

DR. RUSSELL: It would clear through the regional naturalist and regional wildlife office before it received consideration in Washington.

MR. KING: How many know of the Service making quarters available to collaborators at no rent? I also want to know if contributions are subject to income tax deductions. We have a case where a man decided he would donate $1,000 to the Park Service. Of course, he wanted to get income tax deductions out of that money. He was afraid we would not be able to finish the job with that money so he offered to give more. I have not seen him since. This matter went up to the Director about a year ago. Have any of the Associations received contributions and the contributors received income tax deductions?

DR. BAUER: We have received money that way and I took it up last year with the Collector of Internal Revenue, and by referring it to the Treasury Department I found our Association had no income tax or Social Security to pay, and no other taxes in connection with our library.

MR. KING: Can this be done? Has it been done?

MR. DOERR: I think this is a question you would have to settle with the Board of Internal Revenue.

MR. BEATTY: Possibly I can answer the first question King asks. In connection with the Yosemite School of Field Natural History we have endeavored to have university staff members who every year contribute their services to the school. We still have hopes of appointing them as collaborators so that the Government will be able to reimburse them for travel expenses and other expenses while they are in the park. Under the present arrangement they are given quarters in the Government campground. The Natural History Association contributes the necessary funds to pay the Government for these quarters.

DR. RUSSELL: I wonder how many of the park naturalists have copies of the Administrative Manual on their desks? There is a good deal in that

book of importance to you. Research has received recognition. I know the question has been raised a number of times as to whether park naturalists can legally engage in research. I asked Mr. Moskey's office to prepare a statement to be included in the minutes of these meetings. He finds there is no legal restriction.

"Memorandum for Dr. Russell: November 7, 1940.

"Reference is made to your oral request for a memorandum regarding your question whether there is any law or authoritative interpretation of the law which would prohibit park naturalists from engaging in research work within the national parks to which they are assigned. Your question apparently did not involve special research outside the parks for which special authority is granted on each occasion.

"We have been unable to find any legal restriction on research by park naturalists, and it appears the question is solely one of policy and personnel administration.

"In 1930 there was a question regarding the authority for the giving of educational lectures. The Comptroller General held that there must be specific authority of law before funds could be used for travel to give lectures. We have not been able to find the ruling of the Comptroller General, but it is referred to in Mr. Demaray's memorandum of September 25, 1930 to Dr. Bryant (File - Parks General 0-502, part 3). It may have meant only the giving of lectures outside the parks. As far as lectures within the parks are concerned, the matter was settled by insertion of the following language in the Interior Department Appropriation Act for the fiscal year 1932 (46 Stat. 1154):

> "'Appropriations made for the national parks and national monuments shall be available for the giving of educational lectures therein.'

"The word 'therein' was added by amendment from the floor of the House of Representatives (Cong. Rec. for December 12, 1930).

"Similar language has been contained in each annual appropriation act since that time.

"The above-quoted language does not specifically authorize research, but some research would appear to be necessary on the part of anyone giving educational lectures. Although government employees should come to their positions equipped for the work assigned to them (Comptroller General's opinion of Dec. 20, 1927 - A-20837), there is certainly a field for acquiring additional information specially relating to their duties. Research for the purpose of extending human knowledge would not, of course, be authorized without specific provision of law or

clear implication arising from functions recognized by law. Scientific investigations by the Department of Agriculture, extending the boundaries of knowledge for the benefit of Agriculture in the United States, is an instance of the exercise of such specific statutory authority. The extent to which research is a necessary auxiliary to other functions is an administrative question in each case, and it is believed that any reasonable determination of the matter will not be questioned.

"The above discussion is intended to throw light upon the question, but it is difficult to apply it to a particular case unless the circumstances of that case are set forth so that it can be specially considered. It is suggested that it will be helpful if the justifications for naturalists positions in the requests to the Bureau of the Budget for appropriations clearly state that the naturalists, or some of them, will be engaged in extensive research."

(Signed) G. A. MOSKEY
Chief Counsel.

I am not going to take time to read a recommendation made as a matter of record at the last Superintendents' Conference. I ask that it be inserted in the minutes of this meeting, however.

> "That the interpretation of natural and human history in national park areas be considered as a primary objective. The basis of such interpretation should be organized research by members of the National Park Service, supplemented by the invited cooperation of other interested Federal, scientific, and educational agencies. To accomplish these purposes, research by local field technicians must be recognized, encouraged, and strengthened. The National Park Service should preserve a sense of balance between its research and interpretative functions. The President has said, 'The role of the Federal Government in supporting and stimulating research needs to be reexamined.' It seems equally true that the role of research in our National Park Service program also needs to be reexamined. National Park Service problems are national in scope relating to physical, biological, and human values inherent in some of the most perishable of Federal possessions. They pertain to mental health, constructive living, social traditions, enjoyment of life, and other basic matters bearing on the health, education, recreation, and psychology of America's population. The National Park Service is most advantageously situated to develop a national perspective in ethnology, history, wildlife, and aesthetic appreciation of scenery. To meet its responsibilities the Service must recruit a more adequate staff of research workers and retain successfully its best workers in the face of strong competition offered by other Government agencies and outside organizations.

"The report of the Science Committee to the National Resources Committee entitled 'Relation of the Federal Government to Research' which appeared last November indicated that the National Park Service is expending less than one percent of its funds for Research. The present limited provision for Research in the National Park Service as compared with other Federal agencies calls for a reappraisal of our Research responsibilities in preserving and interpreting national park values."

In that statement the Superintendents very clearly expressed their full approval of all research possible. They have gone on record and I would say the next move is up to the park naturalists and the Branch of Research and Interpretation.

I would like to take this opportunity to compliment McKee on his fine talk. His professional accomplishment is something that any park naturalist would be proud of and the Branch is very proud of him. McKee has made remarkable contributions which are monuments which certainly stand to his credit. I think the collections here are an example. Both he and Schellbach have done something very substantial in preparing those collections.

Eddie, it is futile for me to make a worthwhile expression as to how we all feel about your going away, but this is an opportune time to make a statement. We will always regard you as a park naturalist,--even after you have gone. We know you will continue to be interested in what we are doing. We all want to keep in touch with you. I wonder what publications are distributed by the organization with which you will be affiliated?

MR. MCKEE: There are two publications, one that corresponds in a way to nature notes in the parks, and a bulletin series of a more technical nature. I think a lot of the parks receive these publications.

DR. RUSSELL: How many are receiving the publications of the Museum of Northern Arizona? (8). I hope I don't sound unreasonable, but I am going to ask that you be rather generous in the distribution of these publications. I suppose you will be returning to the Canyon from time to time to continue your research?

MR. MCKEE: My present plans are to carry out research on the history of Grand Canyon, which means that I will be at Grand Canyon a large part of the time. But I will also have the handling of the Museum which will keep me busy in Flagstaff. The arrangement is that the Museum of Northern Arizona handle all salaries but research is to be done through grants. The geological work that I am doing is to be sponsored by the Carnegie Institution which will finance all field work in geology and will publish all technical papers.

DR. RUSSELL: I am speaking for the group when I say that I am sorry you are going to discontinue your work with the Park Service, but we know that you are going to work for the good of the Service in your new occupation.

MR. DOERR: Dr. Russell, with those fine remarks which I am sure express the opinion of the entire group, I call this session adjourned at 5:00 p.m.

148673

Friday Morning
November 15, 1940

F. R. Oberhansley, Chairman.

MR. OBERHANSLEY: We are ready to begin our Friday morning session with the paper by Cliff Presnall.

Wildlife Research Projects in National Park Service Areas

Clifford C. Presnall,
Assistant in Charge,
Section on National Park Wildlife.

ABSTRACT

It is estimated that since 1933 two-thirds of the wildlife research and management work in the National Park System has been conducted through CCC funds and personnel. Although wildlife research and personnel have been transferred to the Fish and Wildlife Service the dependence upon CCC continues exactly as in the past. Wildlife research is now a cooperative affair between the National Park Service and the Fish and Wildlife Service. Two instances are cited to show the fine spirit of cooperation manifested by both Services in carrying out wildlife work. Our major effort in the future will be to collaborate as closely as possible with personnel of the National Park Service to the end that wise management practices may be instituted and followed. It is impossible for Fish and Wildlife Service personnel to gather all the data on which National Park Service wildlife management is founded. The park personnel are in the best position to secure information and formulate management advice. As in the past, park personnel will continue to put into effect management practice, the Fish and Wildlife Service function is advisory. The memorandum of October 16, 1940, outlines the organization of research projects within the Fish and Wildlife Service. Through such cooperation it is hoped that a more extensive research program can be planned and accomplished.

A survey of wildlife work in the National Park System during the past few years reveals that a very large part of it has been possible only through funds and personnel supplied by the Civilian Conservation Corps. It is conservative to estimate that such aid has been responsible for two-thirds of the wildlife research and management conducted within the Service, since the Corps was set up in 1933. Even now only 4 of the staff of 9 research men are paid from regular appropriations, and approximately the same proportion holds true in many management operations.

Although wildlife research and the research personnel have now been transferred to the Fish and Wildlife Service, the dependence upon CCC continues exactly as in the past. The transfer, effected by a Departmental order, made certain alterations in administrative procedure, but any fiscal change must await legislative action. Wildlife research work during the fiscal year 1941 continues to be paid for from funds appropriated by act of Congress to the National Park Service and to the Civilian Conservation Corps for use in the Service. National Park Service budget estimates for the fiscal year 1942 do not include funds for wildlife work, but those made by the Fish and Wildlife Service include requests for sufficient regular funds to take care of the entire research program as it now exists, including CCC personnel and expenses. It remains to be seen what action will be taken on this estimate.

Until the first of next July, however, wildlife research will continue to be operated essentially as in past years, except for a few administrative changes, designed to facilitate more efficiency and coordination for both the National Park Service and the Fish and Wildlife Service. Wildlife Research is now a cooperative affair between the two bureaus in much the same way as forest insect research is done through cooperative agreement between the Park Service and the Bureau of Entomology. Perhaps the practical workings of this arrangement can be best explained by outlining an actual case that involved both research and management.

During the past summer the Superintendent of Mammoth Cave National Park wrote to his Regional Director about the possibility of stocking the park with turkeys, and other species native to the area but long since extirpated by hunting. The Regional Director thereupon requested a study of the question by Mr. C. B. Taylor, the Fish and Wildlife scientist assigned to park areas of Region I, and paid from CCC funds allotted to the Park Service. Mr. Taylor spent some time in the area, working with Superintendent Hoskins and his rangers on such questions as food, cover, predators, and possibilities of State cooperation in strictly enforcing a closed turkey season adjacent to the park. A report was then submitted by Mr. Taylor directly to the Section on National Park Wildlife in Washington, with copies to the park and the region. Noting the favorable nature of the report, Mr. Hoskins recommended that the Director authorize introduction of wild turkeys. The Regional Director gave his concurrence upon Mr. Taylor's advice and the Director of the National Park Service authorized the project after consulting with our

office in Washington. Thus the interbureau cooperation on wildlife research in this particular case was concluded in a mutually satisfactory manner. In accordance with mutual agreements, the Section on National Park Wildlife continues to assist in the management phases of such projects. We went into a huddle with some other officials in the Fish and Wildlife Service and found that an unusually good strain of wild turkeys could be obtained from a national wildlife refuge if the park would meet transportation costs. This Superintendent Hoskins could not do from his limited regular allotment, but with the assistance of CCC labor and equipment the restocking is now assured.

Another example will illustrate a slightly different application, as regards fisheries. At Crater Lake, Park Naturalist Doerr had been directing research that included a survey of fish food and environmental factors, coupled with an analysis of fish planting and creel census figures obtained through CCC assistance. This fall the work had progressed far enought to indicate that another year or two might reveal a sound basis for scientific fish stocking. Since such continuation would involve some extra expense, both regular and CCC, for special equipment, and labor, Superintendent Leavitt requested a review of the study, and stated his belief in its eventual value. This review was made by our office in collaboration with the Division of Fishery Biology. It was agreed that the study should be continued by Park Service personnel with such assistance and advice as could be given by the Fishery Biologist at Clackamas, Oregon. His time was already pretty well occupied by previously authorized projects, so that assignment of the Crater Lake job to him exclusively would have greatly delayed the work at the Lake. By continuing for the present the work under supervision of the National Park Service Naturalist, we hope to have soon some accurate data upon which there is every assurance that the Fish and Wildlife Service will cooperate in supplying stock for a truly scientific planting program.

These two instances have been cited to show how well the wildlife agreement is working. In these and all other jobs there is a true spirit of cooperation manifested by both Services, without which the most carefully drafted formal agreement would be relatively ineffective. As most of you know, the working agreement with the fisheries people in the Fish and Wildlife Service has been kept very flexible during this first year, to permit adaptation to such changes as may develop during the consolidation of the old Bureau of Fisheries and Bureau of Biological Survey. During the coming winter a more definitive agreement can probably be worked out. Comments from the field have already been requested, and any suggestions should be forwarded through your Superintendent to Washington at an early date.

As to the future: Our major effort will be to collaborate as closely as possible with personnel of the National Park Service to the end that wise management practices may be instituted and followed. Under present circumstances, as well as those that can be foreseen for a long time to

come, it will be impossible for our technical staff to gather all of the data on which National Park Service wildlife management should be founded. Indeed, such exclusive reliance would be unnecessary and wasteful, for qualified park personnel are in a most advantageous position to secure information and to formulate management advice. Secondly, park personnel will continue as in the past to put into effect management practice; our function continues to be purely advisory. Therefore, naturalist and ranger experience and cooperation is as essential as ever, in order that the wildlife program may succeed. In planning such cooperation it will be helpful to understand the organization of research projects within the Fish and Wildlife Service, as outlined in the memorandum of October 16, 1940. Through such cooperation it is hoped that a more extensive research program can be planned and accomplished in future years than is shown on the mimeographed list of future wildlife projects in the National Park System. Suggestions for broadening this program will be welcome at any time.

MR. PRESNALL: For the record I ask permission to include a paper prepared by Joseph Dixon on keeping proper data on photographs. It is a relatively short paper and has information in it which would be of value to anyone taking photographs in relation to wildlife work.

Keep Data For Your Photographs

Joseph S. Dixon,
Field Biologist.

I wish to call attention of the Park Naturalists to the necessity of keeping certain essential data for each photograph taken. Unless this is done, much of the value of the photograph is lost, especially when the photograph is sent to anyone other than the person who took the photograph.

It is not necessary to record the camera, the lens, the exposure and time of day, but it is essential to record the following:

1. The photographer.
2. Locality.
3. Date.
4. The subject or purpose of the photograph.

Many photographs come into the Regional Office which might be of much greater use if the reason for taking the photograph had been concisely stated. In some instances we are at a loss to understand why certain photographs have been taken because of the lack of explanatory data.

A distinctive number should be written on the extreme outer edge of each negative to identify it. This is especially important when a series

of photographs is taken of a particular specimen or object. Each photographer should number his negatives in a consecutive series so that no two of his negatives will bear the same number.

I have found it advisable to assign a "field" number and to record data to each photograph at the time it is taken. For convenience, each roll of film or box of cut film is given a serial number followed by a dash and then the individual number for that particular exposure, thus 103-7 can refer only to a particular exposure. If the resulting negative should be unsatisfactory or for any other reason is lost or destoyed, a line is drawn through the number and that data which follows, thereby indicating that that particular negative has been destroyed.

I find that it is even more essential that Kodachrome or other photographs in color have numbers assigned and data kept at the time of exposure. Continually, Kodachrome slides are sent into the Regional Office which are not accompanied by identifying marks or sufficient data. For instance, we do not know when or by whom the Kodachromes were taken.

I am frequently called upon to identify Kodachrome slides of flowers, trees and other subjects which have been sent in to the Regional Office without data. If the photograph and, particularly a color photograph is worth taking the essential data is certainly worth recording also. The photographer may not be able to give full identification at the time the photograph is taken, but he should at least indicate what he thinks it is, and I strongly urge that this be done.

In cases where there is reasonable doubt in his mind, his tentative identification should be followed by a question mark which will be a warning to him and to others that the identification is tentative and should be checked and verified.

I fear there has been a considerable wastage of government funds through failure of persons in the government service to record data when they take photographs. This is particularly true in the case of Kodachromes.

I believe that the Park Naturalists could perform a very useful service in helping to correct this condition.

MR. OBERHANSLEY: Before opening discussion on this paper, Natt Dodge would like to make an announcement.

MR. DODGE: The announcement is in regard to a page in the September report of the Branch of Research and Interpretation which has to do with the collecting of scorpions for Dr. H. L. Stahnke of Mesa, Arizona, who is making a study of scorpions of the United States. I want to urge you people to cooperate with Dr. Stahnke. I think our custodians have learned more about scorpions from him than in all the time which preceded, and they have obtained a great deal of information in regard to first-aid to the victims.

MR. OBERHANSLEY: Before going into this discussion I would like to ask Mr. Presnall about rodent control.

MR. PRESNALL: It is necessary to secure Director's approval for rodent control if you do not already have it. That is to prevent abuse of control activities. I hope the same regulations can be made to apply to plants, especially exotic plants and plants which we think have disappeared. We are interested in reintroducing them if they were once present and to control exotic plants as much as possible.

MR. SAARI: With reference to exotic plants we have in some areas tried to eradicate exotic plants. In Shenandoah it was tried in connection with Ailanthus and we found that that particular plant has become so firmly established in the Park that by mechanical means at least reduction was practically impossible. We feel now that actually Ailanthus will eventually be shut out by the native vegetation. The policy of the Service, however, is to eradicate exotic plants wherever it is possible to do so. In connection with the reintroduction of plants that have been lost or destroyed and that are native, providing the loss has not been caused by changes in site factors, I do not see why reintroduction is not in accordance with the Service policy.

MR. DOERR: I would like to make one suggestion. It rather impresses me that it might be advisable for the Park Naturalists to outline a long-time program of research and get it approved so that they will know the lines along which they can proceed and visualize in advance where they are going to need help. Such a program will certainly be advantageous in the selection of the temporary men. You know that over a period of time you are going to have a research problem and should look ahead to selecting your men to fill that bill.

MR. OBERHANSLEY: I think that is a good suggestion. I found it very helpful in my own case.

MR. BROCKMAN: I wonder if that is not going to come up in the Master Plan.

MR. ROTHROCK: In my judgment the master plan should not include a statement of the research problems, but only of the interpretive program for the park. As we conduct it, research is a means of enriching the interpretive program, therefore, it is a "means" rather than an "end." It has a place in the schedule of naturalists activities but not in the Master Plan of the park.

MR. PRESNALL: I want to clarify one point which I neglected to make clear and that was that the submission of wildlife research projects should always include the name of the man who is contemplated to conduct the research for the reason that the qualifications of the men doing the work are an important factor in deciding whether it should be done by him or by an expert from the Fish and Wildlife Service.

MR. BROCKMAN: I just wanted to say that I thought that the research program as far as possible should be written down somewhere in connection with our interpretive program because it is a basic point on which our program should be built. If we have it in the master plan it would be a protection as far as loss is concerned.

MR. GREGG: I would like to ask about research problems by outsiders. Do we have the authority in the park to grant this privilege as long as it does not affect management policy?

MR. PRESNALL: If it concerns wildlife we would like to have it cleared through our office. That is merely to coordinate efforts of all concerned. It is quite logical that the research program you would contemplate could be added to that of other agencies.

DR. RUSSELL: You recall that there was a question raised as to the procedure in recognizing the research program of an outside worker or institution. I said that if the research pertained to geology it would clear through one office and if it pertained to wildlife that it would clear through another office, - the Section on National Park Wildlife.

I think that Mr. Brockman raised a pertinent question. I believe it would be advantageous to us if there was a prescribed method of recording research plans or programs.

MR. OBERHANSLEY: I have had a little experience along this line in Sequoia. I have been going about it backwards but it seemed to us that it was right to proceed the way I did. For example if I saw something was wrong and needed a little investigation as soon as I could get around to it I did it and then I got in touch with Dixon and worked in collaboration with him. Just to illustrate: I noticed that we had a few blind deer and I noticed that Dixon had referred to it a few years ago. I was not satisfied with his diagnosis and I decided that I would do a little investigation of my own. It resulted in the discovery of an eyeworm which was the first time it had been recorded from deer. The same occurred in connection with bears. I had been standing alone against bear feeding. There was quite a bit of pressure among many of the rangers to resume bear feeding. I was looking for some arguments that were concrete and which would oppose this plan. Just the other day when I sent 150 nematode eyeworms taken from one bear I think that practically everyone agreed with me that it would be a serious mistake to get these bears together at a feeding place and thus facilitate the spread of that particular parasite. Now we are working on plans trying to discover what the means of transmission is. This illustrates the point but I evidently have been going about it from the wrong end.

DR. MCDOUGALL: I am perhaps unorthodox. I do not know whether this is a thing that should come before this committee. Mr. Presnall appeared to be concerned about plants only as a habitat of animals. Mr. Saari and I used to quarrel a bit, but we understand each other better now, and

we do not quarrel. I have succeeded in convincing practically everyone in our office that the term wildlife includes all living things both plants and animals. I have no desire to take anything away from Forestry. I have no objection to saying that plant life is the concern of the Forestry Division. My chief concern is that I do not want wildflowers left out in the cold without anyone looking after them. The Foresters are not concerned about the area, because there are no forests there. There are some plants, however, and the wildflowers have to be taken care of by someone. I have always insisted that wildlife refers to all native plants and native animals. The points of view of the Forestry Division and of the Wildlife Division are a little different. Forestry is concerned with protection; we are concerned with the biotic communities.

MR. PRESNALL: It has all been clarified in the manual and McDougall is quite right that plant life as mentioned by him is the concern of the wildlife people. When I made the previous statement I was speaking more in relation to a problem of management. It has rather grown up to the point where both Forestry and Wildlife between them are looking after the wilderness of which wildlife is a very important part.

MR. MCKEE: In a very second-hand manner we discovered the same thing that Dr. McDougall mentioned that the plants would be left out if we did not give them consideration. Yesterday I described a file system which we use for recording data concerning mammals. We started that a number of years ago and had it developed, but we discovered that we were not making headway with our plants. That is because we did not have the right system. In order to keep data accumulating on plants we had to have the same cumulative method. Take a rather common plant like the Cliff Rose. We see it here and there on the highways and we do not pay much attention to it, but we might want to know if the plant appears in some particular area and we have nothing in the record to give us any information on it. So we are now using this same additional card system. Every plant is represented by a card and every observation that is turned in is recorded. Many species cannot be recognized readily. These have to be taken care of separately. Among the common plants we are going to build up a tremendous amount of data on distribution, simply by accumulating the data and recognizing the flowers as having a place just as important as the birds and the mammals.

DR. RUSSELL: We are not so much adrift on this policy matter as might appear. If you have not turned to the chapters in the Administrative Manual that pertain to the Branch of Research and Interpretation, please do it because it is the substance that will guide us in these very things that are under discussion.

DR. SWARTZLOW: The administrative manual is a reference book to which the men in the field can go for guidance in procedures as well as to find out what approved policies are in force. One of the most complete factors in the manual to date is a statement dealing with policies relative to the Wildlife Service and their function and the various branch functions have been worked on first of all by the Branch heads. I thought

the most complete statements along that line were the statements of our own Branch and the Branch of Forestry. The various other bodies that are parts of the National Park Service have devoted a lot of time in stating in clear language that the functions and duties of their respective branches are. That manual at present is not complete. When you think that it was started in 1924 and that you had the first issue four or five months ago you can see that a lot people have had a hand in it. They do not want to stick their necks out for someone to chop at. Mr. Tolson has very vigorously presecuted the work on the manual. Some of the details that we would most like to see in there have not been finally stated because probably there is a diversity of opinion on certain procedures. The personnel section for instance has something that everyone here would unanimously call for and that has not been put into print as yet. I do not know who is working on it now. I had been called to work on it with Jimmy Lloyd of Grand Canyon. The manual, when complete, will be a regular encyclopedia, I believe, to which we can turn for guidance on policy and procedure. If you want to know what you should do; if you want to institute a program of research along wildlife; you will find the channels very clearly defined, so that you will not be stepping on somebody's toes and you won't be involving the various branches in a controversy as to precedence in certain matters. The main object of that manual when completed will be to save us from lots of pitfalls that may become embarrassing from time to time.

MR. OBERHANSLEY: Dr. Russell is it possible for each of us to have our own manual?

DR. RUSSELL: I would like to thank Dr. Swartzlow for outlining the story of progress made on The Manual. I would like to thank him for his reference to Hillory Tolson's perseverance in producing The Manual. Mr. Tolson has been much interested in our work and he has made substantial contribution to administrative aspects of the Naturalist program. The reason we were able to make good progress in presenting one part of the Manual is found in the fact that Dr. McDougall, Dr. Swartzlow, and others were called in from the field to work on it. Earl Trager should not be forgotten. He worked on our section very industriously. Harold Bryant guided the philosophy of the Naturalist service as reflected in the Manual from the beginning. We have had the advantage of Dr. Murie's help also. Carl Swartzlow gave his undivided attention to it for some months. Superintendent Libbey has been concerned with it. The whole project falls under Mr. Tolson's guidance. He had planned to participate in this conference but budget hearings made it impossible for him to leave Washington. In reply to Mr. Oberhansley's question I can assure you that every naturalist can obtain a copy of the manual.

MR. OBERHANSLEY: How many of the Park Naturalists do have a copy of this manual? I think that we should request that copies be provided for all naturalists. Our time is up on this subject. The next subject is "Geologic Projects" by Mr. Rothrock.

Geologic Research in National Park Service Areas

Howard E. Rothrock,
Assistant Chief, Naturalist Division.

ABSTRACT

The followiig account summarizes the geological research of record in the Washington Office that has been undertaken in National Parks and Monuments during the past year by Park Service personnel, by cooperative projects between Service personnel and other investigators, and by investigators working independently of service staffs. It is not always possible to determine the extent of the Service contribution to cooperative projects. My own opinion, however, is that even though the projects are not classed as cooperative the advice of the naturalist staff, the use of the libraries which have been assembled, and the study collections which have been made, constitute an appreciable contribution.

A COMPENDIUM OF THE GEOLOGY OF MOUNT DESERT ISLAND, MAINE.

One of the outstanding projects dealing with general geology is the work undertaken by Dr. George H. Chadwick in behalf of the geology of Acadia National Park. The stimulus for this work came during investigations by Dr. Chadwick, when he served as Regional Geologist in Region One, the bulk of the labor, however, has been performed since he resigned from the Service. The purpose of the manuscript as stated in the prologue is as follows: "First to put into convenient document whatever has appeared in print as to the geology of Mount Desert Island--accompanied by whatever commentary or unpublished contribution may further illumine--the study; and second---to point out how much yet remains to be discovered or explained in all phases of the subject---". All of the notes have been prepared and about half of them typed, the result being a 500-page document. Steps are being taken to make it possible for Dr. Chadwick to finish this work.

THE GEOMORPHOLOGY OF THE ESTES PARK AREA, COLORADO.

Serious research in determining the geologic evolution of the topography of Estes Park and related territory was first undertaken in 1933 by Ranger Naturalist Louis O. Quam. The study has been pursued since then and has resulted in a thesis entitled, "The Morphology of Landscape of the the Estes Park Area, Colorado" (1939). When published, it will be a welcome contribution to the geologic literature of the park and will be a source of material for the naturalist in presenting the story of the significance of the scenery.

GEOLOGY OF THE SPECIMEN MOUNTAIN AREA, ROCKY MOUNTAIN NATIONAL PARK.

As a result of courtesies offered by Rocky Mountain National Park and a small donation of funds and material by the Washington Office, a new attack was made on the igneous geology of the Specimen Mountain area. A field party from the University of Colorado under the direction of Dr. E. E. Wahlstrom carried on geologic mapping, and petrographic studies in order to discover the age relations of the various volcanic rocks, the period of faulting, the source of the lava and the development of the terrain. The studies will be continued by laboratory work at the University and it is probable that further field studies will be made.

PETROGRAPHY OF GARDINER'S HOLE, YELLOWSTONE NATIONAL PARK.

A project similar to that being conducted by Dr. E. E. Wahlstrom is being carried on in Gardiner's Hole, Yellowstone National Park by Dr. Ray Wilcox and his party from the University of Wisconsin. The incentive for this work was the discovery by Dr. C. M. Fenner in 1933 of an unusual gradational contact between rhyolite and basalt on the Gardiner River and the south end of Sheepeater Cliffs. Dr. Ray Wilcox and Mr. Robert Gates became interested in the occurrence and conducted a detailed study during July 1939. In the summer of 1940 they obtained a grant from the Geological Society of America to resume the project, the earlier investigation of which had indicated that the basalt and the rhyolite came together while still hot and the unusual contact was the result of mutual digestion of the contact material. The petrographic study has been enlarged during the past year to include geologic mapping to determine if possible the origin of some of the flows of the basalt and to locate other volcanic features.

MAUNA LOA ERUPTION

While the study of past evidences of volcanic activity was being conducted in Rocky Mountain and Yellowstone National Parks, an active volcano was being observed in Hawaii National Park where Mauna Loa was in eruption. The eruption began on April 7, 1940 and twenty-four hours later was described as consisting of a flow of pahoehoe lava in Mokuaweoweo crater and of pahoehoe and as lava outside the crater on the mountain side. The flows originated from a series of fissures tending south southwest from near the rim and northeast across the floor of the crater. A portion of the flow from the rim fissure cascaded into the crater forming a fire fall estimated to be 400 feet wide. Lava spurted from the fissures forming fountains of molten rock, some of which were estimated to be 300 feet high, but in the southwest rim activity soon decreased to a light fuming. The eruption continued with varying intensity and in latest reports was intermittently active. The eruption was carefully recorded by the park staff and by the dean of vulcanologists Dr. T. A. Jaggar, who until recently was a member of this Branch. In anticipation of more violent eruptions than this appears to

be, studies have been conducted to determine the advisability of constructing a diversion channel to protect the Bird Park (Kipuka Puaulu) from lava flows. The studies by Dr. Jaggar, the aid extended by the Hawaii Volcano Laboratory and observations by the park staff constitute an invaluable record from which it was possible to predict with remarkable accuracy the time of the last Mauna Loa eruption.

SEISMOLOGY, LASSEN VOLCANIC NATIONAL PARK.

A research project which gets little notice but which is an important link in the chain of evidence being gathered regarding mountain-making movements along the Pacific Coast is being conducted by the Naturalist staff at Lassen Volcanic National Park. The seismograph station at Manzanita Lake was placed in operation in the spring of 1940, adding another record to that obtained at the station at Mineral. The recording of earthquake shocks at those stations is one of the continuous research projects to the credit of the naturalist staff. It is conducted in cooperation with the United States Coast and Geodetic Survey and the University of California.

SIESMOLOGICAL STATION AT BOULDER DAM NATIONAL RECREATIONAL AREA.

A study of earth shocks similar to the one being conducted at Lassen has been instituted at Boulder Dam National Recreational Area. In this instance, however, the earth shocks are the result of man-made rather than natural forces. Three seismological stations located at Boulder City, Overton, and Pierce's Ferry have been installed in order to measure the effect on the earth's crust of the load produced by Lake Mead, and to determine its possible effects on Boulder Dam. The investigation is being made in accordance with an agreement between the Bureau of Reclamation, the United States Coast and Geodetic Survey, and the National Park Service.

GEOLOGY OF DEATH VALLEY NATIONAL MONUMENT.

Geologic research in Death Valley National Monument continues although the locale has been changed from the monument to Pasadena, California, where Park Naturalist Curry is completing his work for his doctor's degree. The possibilities for geologic research is this area are almost unlimited as indicated by the variety of subjects which claim attention. Structure and stratigraphy were first on the program of geological research until some very unusual fossil tracks were discovered in Copper Canyon. The story which is being unravelled here is of intense public interest. The impressions in the rock of this arid canyon indicate that millions of years ago a great variety and probably great numbers of animals frequented the locality attracted by an ancient waterhole.

STRUCTURAL GEOLOGY, GRAND CANYON NATIONAL PARK.

A detailed study of the East Kaibab monocline and its southern extensions, the Grand View and Desert View monoclines, has been conducted by Messrs. Donald Babenroth and Strahler of Columbia University.

GEOLOGIC MAPS, BLUE RIDGE PARKWAY

Lacking detailed soil surveys Daniel W. Levandowsky, the consulting agronomist, for the Parkway requested that an aerial geologic map be prepared. An arrangement with the United States Geological Survey was made for the services of Drs. A. J. and G. W. Stose, who prepared the geologic map from original studies along a considerable section of the Parkway north of Mt. Mitchell. It is expected that the map will be of considerable help in the planting programs, in the location of building materials and in foundation studies for roads, bridges and dams. It will also be of assistance in interpretive work, when personnel has been provided.

SOUNDING OF CRATER LAKE

The work of sounding the lake and determining its temperature was continued from the previous season. Additional data regarding submerged cinder cones were obtained. Soundings showed that the maximum depth previously recorded could not be duplicated and indicated that either the lake has become shallower since the earlier readings or that the deepest portion could not be found.

GLACIER MEASUREMENTS

One of the continuous geologic projects of far-reaching significance is the annual measurement of the advance or recession of glaciers in the National Parks. The observations are made in the early fall and represent the effort of one or more field parties in each area. Measurements of glacier recessions were first made by the Service on the Nisqually Glacier in Mount Rainier National Park in 1918, and were continued regularly. The work was extended in 1931 to include measurements at Mount Rainier, Yosemite, Glacier, Mt. McKinley, Rocky Mountain, and Grand Teton National Parks at the suggestion of Mr. Francois E. Matthes, Chairman of the Committee on the Hydrology of the American Geo-physical Union. The data that have been derived have been of considerable public interest and are becoming increasingly valuable to scientists engaged in climatic and hydrological studies. It is a research project which the National Park Service can view with satisfaction because of the valuable scientific contributions which result.

ORIGIN OF PETRIFIED FOREST, PETRIFIED FOREST NATIONAL MONUMENT.

Data regarding the origin of the trees which have been solidified to form the petrified forest are being gradually accumulated and it is expected that eventually facts regarding the site, and density of the original forest will be known. Stratigraphic studies are also being pursued in the Monument by the staff.

HYDROTHERMAL INVESTIGATIONS. The frequency and the characteristics of geyser activity are subject to constant checking by the naturalist staff at Yellowstone National Park. Studies on related subjects were carried on during the year, among which may be mentioned those which led to the conclusion that algae are more important to the deposition of travertine in a mechanical way than from a chemical standpoint. Data gathered in 1938 to determine the influence of air pressure and temperature on the period and interval of interruption of Old Faithful Geyser were analyzed and failed to show that these atmospheric conditions have any effect on the interval between flows or on the period of the flow.

PALEOBOTANY, YELLOWSTONE NATIONAL PARK. As a result of contribution of funds by the Yellowstone Natural History Association and courtesies offered by the park staff, arrangements were made with the National Museum to conduct a study of petrified wood, leaves and other paleo-botanical material in certain sections of the park. One of the results of this study will be the preparation of a popular manuscript on fossil vegetation in the area.

PALEOBOTANY, PETRIFIED FOREST NATIONAL MONUMENT. A notable contribution to paleobotany will appear shortly in the Carnegie Institution of Washington Publication 526 in which Lyman H. Daugherty describes the Upper Triassic flora of Arizona and Howard P. Stagner, Park Naturalist, Petrified Forest National Monument discusses its geologic occurrence. This will constitute a reference work of lasting significance on the paleobotany of the Monument.

MINERAL APPRAISALS, OLYMPIC NATIONAL PARK. A geologic field party under the direction of Regional Geologist Lewis is investigating the oil and gas possibilities in the coastal strip of the Olympic Peninsula. This work is necessitated by the land acquisition program of the Department and the tendencies of land owners to place exorbitant values on the land to be purchased due to the oil and gas showings and the development of oil and gas in the area.

MINERAL APPRAISAL, ORGAN PIPE CACTUS NATIONAL MONUMENT. In response to requests for reconsideration of the mining regulations in Organ Pipe Cactus National Monument, a geologic investigation of the area was made by Regional Geologist Lewis and Dr. B. S. Butler of the United States Geological Survey. Mineral values were found to occur in certain sections of the Monument and although none of them appeared to be of commercial caliber their presence will constitute a lure which the

prospector will find difficult to resist. The record of many years of intensive prospecting both by established companies and by individuals should be a strong deterrent to future operations of this kind.

MINERAL INVESTIGATIONS. Other areas in which the mineral resources were investigated with a view to their effect on possible park values included the Grand Canyon of the Snake River on the boundary of Oregon and Idaho and the northern Cascade area; areas in the vicinity of Boulder Dam National Recreational Area; Slaughter Canyon cave in Carlsbad Caverns National Park and a strip of land within the northern boundary of Yellowstone National Park.

WATER SUPPLY INVESTIGATION. Numerous water supply investigations have been carried on chiefly by the Regional Geologists in many park areas. Development of underground water supplies is a major concern in consultative work. This is especially true in Region One, where a core drill supplements the geological investigation, and has been unusually successful in developing water supplies.

CAVE STUDIES. The manuscript on caves which is being prepared by Regional Geologist Lewis has been augmented during the past year by further research on the subject of ice caves. This publication when issued will be authoritative and comprehensive.

CONSERVATION OF WATER, PLATT NATIONAL PARK. The long period of drought in Antelope Springs, Platt National Park, and the greatly decreased flow of the mineral wells and springs in and around the park resulted in the recommendation by local authorities that additional wells be drilled to augment the supply and to bring back the flow of the creek in the park area to simulate normal condition. An investigation showed that the loss of water was due not only to the drought, but probably to the excessive use of water over a period of the past twenty or thirty years. Steps were taken to obtain actual measurement of the flow from the various wells and springs and to correlate these data with rainfall and other climatic conditions. These data collected over a period of years may reveal the necessity or the futility of artificial remedial action.

The geological projects of record that have been planned for the coming year include the following:

RAMPART CAVE INVESTIGATION, BOULDER DAM NATIONAL RECREATIONAL AREA. One of the most spectacular research projects is the Rampart Cave investigation. This cave which is sometimes called the sloth cave is situated in the cliffs about 600 feet above the level of Lake Mead in the lower part of the Canyon of the Colorado River, Boulder Dam National Recreational Area. It is known to contain very unusual deposits of remains of the extinct ground sloth nothrotherium, which lived in

this area during the Pleistocene period. Although the project is predominantly palentological it is expected that data regarding the geomorphology of the area will be revealed, and it is hoped that some evidences of ancient man may also be found. As the project is now planned the tecnhical work will be under the direction of the National Museum with the Service furnishing some materials, labor and technical assistance.

PETROGRAPHY OF THE CHISOS MOUNTAIN AREA. Arrangements are being made for the petrographic study of volcanic rocks in the Chisos Mountains area situated within the boundaries proposed for the Big Bend National Park. Dr. John T. Lonsdale of Iowa Agricultural College intends to augment his original research by studies of rock slides prepared in the petrographic laboratory of the Naturalist Division. Arrangements are being made to incorporate this work with the geologic studies made by Ross A.Maxwell and to publish a joint paper on the area.

In addition to these special projects, geologists of the Naturalist Division plan to carry on their continuation projects from previous years.

MR. ROTHROCK: I wish to make one plea to you. This paper presents a very commendable record on research but in spite of it we are not able to keep ahead of the times to say nothing of keeping up to or ahead of research carried on by other agencies. It is doubtful if we can remedy the situation by devoting more time to geologic research. The staff is small and the program is now crowded. I think, however, that there is a possibility that we may obtain more research by asking assistance from others. Mr. McKee has indicated his procedure in that regard and I am going to ask if you can't make a greater effort to obtain aid from outside sources in undertaking research that is essential to your area.

Recently I was surprised to discover that we knew so little about the geology of Grand Teton National Park that we had great difficulty in drawing two or three simple diagrams illustrating the formation of the Tetons. I think the same thing can be said about a good many of the areas on which we lack factual data to base museum exhibits and other interpretive work.

In order to remedy the situation you can take inventory on your geology programs. If you wish assistance I would suggest that you call on your regional geologists and I think that all of the regional geologists will welcome the opportunity to talk with you about these problems.

I suggest also that you call upon outside scientists. In looking over the monthly records, I have noticed the number of scientific organizations that were represented in the parks. I think you will find that

an hour or two spent in interesting a representive of some research institution or some school in the problems of your area may result in assigning to that area a field party for one, two or three seasons. I believe that your time can be spent effectively in trying to interest others in your geologic problems and I suggest that you seriously undertake this during the coming year.

DR. BAUER: I might relate a little experience that we had in Yellowstone in connection with interesting outside parties in the geologic problems. Fortunately in our region we have what is called an International School of Field Geology. Princeton University has sponsored this and we have a local association made up of a number of individuals from the towns around Yellowstone and some professors of geology of the various universities throughout the country. I think that some eight or ten universities are cooperating with the president of this school. They tackled the geologic story from the novel angle. Many of you know that we have a complex volcanic history in Yellowstone, at least starting with the beginning of the Tertiary. It is very complicated because of the long and continued volcanic activity, modified all the time by erosion and so the early workers started at the inside trying to work out; it is just like starting at the inside of a tangle of twine and then trying to untangle the story. Then along came State geologists and began to work around the area where the geology was more simple. Now comes the Field School picking up the threads, and when the simpler things are worked out we hope to be nearer to untangling the story. By getting this field school interested in our problems, nearly each year, someone competent would be assigned to pick up one of these threads and straighten it out. Eventually we will have some of these things worked out which bear on Yellowstone history.

MR. SULLIVAN: I wonder if there is any policy concerning rocks that are brought from outside the park and used for construction in the park.

MR. ROTHROCK: The policy regarding geological exotics corresponds to the policy regarding biologic exotics but there are more permissible exceptions to the former. An error made in introducing a geological exotic does not multiply itself as do exotic plants or animals although from an educational or interpretive viewpoint the false impression is extended indefinitely. Another justification for exceptions to the general rules is the practical consideration. There may not be any satisfactory building material in the park or it may be undesirable to quarry it in the park. Wherever possible or whenever necessary you should use your influence to have stone masonry and rock work conform to the type of rock and its method of occurrence. This is particularly true of retaining and guard walls, because they are so obviously a part of the scene. The introduction of angular white granite as a guard wall along a road flanked by glacially rounded red granite is an illustration of this lack of harmony. Such examples are not numerous but occur often enough to indicate the need for watchfulness and closer cooperation between naturalists and architects in the use of natural building materials.

DR. SWARTZLOW: I think that problem is largely a problem of the Branch of Plans and Designs. However, we should assist that Branch in using appropriate building materials.

DR. BAUER: I might say that we have very fine cooperation with the engineers and the landscape architects in Yellowstone because they all seem to appreciate the value of getting local material for guard rails, guard walls, and structural materials as nearby as possible. It is a fine thing and for the most part we have very good success.

MR. KING: We have been exceptionally fortunate in the type of buildings constructed in the Southwest. They are fitting and unobtrusive and they harmonize with their surroundings. Yet I have occasionally been worried by questions as to why modern masonry should be required to harmonize with the prehistoric techniques in a given area. My answer has been that during the hundreds of years of prehistoric occupation the ancients developed integrated local complexes and patterns, conditioned by the environment.

To an archeologist the Wupatki style of masonry is as distinctive of the Wupatki Basin as are the pinyons and junipers. If modern buildings departed too far from this pattern, established by centuries of custom, they would look as exotic as a sugar pine in a saguaro grove.

There is need to develop a discriminating sense of archeologic and historic harmony in the planning of structures in areas where differences in the ancient crafts and culture are not obvious but are nevertheless important. Exotics can impinge into historical and archeological situations as well as natural ones.

Presumably the archeologist, historian, and naturalist should know their area more thoroughly than almost any other officer. They could be extremely helpful in advising concerning native materials and techniques. I feel that perhaps a recommendation stressing the importance of these technicians in the combat against exoticism would be illuminating.

MR. SULLIVAN: Part of the trouble lies in the contracts we make. The contracts specify that the contractor should furnish stone in various sizes and he makes it a point to get the cheapest that is available.

MR. ROTHROCK: I think you have put your finger on the major difficulty. The naturalists are not aware of these things until after they have gone so far that they cannot be remedied and that is the reason I have urged that whenever they have the opportunity the naturalist advise the administrators, wherever possible, concerning these activities. It seems to me that in the past the information which the naturalists have has not

been fully utilized in matters of park development. I hope that where necessary you may sell yourselves to the administrators in this regard so that when a contract for stone guard rails is let or a job involving stone work is planned you may be asked an opinion as to what materials would be best from the standpoint of harmony with the geology of the area. We have stated the policy wherever we have had the opportunity. It is up to the individual naturalists to demonstrate their usefulness as consultants to the Park Superintendents.

DR. RUSSELL: What Mr. Rothrock has said is pertinent to what we have before us in a future part of our program, - the relationship of the Park Naturalists to the Park Administrative Officer.

MR. TILLOTSON: It just occurred to me when I came in here that I was attending a conference of the Branch of Plans and Designs and landscape men. I don't see why this organization should particularly concern itself so much with the type of buildings that are in an area. It seems to me that we have a very competent Branch of Plans and Designs and they are as a rule fully alive to the necessity of having everything within keeping in an area. It just seems to be a little out of the scope of this conference to dictate what type of buildings should be constructed. You would not want the Branch of Plans and Designs to dictate how the naturalist program should be conducted.

MR. DOERR: I would like to get back for a moment to this matter of research. I don't want to discredit the work that has been done by outside institutions. I realize that we must depend upon them. But are we not weakening out position and disregarding the authority we have for research if we show a tendency to lean too much on these outside organizations to do our research. I talked yesterday as a naturalist from the standpoint of the interpreter and I don't want anyone to infer that the naturalist cannot also be an investigator.

DR. NEASHAM: We may possibly strengthen our own research positions if we do depend upon outside agencies. I do think research is very, very important, but in a time of national emergency I would not like to see a program of research lost through any inability on our part to handle it. Cooperation in research problems should be encouraged.

MR. OBERHANSLEY: The next paper, by Erik Reed, will not be read at this time due to the fact that Mr. Reed has been called away to investigate an archeological discovery of reported importance. The paper will be inserted in The Proceedings.

Archeological Research in National Park Service Areas

A. R. Kelly,
Chief,
Archeological Sites Division.

Erik K. Reed,
Regional Archeologist.

ABSTRACT

In the southwestern United States, archeological work of the National Park Service has consisted primarily of efforts to stabilize and preserve the major ruins in Southwestern Monuments. The urgent needs of stabilization have led generally to such a concentration of archeological functions, and this tendency has become more pronounced owing to the general lack of adequately trained personnel and funds available to conduct original research.

Joint ownership of contiguous areas at Chaco National Monument by the University of New Mexico and the Federal Government has made possible collaborative research and survey and there have been increasing indications that such work would be intensified. Specialized research has been conducted in collaboration with Gila Pueblo in dendrochronological dating of wood specimens from several Southwestern areas.

The National Park Service has carried out archeological research under CCC auspices at South Mountain City Park, Phoenix, Arizona; has cooperated in work at Pueblo Grande; and collaborated in special investigations undertaken at University Ruins, Tucson, Arizona. Historical and historical-archeological research, with restoration and reconstruction of historic buildings involved, has been carried on with CCC at Goliad State Park in south Texas and at Fort Griffin State Park, Texas.

Fort Laramie National Monument, Wyoming, is the outstanding example of combined historical, architectural, and archeological research in the West, being supervised by Service technicians.

In the eastern United States, archeological explorations are in continuous progress at Ocmulgee National Monument. A large-scale archeological site survey is in progress along the 450 miles of the Natchez Trace Parkway. A combination of historical, archeological, and architectural research characterizes most of the work conducted in the eastern United States. Several years of coordinated research at Colonial National Historical Park have resulted in an orderly procedure in planning the investigative phases regarded as basic to

construction, landscaping, and ultimate museum presentation of the essential park story. Other historical or historical-archeological areas where research has been carried out, are Saratoga National Historical Park, Hopewell Village National Historic Site, Appomattox Courthouse National Historical Monument.

The National Park Service has entered into collaboration with several eastern universities to conduct limited regional surveys; with Harvard University, University of Michigan, and Louisiana State University, in a survey of archeological sites along the middle Mississippi River; with Columbia University along the Northwest Florida coast.

The need for increased research in archeology, and in combined history and archeology, considered basic to development and interpretation, is strongly stressed. Also, archeological survey, both within and without existing Service areas, is indicated as a prime necessity.

In the Southwest, archeological work by the National Park Service in recent years has consisted mainly of ruins stabilization, with some archeological reconnaissance survey, as at Grand Canyon National Park and Petrified Forest National Monument, particularly, and some research incidental to stabilization, as at Bandelier and Tonto National Monuments especially. Major ruins stabilization projects have been carried on at Mesa Verde National Park and at Bandelier, Chaco Canyon, Aztec Ruins, Tonto, Montezuma Castle, and Walnut Canyon National Monuments. The most intensive and extensive ruins stabilization program has been that at Chaco Canyon National Monument, carried on by a Navajo CCC unit directed by R. G. Vivian.

Relatively little research as such has been done in the Southwest by the National Park Service, or on National Park Service areas by other organizations, in the last few years. The field school of the University of New Mexico at Chaco Canyon National Monument has worked each summer on small, but important and interesting sites, mostly on the south side of the canyon opposite Pueblo Bonito and Chetro Ketl. Other than this, no extensive archeological research has been going on in National Park Service areas in the Southwest for several years.

There have been minor or specialized investigations, of which the most important has been the collection during the current year by Dr. Deric Nusbaum of Gila Pueblo of wood specimens at Aztec, Chaco, and other areas, for dating purposes. Study of these specimens by Mr. H. S. Gladwin, Director of Gila Pueblo, and his assistants in tree-ring

work has yielded a good deal of valuable additional information on dates, particularly in the case of Aztec, where no dates were previously known from the later, Mesa Verde, period of occupation.

The CCC camp at South Mountain City Park, Phoenix, Arizona, under the supervision of the National Park Service, has cooperated in archeological research at Pueblo Grande, in that city, and at University Ruins at Tucson, through assignment of Julian D. Hayden, Senior Foreman Archeologist, an unusually expert excavator and observer.

CCC work under National Park Service direction has also included excavations on historical areas, notably at the two 18th century Spanish missions in Goliad State Park in south Texas. Other CCC historical-archeological work in the West includes that at Fort Griffin State Park, Texas, and Fort Laramie National Monument, Wyoming.

In contrast to the Southwest, in the eastern and southeastern United States, experimentation and research in methods of ruins preservation have been relatively little developed, and attention to these problems has run a short course of less than 10 years. On the other hand, a complex methodology comprising many techniques from the fields of history, archeology, and architecture has been applied to the basic research undertaken on several of the eastern historical or historical-archeological areas. Most of the historical and archeological areas in eastern Mississippi have been acquired within the last 10 years by transfer from other departments of the Government. Particularly is this true of the battlefield sites transferred from the War Department. Stabilization in these instances has consisted primarily of the simplest protective measures. Historic buildings and features have received no special attention; preservation has been casual, interpretation relatively undeveloped. During these 10 years there took place the establishment of various national historic parks and monuments representative of the Colonial period, the Revolutionary War, the War of 1812, and the War Between the States. Most of the preservation work carried out in these historical areas has been closely bound up in concurrent operations in the interpretive program and the physical development. The need for coordination of technical work in history, archeology, and architecture has been acutely felt.

There has gradually emerged a systematic approach with a precise procedure in research considered basic to development. In a region where heavy rainfall, rapid variations in temperature, deterioration from parasites, or factors of elemental destruction occur, the problems of emergency stabilization have been stressed. Special situations have challanged attention, such as the preservation of 17th and 18th century foundations of historical buildings where early American brick is exposed to the salt atmospheres of the eastern coast. Other examples are represented by the stabilization of an extensive vertical mound profile

located near a railroad in Ocmulgee National Monument and, at the same area, by the preservation of an extremely perishable exhibit in the form of a prehistoric "corn field" uncovered by archeological excavations from beneath an Indian mound. Another factor stressing the needs of protective measures and preservation in the eastern United States comes from the greater density of population and the increased human use where human attrition results in a cumulative disintegration of sites and structures similar to that experienced in some of the Southwestern Monuments.

In the field of historical archeology, the most extensive research is being carried on at Colonial National Historical Park, Yorktown, Virginia. Here the Yorktown Battlefield itself has been investigated by historical and archeological techniques, and the results utilized in restoration of the military features of the battle. Also, in the same park, combined historical-archeological and architectural research is being utilized in the reconstruction of the history of Jamestown and the presentation of the essential story in museum and field exhibits. At Saratoga National Historical Park, similar procedures have recently been instituted. The same approach is contemplated for Morristown National Historical Park. At Appomattox Court House National Historical Monument, the partnership of history and archeology is again represented in combined historical and archeological research undertaken to uncover the site of the McLean House, where Lee surrendered to Grant at the close of the Civil War.

Ocmulgee National Monument remains the only outstanding purely archeological area in the eastern United States, under the immediate jurisdiction of the National Park Service, where extensive research has been and is still being carried on. The investigations at Ocmulgee have indicated a long series of stratified deposits comprising both mound and village features which represent at least four distinct prehistoric intervals or horizons in the Southeast.

Other archeological parks in the state park systems of the Southeast are being developed under the technical advice and supervision of the National Park Service. Kolomoki State Park in Georgia and Moundsville in Alabama are the two leading examples. The National Park Service is collaborating with the State of Kentucky, utilizing the CCC in a program of archeological salvage in the Gilbertsville Basin under the TVA program.

Altogether, the most outstanding feature of the archeological program in the eastern United States is the progress made in coordinating historical, archeological, and architectural methods and techniques in research where combined results are utilized in ambitious restoration or reconstruction projects. Another feature of archeological research in the East has been the increased tendency for collaboration with outstanding institutions in carrying out archeological site surveys. The most

notable instances are the Middle Mississippi Valley Archeological Survey undertaken in collaboration between the National Park Service and Harvard University, the University of Michigan, and Louisiana State University; and the archeological survey of the northwest Florida coast undertaken in collaboration with Columbia University.

In some instances, modern ethnological studies may be combined in an attempt to restore the peculiar folk atmosphere of certain early American communities. The proposed mountain culture museum in the Great Smoky Mountains National Park is an example of this kind of development. The preservation of many mountaineer homes with all of the associated outbuildings or dependencies, the early trails and roads, along with many of the ordinary articles of daily use, makes possible ethnological reconstruction of the pattern of life in the Southern Highlands. The persistence of an early American cultural pattern in the Southern Appalachians also makes practicable the contemplation of an actual living "museum" in which the people might continue to live after the old fashion and make many of the orjects which are so characteristic of the old culture and which have special aesthetic or sentimental appeal to visitors.

At Hopewell Village National Historic Site, Pennsylvania, there is an iron plantation which represents the historical development of iron manufacture in the United States, beginning in early Colonial times and extending to the 20th century. Historical, archeological, and architectural and ethnological treatment is very important in the basic research and interpretation at this site.

There is great need for archeological research, as such, although integrated with the ruins stabilization program at most National Park Service archeological areas, in order to establish the interpretive program on a firmer foundation. Reconnaissance surveys, including mapping of sites and collection of potsherds and any other surface specimens, are needed at many areas in connection with research and interpretation, and in most cases should not be restricted to sites within the boundaries of the park or monument. Actual excavations and related investigations and studies are needed in many areas. It is generally preferable for this research to be done by research institutions, but in cases where information is needed, no research institution is interested, and the Service has competent men available, there is no justification for not doing the work. The frequent complaint of lack of funds is reiterated in this connection. The importance of research, as basic to the interpretive program, needs to be emphasized; and there is no reason, at least in the abstract, why archaeological research should receive less attention from the National Park Service than historical, geological, and biological research. It is not possible to present an adequate interpretive program at National Park Service archeological areas without the full information and specimens which can only be accumulated by extensive research competently done.

MR. OBERHANSLEY: The next paper will be by Arthur Stupka.

Collecting Practice

Arthur Stupka,
Assistant Park Naturalist,
Great Smoky Mountains National Park.

ABSTRACT

The policy of issuing collection permits to qualified scientists has been encouraged in the Great Smoky Mountains National Park where, during the past fiscal year, more permits were granted than in any other area under National Park Service supervision. This practice has resulted in the acquisition of a considerable body of facts pertaining to the natural history of an area, which up to a dozen or so years ago, was practically unknown. In several instances specimens, with determination labels attached, have been contributed to the park's collections by grateful scientists; a number of articles have appeared in the scientific journals, the data therein being based on collections made in this area; and our files now contain many valuable unpublished lists for use and reference. The great majority of the permits issued have been for the collection of plants and invertebrate animals, and in no way has this practice resulted in any harm or disturbance to the area. Since the best interpretive program should be based on a broad knowledge of the natural history of the region, we feel that the Great Smokies have benefited by the cooperation which has been extended to scientific workers.

Aside from the fact that I volunteered to discuss the subject of "Collecting Practice" before this assembly, I can think of two reasons why the program committee agreed to have me do so. One is that we issue more collecting permits in the Great Smoky Mountains National Park than are issued in any area under National Park Service supervision; the other is that in August 1939, I submitted a memorandum to the Supervisor of our Branch of Research and Interpretation criticizing an article which the Park Naturalist of Yellowstone National Park had prepared on the subject. One interpretation which might be drawn therefrom is that I was designated for this assignment not because I knew anything about the subject but as an opportunity to vindicate myself. For there may be some in this audience who feel that the park naturalist who signs the greatest number of collecting permits in a year is in a class with the person who proposes the greatest annual mileage of new truck trails in a National Park.

During the 12-months period beginning July 1, 1939, a total of 93 collecting permits were issued to scientific investigators in the Great Smoky Mountains National Park. According to statistics compiled in the August 1940, issue of the Branch of Research and Interpretation's Monthly Report, this was double the number issued in Rocky Mountain National Park which granted the second greatest (47) number of permits. The 93 issued in the Great Smokies represented almost one-third of all the collecting permits which were granted in all the National Parks and Monuments during this period. It is significant, however, that only two of the permits were issued to individuals who wished to take geological specimens; 48 were issued to plant collectors, 43 to animal collectors. Of the 48 which were granted to botanists, 26 permits were for flowering plants, 15 for fungi, and seven for other groups. Of the 43 permits granted to zoologists, 38 were for insects or other invertebrates, two for fishes, two for amphibians and reptiles, and one for small mammals.

I presume that many of those present recall the article which the park naturalist of Yellowstone National Park issued in his monthly report and which later appeared in the May 1939, number of the Naturalist Division's monthly report. It was entitled "Permit Procedure in Yellowstone National Park." Not knowing the conditions which prevail in the Yellowstone I had no criticism to make. However, it appeared at a time when our Branch was considering the formulation of a standard policy of permit procedure, and since conditions which prevail in the Great Smokies, were, apparently, unlike those which obtain in the Yellowstone, I felt as though our side of the story should be given.

The Smokies comprise close to 700 square miles of rough and densely vegetated country. Up to about a dozen years ago they had been visited by only a very few biologists. Little was known regarding the natural history of this mountainous region. Consequently, during my few years in the area I have considered the encouragement and assistance given to visiting scientists a very important part of my job, and the growing number of biologists who come to this park is, in part, due to the cooperation they can expect when they get there. This attitude has produced the desired results--a growing body of information in our files as well as an increasing number of correctly-determined specimens in our collections, and this has come about without the slightest damage to the natural features or without any disruption of the ecological situation. Some of the foremost botanists and zoologists of the Eastern United States have visited the Smokies in the past few years, and a number have published their findings in the scientific journals. Partly through invitation by the park naturalist, the American Mycological Society decided upon the Great Smoky Mountains National Park as the place to hold their annual foray in 1939. After this foray I received a letter from Dr. David H. Linder, vice-president of this society and professor in Harvard University, which I wish to quote in part, as follows:

> "Out of the summer foray there crystallized a definite feeling that the parks, such as the Great Smoky National Park, are of tremendous interest and value mycologically, since they give us some considerable insight into the ecology of native species of fungi and at the same time preserve the collecting places which today are becoming all too few. I say this advisedly since undisturbed areas of original forests are rapidly dwindling and only secondary stands are available. To the average person who knows or cares little about the problems of mycology, this may seem unimportant, but the mycologists on the other hand feel that it is most important because of the facts that come from the study of such areas and which may be applied to future forestry problems. Because of this conviction the members have expressed the hope that the policy of continuing the issuance of permits may be continued. The more that is collected, and the more observations made, the greater will be the knowledge that will be available for application in a practical way."

The plan to encourage scientific investigations in our National Parks represents a procedure of recognized merit. The National Park Service Administrative Manual (April 1940) makes the statement that "The Service shall solicit and welcome the advice and suggestions of both Federal and private specialists concerning problems pertinent to the Service." The Historical Division of the Service, during the spring meeting in Richmond, Virginia (1940), went on record encouraging the cooperation with various outside agencies. In the 1939 issue of the American Planning and Civic Annual, Pearl Chase, president of the California Conservation Council makes the following statements:

> "The importance of scientific research in all these fields of conservation is apparent. It is evident that the National Park Service should continue its broad-minded policy of encouraging all qualified research agencies interested to help study and solve these problems in different areas. Perhaps it is proper to emphasize that as the cost of research is very great, the Park Service should devote its efforts to encouraging and directing others and cooperating, insofar as its staff may, in year-around investigation, but it should retain and expand so far as possible its function of interpreting these findings to the general public which it contacts."

Refusal to grant outside agencies the privilege of collecting specimens in our National Parks would be to presume that

(1) the park naturalist and his staff are capable and have the time on hand for undertaking all research investigations themselves; that

(2) it is unnecessary to engage in further scientific investigations; or that

(3) the proposed research problem would possibly result in some harm to the area.

Number three, of course, is the only one which concerns us, for there is always the potentiality of harm to the area which we associate with the taking of specimens from a National Park. But this, of course, varies with the park in question, and here is where the chief difficulty seems to lie. We pride ourselves about the fact that in this superlative array of more than two dozen National Parks and the many more National Monuments there is no duplication of scenic beauty or of historical or archaeological interest. The story which each has to tell is unique; the floral and faunal complexes are unique; the geology varies from place to place. And the importance which plants, animals, and rocks assume in the various areas is bound to be different. Whereas 40 per cent of the study groups which came to all the National Parks during the past fiscal year were especially interested in geology, less than three per cent of the scientists who studied in the Great Smoky Mountains National Park were interested in that subject. In a certain sense, what plant life is to the Great Smokies, geysers are to the Yellowstone and colored rock formations are to Zion and Bryce. But plants, of course, are living things, and in the Smokies their growth is exceptionally luxuriant and aggressive. Such collecting of plants as might be carried on by a person to whom a permit has been granted would result in no harm to the Great Smoky Mountains National Park.

In this area the requested collecting permit may be mailed to well-known scientists. Usually the prospective collector calls at the park naturalist's office in person. In the course of an interview, the following information is brought to light:

(1) The person's name, title, and address;

(2) His (or her) affiliations--university, herbarium, museum, etc.;

(3) The department within the institution--such as entomology, botany, etc.;

(4) The intended use of the specimens which are desired--for a special scientific problem, for addition to an herbarium or entomological collection, etc.;

(5) The approximate number of specimens which are desired; and

(6) The period during which the collector may be in the park.

The candidate is meanwhile notified of the fact that all collecting must be done away from the main highways or away from points of human concentration, and in such a manner so as not to attract the attention of park visitors. Natural features of the park must not be unduly interfered with. Access to such material as is taken away must be given to the interested public or it must be made available to scientific workers. He is encouraged to publish his findings and, if this is done, to favor the park library with reprints of his papers. If the material which the collector seeks would be desirable as additions to the Great Smoky Mountains National Park collections, he is made acquainted with this fact and asked to furnish us with duplicate material. In some instances a list of the specimens he collects is requested. If the park naturalist signs the permit recommending that it be issued, it is taken to the superintendent for final approval. Three copies of the permit are made--one going to the applicant, one to the superintendent, and the third to the park naturalist.

When refusing to issue a permit, the applicant's feelings are hurt less if the park naturalist suggest as to where (i.e. outside the park) the desired material might be secured--should this fact be known and disclosed.

Since it is difficult for grade schools, high schools, summer camp groups, etc., to give assurance regarding the permanent upkeep of their collections, it appears unwise to grant permits to representatives of such groups. Neither does it seem proper to delegate naturalists or rangers to do the collecting for any groups or individuals except, perhaps, in unusual instances.

Speaking very generally, the higher we go up the scale of the animal kingdom, the more strict we may well be in the issuance of collecting permits. In the Great Smoky Mountains National Park only two permits for the taking of bird specimens have been granted during the past five years--both of these to representatives of Federal agencies (U. S. National Museum; Bureau of Biological Survey). I need not elaborate upon the well-known fact that the higher forms of animal life are usually the more specialized in their ways of living, and disturbance of this way of life is more easily brought about than in the case of the lower forms.

Although, as I have already indicated, formulation of a permit form flexible enough to be applicable to all National Park Service areas is very difficult, the Washington Office, I believe, has proposed the mimeographed form which has been handed out to you. If the changes which I have indicated are agreed upon, I recommend that this form be adopted.

(Form, with changes incorporated, follows).

148673

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

PERMIT TO COLLECT PLANTS, ANIMALS, OR GEOLOGIC SPECIMENS

_____
(NAME OF AREA)

NAME OF APPLICANT _____

ADDRESS OF APPLICANT _____

REPRESENTING (NAME OF INSTITUTION) _____

REASON FOR COLLECTING _____

PLACE WHERE SPECIMENS ARE TO BE DEPOSITED _____

_____

I, THE APPLICANT, HAVING READ THE CONDITIONS ON THE REVERSE SIDE OF THIS PERMIT RELATING TO COLLECTING IN NATIONAL PARK SERVICE AREAS, AGREE THAT IF THIS PERMIT IS GRANTED I WILL COMPLY WITH ALL THE CONDITIONS STATED THEREIN.

(SIGNED) _____

_____

DURING THE PERIOD _____ TO _____

SPECIAL CONDITIONS OR RESTRICTIONS: _____

_____

_____

_____

APPROVED BY _____
(SUPERINTENDENT)

(BY) _____
(PARK NATURALIST)

DATE OF ISSUE _____

N. B. THE PERMITTEE'S COPY MUST BE CARRIED AT ALL TIMES WHILE COLLECTING.

CONDITIONS UPON WHICH THIS PERMIT IS ISSUED

IT IS THE INTENTION OF THE NATIONAL PARK SERVICE TO FURTHER SCIENTIFIC RESEARCH WITHIN THE AREAS ADMINISTERED BY IT AND TO COOPERATE WITH TECHNICAL WORKERS TO THE FULLEST EXTENT, COMPATIBLE WITH ITS CHARGE TO PRESERVE ALL SPECIES OF PLANTS AND ANIMALS AND ALL GEOLOGIC PHENOMENA IN THE NATIONAL PARKS AND MONUMENTS IN A NATURAL STATE. WITH THESE FACTS IN MIND, THE MINIMUM REQUIREMENTS WHICH MUST BE IMPOSED UPON THOSE WISHING TO COLLECT SCIENTIFIC SPECIMENS IN THE NATIONAL PARKS AND MONUMENTS ARE AS FOLLOWS:

1. ANY PERSON WISHING TO COLLECT IN LIMITED QUANTITIES SPECIMENS OF PLANTS, ANIMALS, OR GEOLOGIC MATERIALS FROM ANY NATIONAL PARK OR MONUMENT MUST FIRST OBTAIN A WRITTEN PERMIT FROM THE SUPERINTENDENT OR CUSTODIAN OF THE PARK OR MONUMENT CONCERNED.

2. EXCEPT WHERE LOCAL CONDITIONS MIGHT MAKE THIS UNNECESSARY, APPLICANT SHALL BE A REPRESENTATIVE OF A PUBLIC OR PERMANENTLY ENDOWED MUSEUM, AN EDUCATIONAL INSTITUTION, OR A SCIENTIFIC ORGANIZATION OPERATING ON A NONCOMMERCIAL BASIS; IF NOT SO AFFILIATED, APPLICANT SHALL BE A RECOGNIZED AUTHORITY IN THAT FIELD WHEREIN THE PROPOSED COLLECTING IS TO BE DONE.

3. PERMITS WILL BE ISSUED ONLY ON CONDITION THAT THE SPECIMENS IF TAKEN IN ANY QUANTITY WILL BECOME PART OF A PERMANENT PUBLIC MUSEUM STUDY COLLECTION OR HERBARIUM OR IN SOME SUITABLE WAY THEIR SIGNIFICANCE WILL BE PERMANENTLY RECORDED AND MADE AVAILABLE TO THE PUBLIC.

4. ALL COLLECTING MUST BE DONE IN ACCORDANCE WITH RESTRICTIONS DESIGNATED BY THE SUPERINTENDENT AND IN SUCH MANNER AS NOT TO ATTRACT ATTENTION OR TO INTERFERE UNDULY WITH OTHER NATURAL FEATURES OF THE PARK OR MONUMENT. THE SUPERINTENDENT MAY SPECIFY ANY OTHER RESTRICTION NECESSARY TO THE PROPER ADMINISTRATION OF THE AREA OR NECESSARY BECAUSE OF SPECIALIZED LOCAL CONDITIONS.

5. A PERMIT SHALL BE OBTAINED BEFORE TAKING ANY PLANT, ANIMAL, OR GEOLOGIC SPECIMEN, REGARDLESS OF ITS SIZE, KIND, OR REPUTED IMPORTANCE, AND THE SUPERINTENDENT GRANTING THE PERMIT SHALL HAVE THE PRIVILEGE OF RESTRICTING OR PROHIBITING THE COLLECTING OF RARE OR HIGHLY IMPORTANT SPECIMENS AND MAY DESIGNATE THE APPROXIMATE NUMBER OF SPECIMENS OF ANY SPECIES OR KIND TO BE TAKEN, AS WELL AS THE AREAS WHERE THE COLLECTOR MAY WORK.

6. ALL PERMITS FOR COLLECTING ON AN EXTENSIVE SCALE OR OF A TYPE REQUIRING EXCAVATION WHICH WILL LEAVE A SCAR OR COLLECTING OF RARE NATURAL OBJECTS MUST BE APPROVED BY THE DIRECTOR.

7. THE NATIONAL PARK SERVICE RESERVES THE RIGHT, IN THE INTEREST OF SCIENCE, TO DESIGNATE THE DEPOSITORY OF ANY TYPE SPECIMEN REMOVED FROM A NATIONAL PARK OR MONUMENT, AFTER THE COLLECTOR HAS PHOTOGRAPHED AND PUBLISHED THE RESULTS OF HIS RESEARCH.

8. ARCHEOLOGICAL COLLECTING CANNOT BE CONDUCTED UNDER THIS PERMIT.

9. WHEN A PERMIT IS ISSUED, NOTATION WILL BE MADE THEREON IF THE COLLECTION IS TO BE INSPECTED BEFORE REMOVAL FROM THE PARK. THE SUPERINTENDENT MAY ALSO REQUIRE THE PERMITTEE TO FURNISH AN INVENTORY OF ANY OR ALL OF THE SPECIMENS BEFORE SUCH REMOVAL.

MR. YEAGER: It seems to me that some of these recommendations are pretty stringent. For example you would exclude any collections made by high schools except under most unusual circumstances. Suppose a high school group comes in and they are interested in taking back certain common species. I can't see what harm will be done by letting them do so. When you recommend that no collection be made that cannot be made available to the public, you are going to discourage such groups as boy scouts and others.

MR. STUPKA: I think we should exclude high school groups since most of the common species can be secured outside the park.

MR. WALKER: Why use the park when they can be gotten outside the park?

MR. STUPKA: The scientist knows what he wants. His reason for collecting specimens differs considerably from that of the high school boy.

MR. WATSON: How many states have laws against collecting flowers? Do we have the right to tell people not to spoil the park but they can go outside the park and collect on state lands? A lot of high school teachers now have equal standing with University professors and perhaps it would be inadvisable to consider exceptions. I think we are the ones who should decide whether a thing is good or bad. Many of you have been approached by a person who is not affiliated with any society but who wants one plant. I don't think we should deny such a person.

MR. PRESNALL: I just want to comment on one phase of giving discretion to the Park Naturalist. Many Naturalists would prefer to have a definite rigid thing to follow. Then they would have a foundation on which to refuse a request for collecting.

MR. OBERHANSLEY: We don't want to be bound as closely as this recommendation would bind us because there are exceptions that we just can't get away from.

MR. BEATTY: I agree that we should have a general policy for all the parks, but it seems that conditions are different in each place. For example, in Yosemite for many years we have denied even scientists the privilege of collecting flowers on the floor of Yosemite Valley. We have met the situation by giving permits to collect along the sidewalls or along the bridal paths, and with groups such as mentioned, under able leadership, we have granted a limited collecting permit to the leader of that group. But I am opposed to issuing general permits to any organization, even the West Coast School of Nature and to their students. We issue them to instructors only. We have found that visiting scientists represent well known institutions. These workers are usually more interested in collecting from one plant family only, and we can cooperate with them in that one respect. The problem we have to contend with is the person who has taken up botany as a hobby and says that he wants a permit to collect a

few plants. We explain that it is not our policy to issue such a permit unless the specimens can be used by the general public. Then he asks why we are so strict here when he was granted such a permit in some other national park.

MR. DODGE: How about the lady who wants just one plant specimen and after getting it, boasts about her good fortune to the other ladies of her group who had failed in a similar attempt. Then the whole group comes over. We have the problem now of a man who wants to get an organ pipe cactus from one of our monuments or die in the attempt. I want to defend Mr. Brockman's policy of collecting on nature hikes. Of course with a lot of restrictions I think proper collecting before a group of intelligent visitors is one of the best forms of information and interpretation that we can give. In this manner they can be better educated in the principles of the National Park Service.

MR. GRATER: There is another point that I would like to inject. I find in talking to some of the fellows here that they have received a form letter from one of the State colleges in which it is requested that we make up a complete detailed museum exhibit on each park. We are to do all the collecting, all the working up of materials, - geological, biological or any other - and send it in. Naturally we want to cooperate insofar as we can with such agencies or such institutions. But are we not likely to get ourselves into difficulties if we do? If we had the personnel for doing what they want us to do it would be a man-sized job in itself. We must remember that there are several hundred institutions in this country not to mention the high schools, etc., and if we supply one, many of the others may make the same request. I would like to see the Park Service set up a policy on which we can base our decisions in this matter.

MR. GREGG: It seems to me that when we attempt to draw line of demarcation it is important to decide whether people are to collect for display or for research. It is going to be hard to say who can display and who cannot display.

MR. YEAGER: I think a definite policy is going to be established. I recall the case of a man who was building a fireplace and he wanted one rock from every national park, and he got his rocks, but when a group of interested high school children come in, they are turned down.

MR. ROTHROCK: I think we will get some light on this subject if we have Mr. Fulcher's paper on legal aspects. I suggest that the next paper be read and the discussion continued after that.

MR. STAGNER: Mr. Rothrock has asked that I read this paper in the absence of Mr. Fulcher.

Legal Aspects of Collecting

Maxwell S. Fulcher,
Museum Division.

ABSTRACT

The authority for collecting botanical, zoological, and geological specimens in National Park Service areas is found in Rule 1(d) of the general Rules and Regulations concerning the National Park Service. It states that "collections for scientific or educational purposes shall be permitted only in accordance with written permits first had and obtained from the superintendent". This rule has received varied interpretations in the different areas, resulting in a lack of uniformity in issuing permits. Keeping in mind the best interests of Service, and at the same time endeavoring to further scientific research, a set of uniform rules and regulations are herewith submitted in an effort to obtain the collective criticism of the naturalists in the light of field experience.

The authority for collecting botanical, zoological, and geological specimens in National Park Service areas is found in Rule 1(d) of the general Rules and Regulations concerning the National Park Service which were approved by the Secretary on June 18, 1936, and amended and supplemented to February 1, 1940. It states that "Collections for scientific or educational purposes shall be permitted only in accordance with written permits first had and obtained from the superintendent." It is understood that this has received varied interpretations in the different areas, resulting in a lack of uniformity in issuing permits.

Whether it has been detrimental to the Service I do not know; nor do I know whether the volume of such collecting has been great or small. But the possibilities are great and it is obvious that under the meager language of Rule 1(d) some limits must be set up and a policy established. Heretofore it was felt that the rule would require revision before the policy could be delineated, and accordingly a revised regulation was submitted to the Secretary well over a year ago but it has not yet been approved. It is understood to be held up because of questions arising in connection with other regulations which were submitted with it. But now the Legal Division has decided that the Director can determine the policy within the present language of Rule 1(d).

Therefore it becomes necessary to determine, in the light of field experience, just what the essential features of such policy shall be. To this end a permit form for collecting has been drawn up, on the reverse side of which are the conditions under which the collecting is to be conducted. And while these conditions are intended primarily to bind the collector and to insure the proper control over him and to guide and direct in the physical acts of collecting and in the care and disposition of the specimens collected, at the same time they cover a large part of the ground to be covered in any statement of collecting policy and should therefore be drawn with great diligence. Let's take a look at the proposed conditions on the reverse side of the permit form.

Paragraph 1 uses the term "plants, animals, or geological materials" to include the whole field in which collecting will be permitted. Does this cover the whole field and no more? For instance, does "animals" include insects and fish? Would it not be better stated by striking out the phrase beginning with "specimens" and ending with "materials" and inserting in its place "botanical, zoological, or geological specimens"?

Is paragraph 2 inclusive enough? It permits collecting by universities but does not mention colleges; by scientific organizations but does not mention educational organizations. Might not there be educational institutions of good repute which are neither universities nor scientific? Would it not be better stated by striking out the phrase "a university or a scientific organization" and inserting "a university or college, or other bona fide scientific or educational institution"? Is it also desirable to exclude individuals of recognized scientific standing who are connected with no organization?

The first sentence of paragraph 3 is not very clear. Would it be an improvement to rephrase it in this language: "Permits will be issued only on condition that the specimens taken will become part of a permanent public museum, the study or herbarium collections of a university or college or other scientific or educational institution where they will be available to the public, or in some other suitable way their significance permanently recorded and made available to the public"? The last sentence of this paragraph would seem to fall more logically in paragraph 7 where the depository is being considered.

Paragraph 4 is designed to obtain compliance with the law requiring the areas to be reserved in their natural condition insofar as possible.

Paragraph 5 is necessary for the same reason as 4.

Paragraph 6. It is felt that the Director should approve all permits for extensive collecting or of a type requiring excavation which will leave a scar or collecting of rare natural objects. It is quite obvious that extreme care should be exercised in permitting such collecting.

Paragraph 7 is necessary for quite obvious reasons; for instance, if a highly significant specimen should be taken, the Service would naturally be interested in its disposition.

Paragraph 8. This language is necessary because archeological collecting has been provided for specially in the Antiquities Act.

The language of paragraph 9 is felt necessary to complete the desired control and supervision of the collecting.

Other phases of policy which do not concern the permittee could be taken care of in the form of a memorandum from the Director. These matters would concern the superintendent and naturalist in administering the policy. For instance, it might be desirable for the superintendent to issue permits on the written recommendations of the naturalist, or his representative, who is most familiar with the natural features and specialized conditions existing in the park or monument. Other phases of policy include the number of copies to be made of each permit and their distribution, as well as other records which might be necessary; the extent to which the superintendent may permit collecting without referring the matter to the Director; the degree of discretion to be exercised in permitting or refusing to permit collecting, etc.

MR. FAGERLUND: There may be some connection between the permits that might be issued to high school groups and the extension of the naturalist program to these outside groups and to the community. There may also be some connection between the collection and preparation of material, biological and otherwise, for their small museums. Perhaps cooperation with the colleges would not be as important in our extension program as cooperation with high schools.

MR. WALKER: May I speak about one collecting incident that I know about. While I was stationed at the Petrified Forest a doctor from the East received a permit to collect one typical specimen of petrified wood and he took the largest one that he could get into his car. The next year he returned with the same permit and the third year he came back again.

MR. KITTREDGE: I think that we should keep in mind that first and foremost we must be human. A rule of this kind would not prevent the abuse that was just referred to. We do want to encourage the youngsters to study the flora, the geology and everything else in the national park. If a youngster is sufficiently interested in his own home collection (which will probably be shown to his schoolmates) to ask for a permit to pick certain flowers, I think the Superintendent or the Naturalist should have discretion enough so that he could say "Yes" if it seemed a worthwhile arrangement. If it is someone like Mrs. Oastler or someone else who has shown a long interest in the national parks our answer should be based on some flexible rule. If we refuse people like this we

have immediately made powerful enemies. We do not want to put anything in the record which we would have to interpret as "Yes" or "No" depending upon our supply of flowers, petrified wood, rocks, etc. Then we could have the opportunity of developing the worthwhile interests of youngsters in our neighborhood or in other states.

MR. BEATTY: I think Mr. Kittredge's point is well taken. I notice that he arrived after we had had some discussion on the subject. I would like to stress the point of having a basic policy for the entire Service, but local conditions should be considered. In Yosemite we do not feel it necessary to issue permits for rock specimens and we let children take all they like, but the situation we have been bothered with is that of incoming public and high school groups (and we get thousands of them every summer) who say they want to make a collection of flowers for their own class. Under the conditions existing at Yosemite we have made it a practice of turning these down, but assisting them by telling them of locations where they can collect adjacent to the park. I realize, however, you can get into difficulties, especially in California, with State laws.

MR. JONES: The fellows who get into my hair are the geologists. I have found geologists with arm-loads of specimens. I usually approach them and try to be as diplomatic as possible but usually get a blunt reply. It would be a big help to me if some of the big men in the geological field would make some definite statements so that I could call the attention of these people to someone high in the profession who has commented favorably on our practice of restricting collections.

MR. ROTHROCK: I talk to a good many geologists regarding collecting and their reaction leads me to believe that it would be difficult to get their approval of our collecting practice. Most of them feel that the supply of specimens is so great that no harm can result. They ask why they should not obtain these specimens in out-of-the-way places when they won't appreciably deplete or damage the features of the park? I think we are agreed that collecting should be restricted in the case of materials that cannot be replaced or are scarce but when it comes to common materials such as rock specimens that can be obtained in out-of-the-way places and the loss of which will not in any way be a detriment to the area, the policy should be more lenient.

MR. BURNS: Some of the discussion has been more or less with the motive of supervising the high school. I would like to bring out that museums are not always as careful in their collecting that some people think they are. Some museums are very reputable but sometimes their enthusiasm carries them to excesses in collecting. I regard the danger of excesses by museum collectors to be as great as the danger from high schools.

MR. STUPKA: Perhaps the best interests may be served by having the Washington Office formulate a sufficiently flexible policy which is to

be the basis for all the collecting permit forms issued by the various national parks. Collecting of any specimens should be regulated largely by the various park officials.

MR. YEAGER: Someone brought out a while ago the fact that in a certain park some person commented about having gotten a permit and questioned why he could not get it in another park. You are going to run into that unless you have some uniform policy.

MR. KITTREDGE: I think there is a great deal of merit in what Mr. Stupka just said as well as what Mr. Yeager brought out, but I don't see how we are ever going to have a uniform regulation. For instance in Yellowstone we would never think of recommending taking out rock specimens but in Grand Canyon we can take out a thousand tons and it would never be missed. I think we really must have separate regulations.

The recommendations of the Conference and of other advisors were followed so far as possible and adjusted where necessary to produce the regulations and instructions for collecting which follow. Although these have not been formally adopted they are inserted here in order to give the reader the benefit of the latest decisions on the procedure of collecting.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

PERMIT TO COLLECT SPECIMENS OF FAUNA, FLORA, ROCKS, AND MINERALS

IT IS THE INTENTION OF THE NATIONAL PARK SERVICE TO FURTHER SCIENTIFIC RESEARCH WITHIN THE AREAS ADMINISTERED BY IT AND TO COOPERATE WITH TECHNICAL WORKERS TO THE FULLEST EXTENT, COMPATIBLE WITH ITS CHARGE TO PRESERVE ALL SPECIES OF FLORA AND FAUNA AND ALL GEOLOGIC MATERIAL IN A NATURAL STATE, INSOFAR AS IS POSSIBLE.

_____
(NAME OF AREA)

TYPE OF SPECIES TO BE COLLECTED _____

CLASS OF COLLECTING _____ PERIOD OF COLLECTING _____

NAME OF APPLICANT _____

REPRESENTING (NAME OF INSTITUTION) _____

REASON FOR COLLECTING _____

_____

PLACE WHERE SPECIMENS ARE TO BE DEPOSITED _____

_____

SPECIAL CONDITIONS OR RESTRICTIONS _____

_____

_____

I, THE APPLICANT, HAVING READ THE CONDITIONS ON THE REVERSE SIDE OF THIS PERMIT RELATING TO COLLECTING IN NATIONAL PARK SERVICE AREAS, AGREE THAT IF THIS PERMIT IS GRANTED I WILL COMPLY WITH ALL THE CONDITIONS STATED THEREIN.

SIGNED _____

AUTHORIZATION FOR COLLECTING

RECOMMENDED BY _____
(PARK NATURALIST)
(OR OTHER INTERPRETIVE OFFICER)

APPROVED BY _____
(SUPERINTENDENT)
(CUSTODIAN)

DATE OF ISSUE _____

N.B. THE PERMITTEE'S COPY MUST BE CARRIED AT ALL TIMES WHILE COLLECTING.

CONDITIONS UPON WHICH THIS COLLECTING PERMIT IS ISSUED

1. THIS PERMIT APPLIES ONLY TO FLORA, FAUNA, ROCKS AND MINERALS. ARCHEOLOGICAL AND PALEONTOLOGICAL COLLECTING CANNOT BE CONDUCTED UNDER THIS PERMIT.

2. THE COLLECTIONS SHALL BE USED FOR SCIENTIFIC OR EDUCATIONAL PURPOSES ONLY, SHALL BE DEDICATED TO PUBLIC BENEFIT, AND SHALL NOT BE USED FOR COMMERCIAL PROFIT.

3. BEFORE COLLECTING OF ANY KIND IS DONE, THIS PERMIT MUST BE SIGNED BY THE PARK NATURALIST OR OTHER AUTHORIZED INTERPRETIVE OFFICER AND COUNTERSIGNED BY THE SUPERINTENDENT OR CUSTODIAN.

4. ALL COLLECTING MUST BE DONE AWAY FROM ROADS, TRAILS, AND DEVELOPED AREAS, AND IN SUCH MANNER AS NOT TO ATTRACT ATTENTION OR TO INTERFERE UNDULY WITH OTHER NATURAL FEATURES OF THE PARK OR TO CAUSE INCIDENTAL DAMAGE TO THE ENVIRONMENT, OR TO IMPOSE ANY SIGNIFICANT CHANGE OVER A PERIOD OF YEARS. THE SUPERINTENDENT AND/OR THE NATURALIST OR OTHER INTERPRETIVE OFFICER MAY DESIGNATE THE NUMBER AND SIZES OF SPECIMENS WHICH BECAUSE OF THEIR SCARCITY OR IMPORTANCE MAY NOT BE COLLECTED, AND ANY OTHER RESTRICTIONS NECESSARY TO THE PROPER ADMINISTRATION OR PRESERVATION OF THE AREA.

5. TWO CLASSES OF COLLECTING MAY BE CONDUCTED UNDER THIS PERMIT; (A) THAT REQUIRED FOR PUBLIC EXHIBITS AND FOR ADVANCED RESEARCH; AND (B) THAT UNDERTAKEN FOR ELEMENTARY STUDY. THE FOLLOWING SPECIFIC REGULATIONS, IN ADDITION TO THE GENERAL ONES IN THE PRECEDING SECTIONS, APPLY TO THESE TWO CLASSES, AS INDICATED:

CLASS A

I. BY WHOM UNDERTAKEN: ADVANCED RESEARCH WORKERS WHO CAN ESTABLISH THEIR CONNECTION WITH PUBLIC MUSEUMS OR WITH SCIENTIFIC OR EDUCATIONAL INSTITUTIONS.

II. SPECIMENS WHICH MAY BE COLLECTED: ONLY THOSE TYPES OR SPECIES OF PLANTS, ANIMALS, ROCKS OR MINERALS NAMED ON THE FRONT OF THIS PERMIT.

III. USE OR DISPOSITION OF THE SPECIMENS: THE COLLECTION MUST BE REPRESENTED BY SUITABLE SPECIMENS WHICH SHALL BE DEPOSITED IN A PERMANENT PUBLIC MUSEUM OR IN THE EXHIBIT, STUDY OR TYPE COLLECTIONS OF SCIENTIFIC OR EDUCATIONAL INSTITUTIONS. THEY MUST BE SUITABLY RECORDED IN A PERMANENT FILE AND MUST BE AVAILABLE TO THE PUBLIC.

CLASS B

I. BY WHOM UNDERTAKEN: THOSE SERIOUSLY INTERESTED IN ELEMENTARY SCIENTIFIC STUDY.

II. SPECIMENS WHICH MAY BE COLLECTED: THOSE TYPES OF SPECIES DESIGNATED ON THE FRONT OF THIS PERMIT, COMPRISING ONLY COMMON FLOWERS (NOT ENTIRE PLANTS), OR COMMON ROCKS AND MINERALS, OR COMMON INSECTS AND INVERTEBRATES.

III. USE OR DISPOSITION OF SPECIMENS: ANY USE OR DISPOSITION OF THE MATERIAL MAY BE MADE WHICH IS NOT AT VARIANCE WITH THE PREVIOUS REGULATIONS AND WHICH, IN THE OPINION OF THE SUPERINTENDENT OR THE PARK NATURALIST OR OTHER INTERPRETIVE OFFICER, WILL RESULT IN INCREASING THE UNDERSTANDING OF THE FIELD OF SCIENCE REPRESENTED BY THE COLLECTION.

6. THE NATIONAL PARK SERVICE RESERVES THE RIGHT, IN THE INTEREST OF SCIENCE, TO DESIGNATE THE DEPOSITORY OF ALL SPECIMENS REMOVED FROM A NATIONAL PARK OR MONUMENT. NO SPECIMENS COLLECTED IN SERVICE AREAS SHALL BE REMOVED FROM THE DEPOSITORY DESIGNATED IN THE PERMIT WITHOUT THE WRITTEN AUTHORITY OF THE SUPERINTENDENT, AND THEN ONLY TO ANOTHER PUBLIC MUSEUM OR SCIENTIFIC OR EDUCATIONAL INSTITUTION; AND WHEN ANY ORGANIZATION WHICH IS A DEPOSITORY FOR SPECIMENS COLLECTED UNDER THIS PERMIT SHALL CEASE TO EXIST, EVERY SUCH SPECIMEN SHALL REVERT TO THE NATIONAL PARK SERVICE. THE NATIONAL PARK SERVICE ALSO RESERVES THE RIGHT TO DESIGNATE THE U. S. NATIONAL MUSEUM AS THE DEPOSITORY OF ANY TYPE SPECIMEN REMOVED FROM A NATIONAL PARK OR MONUMENT, AFTER THE COLLECTOR HAS MADE NECESSARY STUDIES AND PUBLISHED THE RESULTS OF HIS RESEARCH THEREON.

7. THE SUPERINTENDENT MAY ALSO REQUIRE THE PERMITTEE TO FURNISH AN INVENTORY AND LOCALITY DESCRIPTION OF ANY OR ALL SPECIMENS PROPOSED TO BE COLLECTED BEFORE THEY ARE REMOVED, AND AFTER THE COLLECTION IS ASSEMBLED, TO SUBMIT IT FOR EXAMINATION.

DR. RUSSELL: This question of collecting policy is something of importance to all administrative offices of the Service. I think that the number of ideas advanced will enable the committee involved to work on it. There is one more phase of the question that I would like to include now. Mr. Demaray who is interested in this particular question and personally interested in our program generally, turned over to me, just before leaving an opinion as to the grazing of livestock in Hawaii National Park. The opinion is contained here in this voluminous mimeographed document, and I have asked Mr. Maxwell S. Fulcher of the Museum Division to give it in the briefest form possible.

Brief of Opinion of Interior Department Solicitor Marigold of February 21, 1938, Regarding Grazing of Livestock in Hawaii National Park.

The opinion is given as to the construction to be placed on a deed dated March 30, 1927, from the Territory of Hawaii purporting to convey to the United States of America certain Government lands for national park purposes, and the interpretation to be given to a reservation therein worded as follows:

> "Reserving, however, to the Territory of Hawaii, its successors and assigns, a perpetual right to at any time graze livestock on any portion or the whole of the lands therein conveyed."

The facts are:

The Territory of Hawaii executed the above-mentioned deed purporting to convey to the United States certain lands for national park purposes and attempted to reserve the right to graze livestock thereon in accordance with the reservation quoted above. The deed containing this reservation was accepted by the Assistant Secretary of the Interior on May 4, 1927. By an instrument in the nature of a lease, dated April 16, 1928, the Territory of Hawaii attempted to convey to the Hawaii Agriculture Company for 21 years the grazing rights on these lands. The Superintendent of Hawaii National Park objected to clearing operations attempted by the Hawaii Agriculture Company to make the lands suitable for grazing.

Particular questions raised:

1. Whether or not the term "right to graze livestock" should be defined to include as incidental and essential thereto the right to eradicate from park lands vegetation regarded as plant pests noxious to grazing and generally to adapt such lands to grazing purposes in conformity with Hawaiian connotations, which differ widely from those of the term in the continental United States.

2. Whether or not the Secretary of the Interior has authority to forbid such clearing operations on national park lands as being destructive of shrubbery, timber, natural objects or scenery and thus violative of certain acts of Congress.

The Solicitor found that in 1848 the lands became the private property of the King; in 1865 became the property of the office of the Crown; in 1893 became the property of the Republic of Hawaii when the monarchy was overthrown; and on August 12, 1898, the date the Hawaiian Islands were annexed to the United States, were ceded to the United States in absolute fee. Section 91 of the Hawaiian Organic Act, as amended by act of May 27, 1910, returns the lands to the possession, use, and control of the government of the Territory of Hawaii until otherwise provided by Congress or taken for use of the United States by the President or the Governor of Hawaii.

In passing the act of August 1, 1916, creating Hawaii National Park the Congress acted upon the contingency provided for in the Hawaiian Organic Act mentioned above and dedicated the lands to a Federal use, thereby terminating the possession, control, and use by the Territory of Hawaii. Therefore the Territory had no title to convey by the deed of March 30, 1927, and the instrument is null and void; the Territory could reserve no right to graze livestock on the lands; and the Assistant Secretary's approval of the reservation was ultra vires and inoperative.

The act of August 25, 1916, creating the National Park Service empowers the Secretary to cut timber where required to control insects or disease or to conserve the scenery or natural or historical objects in a park, monument or reservation and to destroy such plant life as may be detrimental to the use of any such area, and authorizes him to permit grazing in any of such areas, except Yellowstone National Park, where in his judgment such use is not detrimental to the primary purpose for which the area was created, "which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Wilful damage or injury to any living thing is made a crime. The Secretary himself may neither cut down nor pull up except to conserve the park and check such ravages of nature as might hurt the whole. Grazing he may not permit unless it shall in no way tend to change or destroy the natural conditions of the park.

This makes immediately obvious that to fell trees, uproot shrubbery, eradicate plants and generally to clear away any park lands in order to adapt them for grazing would violate every one of the prescribed principles and grazing which requires such operations is of a character which the statute forbids the Secretary to permit. It follows therefore, that the Secretary has no authority not to prohibit such clearing operations as were undertaken by the Hawaiian Agriculture Company and every authority to refuse to issue permits for such grazing as would demand adaptation of Hawaii park lands to the needs of cattle raising.

And although this opinion was given in connection with grazing in Hawaii National Park, it construes the general statute which applies to all parks, monuments and reservations. Therefore the opinion would seem to affect the grazing policy of all areas to which the statute applies.

Maxwell S. Fulcher.

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Mr. Oberhansley then introduced Mr. Watson to submit the next paper.

Natural History Associations

Donald C. Watson,
Assistant Park Naturalist,
Mesa Verde National Park.

ABSTRACT

The first Natural History Association grew out of the need for an organization that could accept and handle funds privately, accept gifts without a formal acceptance by the Secretary, sell publications the receipts from which could be used for books, equipment, research, printing of Nature Notes, etc. The general purpose of such an association is to aid in development of museums and libraries and in research, stimulate interest in various inspirational activities and the sciences, sell publications, and publish Nature Notes and technical papers. A typical association consists of a Board of Directors of five members and an Advisory Committee composed of interested scientists. Some of its problems are the constant turn-over of Service personnel and interested park residents, lukewarm members, the responsibility and amount of work that falls upon the Park Naturalist, the amount of time to be spent in the preparation of Nature Notes, the size of the mailing list, point of balance between time spent and value received, and proper expenditure of its funds.

The first Natural History Association in the National Park Service resulted from certain problems which developed as the interpretational branch of the Service grew and expanded. In the early days' of the Service such problems did not exist. The need for an interpretation of park features had not reared its ugly head over the tranquil landscapes that were so capably, though unscientifically, cared for by what later became known as the "Old Time Ranger."

As park travel increased, however, it became apparent that some effort should be made to answer intelligently the countless questions with which the rangers were constantly bombarded. The entertaining answers of the "Old Timer" seemed insufficient, and the need for an accurate and sympathetic interpretation of phenomena became distressingly apparent. As a result, museums developed, libraries appeared, lectures and guided tours were scheduled and the Naturalist Department became a functioning organization, accepted by all but the more conservative members of the Service.

Because of various governmental limitations these facilities grew slowly, and some of the friends of certain parks endeavored to aid by making contributions for this part of the Service. Money was contributed for museums and libraries; books and other material objects were donated. Immediately vexatious problems arose. All money contributed was, of necessity, turned over to the Treasurer of the United States. Non-monetary contributions were subject to the ruling that all gifts should be formally accepted by the Secretary of the Interior. A further complication resulted from the necessity of turning in as miscellaneous receipts the profits that resulted from the sale of publications in the park museums.

In order to solve these problems satisfactorily a Museum Association was formed in Yosemite National Park in 1923. As indicated above it resulted from the need for an organization that could:

1. Relieve Park Service employees of the responsibility of accepting and handling funds personally.

2. Provide means for the acceptance of gifts (books, money, equipment, etc.) without a formal acceptance by the Secretary of the Interior.

3. Provide for the sale of publications, the receipts to be used in furthering the Naturalist program.

This initial organization seemed to solve the problems. Other organizations were formed until, at the present time, Natural History, Museum or Library Associations exist in most of the National Parks as well as in other Service areas.

For a long time these organizations enjoyed a dubious position with their exact legal status rather beclouded. Considerable criticism was aimed at them for it was obvious that the members of the Naturalist Department were using government time in the sale of publications and in the transaction of the affairs of the Associations. At last governmental approval was secured by the Interior Department Act of 1937 which contained the following provision:

"Appropriations made for the National Parks, National Monuments and other reservations under the jurisdiction of the National Park Service shall be available for the services of field employees in cooperation with such non-profit scientific and historical societies engaged in educational work in the various parks and monuments as the Secretary, in his discretion, may designate."

Although there are slight variations, the organization and functions of the various associations are much alike. The typical association consists, first of all, of a Board of Directors or Trustees; in various parks

the number ranges from four to nine. Included among the Directors, or in some cases, in addition to them, is an Executive Secretary and a Treasurer. The Executive Secretary is the Park Naturalist who supervises the activities of the Association and submits an annual report to the Board of Directors and to the National Park Service. The Treasurer, who must not be a Park Service employee, administers the finances of the assoication and submits monthly and annual reports to the Executive Secretary.

In addition to the Board of Directors some associations have an Advisory Council composed of interested scientists and friends who are available for consultation on scientific problems as well as on association affairs. Some associations also have a "membership at large" and any interested individual can become a member by payment of an established fee, varying from one to five dollars, or by contributing money, books, pictures or some other article of value. Such contributions entitle the members to the publications of the association. In other associations there is no "membership at large," the association consisting of the functional organization, the Board of Directors, the Executive Secretary and the Treasurer.*

In evaluating the good and bad points of the associations, there is an abundance of evidence to be considered. There are now 16 associations. The oldest has been functioning seventeen years while the youngest is still in swaddling clothes, having been born only seven months ago. From the experiences and results of these associations it is now possible to weigh their ultimate values.

On the one hand it is impossible to underestimate the value of a smoothly-functioning association. It has been established with exceedingly high aims, and even though it succeeds in only a part of these, it is of great benefit to the Park and the Naturalist Department. The aims of the average association are:

1. To aid in the establishment and development of a Park library.

2. To promote research and disseminate information.

3. To publish technical and non-technical bulletins dealing with various phases of investigation.

4. To promote the inspirational program of the park.

5. To aid in the development of museums and the purchase of necessary equipment.

6. To provide means for the sale, in the park, of pertinent government and non-government publications.

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* In about three of the parks where they have permanent residents numbering in the hundreds or even thousands rather elaborate associations have been formed and the little party we had the other night is evidence of how they can function.

In all of these aims most of the associations have been more or less successful and the Naturalist Departments have received invaluable aid. Museums, libraries, publications, and research have been benefited and stimulated, and the interpretational programs of the parks have been broadened. Net yearly profits of the associations range from small amounts to many hundreds of dollars and with these funds available to the Naturalist Departments the results are bound to be gratifying. A National History Association also provides an excellent means of keeping in touch with friends of the park. A carefully selected mailing list for publications, a wisely chosen Board of Directors and an interested Advisory Council provides a strong group of friends whose support could be mobilized if any of the important objectives of the Park or the National Park Service were threatened.

On the other hand certain problems have developed, problems that must be settled before the associations can function smoothly. Some involve the delicate adjustment between the government and the associations, others involve the use of funds, and still others concern the actual powers and functions of the associations.

Some of the major problems are:

1. What is the relationship between a Natural History Association and the government? Is it a government function, a semi-official body or a strictly nongovernmental cooperating institution?

The 1937 Appropriation Act merely gave government employees permission to use government time in cooperation with "non-profit scientific and historical societies engaged in educational work in the parks and monuments." It did not mention the associations as such, and their exact relationship to the government has not been established. A very delicate point is involved. A Natural History Association is not a group of people who have decided to band together, voluntarily, in order to aid the Naturalist Department of a park. It is, rather, a group of people whom the Park Naturalist is forced to bring together in order that the money he makes and spends may be presided over by a non-governmental institution. The Naturalist, working on government time, earns the money and later he directs its expenditure for the benefit of a government institution. During the resting stage in between the earning and spending, the money is in the hands of the Treasurer of the association who is not a Park Service employee. Because of this delicate balance a definite decision is needed as to the exact relation between the association and the government.

2. Should a Natural History Association pay Sales Tax?

Again a delicate point is involved. In order that it may function and handle funds we are forced to maintain that an association is a non-governmental agency. When a state insists upon the collection of a sales tax we maintain just as stoutly that the association is an instrumentality of the Federal Government and should be tax exempt. Yosemite has requested

a decision on this matter from the Chief Counsel of the National Park Service and the Attorney General which may clear up the problem.

3. What is a reasonable amount of time that the Park Naturalist may spend on the affairs of the association?

No matter how smoothly an association functions a vast amount of time and labor is required of the Park Naturalist. In a park having several permanent members of the naturalist force this is less serious, and an elaborate organization maybe maintained, but in a park where the Naturalist is the only permanent member of the force a simple set-up is necessary. In such a situation the entire association may become a "skeleton", and the affairs may be managed almost entirely by the Executive Secretary and the Treasurer. It is necessary for the Naturalist to decide how much of his time can be spent profitably on the affairs of the association.*

4. Are "Nature Notes" worthwhile?

Most of the associations have published or attempted to publish non-technical papers that are mailed to interested friends of the parks. In some cases attractively printed and illustrated publications have resulted; in some cases poorly mimeographed publications of dubious value have appeared. Such publications require a great deal of time on the part of the Naturalist and other members of the force and much care must be exercised to keep them from reaching the point of "diminishing returns." There is a delicate point of balance between the time spent and the permanent value received. The mailing list at best should number only a few hundred names. The "Notes" are transitory in nature, read by a few interested people and discarded. Unless they can be produced with a minimum of time spent, they can well be discarded in favor of occasional technical bulletins that can be offered for sale to all park visitors. The Park Naturalist must sooner or later make a wise decision on his "permanent values." Is it better to spend considerable time on an issue of "Nature Notes" that reach only a few people or to spend the same amount of time on a permanent museum or trailside exhibit that will be seen and enjoyed by hundreds of thousands of people?

5. What can be done about a lack of enthusiasm on the part of members of the Board of Directors?

In some parks the Board of Directors has become a "dummy" organization with the affairs being carried on by the Executive Secretary and the Treasurer. In larger parks, where there is a large group of permanent residents, it is less difficult to obtain interested directors, but in smaller parks, where they are few permanent residents and a constant turn-over of personnel, it is a serious problem. It is absolutely essential that the Treasurer be an interested, cooperative individual willing to spend considerable time on the affairs of the association. Board members must be selected with extreme care or the Naturalist will find himself afflicted with a "dummy

* I have been on the verge of paying room and board on graduate work. I want some opinion as to whether we can pay the room and board on some fellow who can do a great deal of good.

Board", and, in addition, will find himself loaded with all of the work of the association. Special attractions may be offered to Board members, but it is difficult to overcome a lack of enthusiasm which is, all too often, contagious.

6. How can book and money losses be avoided?

It is difficult for any organization to function without a few minor discrepancies in accounts. At the end of the month stock or funds may fail to balance because of carelessness, mistakes in making change, or even dishonesty. All stocks, both reserve and "on sale", should be kept under lock and key and no great amount of money should be allowed to accumulate in the cash drawer. If discrepancies continue to occur in the monthly check-ups, weekly or even daily check-ups should be made. It is not the best policy to allow CCC enrollees to handle the sale of publications.

7. Should an association have an Advisory Council?

An advisory Council may be merely an important sounding list of names on a letterhead, or it may be a group of scientists who are of great benefit to the Park. Every Naturalist has his own unofficial advisory committee, composed of scientists to whom he goes for consultation on problems. They are valuable to him in an unofficial capacity, but if he wishes to add prestige to his association, he may form an official Advisory Council. Council members should receive all publications and should be contacted occasionally to make them feel that they are of importance to the park. However, no effort should be made to get concerted action from the Advisory Council. Each man is a specialist who has gained his reputation by his ability to disagree with other specialists. Concerted action on a problem would be impossible.

8. In what ways may association funds be spent?

The use of funds is almost unlimited as long as the educational and interpretational program is furthered. Some of the common uses are:

Books.
Magazine subscriptions.
Stationery and postage.
Research fellowships.
Memberships in scientific organizations.
Publication of "Nature Notes" and technical bulletins.
Purchase of equipment such as cameras, film, slides, projectors and museum supplies.

9. The success or failure of a Natural History Association.

The entire success of the organization lies in the personality, organizing ability and diligence of the Park Naturalist. The names of the Advisory Council may look impressive on the letterheads and the Executive

Committee may render abundant aid, but in the end it is the Park Naturalist who runs the organization. He manages the affairs, makes the decisions, earns the money and spends it, and takes the blame for mistakes.

A smoothly functioning Natural History Association is a valuable asset to a Park and its Naturalist Department, but the success or failure rests squarely upon the shoulders of the Park Naturalist.

MR. OBERHANSLEY: Any discussions on Natural History Associations?

MR. LLOYD: Mr. Chairman, I would like to ask several questions. I had an opportunity while in Washington to review some of the correspondence that led up to the legislation that promoted the establishment of the Natural History Association and in that correspondence so far as I have been able to discover there is no place in the record that defines the relationship between the Natural History Association and the Superintendent of the Park. I think that is one point that might be brought out a little more clearly in the Committee sessions, possibly for discussion here. There is another thing that disturbed me administratively. I will give you a practical example. The temporary ranger-naturalists, as well as the Assistant and Junior Naturalists, are appointed by the Secretary, assigned to the Superintendent in the Park and the Superintendent turns these men over to the Naturalist; he prepares the program in which they work and as Executive Secretary of the Natural History Association the Park Naturalist outlines and describes their duties. Now these men, insofar as I know, are not bonded agents of the Government. Those men who do handle money for the Government are all bonded, such as the Ranger, the Agent-Cashier and some administrative men. Yet, because of the duties that are prescribed by the Park Naturalist, these naturalist assistants are called upon by the Park Naturalist to handle funds. What happens in the event there is a loss of funds? Is there an administrative tie-up? Is there a stigma placed on the man's records because he loses funds of the Natural History Association? What cognizance is taken in the loss of funds which, under the conditions that he was appointed by the Secretary, there is no indication that he was a bonded agent of the Government and as such supposed to handle funds belonging to the Government or to the Natural History Association?

We had a specific case a few years ago where there was a loss at the Yavapai Observation Station in a particular fund that was being handled by the temporary Ranger-Naturalist. Immediately we remembered that the funds were not Government funds and belonged to an outside organization. Now the question is are we justified in taking this into consideration in discussing whether a man who is involved in such a loss should come back? In this particular case the man felt badly about it and came in and apologized for the loss of Natural History Association funds for which he was directly responsible.

These are several problems which I think the meeting here might discuss and also which the Committee might take under consideration. It seems to me that from an administrative standpoint they are definite problems.

MR. GRATER: I don't know how it is in other parks but in Zion the Superintendent has just as much responsibility as the Park Naturalist. Nothing that I do is done without discussing it first with the Superintendent, and if he disapproves it because it runs contrary to some policy which I don't know about, he has the right to speak up and tell me what should be done. The administration of the Association is under the direct supervision of the Superintendent and I have to get his opinion.

MR. WALKER: In connection with bonding I wonder why our wives should not be bonded for the sake of protection. Some of them are Secretaries and Treasurers of these associations.

MR. BEATTY: It may seem rather simple but to me in Yosemite it is a rather complex situation. One day we have one set of workers and the next day we have another set and it is hard to place responsibility. Our Association has assumed all losses from sales of publications and we have found that over a period of about ten years our losses have been less than one per cent. I think this is a rather small percentage. In our park the Superintendent has declined a nomination to the Board of Trustees and perhaps wisely, but the actions of the business manager of our association are subject to the approval of the Superintendent and in that way he is kept informed and in the long run the Superintendent's word is usually the final one. That is the situation as it exists in Yosemite.

The question was brought up in the paper as to just where we stand with the National Park Service. We have found in Yosemite that an outside Advisory Board or Board of Trustees is somewhat impractical because of frequent resignations, in which case it is necessary to get written recommendations for a successor and then it must be approved and this involves too much paper work. We have abandoned the idea of an advisory council of learned scientists in favor of a Local Board of Directors of four and the Director serves as ex-officio member of the Board of Trustees. In that way we can call meetings once or twice a year as needed and we are permitted by our local board to make expenditures up to one hundred dollars. For items over that amount we have to call a meeting and get the approval of the Board.

The statement that was entered into the Budget Act was largely due to one of our members who was the United States Commissioner of Parks. He recognized that our associations and perhaps many others were in a very bad legal situation. In other words he pointed out that we were

directly responsible and liable and that we should have the recognition of the Washington Office. To that extent we investigated the records of the Association from the beginning and submitted them to the Washington Office for approval. The present wording in the Budget Act is the result. It contains a statement that we are permitted to participate in such organizations as are designated by the Director. We immediately wrote to the Director and asked that our Association be designated under that Act. In addition anything that is supported by the Natural History Association (in our case the Junior Nature School) is also designated as coming under that Act. Now we stand in a much better light as far as participating on Government time in these associations. Recently the questions of State sales tax came up. I know that this is going to be of particular interest to two other organizations in our state, Lassen and Sequoia. We try as much as possible to establish that our institution is an instrumentality of the Federal Government. In this respect a reply from Mr. Moskey is quite clear. He states that after giving careful consideration to the relationship existing between the Federal Government and the Yosemite Natural History Association that:

> "But regardless of the extent to which the affairs of the Association are interwoven with Government functions this office is of the opinion that as the Association is a private organization it is not possible to classify it as an instrumentality of the Government to that extent that it would be under the Federal law and be exempt from State taxation."

That is the gist of the whole thing and we in California are, therefore, sunk. Mr. Brockman has a communication which exempts his Association and I am happy for that.

MR. YEAGER: I think Don left out one very pertinent thing. Unless there is some new ruling the funds must be kept separate and you are not supposed to mix the Association funds with others.

MR. BEATTY: Formerly in Yosemite the Government publications were sold by Rangers and by the Yosemite Natural History Association. In addition the Association has on sale some private and non-Government publications. But with this decision coming from Washington, which has designated this Association as legal, the Superintendent in our Park and I believe that the entire sale of all publications in the Park is turned over to the Natural History Association. Formerly we had been securing Government publications and maps on a consignment basis, but charged to the Superintendent. We had to return all the money that was taken in from the sale of these publications. If the Natural History Associations have sufficient funds to pay cash for the purchase of Government publications they should be able to secure a 25 per cent discount. That has been sufficient inducement for most associations since they possibly could get on their feet by handling it that way. We still handle all Government maps on a consignment basis.

DR. RUSSELL: I think Mr. Lloyd's suggestions on this question are very pertinent and I wonder if he could be persuaded to put them in black and white and give them to the Committee? We have not been able to obtain in Washington a complete picture of all that goes on in cooperating societies. I would like to take just a moment to show what our record contains regarding the scope of cooperating societies.

NATURAL HISTORY ASSOCIATIONS
of the
National Park Service

Park	Association	Founded
Grand Canyon NP, Ariz.	Grand Canyon Nat. Hist. Assn.	April 1932
Grand Teton NP, Moose, Wyo.	Jackson Hole Museum and Historical Assn.	Dec. 14, 1936
Hot Springs NP, Arkansas	Hot Springs Nat. Hist. Assn.	Nov. 17, 1936
Mesa Verde NP, Colorado	Mesa Verde Museum Library Assn.	1934
Rocky Mt. NP, Colorado	Rocky Mt. Nature Assn.	Nov. 1931
Yellowstone NP, Wyoming	Yellowstone Library and Museum Assn.	Jan. 26, 1933
Zion-Bryce NP, Utah	Zion-Bryce Nat. Hist. Assn.	July 1931
Fredericksburg and Spotsylvania County Battlefields, Memorial National Military Parks, Fredericksburg, Va.)	Fredericksbury Battlefield Parks Assn.	1927
George Washington Birthplace National Monument, Washington's Birthplace, Westmoreland County, Virginia.	Wakefield National Memorial Assn.	Feb. 22, 1922
Morristown National Historical Park, Box 759, Morristown, N.J.)	Washington Assn. of N. J.	1873
Petersburg National Military Park, Petersburg, Va.	Petersburg Battlefield Parks Assn.	1927
Southwestern NM, Coolidge, Ariz.	Southwestern Monuments Assn.	July 22, 1938
Mt. Rainier NP, Longmire, Wash.	Mt. Rainier NP Nat. Hist. Assn.	Jan. 27, 1939
Lassen Volcanic NP, Mineral, Calif.	Loomis Museum Assn.	May 18, 1939
Yosemite NP, Calif.	Yosemite Nat. Hist. Assn. (Founded as Yosemite Museum Assn. 1923)	Apr. 24, 1925
Sequoia NP, Calif.	Sequoia Nat. Hist. Assn.	May 27, 1940
Hawaii NP, T. H.	Hawaii Nat. Hist. Assn.	1933

Mr. Oberhansley introduced the next speaker, Mr. M. V. Walker.

Facilities and Resources Available For Publication and Types of Issues Adaptable to Naturalist Needs.

Myrl V. Walker,
Associate Park Naturalist,
Crater Lake National Park.

ABSTRACT

The author approaches this problem first from the standpoint of facilities and resources available for the publication of (a) scientific manuscripts and (b) non-technical or popular articles. As avenues of publication for scientific manuscripts, the author suggests the following in order of priority: (1) through recognized scientific periodicals, such as the Journal of Geology, the Journal of Mammalogy, and so forth. (2) Through funds provided by special grants, such as Carnegie Grants, and the like. (3) Through State Academy of Science Proceedings. (4) Through Natural History Associations. For non-technical or popular articles, the author suggests publication by (1) Natural History Associations, (2) The Regional Review or the Regional Quarterly of each region, and (3) the proposed PARKS publication.

In regard to types of issues adaptable to Naturalist needs, this is discussed from the angle of (1) scientific publications needed by the Park Naturalist for his own use in preparing his interpretive program, and (2) the non-technical or popular type of bulletin which is demanded by the public so that they may be better able to interpret the area being visited with a minimum or wasted time and effort.

To begin with, I am going to restate this title and break it down so that we can consider one item at a time. This title seems rather broad and includes a number of different problems. I am going to restate it as follows:

1. What facilities and resources are available in the parks for publication of naturalist manuscripts.

   a. For publication of technical research manuscripts.

   b. For publication of non-technical manuscripts.

2. What types of issues are adaptable to naturalist needs.

   a. What type of research publications are needed by the Park Naturalists.

   b. What type of non-research publications are needed by the Park Naturalists.

I shall not attempt in the following remarks to decide any of these problems, but simply to make some suggestions and bring up a few questions for thought and discussion.

In the first place let us consider the facilities and resources available in the parks for publication of technical manuscripts prepared by park naturalists. In a majority of the areas the facilities and resources have been rather limited, and there has been little or no uniformity in procedure. It has been something of a problem to find an "avenue of escape" for such papers and manuscripts. In thinking this problem over it seems that there are about four possible publishing procedures for technical manuscripts. These are listed as follows:

(1) By membership in some recognized organization which publishes its proceedings in a periodical such as the following. Journal of Geology, The Condor, Journal of Paleontology, Bulletin of the Geological Society of America, The Wilson Bulletin, Journal of Mammalogy, The Auk, and so forth.

(2) Through procedure outlined in the special grants by the National Research Council, the Carnegie Grants, and like foundations.

(3) By membership in the local or State Academy of Science organizations and through their published proceedings.

(4) Through Natural History Associations by funds provided. Publications through Natural History Associations should probably be limited to not more than 20 per cent research papers.

Of these possible types it appears that the first is the most logical procedure for publishing technical research papers, but unfortunately not all naturalists are members or even subscribers to any number of these periodicals. There is, however, the possibility that individual member-

ship could be replaced by a scheme whereby all Parks (or naturalists) are members as a group, thereby insuring continued complete files of all publications in all park libraries, and at the same time making accessible for all naturalists a list of the publications of all other naturalists. It might be suggested that the naturalists as an organization enter as a block, a blanket subscription of perhaps thirty group subscriptions for at least ten different periodicals. These publications could be selected to cover the main fields, such as geology, biology, archeology, history, museum news, and so forth. All naturalists should then be considered members eligible to submit articles for publication in these bulletins. These articles should be submitted through a special science editor selected from our own service who preferably would be stationed in the Washington Office. The following list of ten periodicals is suggested:

1. Bulletin of the Geological Society of America.
2. Journal of Paleontology.
3. Journal of Mamology.
4. The Condor and/or Wilson Bulletin
5. A journal of herpetology or general zoology.
6. The Botanical Gazette or some other general botany journal.
7. A journal of forestry.
8. A journal of archeology.
9. A journal of history.
10. A museum journal.

There are few instances where research work is financed by special grants such as Carnegie Grants, and others, or where park naturalists and visiting scientists prepare joint papers. In such cases reports would be published through the special procedure provided by these grants.

In order to keep well acquainted with research work being done locally, by that I mean within the state, it seems that all park naturalists should belong to State Academy of Science organizations, thus making it possible for an occasional paper to be published in that manner. Individual membership might be replaced here again by the membership being kept up by the Natural History Association, thus insuring an unbroken file of the proceedings of these organizations.

There is also the possibility of publishing through the Natural History Associations, even going so far as to have the Natural History Association finance publication of a few technical papers; however, I see no reason why the above mentioned methods would not take care of practically all research papers. In any event, technical research papers should not comprise more than 20 per cent of the publications financed by Natural History Associations.

I have emphasized in the above remarks the desire of having complete and unbroken files of periodicals and proceedings in the park libraries (although this is more of a library problem), and for that

reason suggest some method other than individual membership or subscription. What often happens is that one naturalist will be interested in mammology and will join the American Society of Mammalogists and receive their journal for some time. Then he is transferred, and the next man may be interested in geology and be a member of the Geological Society of America and receive the Bulletin of that Society. If he is transferred, the next man may be interested mainly in birds and may be a member of the Cooper Club and receive, The Condor. The result is that we find our park libraries composed of a few issues of this and few issues of that. Even if I were a geologist, I would far rather have a complete file of The Wilson Bulletin than a few each of a half dozen different periodicals scattered over a period of years.

I should also like to see a requirement to the effect that the majority of all technical manuscripts prepared by naturalists be published in the above-mentioned periodicals. All naturalists would then be able to keep abreast of the research work being done by all other naturalists. As it is now, each one is required to find his own publishing outlet. As a result papers are published in the Science Proceedings of Podunk Center, and the Journal of the Newest American Naturalist, and so forth. In this way, we never know what other naturalists are publishing, when they are publishing, or where.

Let us next consider the publication of non-technical manuscripts. I believe that we have at the present time two possible outlets for these papers, and I think that is all that is necessary. These two are as follows:

(1) Through the Regional Review or Quarterly in each Region.
(2) Through the Natural History Associations in each park.

In considering the first of these, it seems that there are, on occasion, popular and semi-technical papers prepared which are not scientific enough to be considered in our above technical series; neither would they represent acceptable Natural History Bulletins. I believe the Regional Review or Quarterly offers a fine outlet for publishing such articles, and at the same time insures distribution of copies to all park libraries.

The second method for publishing non-technical manuscripts is through the Natural History Associations. Technical scientific data and popular presentation are combined and the material is printed as a small attractive bulletin which is on sale at a very moderate price. The publishing (actual printing) of these Natural History Bulletins is quite an undertaking, and up to the present time there has been no uniformity in this matter. Each park naturalist or Natural History Association editor prepares the manuscript, decides on style of format, pictures and cuts, weight and type of

paper, type of cover, style of binding, number of pages, frequency of issue, and a thousand other little items, and then starts out to find a printer who will carry out the Association's plan for the publication. However, a discussion of all these items is not within the scope of this paper.

We come now to that part of our title that deals with "Types of Issues Adaptable to Naturalist Needs." It seems that the naturalists are in need of two types of publications, first being research publications (for themselves), and second, non-research publications (for the public).

The research publications are needed primarily by the naturalists so that they will be able to avail themselves of all the technical information on their area. They should have the very latest and most exhaustive research papers on geology, biology, prehistory, and so forth, so that their interpretive program can be built up on a solid background. They should have complete check lists of plants, mammals, birds, trees, and such bulletins, and the best publications on the salient features pertaining to the geology, archeology, or history of their area. The interpretive program of an area should be based on published technical research papers, and these should be close at hand. When questions arise on a point in some chart or diagram or text label, the naturalist need defend the point no farther than simply to say, "that is according to the published report in bulletin so and so, of such and such a date, by Dr. so and so, who is an authority on that subject in this area." I think it is simply wasting a naturalist's time to have him standing around arguing a technical point with some learned gentlemen who may or may not know anything about the point being debated. I have always considered it far more important to be able to refer him to a bulletin or be able to have a publication at hand in which I can turn to the proper page for the identification of, let us say, a chipmunk, than to try and remember all the different species of chipmunks in the world. About all I try to do is to remember the difference between a chipmunk and a ground squirrel.

I would then like to repeat that we need, and need badly, technical research papers on our areas for our own protection and for our own utilization in the preparation and carrying out of our interpretive program.

These research papers should, in the main, be the work of men outside our service, except in special cases where a park naturalist is an authority in some particular field. This technical research should be undertaken by professional men and they should be given an especial invitation to do such research work. The Service should give these workers every possible assistance. There is the possibility of some assistance from the Service through the appointment of Collaborators, from the Natural Hisotry Associations, but the greater part should be financed by

special grants or funds provided by scientific organizations, or by the home universities of the research workers. It is also suggested that the results of this research be published, whenever possible, in one of the ten selected scientific periodicals, thereby making the information available to all the park areas.

The second type of issue needed by the park naturalist is the non-technical or Natural History Bulletin publication. These popular bulletins I like to call "salesman of knowledge" publications, and they are needed for perhaps two reasons. The first, their preparation affords the finest opportunity for the naturalists and to take technical scientific reports and transpose them into popular informational bulletins. He thereby increases his own fund of information immeasurably, for in many instances there is considerable compilation from various reports. This also gives him the best type of training for organizing his popular interpretive programs. In other words, if you can not "sell" it to the public in published natural history bulletins, the chances are you can not interest the public in your exhibits or in your lectures, and vice versa.

In this connection I would like to say that the National Park Service receives many benefits from this type of publication if it is available and for sale in the park by the Natural History Association. These publications are not only "salesmen of knowledge", but they are also "salesmen" of National Parks and "salesmen" of our Naturalist Service. If the publications are popular and salable, the individual park or Natural History Association gains most, for in the first place the park becomes widely advertised through the distribution of such bulletins, and in the second place funds are made available for additional publications, some of which might be research papers. Funds secured in this manner are also, in many instances, the only means for the building up of park libraries and study and research collections, and for providing additional interpretational aids.

The second and perhaps most important reason for having these bulletins is that there is a popular (public) demand for just such information. Many park visitors are anxious to get this information in a condensed form to carry with them, for most visitors do not have time to attend enough lectures or go on enough trail trips to cover the entire story of the Park. They want their information condensed, interesting, non-technical, and put up in an attractive form.

One might think that these bulletins would have the tendency to promote faster travel and a shorter stay in the park, since the information can be secured with so little effort, but from observations and statements made, the evidence all tends to show exactly the opposite

response. These bulletins tend to slow down travel because they create a desire to see a little more and learn a little more, hence the visitor enjoys the area a few hours longer. This is the very goal for which we are striving in this balance of park use, recreation and interpretation.

It seems, then, that the greatest need of the naturalists (in their service to the public) is the assembling of a comprehensive set of non-technical "salesmen of knowledge" bulletins covering the various outstanding interests in their particular parks; bulletins that will give an interesting, non-technical, but accurate description of the geology, botany, zoology, or the historical story of the park, and give it in such a manner that it will inspire the reader and create within him a desire to learn more, see more, and enjoy more, this particular national park.

I believe this comprehensive set of popular bulletins should be well illustrated with charts, black and white pictures, and if you want to sell them, some good colored pictures. They should consist of approximately 35 to 50 pages and be made to sell for about 25 cents each. The following is a suggested list of titles.

1. A visitors guide to the park.
2. The geology of the park.
3. The mammals of the park.
4. The birds of the park.
5. The reptiles, amphibians and fishes of the park.
6. The interesting invertebrates of the park.
7. The trees of the park.
8. The plants of the park (other than trees).
9. The prehistory and Indians of the park area.
10. The history of the park.

After this first series had been completed, each division could have supplementary issues. For example, in Mesa Verde National Park where prehistory is by far the broadest subject to consider, additional bulletins on various phases of prehistory, such as pottery, textiles, house types, or even head types would be very interesting, and I would venture to say, popular and salable.

Again I would like to emphasize that these are not only "salesmen of knowledge" but they are salesmen of our national parks and of our naturalist service. It seems, therefore, that these popular bulletins should be the main effort of the naturalists in non-technical research and publication.

At the present time there appears to be very little uniformity in organization or procedure or even in establishment of Natural History Associations. It seems that we should come to some decision on this matter, and formulate organization plans, decide on types of publications, size of

publications, and sale price of Natural History publications. We should also consider the possible complaints and objections which may come from the park operators, if and when such publications become highly salable thereby providing profits to the Natural History Associations.

In looking back over these pages it seems that I have only touched on the various items indicated in the title of this paper, and perhaps there are some remarks that are a bit beside the point. I hope, however, that the value of the paper is not in what has been said, but in the questions that have been raised and in the discussions which are to follow. And finally, in order to raise some very definite debatable questions, a number of recommendations are proposed for consideration and discussion. These recommendations are listed as follows:

1. That park naturalists give first consideration to the preparation of a comprehensive set of popular science bulletins covering their area, rather than spending time on technical research publications.

2. That every park have a Natural History Association, each to operate independently, but all to be governed by an approved constitution or organization plan. (This condition now prevails. H.E.R.)

3. That all non-technical bulletins be for sale at very moderate prices, but that no attempt be made to provide free literature.

4. That these popular science bulletins be published and offered for sale only by the Natural History Associations in the respective parks.

5. That such processed Kodachromes as have been taken by members of the Natural History Association and used to illustrate these various bulletins, be placed on sale by the Natural History Association in the park.

6. That more technical research in the national parks be undertaken by professional men outside the Service, and that they be given an especial invitation to do such research work. That funds for such research and publication be provided by special grants and not taken from regular National Park Service appropriations, and that all such technical papers be published in the ten selected periodicals.

7. That popular and semi-technical papers be printed in the issues of the Regional Review or Regional Quarterly, and that further study be given this outlet.

8. That issuance of mimeographed Nature Notes be discontinued, in all National Parks as rapidly as it is possible to produce printed publications.

In conclusion I would just like to say that I have enjoyed working on this problem, and I hope now that we can have a good discussion of some of these points.

MR. ROTHROCK: I would like to see the results of Service research published in Service documents. That is an ideal that we cannot obtain at present, yet I think it is one that we should strive for. It is impractical now, because there are no funds for such publications; hence we must go to the other sources. We should also strive for the publication of some of our popular material in park publications. I have a plan that I would like to suggest for popular publications in the field of geology. I think it will be worthwhile to issue a geologic primer of each scientific and scenic area. It would have the form of the two-fold leaflet, a type that the Branch of Historic Sites has found practical, and of which all of you have received a copy. Miss Story advised me that we can publish virtually any number of these as manuscripts are prepared. The primer would consist of a short popular description of some of the geologic features which would be of interest to the average visitor accompanied by illustrations constituting probably fifty per cent of the leaflet. Each of the naturalists has enough of such information available to prepare at least one such leaflet on his area. It would be helpful if some of them could be available in the spring or sometime in the early travel season. If you will examine the leaflet on Gettysburg you will see that only a small amount of text is required, so small in fact that you can include only a small part of your geologic story in a single leaflet. That may necessitate devising a series of such leaflets. The first one may be a guide to the points of geologic interest in the park. This guide could be augmented by other leaflets devoted to individual areas or special features. Such leaflets would be for free distribution and could be designed to reach the people who like to have some record of the geology of the area to carry away with them.

The second type of popular presentation is one which has been successfully accomplished by Mr. McKee in "Ancient Landscapes of the Grand Canyon Region," and recently by Dr. Herbert Gregory for Zion and Bryce. It is a printed booklet offered at a moderate price. I would like to have publications of this kind prepared by the naturalists, but if that cannot be done I would propose to call upon any scientist who is qualified to do the work. There are several eminent geologists who have specialized in the parks--William Lang in Carlsbad Caverns, Howell Williams in Crater Lake, George Chadwick in Acadia--and I can mention a number of others. They probably can be interested in preparing these more ambitious presentations. Miss Story advises me that she thinks she might be able to publish two of these with current funds. The reason we have not issued them is that we have no manuscripts.

I would like you to canvass your fields and see if you cannot prepare material for a leaflet of the first type promptly. Then plan on the preparation of the larger sales publication or recommend to this office someone who is capable and would be willing to undertake it.

DR. RUSSELL: I would like to introduce another thought that will help on the discussion that will follow. I will concede to Mr. Rothrock that he is justified in making a plea for geologic manuscripts. I am not saying this to urge anyone to give preference to the geology that Mr. Rothrock has asked for, but I do wish to urge that Naturalists exert themselves in producing more publications. The philosophy of interpretive work does not find much representation in our literature. The old stand-by by Bryant and Atwood, "Research and Education in the National Parks," is a handsome job of printing and it can be distributed from our office in Washington or from the Field. There are still copies of that item available. It is old--1936 I think. It is not up-to-date yet the principles presented there still prevail and we can continue to supply it to those interested in interpretive work. As I have been listening to the splendid papers that have been presented here it occurs to me that we may do well to obtain authority to publish the minutes of this conference.

There is a new series of publications that you may not have heard about by Walter Weber featuring black and white drawings accompanied by popular accounts of birds and mammals of the Western Parks. There is a Forestry series now in the Government Printing Office. The Branch of Historic Sites has been quite successful in producing publications. Historians have seen to it that manuscripts were available for publication. If the manuscript is on hand it gets early consideration in the Publications Committee. The Branch of Historic Sites has obtained a printed leaflet for each of the historical areas and they have produced a 16-page pamphlet of a new size for a number of the areas. It is considerably larger than the Rules and Regulations size, and it is very popular. It required work on the part of the people in the areas and it required work in the Washington Office. There is a "popular study series" which is brand new. I think it is the plan to produce twelve reprints from articles that appeared in the Regional Review. Mr. Walker suggested that there is an outlet through the Region Three Quarterly and the Regional Review in Region One. I urge that Naturalists cooperate with the editors of those publications. Both have carried quantities of worthwhile material but few of the articles are written by Naturalists.

There is a proposal for a new publication called History and Archeology which has not yet come into existence. There is a "research series" which has been talked about. Mr. Lee introduced the idea and it has been accepted by the Committee. The items in that proposed series will cost probably from $3,000 to $5,000 each print. Isabelle Story has been quite successful with the Bureau of the Budget, and we may expect more government publications in the near future. Mr. Rothrock is right in saying that if we have manuscripts there we can get them into print. Ned Burns expects to make use of one of these new series in producing some museum guide books for certain parks. His Museum Manual now in press will provide the first major publication for the Branch of Research and Interpretation since "Research and Education" appeared in 1936.

MR. MCKEE: Our Natural History Association has recently taken over the sale of publications in the park--Government as well as others. For years they were sold here in the park and we made no profit. We find that for the topographic maps we get a forty per cent discount. For other Government publications we get 25 per cent so now we handle everything that way.

MR. OBERHANSLEY: I would like to ask Mr. Walker a question concerning that fine bulletin that is put out in Zion--how did you manage to get those color plates?

MR. WALKER: The color plates are copies of old Union Pacific color plates which are being used by publishing houses and they were loaned to us without cost. There are many color plates scattered over the country. If you want one made up it runs into money, but there are a number of processes which cut down on the cost. I believe that the time will come in the not too distant future when we can utilize our Kodachromes and make up our own color plates.

MR. WATSON: I have had occasion to make inquiry regarding color reproduction and I find that the prices run from 40 cents to 60 cents per picture, the cheapest being 5" x 7" at 40 cents in quantities of 2,500.

DR. NEASHAM: I might say that articles on Region Three are at the present time being handled by Mr. Leo A. McClatchy. He is the editor of the Region's magazine. I know that he is very anxious to have members of the naturalist staff and of other divisions send in articles for publication and I know that they will be given every consideration. He likes wildlife subjects especially, and that will give the naturalists one outlet. Also, I would like to bring up the matter of reprints. When it is known that an article pertaining to areas in which we are interested is about to be published, a request directed to the editor or the author should be made immediately regarding the number of reprints desired. This is quite necessary when many reprints are wanted.

MR. GRATER: If articles for the Regional publication are requested, I think the editor should depend upon the judgment of the man who writes the article. If he wants the subject approached in some definite way, he should say so. If he asks someone to work up the details, these should be accepted as the writer presents them as long as they are accurate. I have a question regarding our responsibility to the Region and to the Washington Offices concerning requests which may come to us from both these places simultaneously.

DR. RUSSELL: I am afraid that my answer will be disappointing to you. It is up to each administrative officer to decide what receives priority on the work program and you as park naturalists are in a better position to recommend what comes first in the way of writing. Once in a great while I

think the Region and the Washington Office is justified in saying "Please drop what you have on your desk and do this first. I need it next week." That does not happen very often. I must say that the results you have attained in preparing the papers for this conference have been good and I think we were justified in asking you to give priority to them. There may be times when we will press you again. I can ask only that you make your best effort to meet demands that come from Washington and the Region.

MR. MCKEE: Mr. Walker brought out an idea with which I have been concerned for a long time and that is the bringing together of materials, particularly in the scientific publications. As he pointed out they are scattered, some of them being rather difficult to secure. In the first place I don't think that the publication we have here is going to take care of all of the miscellaneous material pertaining to Grand Canyon. In the second place I don't know that it is desirable to have notices of all such material published in the Park Service Bulletin. Now, as a possible remedy to this, and one which I have long intended to develop but have never gotten around to because of a lack of time, is a publication which we had proposed to issue as one of our National History bulletins--a technical one which would be a review of papers that have come out. We have done that sort of thing in our summer meetings with the naturalist staff. Every week or two in the summer I call the naturalists together for an hour or two and a part of our program is a review of all recent literature on the Grand Canyon and on the Grand Canyon area. If these reviews were all incorporated under one cover and copies sent to our libraries I think we might, at least partially, realize a definite need.

DR. BAUER: Maybe, I placed a wrong interpretation on Mr. Grater's remarks, but I am quite certain that an editor of any publication, will reserve the privilege of editing a paper. I have never sent in any but what have come back considerably blue-penciled and marked up. We should not take the matter personally, but rather to fit in with the ideas of the editor even if it is our own quarterly or some other publication that does not have a really wide circulation.

In going back to the paper that Mr. Walker has given I notice that he recommends that Nature Notes in the various parks be given up entirely. I would like to get across to the Committee that in Yellowstone we have had Nature Notes published more or less consecutively since 1924. We have a public that is appreciative of our efforts on Nature Notes in Yellowstone Park. This publication has developed into a rather interesting series of notes that gives one a rather comprehensive record of observations, natural history, etc. I am quite sure that our Superintendent would not like to give up the publication, and I know that I feel the same way about it.

DR. RUSSELL: Good for you. I think we can put another interpretation on what Mr. Walker said. I believe he said, "print your nature notes if you can." The same arguments hold for the Regional Review and the Region Three Quarterly. We started the Regional Review knowing that it could not be printed. I worked on the Yosemite Nature Notes for many years. It was not a printed publication when started by Ansel Hall. I feel that the Regional Review is doing some good work even though it is not printed. At the last Superintendent's Conference the question was brought up as to whether or not the Regional Review should be abandoned and I argued that it should not be abandoned until a printed publication could take its place. The latter, I maintained, would be better. There are drawbacks to mimeographed notes of course,--they may be unattractive and they do not have lasting qualities although probably you put just as much effort into them as would be the case if they were printed. I would like to say for the benefit of those who are producing mimeographed notes that we have the highest respect for them and we are making a determined effort to bring them together in an organized way in the Washington office. Our files have been bound through Mr. Yeager's ability to repair books, and we have gone so far as to employ typists for weeks at a time in obtaining copies of some of those that have disappeared or are lacking because the Washington Office was not supplied with full sets of Nature Notes from all the Parks. We found in some cases that the Park had only the file copy; we could not obtain originals and in these instances put the typists to work and they copied the needed numbers to complete our collection. We are proud of the showing made by Nature Notes whether printed or not.

I would like to mention Mr. Brockman's series. He worked on it at first every two weeks and then once a month and then at irregular intervals but with good substantial results each time. I regret that he has found it necessary to drop the series.

I agree that the mimeographed Nature Notes and the material that goes into them is serving interested people today and probably they will serve other people many, many years from now and perhaps in a more important way than they are today. It is worthwhile to produce them in mimeographed form; but if they can be put in printed form so much the better.

MR. YEAGER: Dr. Russell expressed my thoughts. Some of the finest material that we can get together is in these Nature Notes, but the distribution of the mimeographed material cannot be what it would be if it were printed. I value these Nature Notes highly and try to keep a complete file.

MR. GRATER: May I attempt to make myself clear. I don't think that anyone questions the right of the editor to go through an article and clarify it. However, if he must take it to someone in order to have criticism of the statements involved, he should take it to competent men in his own office. He has Regional Geologists and Regional Biologists and should not go outside his own organization.

MR. BROCKMAN: The reason we abandoned Nature Notes is just because we did not have time to work on them. I don't see anything wrong with a well-written set of Nature Notes. In fact I have not seen anything quite as good.

MR. WALKER: Just to go back to the matter of the editing of our papers again. I don't think anyone feels badly about it. In fact my conscience often hurts me when a paper comes back edited and the editor is still good enough to print it under my name.

MR. MCHENRY: If we are not able to have this conference material printed, then I suggest that we multigraph it instead of mimeographing it because of the deterioration of the paper.

MR. WATSON: Is there any chance that the National Park Service portfolio will be rewritten soon? Is it still being printed?

DR. RUSSELL: I am sorry to tell you that I don't know what the plans for revision may be. The present edition is of 1931 vintage.

MR. BEATTY: We have not pushed the sale of it as much as it has been pushed in other parks.

MR. MCHENRY: Has not the American Planning and Civic Association recently produced a publication designed to serve a purpose similar to that of the National Park Service portfolio.

DR. RUSSELL: There is a series of four booklets that I thought was a swell job of publishing. I remember when it first appeared, I wrote a brief review of the series in what was then the Regional Director's Weekly letter and expressed the idea that it had accomplished something new and should set a standard for that type of publication. I believe it sells for fifty cents instead of a dollar. It is still available. While we are talking about publications, I would like to mention developments that have taken place in connection with the magazine "Parks." The idea has been embraced by the whole Service that the National Park Service should have a printed publication that will give it creditable representation. Definite action was taken within the past few months to obtain authority to publish it. The Secretary has given it a tentative clearance at any rate and there is money available from the publications fund for the first year of publication. It is intended that Hugh Awtrey shall handle the editing of the new publication. If this employment can not be handled on the regular basis it is proposed to bring him into Washington on a CCC assignment. I am sure that he is very capable of editing this publication. He will look to the Park Naturalists' group as a source of good material. Of course he can use good illustrations. The magazine "Parks" is deserving of much more than I have said about it but I want to give it some place in the minutes.

DR. BAUER: In regard to the sale of publications: Which publications should we sell, which ones should we push, and which ones should we not push?

MR. BEATTY: I find that we have several volumes on the same subject by different authors which we have been asked to push, at varying price levels. It makes it rather difficult to determine which to offer to the public.

MR. SULLIVAN: There appears to be a well defined policy concerning publication of pictures. Suppose a chamber of commerce writes in for some pictures. What would be the policy on that? Has the Superintendent the authority to send three or four pictures or does the matter have to clear through the Director's Office?

DR. SWARTZLOW: I have had a little experience along that line. I believe the actual designation of the recipients rests in the hands of the Superintendent as long as the pictures are not used privately or for profit. Legitimate publicity sources have access to pictures that are available. The usual credit line, "Courtesy of the National Park Service" should be forthcoming. Concerning this question of pushing sales of publications, I believe there is a very definite memorandum concerning it; we should not make any special attempt to draw the attention of the public to any specific publication. These should be on display and the public allowed to make their choice without persuasion.

MR. KITTREDGE: Yesterday morning I was torn between two pleasures. One was to take the Director down to Phoenix and the other was to attend our own party at the Superintendent's house. Needless to say I took the Director to Phoenix. I just wanted to mention this as the reason why I was not there to receive you personally at my residence.

The meeting adjourned at 1:00 P.M.

Saturday Morning
November 16, 1940.

Mr. Edwin D. McKee, Chairman.

MR. MCKEE: Mr. Rothrock will give the first paper of the morning.

The Monthly Report of The Branch of Research and Interpretation and Periodic Reports by Naturalists.

Howard E. Rothrock,
Acting Chief, Naturalist Division.

ABSTRACT

The monthly report serves a three-fold purpose: (1) Records accomplishments of the branch staff as a functional unit; (2) furnishes a medium for exchange of ideas; (3) records and assembles material on policy and procedure. It developed from a divisional to a branch organ and has been useful in presenting and supplementing activities of the branch, compiling statistics, preparing the annual statement for the Secretary's report, and as a technical and historical reference.

Question: How useful has it been to the field and what policies should govern its issuance in the future?

When in the spring of 1938 we were advised that a naturalist conference would not be approved that year, a means was sought to assuage the situation. It was recognized that the aims, functions and efforts of the naturalists were not fully understood by all of the administrative officials. It was also appreciated that there was not a uniformity of endeavor and understanding among the naturalists themselves. A conference, such as the one now in progress, would have aided materially in remedying this situation. Since a conference was denied, a monthly publication devoted to naturalist activities offered itself as the most satisfactory alternative, hence the project was launched with the July 1938 issue of the Monthly Report of the Naturalist Division.

It was decided that the report should be a compilation of only the best items submitted by the field and Washington staffs in their monthly reports. This was necessary because an unabridged compendium would have been so bulky that it would have discouraged perusal. It was also decided that the material would be arranged according to functions. Such an arrangement has the advantages of giving unity to the presentation, emphasizing the functions and accomplishments of the organization and avoiding a geographic arrangement, a presentation now covered by the superintendent's report.

In order to accomplish the three-fold purpose of selling our services, discussing our problems, and assembling instructions on basic policy and procedure, the report was composed of two parts, the Narrative Report and the Appendix. The former is the record of accomplishments. The latter serves to exchange ideas and disseminate instructions so that these accomplishments may be more effective. When Dr. Carl P. Russell became Supervisor of the Branch of Research and Information, he adopted this form for the Branch report, expanding it to give representation to all of the Divisions. The objectives sought in the various sections are outlined in the following discussion:

The Foreword

The report begins with a foreword by the Supervisor which may contain a sketch of some important event or accomplishment of the Branch or a statement of desired or accomplished policy or an outline of trends in Branch activities. It constitutes his personal message to the other administrators regarding the progress of his staff. This summary is the answer to the executive whose desk is piled high with imperative tasks or to the worker who is interested in keeping in touch with the Branch activities, but whose regular duties do not allow him time for the perusal of the complete report. The foreword also serves to whet the reader's appetite for what may be found in the succeeding pages.

The Narrative Report

Following the foreword is the narrative report compiled from the monthly reports of the Museum Division and the Section on National Park Wildlife, and from individual reports by the naturalists and geologists. In order that the narrative report be kept within the reading time of the average executive, the policy was adopted of reporting upon important projects at their inception and at their completion only, unless some highlight was revealed during the progress of work. Routine reports, therefore, do not usually find a place in the document.

In order that each division shall have equitable representation, an equal amount of space is allotted to each in the first draft of the narrative report. In the process of rewriting, however, this balance usually is altered by deleting the less important items, - a process necessitated by the urgent need of keeping this portion of the report sufficiently short to encourage reading.

The three prime functions of the Branch are represented in the three main topics of the narrative report. The first deals with Interpretation; the second, with the Research which supports the interpretive program; and the third, with the activities and relations of the naturalists in the Park Administration.

The restriction as to length necessitates the substitution of tabulations for narrative accounts wherever possible. A great deal of effort, therefore, is represented in this stereotyped form of presentation. The outstanding example is the Statistical Summary of Interpretive Contacts which in its regimented columns contains the essence of the naturalist program. The Tabulation of Exhibit Projects and the Tabulation of Job Review also belong in this category. Through these statistics every area and every staff member is represented, although the identity of the individuals is lost in the aggregate result.

The tabulation of educational contacts is the summation of the interpretive work and takes the place of the programs and routine announcements that appear in the reports from the naturalists. Improvement of this tabulation by including a column representing service rather than numbers of contacts has been suggested in previous discussions. Such a device representing visitor-participation-hours would further define the program and give recognition to the services of long duration but few participants as compared with those of short duration in which many visitors take part.

The inclusion of estimates of attendance at unattended stations with the count of contacts at attended stations has been criticized as not presenting a true picture of the naturalist's activities. It is contended that this is equivalent to adding cats to dogs because (1) the count of attendance at lectures and attended stations is reasonably correct, whereas the attendance at unattended stations, almost without exception, is an estimate with a large percentage of possible error, and (2) the service at the unattended station does not represent a personal service. On the basis of this reasoning, it has been proposed that the figures representing contacts at unattended stations be deleted from the total contact figure. After careful consideration and trial of both methods, it was decided that the total should contain both figures, for the reason that the facilities provided at unattended stations represent a service on which time and effort have been spent and so have a rightful place in the total figure which represents the interpretive work. It is expected that judgment will be used in reporting these statistics. They are intended to represent a fair picture of the interpretive service, and therefore should not include mere informational contacts.

Although the park is the chief exhibit, it is recognized that the prepared exhibit or as we generally say, the museum exhibit, is an interpretive factor of first importance. For this reason the record of accomplishment in this field is generously represented in the portion of the report devoted to interpretation. The major part of the report of the Museum Division is found in this section.

Since the interpretive program is founded upon research, a portion of the report is devoted to this subject. This section has been found useful in many ways, one of which is to maintain a balanced report. During the winter when interpretive activities have slackened, the research work can be emphasized. The section has proved very useful in keeping before the administrators continuous or long-time projects which tend to slide into obscurity after their freshness or novelty has worn away. Periodic tabulation of these projects and of the visits by schools and scientific investigators has been used to demonstrate the value of the naturalist program in stimulating research.

The section of the report dealing with consultation on administrative matters and park development is an outgrowth of the reports on the activity of CCC employees, both in the Naturalist Division and in the former Wildlife Division. The park naturalist also has served as consultant in matters affecting or affected by the natural history of the area, hence such items of this nature as come to our attention are given place here. These activities are an important contribution to park planning and development and it is hoped that the naturalists will be able to assume a more influential position in these matters.

The Appendix of the report was designed specifically for the Branch staff. In it are recorded unusual field observations of interest chiefly to the Branch members, gossip about personnel changes, suggestions regarding books and articles of interest, recommendations regarding new equipment, suggestions for preserving materials, and a mass of odds and ends which if we were together we would discuss over the lunch table or in informal notes. When the Appendix was inaugurated, it was hoped that the field would make generous use of it as a forum for the exchange of ideas. Although some contributions have been received, chiefly for the section dealing with the Naturalist's Handbook, this section of the report has been conspicuously the mouthpiece of the Washington Office. If this section of the report is continued, it is hoped that more contributions may be received from the field.

A section entitled Naturalist's Handbook appears irregularly in the report. It was designed to contain material regarding policy and procedure which is of reference value to the naturalists. It is hoped that this material will some day be compiled and printed to form a general naturalist manual for the service. Until that time, this portion of the report will serve to distribute information on policy and procedure affecting the naturalist work.

The compilation of the monthly report requires several days. It may be possible to reduce this time by standardization of the form of the report, providing other advantages are not lost. Attention was focused on this subject at the time of revision of the report manual several months ago. A comparison of the naturalists' monthly reports showed that approximately one-half of the naturalists conformed so far as possible to the form required in the superintendent's monthly narrative report, the others using various forms developed to suit their needs. Since satisfactory results seemed to be obtainable with any of the forms, the Washington Office cast the decisive vote in favor of the form for the superintendent's narrative report. It was thought that the use of this form would facilitate compilation and so tend to obtain better representation in the superintendent's report. This fact alone would justify adoption of the form. The recommendation which was made to the committee working on the report manual has been mimeographed and distributed for your study. It is suggested that these recommendations be studied, that the matter be discussed in this conference and that the conference go on record with regard to the form which it recommends for the monthly naturalists' report.

A number of the naturalists submit an annual report, although such a report is not required in the existing report manual. As long as the monthly report is submitted in its present or in an equivalent form, the annual report may be dispensed with so far as the needs and records of the Washington Office of the Naturalist Division is concerned. It is recommended that this conference consider the matter of the annual report and place on record its recommendation for continuance or discontinuance, and, if continued, for the form which should be used.

In closing I wish to ask the conference for its recommendations regarding the following matters:

1. Is the Monthly Report of sufficient value to the field to be continued?

2. What improvements should be made therein?

3. Should a standard form be used in submitting the Naturalist's Monthly Reports? If so, what form should be adopted?

4. Should the annual report be continued? If so, in what form?

MR. MCKEE: You have heard a discussion on some of the problems related to our reports; these, of course, affect all of us. Several specific questions have been brought up. In the discussion that follows I would suggest that insofar as possible we try to keep to the subject in question.

MR. DOERR: I like this idea of the report form that you have submitted. I don't know whether the subject of the Outline of Work would come into this but when that was suggested a number of months ago I found that the Outline of Work, although it took considerable time to prepare, was a valuable thing to me in the field. I don't know how valuable it was in the Washington Office but it gave me something to shoot at that was valuable. I would like to hear some discussion from the men in the Washington Office about the significance of the Outline of Work.

MR. ROTHROCK: We have found that if we know beforehand what is to be done, we can sometimes help with equipment or aid in coordinating the work with similar effort elsewhere. The outline also enables us to keep in touch with the work as it progresses. We would like to see it continued.

MR. STAGNER: The monthly report of the Branch of Research and Interpretation, according to a statement in the first issue, serves two functions: an inter-branch use in informing other departments of the National Park Service of what this department is doing; and an intra-branch use as it keeps the field naturalists informed of progress and developments in other areas, and as it serves as a means of disseminating information regarding public contact, museum and research activities.

The following comments are concerned only with the second purpose of this report - the intra-branch function.

Two questions have been asked: is the report worthwhile from the viewpoint of the naturalist in the field, should it be continued; and, in what ways may the report be improved to increase its usefulness to the man in the field.

That the report has become a valuable tool of the branch, and that its usefulness will certainly increase has been indicated by direct reference and by implication numerous times during this conference. It appears to be the consensus of this group that the report fills an important need, and that it should be continued.

The only question that need concern us now is that of any possible improvement. The following ideas, gathered from various members of this conference, and which, for the most part are merely a summary of improvements already visible in the report, are offered in the hope that they may have some value in attaining this end.

It is suggested:

1. That more personal news be carried in the report regarding activities of individual naturalists. It is suggested, in this connection, that the monthly report of the individual

naturalist contain a short paragraph summary of the important activities of the month written in such a way that it may be lifted intact for inclusion in the branch report.

2. That items of routine nature - projects started, work in progress, the mere listing of projects completed - be held to the minimum; and that upon completion the results and significant conclusions reached be discussed in a little more detail.

3. That current scientific articles judged to be of interest or importance to the field naturalist be listed and, if possible, abstracted.

4. That the naturalists utilize the manual section of the report more freely as a means of discussing individual park interpretive problems, and of outlining the type of program developed in solution of those problems.

5. That more space be devoted to discussion of practical methods, techniques, and the psychology of public contact activities.

6. That the appendix and naturalist manual sections wherein are described museum preparation methods, collecting practices, exhibit techniques, new developments in photography, and the like, be continued and expanded as far as practicable.

MR. YEAGER: I would like to question just one point that Mr. Stagner brings up and that is the advisability of not including in the report projects that are just starting. I know that it has been my experience, and it would be applicable to the naturalist elsewhere, to learn a great deal from the report of projects that are just beginning. In several instances we have found that the naturalist is just about to undertake some bit of construction. Possibly we have had a lot of experience in that line and we may be able to give him help before he undertakes the work. Possibly Carl Swartzlow would start a little piece of research on one of his hot springs in Lassen. There is a chance that Dr. Bauer has done that same work in Yellowstone, and it seems to me that if we know what the other men are starting we may be able to assist them and save them some time.

MR. KING: That probably is covered by Mr. Rothrock's suggestion in which he asks for projects that are proposed for the following month.

MR. ROTHROCK: There are three questions that I proposed on which I would like to have advice before this Committee takes action. One is

the form that the naturalist uses in submitting his report. Does this meet with your approval?

Since no one wishes to comment on the form of the Naturalists' report, would you care to express yourself regarding the annual report? As far as the Washington Office is concerned we would be willing to relieve you of that duty. We have your monthly reports, and these are filed together, and it seems to me that the compilation of an annual report is extra work, extra reading and gives the Washington Office no additional information.

MR. MCKEE: Speaking of Grand Canyon I am thoroughly in accord with that statement. I have always considered the annual report as nothing but a nuisance and it is just one more form. From my standpoint I would like to see it discontinued.

MR. GRATER: Another thing about that report is that it comes at the wrong time of year. The Park Naturalist is so busy that he can't make a good report and all he can do is prepare a rehash and hope it meets with everyone's approval.

MR. DOERR: Personally, I like it. It gives me an opportunity to summarize the year not only statistically but in terms of accomplishment. I had the pleasure of writing the Superintendent's Annual Report for a number of years and naturally the work of the naturalist came in quite prominently. I feel that our place will be more in the limelight in the Superintendent's Annual Report if we provide him with our own annual report.

MR. MCKEE: In partial refutation of that I might say that it is necessary for us to work up special material for the Superintendent's report, even though we prepare an annual report. I believe that it is much easier to prepare the material for the Superintendent's report in the form and quantity that he needs and thereby save him the necessity of reading the more detailed statement of an annual report, and us the necessity of preparing it.

MR. ROTHROCK: I would judge that the Conference might recommend that each man can use his judgment in this regard since there is nothing in the Report Manual that requires an annual Naturalists' report. If that meets with your approval, the Committee will consider such a recommendation.

MR. MCKEE: We have the first question that Mr. Rothrock submitted -- whether you like the forms. I would like to have an expression on that.

DR. SWARTZLOW: I am quite happy to see this form brought out. It gives one a guide. It helps you to survey the field. You may have a few odds and ends that you otherwise would refrain from putting in the report merely to save time but if added will make it more complete. I believe that this outline should be adopted as a general procedure.

MR. GRATER: There is another angle to that. In going through previous reports where you have a definite outline set up you can always turn to the particular division to which you wish to refer. Without such an outline, a naturalist new to the park would have difficulty in finding the information he desires.

MR. BROCKMAN: This form here does not correspond to the Superintendent's form at Mount Rainier. Also I notice that we are asked to prepare one copy only and send it to the Director.

MR. ROTHROCK: The existing regulations in the Report Manual make no mention of a naturalist monthly report except to say that the summary of educational activities report, which has been superseded by the statistical report of educational contacts, should be submitted with the monthly narrative report. It is not explicitly stated that this monthly narrative report is the naturalists, but it is safe to assume that that was meant. I do not know when instructions were issued for the preparation of the naturalists' monthly narrative report but it is certain that it should be continued. So far as I know these reports get no circulation other than that which is given by the Naturalist Division. It is, therefore, not necessary to submit the report in duplicate.

DR. BAUER: As I understand it, you say that only one copy is needed for the Washington Office. We have always been told to send one to the Naturalist Division in addition to one to the Director. Does not this outline follow the approved form of the Superintendent's Report?

MR. BROCKMAN: In general it is about the same. We don't have anything under No. 110 or under the Master Plan. This form may be obsolete but it is what I have been using. There is nothing on Research. When it gets down to section 900 I really write my report. There is nothing in the Superintendent's Report about Research and other work which you have done.

MR. ROTHROCK: This form before you corresponds with the newly revised form.

MR. MCKEE: I think we had better get on to the next subject which will be a paper by Mr. Rothrock.

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The Naturalists' Participation in the Preparation of Interpretive Sheets for Master Plans

H. E. Rothrock,
Acting Chief, Naturalist Division.

ABSTRACT

The interpretive service is a principal function of park administration. The participation in this program during the past fiscal year has amounted to more than 72 per cent of the park visitors, in those areas in which programs were maintained. It is essential that a program of this importance be represented in the master plans for the parks. Such reference as now is made in the master plan occurs as incidental material and hence, the program as a whole is not represented adequately. This should be remedied by the insertion of descriptive material and definite plans which will outline the purpose of the program and show how it is being accomplished and indicate the proposals for future development. The accessories to this program such as museums, trailside exhibits, nature trails, and lecture amphitheaters, should be located on the plans and their use explained in terms of the entire program.

A sober consideration of the meticulously prepared master plans covering physical development of many of the scenic and scientific areas in the park system reveals that there is a lack of emphasis on the reasons for this development. The simplicity of the answer is probably the cause of this omission. The development is for the purpose of preserving the park and making it of use to the people of the United States.

In the field of preservation there are fire control plans to show how the ravages of fire will be prevented. In the field of park uses, there are utility development plans to show how the people will be taken care of and road and trail maps to show how the visitors may go about the park; but there seldom is a section of the Master Plans that shows what the visitor may do with his time while in the park or how the Service may aid him in making his trip most worthwhile. The most effective of such aids is the interpretive program. Such a program cannot be devised hastily or by uninformed persons. It should not be permitted to grow fortuitously like a weed, but should be cultivated like a crop according to a planned economy so that a maximum yield of benefits will

be harvested. The value of these plans for visitor activity, as indicated by participation in them, justifies their inclusion in the master plans. In fact they may logically be considered as an important goal, to the attainment of which the construction of roads and trails, and the installation of facilities is contributory.

In the report of the 1939 Superintendents' Conference, recognition was given to the need for inclusion of interpretive sheets in the master plans by the following statement: "It is recommended * * * 2. That technical sheets, defining the interpretative program, and its relation to a park area, be included in park master plans."

In order to determine the content and arrangement of this interpretive material, the purpose of the master plan should be considered. Memorandum to Field Officers W-5 states: "'(The master plan) is a graphic record of the ultimately completed area so far as present knowledge of future requirements enables the designer to reach conclusions. The well-considered master plan will usually establish fundamental conceptions, within limits of slight variation, far enough in advance of execution to guarantee the soundness of the whole design and to preserve and protect the inherent values of the area.' The master plan should consist of the Graphic Plans and a Report which is an integral part of the plan. The purpose of the report is 'to supply fundamentally important information of a nature not readily adaptable to graphic indication on the master plan.'"

In conformity with these premises, the interpretive program should be represented in the master plan by Interpretive Plans, and Interpretive Statements.

The Interpretive Statement should (1) indicate the significance of the area biologically, geologically, and historically; (2) it should describe the existing program for making this information available to the visitor; and (3) should present so far as possible the plans for further development of these natural resources.

Interpretive Statement: Significance of the Area

The justification for the establishment of an area usually will contain basic information for the statement of its significance. The information contained therein, however, will need amplification and periodic revision in order to include new facts revealed through research. This statement should be clearly and convincingly made because it is a justification for the Branch activities in the fields of interpretation, research, and conservation for the area under consideration.

The preparation of the historical and archeological statements is the responsibility of representatives of the Branch of Historic Sites; the biological and geological accounts, the responsibility of the staff of the Branch of Research and Interpretation. The naturalists should prepare the statement for the area or areas to which they are assigned. The regional staffs are available for consultation in this work, but the park staffs should not throw the entire burden upon them because the regional staffs will be extensively engaged in the preparation of such statements for areas having no naturalist staff.

Interpretive Statement: Program

Having established the significance of the area, the interpretive statement should tell how these recreational and educational resources are to be presented or made available to the public. This may be accomplished by describing the lecture program, hikes, auto caravans, museums, and exhibit structures, as to location, purpose and relation to interpretive activities. The number of naturalists engaged in these activities should be given and the distribution of work among them indicated.

Interpretive Statement: Future Plans

The future of the interpretive program should be considered in the master plan. Justification of the proposals may be found in trends in visitor use and in methods of presentation. If modifications are suggested, they should be justified by reference to the opportunities offered by the park, and the effectiveness of the program in realizing the maximum use of these opportunities.

Interpretive Plans

The interpretive statement should be supplemented by maps representing in graphic form as much of the narrative as possible. These maps should consist of (1) an interpretive base plan or plans, and (2) an interpretive device plan.

The Interpretive Base Plan would be the graphic equivalent of the interpretive statement, and would constitute the setting not only for the established program but also for future planning. It comprises a graphic inventory and it should show by appropriate symbols the significant biologic and geologic features of the park upon which the naturalist program is founded. It should not be limited to those few features which are selected for presentation in the program, but should embrace the larger field of fundamental data. If a great deal of data are available it may be necessary to make separate biologic and geologic maps. In any event, this type of plan should represent current information presented in as complete and detailed a manner as possible.

The Geologic Base Plan. If there are sufficient data to justify a separate graphic inventory of geologic features they should comprise the Geologic Base Plan. Such a map should be prepared on a topographic base and should show by means of standard symbols the areal and structural geology. It may be supplemented by detail, vignettes or maps illustrating the geomorphology, i.e., the origin and development of the scenery; the paleogeography, i.e., the appearance of the area in past geologic ages; the paleogeology, i.e., the rock outcrops and structure in past geologic ages, and events in the historical geology of the area which would be useful in the interpretive program.

The Biologic Base Plan. If there are sufficient data to justify a separate inventory of biologic resources, they should be presented as a Biologic Base Plan. I do not have an adequate solution of the problem of constructing such a record, but I contend that it is just as important and desirable as the geologic base plan, the historic base plan or the forestry type map. It would appear that the forestry type map could be used as a biologic base plan or one of the series of such plans. It would also appear that classification of animal life into groups having similar ranges, such as the Life Zone classification, would lend itself to graphic presentation. Appropriate symbols would represent animal associations in some such manner as the symbol for rocks of a certain age, or rocks of a specific kind will connote aggregates of many types of rock or several kinds of minerals. The problem of reducing the biologic data contained in the Interpretive Statement to a graphic record is presented for your consideration, and it is hoped that a solution as satisfactory as the one that has been evolved by the geologists, foresters, and historians, may be found.

The Interpretive Device Plan should show the routes taken by caravans and hikes, the locations of museums, trailside exhibits, attended and unattended naturalist stations, and amphitheaters, or other places where lectures are given. It will be the equivalent of the historian's route map. Ordinarily, this information can be clearly shown on a roads and trails map of the park. The tours should be designated by some appropriate symbol such as by the use of capital letters. The starting and ending points and the direction of travel should be indicated. The points of interest should be numbered and the significant features may be illustrated at their proper geographic location or by vignetted drawings made in the margin of the map.

The ideal device plan, i.e., the ultimate plan of the future, may be indicated on the plan showing existing devices. Such an arrangement has the advantage of revealing the progress made in the development of the plan or the discrepancies between the existing and the proposed programs. If the resulting illustration is too intricate, a separate plan should be prepared on which the ideal arrangement is emphasized and the existing facilities simplified and subdued.

In order to facilitate the documentation of important features or areas on the plans, the map should be indexed by superimposing a grid over the base. The grid should be based upon some convenient reference point and the size of its component square should be determined by the amount of interpretive detail in the area. The squares should be designated by numbers along the top, beginning with number 1 at the left, and by letters at the right side beginning with letter A at the top. Thus, the upper left hand square would be designated as A-1 and the others would be identified accordingly.

The maps used should be of a standard acceptable to the Branch of Plans and Designs and as far as possible the symbols should be the standard symbols now in use. The plans prepared by the technicians should be submitted as work sheets from which the finished drawings can be prepared by representatives of the Branch of Plans and Designs.

It is considered that the preparation of interpretive statements and plans for the Master Plans is a duty to which the members of the Branch should address themselves seriously. It may not be possible to provide adequate representations of the interpretive program in these plans within the coming year, but at least a preliminary statement should be submitted for every area in which a Naturalist staff is operating. This statement can be amplified and should be refined as methods become standardized, new information is available or conditions change. The paramount necessity is to record the program in the development plan, where it will take its place as one of the desirable goals which this development is designed to achieve.

In order that the procedure for this project may be classified, the following recommendations, adapted from the memorandum of September 2, 1939 addressed to the Director by the Supervisors of the Branches of Research and Interpretation and of Historic Sites, are submitted for your consideration and action:

> "The basic material for the interpretive plans should be prepared by the interpretive staff assigned to the parks and monuments for which the plans are submitted, except as hereinafter provided. On completion, it should be turned over to the appropriate field representatives of the Branch of Plans and Design for their use in preparing the master plan.
>
> "In those areas which are grouped under a coordinating superintendent having a central naturalist staff, that staff will prepare the basic material. Data for those areas which do not come under this category will be prepared by the regional representative of the Branch of Research and Interpretation.
>
> "Until such time as regional naturalists are appointed, the Branch of Research and Interpretation will designate other

individuals as Branch representatives in the regional offices, to be responsible for the review of the interpretive programs.

"The Museum Division, regional wildlife technicians and geologists will be expected to assist in the preparation of material for any park or monument where their services are required.

MR. MCKEE: There are a number of important points in this paper and several questions have been brought up for which answers are requested.

MR. YEAGER: I would like to ask for some instructions both of Dr. Russell and Mr. Burns. After that memorandum that Mr. Rothrock read was received, there was additional correspondence in my office in regard to the Western Museum Laboratories reviewing the Master Plans as they pertained to Museum work in Regions Two and Three. Region Four asked me to look over the Master Plans as they came in, but what kind of a system can we work out for Regions Two and Three? It is not practical to send the Master Plans to Berkeley and it is not possible for me to run to Regional Offices Two and Three when the Master Plans come in.

DR. RUSSELL: I believe I can explain why there is confusion there. In one instance you were instructed on the basis of your being Acting Regional Naturalist, and in the other case you were instructed on the basis of your regular position as head of the Western Museum Laboratories.

MR. YEAGER: It is my understanding, then, that I am supposed to look over the Master Plans for Region Four only. If there had been some means of seeing plans for other regions, the museums whose plans had not been reviewed would not have gone to Washington without our handling.

DR. RUSSELL: It is one of those instances of raw materials coming to Washington because the Branch does not have sufficient representation in each Regional Office. From a Branch standpoint, it is important that all plans affecting research and interpretation receive careful review in the Regional Offices.

MR. YEAGER: Do you suggest that we pass up the Master Plans for Regions Two and Three except at such times as I can be in the Regional Office and go over them?

DR. RUSSELL: I hope that something can be done to have additional help in Regions Two and Three.

MR. TILLOTSON: It all adds up to an excellent argument for setting up Regional Naturalist positions in the various regions. That is one of the many reasons why it should be done.

MR. MCKEE: Any further discussion on this paper.

MR. GALE: We have no interpretive part in the Master Plan for Grand Teton. I think the reason for it is that we really have no up-to-date Master Plan.

MR. ROTHROCK: It would be advisable to make your own plan of the interpretive work regardless of the stage of the development of other plans.

DR. RUSSELL: Mr. Gale is really in an unusual position in that he has opportunity to keep ahead of the Master Plan instead of behind it.

MR. ROTHROCK: May I restate the point discussed after Mr. McKee's paper on research. It is my feeling that since the Master Plan is a plan of development that it is not the proper place for the plan for park research. The reason for including the interpretive plan in the Master Plan is that it is so closely related to the developmental features. Research is a supporting function for the interpretive program and each park should have a Master Plan for research but the Master Plan for park development is not the place for the Master Plan for research. The plan for research is apt to be a voluminous document and if you include in the Master Plan material that is not very closely related to the development of the park you will make the Master Plan so huge that it won't get attention.

The museum program should be represented in the Master Plan as a part of the interpretive program. The details of the museum program come in separate volumes and should not be included in the Master Plan.

DR. RUSSELL: Mr. Long, do you have the Museum Development Plans for Boulder Dam? Will you hold them up so that we can see them? It is fairly typical--three volumes. This museum development plan is not to be inserted in the Master Plan but, rather, it will supplement it.

MR. LONG: One word, please, about the interpretive Master Plan as Mr. Rothrock has outlined it: If it is properly done there probably will be bare spaces on your map which will indicate points where additional research is needed. This will help in planning your research program.

DR. BAUER: Is not this related very closely to the matter of research areas, primitive areas and utility areas? Just what is the relationship between what we are trying to do and these other things? In some of the parks we don't have research areas as yet.

MR. ROTHROCK: You can't decide upon your whole development plan at once. As new developments and utilities are required your interpretive program will be adapted to take care of them. On the other hand certain developments will be required to take care of your existing interpretive program. The two go hand in hand--the development facilities and the use of these facilities. They constitute a progressive development that is to be planned as far ahead as possible but that is to be flexible enough to care for unforeseen needs.

MR. WALKER: As I anticipated, the main use of our Master Plan is to get something down in black and white so that we can argue about it. We may change it a thousand times but the value of it is that we first get it down in black and white. Our Master Plan has just that purpose and we should look at it from that angle and not regard it as final.

MR. STAGNER: I think this discussion has brought out some interesting points. It has shown the desirability of keeping a schedule or program of research separate or divorced from the program of projects and that, I believe, is exactly what I tried to bring out in my discussion on research. The projects tell us what our research should consist of. Research precedes the projects. Then we know what our research should be. We don't have to write in to study this because we are going to build that. If we are going to build a museum it goes without saying that we should do research to build the museum.

MR. MCKEE: We have received a radio message from the Superintendent at Zion and Bryce inviting the delegates to visit these parks. Mr. Eppley also has an announcement to make.

MR. EPPLEY: The State Park Board of Missouri in cooperation with Region Two of the National Park Service is sponsoring a park naturalist conference next May 13, 14 and 15 at Meramec State Park, near Sullivan, Missouri. The park is just off of road #66 about 65 miles southwest of St. Louis.

Although the conference is planned primarily for state park naturalists of which there are about forty in the Mid-West alone, we are inviting park executives, city recreation directors, college and university professors, members of hiking and nature clubs, museum personnel and representatives of various youth agencies to attend. This is being done so that the nature program can be extended to the daily lives of the people. Then, people will come to the park to enjoy nature.

A faculty composed of such outstanding persons as our own Dr. Russell, Reynold Carlson of the National Recreation Association, and Dr. (Capt. Bill) Vinal of Massachusetts State College, will serve as consultants at the conference.

There will be demonstrations of campfire programs, illustrated lectures and nature tours.

The group will be divided into committees. These committees will make recommendations and suggestions relative to the part that educational institutions, park and recreational agencies, youth groups and others can play in a nation-wide nature program. Also, suggestions will be made relative to the community contacts of the park naturalists, publicity and publications, museums, self-guiding nature trails and exhibits, and the place of history, astronomy, music, pageantry and art in the nature program.

The conference will be held in a scenic area, rich in natural history, of about seven thousand acres.

Nothing would please the sponsors and those in attendance more than to have as participants in the conference, some of the park naturalists, both permanent and seasonal, of the National Park Service. You are the leaders of a movement which we hope will be extended throughout the entire country. We believe the Missouri Conference can do much to bring about this extension. I am certain that the Conference officials of the State Park Board of Missouri, and my Regional Director, Thomas J. Allen, would be most pleased to see you at Meramec State Park, May 13, 14, and 15.

DR. RUSSELL: One of the shortcomings of the Naturalist service is our failure to participate in conferences outside of the Service. I think we can do a great deal of good by attending certain meetings called by Conservation groups and I would be glad if a policy could be adopted that would result in naturalists traveling much more than they have to areas and cities outside of their park. As far as the legal aspects are concerned there is no trouble, if the Park Superintendent has money that would permit the travel, and if he sees fit to send his Naturalist on administrative duty. Here in Mr. Eppley's proposal are two instances, at least, where we might expect naturalists to participate in a conference in which we should be represented.

MR. EPPLEY: If any of you feel that you can attend you are invited to do so.

MRS. DEAN: I wonder if anyone has suggestions for publicity. If you have you might get in touch with me before your meeting breaks up. Mr. Sullivan has given me some ideas.

MR. FAGERLUND: Several naturalists have asked me if the Kodachrome motion picture of the Mauna Loa eruption would be available. It is obtainable now for $15.00 less whatever discount you can get. I was told that there are thirty copies available and that 200 more will be made. If anyone is interested he should inquire before many months go by.

MR. MCKEE: I will now introduce Dr. Bauer who will present the next paper.

The Naturalists Relations With The Park Operators, Their Employees and Their Programs.

C. Max Bauer,
Park Naturalist,
Yellowstone National Park.

ABSTRACT

Park Operators receive their most important impressions of the Service through contacts with the Washington officials and base their attitude toward the field upon these impressions. They have an important function in supplying accommodations and related services. The best relationships are based on mutual understanding and result in enthusiastic cooperation. The naturalists and rangers should meet with the operator's employees at the beginning of the season to show importance of cooperation by inviting their help rather than by threatening penalties for violation of regulations. Operators' programs are essentially entertainment; naturalists' programs are informative and interpretive. Unless complete harmony exists, the two should hold their programs separately.

I will discuss the above items in four separate parts of this paper since each part of the subject requires somewhat different treatment. To begin with, then, we have:

The Relationships of the Naturalists to the Operators

By the operators, of course, we mean those men or business concerns that sell accommodations, meals, gasoline, general merchandise, curios, souvenirs, and pictures under government lease or franchise. In other words, they are the people that run the hotels, the lodges, camps, stores, restaurants, cafeterias and filling stations within the Parks and Monuments.

First, I should like to say that the naturalist must take a friendly attitude toward the people that run these necessary establishments. He should start with the presumption that they perform necessary services for the public and are entitled to due consideration. In the second place I would like to point out that the operators are business men who have obtained a lease or a franchise from the Government, and they are influenced

greatly by the attitude of the officials in the Washington Office, especially the attitude of the Secretary of the Interior and his assistants. Their attitude toward the Parks and Monuments is derived largely from their contacts with these high officials. If the operators are given to understand that there are rules and regulations to be observed and that the officials intend to enforce them, then the field man has little difficulty in cooperating with them. It is advisable for the operators to meet with the rangers, naturalists, and park officials at least once a year in a good round table discussion of their functions, ways and means of assisting each one, and to become acquainted. These meetings can be called by the Superintendent and are for the purpose of mutual understanding and appreciation; there should not, of course, be any thought of collusion.

The naturalists should not hesitate to indicate to visitors the availability of any and all accommodations, stores, filling stations, and other facilities, especially those of the operators who have franchises from the Government. On the other hand there should be no effort to advertise or sell these services. Discussions between naturalists and visitors on prices, character of accommodations, and so forth, should be limited to the minimum. If complaints or criticism, or comments of any sort, are forthcoming from the visitor, then these should be written out and turned over to the Superintendent. It is decidedly bad taste to take sides with the visitor against an operator, and the naturalists should not become partisan in these matters to any extent whatever.

The Relationship of the Naturalists to the Operators' Employees

The relationship of the naturalists and other field men to the employees of the companies is largely a matter of our own choice and making. To begin with, these employees serve the public the same as the National Park Service men and an effort should be made early in the travel season to obtain complete cooperation between the employees of the company and the rangers and naturalists in the Parks. Employees of both the companies and the Park Service should be required to get together, get acquainted, and their cooperation should be solicited. In parks that are open all year there should be several meetings each year and these meetings should be attended not only by new employees but also the old. Such meetings can be called by the Superintendent, by the Chief Ranger, or by the District Ranger as it is in Yellowstone. These meetings should make it clear to everyone present, whether they are laborers, clerks, or managers, that every employee is working to serve the public in an efficient and courteous manner and that it is our duty and privilege to work together to that end.

Secondly, these government-owned areas known as National Parks and National Monuments form the drawing card not only for millions of visitors, but also for millions of dollars, and that obviously it is a function of the operators' employees to help in the preservation of these areas as

much as though they were employed by the Government itself. There should be no attempt made to dominate or force the employee into compliance by threat of arrest or of the penalties involved, but a statement should be made that both Government and Operator must work together for the protection and preservation of all the Park values; their interests are, after all, mutual--no park, no job for either party. After this general statement, discussion of the rules and regulations by the question and answer method will usually prove to be very enlightening and satisfactory. Be sure to advise that the rangers and naturalists are there to help the employees, as well as the visitors, to familiarize themselves with the best means of presenting the area to the public and preserving it against destruction.

Employees' Programs

The relationship between the employees' programs and the programs of naturalists should be pre-arranged in such a manner that they will not conflict with each other. Naturally, the employees' programs deal primarily with entertainment, usually consisting of music, drama, or dancing. These can be so arranged that they do not invade the field of interpretation too much. On the other hand the programs of the naturalists and rangers are mainly interpretive, that is they give information regarding the area or park and its immediate surroundings and attempt interpretation of its historical and natural development. There may be places where the naturalists and employees can hold their programs together, the naturalist taking the interpretive part and the employees the entertainment part. However, this has not proved satisfactory in Yellowstone except in one or two situations. Usually the younger employees like to be "the whole show", and there is a tendency to sidetrack the naturalist or to set him up as merely a "curtain raiser" to the main event which is put on by the "savages." This should not be tolerated. Where there cannot be a complete balance, the two programs should be held separately - one, at one place, and one at another. If size of crowds warrant, the programs might be staged contemporaneously or else let the programs come at different times so that the public may attend both.

But above all, the naturalists' program must not be subordinated to that of the operators' employees, or carried on in such a way that it becomes something which must be endured rather than welcomed.

Outside Activities of the Naturalists

The activities of naturalists outside of the Park wherein they serve should, I believe, be greatly developed and encouraged. Up to the present time it has been more or less a hit or miss proposition; in fact it seems that the Parks do not have legal authority to send their men out to meetings of civic organizations or conventions of any sort.

Perhaps before the situation is improved very much it will be necessary to get legal authority for this purpose. However, I am reminded of the methods of the United States Forest Service. It seems that the men working for the Forest Service, particularly those in the technical branches are definitely encouraged to take part in the affairs of the communities and districts in which they live. Since this policy has been adopted, it has led to a much better understanding on the part of the public of the duties, functions, and services rendered by that bureau. In fact it has strengthened their political position until it is almost unassailable. The same sort of thing could be encouraged among the field officials of the Park Service.

On the one hand we have had suggestions from some Washington officials to contact all of the schools, colleges, and institutions of higher learning in the states adjoining our parks. On the other hand we are told by some of the officials that such trips can not be authorized and that they are essentially illegal. Certainly, there needs to be a clarification of that point. Our policy in Yellowstone has been that we have tried to send out all our naturalists into the adjoining states to contact schools, civic clubs, etc., for at least one week of each winter. These trips, of course, must be approved by the Superintendent and the Director, and at the present time the funds for carrying out such activities come from the money set up for travel. It might be much better for the naturalists if each staff could have within its own appropriations a fund set up specifically for travel. Final authority would, of course, remain with the Superintendent, but it would give the naturalists something to plan for. So far the funds have been entirely too limited to permit the naturalists to carry out anything like the amount of public contact work which should be done in the districts in which the parks are located. Perhaps the greatest good is done among school children, though meetings with civic clubs and similar bodies indicate that very few citizens are familiar with either the aesthetic or economic value of the Park. A recent talk on the "Economic Value of Recreational Travel" given before the Chamber of Commerce and Kiwanis Clubs of Billings has indicated to the present speaker that there is a large field for public education along this line. Surprising results would undoubtedly be realized if such a field were to be exploited.

It is recommended that some steps be taken by this conference to clarify our relation to the general public and to see how far we can go in meeting and addressing public gatherings outside of our parks and monuments.

I wish to mention particularly at this time the excellent work which has been done by Naturalist Gregg of Rocky Mountain National Park in his radio talks during the past year. I have not been privileged to hear very many of them, but from those that I have heard I am convinced that this is the best job of radio work which the naturalists of the National Park Service have undertaken. This type of service should be encouraged.

Furthermore, I might add that in case your park or monument does not have travel money for contacting the public in nearby areas, I believe it is important enough that you should make an effort to do some of this work on your own time and even at your own expense. The friendships you make for the Park Service and for yourself will well repay you.

MR. MCKEE: I am sure there are many of us who would like to discuss the various points that were brought up in this paper.

MR. YEAGER: There is one matter that involves relationship with operators and that is joint occupancy of buildings. It is not our problem to say where the operator will put his buildings, but I do think that they should not crowd ours.

MR. BURNS: That is a subject which concerns museums. There have been some instances where, for various reasons, a museum has been placed in a building where an operator has a concession for the sale of food and various other things to the public. The main danger in this situation is that the carefully prepared interpretive exhibits made by the Park Service can easily degenerate into an advertisement for the sale of these objects with a resultant loss to our program. I believe our interpretive museums should be distinctly separated from such salesrooms, preferably in a separate building, and when this is impossible, they should not be in connecting rooms which naturally would lead to confusion between sales and exhibits. I recall in one area where the entrance to the temporary museum was through the operator's quarters. In other words a visitor was compelled to go past the counters, since there was no other means of access. The problem was remedied very simply by cutting through a door so that now we have direct entrance to the museum which eliminates any possible impression that the Park Service is engaged in the business of selling souvenirs. Separate buildings and these very definitely separated is the best permanent solution.

MR. YEAGER: I think another big thing is fire protection, especially when you have everything including a lunch counter crowded into one building.

MR. BROCKMAN: This particular angle is of great concern and interest to me. In Mount Rainier National Park we have a situation which is unique in that our operator has a contract which gives him the privilege of conducting parties to the various points of interest. This guide department was established many years ago -- even prior to the organization of our Rainier National Park Company. Of course we all know that the glaciers are the primary feature in Mount Rainier National Park, and if the public is to gain any conception of the various points of interest in that area they necessarily must receive adequate interpretation as far as the glacial system and glacial features are concerned. Confronted by the park

operator's guides, we have been prevented more or less from carrying out the various activities for which our division is responsible. I don't think any other area has quite the same problem. It has caused a great deal of trouble in the past in Mount Rainier. Natt Dodge, who worked for me a few years, will bear me out on that. After many years of trying to effect some logical solution as far as we were concerned, we developed a system of coordination. If we could not tell people about the glaciers we could at least get our information through to the bus drivers and to other organizations of the park company. We have been very fortunate in having a very sympathetic guide department and they have been very fine in coming to us for this information. It still does not answer the question. It is obvious that no matter how good a guide or transportation department might be, they probably would not do things exactly as we would like to have them done. I don't know what can be done about it but the public is suffering; I know that we are, and I really believe that if a fair analysis is made it will be found that the park company is suffering. I don't know whether I have been out of turn with these remarks and if Dr. Russell feels that they should not be recorded here I suggest that they be stricken from the record.

DR. RUSSELL: If our Branch of Operations sees any reason for removing them from the record we will do that. Personally I think they should remain in. I would like to hear from other naturalists who have operator problems.

MR. KING: At White Sands we recently had a unique problem when the suggestion was made that all vistors should park their cars and be taken through at two bits a head. It seemed impossible to put a ranger there because he would be riding a commercial car and we would be helping a private operator. That was very seriously considered but temporarily disapproved, but these things rear their heads every once in a while. Just now the operator takes trips and a very sympathetic employee does his best to make the story as good as possible. I don't know many other places where it could happen except where there is something comparable as at Canyon de Chelly and it might start very rapidly in the Southwestern Monuments.

MR. YEAGER: Mr. King, is it not true that sometime ago there was some talk about turning over a portion of the museum to be used as a lunchroom?

MR. KING: I am afraid that is true. We have quite a beautiful development there--a big lobby, etc. And such suggestions naturally have been made.

MR. TILLOTSON: As Ned Burns pointed out, lots of these difficulties can be corrected merely as a matter of mechanics. It is very much a matter of advance planning. There is where our Master Plans fit in and there is the reason why Master Plans should have the review by those who have

to do with the interpretive program. As to White Sands, we are very keenly alive to that. It is now a definite plan of my scheduled trip to go to White Sands and I have an engagement to meet there on the morning of the 25th with the Regional Landscape Architect, the Regional Engineer, and the Superintendent in order to work out exactly these problems. I can assure Dale King and the rest of you that it is not something that is being overlooked at all. We are working on it and I am specifically looking that up on this trip. While I am on my feet I just want to make a few other comments on Dr. Bauer's paper in regard to cooperation between the operator and the naturalist. If that is properly done, the one can be a very direct and helpful adjunct to the other. The operator will welcome the activities of the naturalist in his building and in his area, if it is properly done, and by being properly done I don't mean to make the naturalist program an advertising agency or a promotion agency for the operator. To be specific, right here at Grand Canyon there is no doubt at all in the minds of anyone that a trip into the Canyon is one very much to be desired as a part of our educational program. If we can get the visitor to go down into the Canyon then we can tell him the story of it so much better. To go down into the Canyon it is necessary for him to hire a mule. If our program is properly carried out, the operator will appreciate the fact that we are really promoting trips into the Canyon; we are not doing it to sell his mule trips, but it amounts to the same thing--we really are selling his mule trips, but actually we are not doing it to increase his revenue.

Now about cooperation with the employees. I hope most of you who were at the school house the other night had an opportunity to meet Uncle Ed. Cummings. He was one of the old time guides here and, really, is a better naturalist than lots of naturalists. He knows more about the Canyon than lots of people. He has no scientific background at all, but he is an inquiring man and he has an interest in these things. I don't have the slightest doubt but that his interest was fostered, originally at least, by the idea that if he could tell the dudes something about the Canyon and about the flowers and the plants and the rocks rather than to say "I don't know" to their questions, at the end of the trip his tip would be bigger. That may have been his motive. I believe that it originally was, but no matter what the motive he began to study and inquire about these things and the final result is that he is one of the best guides in the park. If we do not have a naturalist to send along with the party we can send Ed Cummings, and that does just about as well. He has become very much interested in all naturalist features, and as you see he has become a leading member of the Natural History Association. My point is that when you can show the employees that it is to their advantage to know something about the park, it serves the purpose just as well and helps to promote their interest.

About this planning for utilization of space for buildings either in conjunction with or in the same general area as the operator--that just adds strength to the plea that I would like to make for the establishment

of the position of Regional Naturalist. That would be very helpful to the region. I would like to see some specific action taken by this conference if it is considered appropriate.

MR. WALKER: The operators do not all seem to have the same spirit. While I was in Zion and Bryce there was a most friendly spirit there and I certainly enjoyed my work. The Utah Parks Company was very kind to me. In going to Crater Lake we have a little different situation, but I have made up my mind that I am going to be just as friendly. I think our friendly attitude there is going to correct a lot of these little difficulties all along the line.

DR. RUSSELL: We talk about integration and coordination. This is one place where we will have to make a beginning. If there is not a coordination of interests in the parks we can't get far in coordinating things higher up. Mr. Tillotson, as usual, picked out the meat of the question and put it in very few words. He said something too about advance planning and the need for Regional Naturalists who can coordinate planning as it affects interpretive work. The regional scheme has been set up in such a way as to enable the Regional Director to forestall developments that are objectionable. I am glad that Mr. Tillotson believes that a Regional Naturalist would be helpful to him in his clearance of plans. I wonder if Dr. Bauer would care to be specific in the matter of "some Washington officers" in saying that some park naturalists can go afield to do interpretive work and some can't.

DR. BAUER: Dr. Bryant is one who tried to encourage us to prepare a schedule involving contacts with colleges, high schools, grade schools, etc. He thought that our permanent men should go out for two or three weeks at least. That would make a total of probably two months work for the three men in the three states adjoining the park. It is a very fine idea and we have had considerable request for such services, but we have never been able to set it up.

DR. RUSSELL: The answer rests in the fact that our appropriation act limits our educational work to the parks. A Park Naturalist is free to travel in connection with administrative work if his Superintendent finds it desirable to send him.

MR. MCKEE: I notice that the next paper is on pre-season training. I hope that in that paper some information will be given in training operators' employees, as that is one way in which we can do a lot of good work. I think we should stress the point very strongly with the new temporary naturalists who are coming into the area that they should develop friendly relationships with the operators, particularly with the bus drivers. I know that in this park such an attitude helps a great deal. On that basis we will either have difficulties or avoid difficulties as the case may be.

We have just about time enough to get in this one paper before noon, and since we are so much behind I think we had better get to this next paper immediately. I am going to ask Mr. Oberhansley to take the floor.

MR. OBERHANSLEY: I am sorry that I did not touch upon the point that you mention. I confined myself strictly to the Ranger-Naturalists. I am sure that you will all agree with me that one of the values of this convention has been the opportunities we have had to discuss our mutual problems and in that way gain some help from each other's experiences. In preparing this paper I wrote each of you and asked how you would handle this situation. This paper is prepared from that survey.

Pre-Season Training and Administration of Ranger Naturalist Personnel

Francis R. Oberhansley,
Associate Park Naturalist,
Sequoia National Park.

ABSTRACT

A survey of training methods employed in the National Parks and in many National Monuments is presented to indicate the scope of this program under various conditions. It is found that in many areas formal pre-season schooling is impracticable, but that intensive training of new men and in-service training for all is both practicable and desirable. Pre-season training procedure in Yellowstone National Park is given to illustrate a highly successful formal training program. Some of the methods described are recommended for training park operator personnel whose duties require them to give information to visitors. Efficient personnel management requires carefully planned schedules and duty assignments. Regular staff meetings result in good coordination and improve standards. A standard Ranger Naturalist Manual is recommended.

The wide variety of conditions under which interpretive programs function in the National Parks and Monuments results in a difference of opinion concerning the values and methods of pre-season training of ranger-naturalist personnel. Some of us consider formal training unnecessary and impractical because of the small turnover of seasonal men

and a policy of selecting new men on the basis of their previous training or experience, as well as familiarity with the park and its interpretive program. Also, in many cases, the ranger-naturalists are unable to report uniformly early before the pressure of the season is on. On the other hand, where these conditions do not prevail pre-season schooling is considered vitally important and is given a rather prominent and exclusive place on the program.

Before an inexperienced ranger-naturalist assumes a schedule of duties, it is obvious that a certain amount of careful pre-season training is essential. It has also been demonstrated many times that experienced men are improved by this schooling regardless of the number of seasons they have served. Although methods vary, some provision is made in most Park Service areas for preparing inexperienced seasonal men for interpretive duties.

The primary functions of the ranger-naturalist are to interpret the phenomena of a given area to the visitors in an interesting and inspirational, yet accurate, manner, and to make other contributions toward their successful vacations. He must foster a patriotic understanding of American ideals and principles, stressing the importance of enjoying nature without spoiling it for succeeding generations. His explanations and lectures must be framed to meet the requirements of the laymen and yet be acceptable to the scientist, and delivered in a manner that will inspire others with the enthusiasm he feels for our national heritage. He is required to man museums, information desks and other important points and to answer a weird variety of questions with calm courtesy and accuracy. He may be required to sell publications and keep accurate accounts. He is expected to act wisely in any emergency and is subject to call at any time. It is his duty to assist in the protection of natural features and to enforce regulations. He may be assigned to collect and prepare specimens, make check lists, prepare written reports and articles or to do other research for which he is qualified. There are numerous other responsibilities of ranger-naturalists which might be added if time permitted.

Various methods are used in preparing ranger-naturalists and other seasonal employees for these important duties. Some consider it sufficient to require the new man to report a few days early in order to familiarize himself with the area and with his work. Others provide formal pre-season schooling of an intensive nature for the entire staff, consisting of personal conferences with new men and instruction and demonstration in the field, in addition to evening schools and round table discussions of methods, objectives, policies, etc. In the majority of cases the training is informal and concerns primarily the inexperienced men. The majority of park naturalists hold personal conferences with the inexperienced men on their staffs before assigning them to a schedule of duties. They also conduct them over the trails and roads and to points of major interest for orientation and instruction in the field.

The new man is usually assigned to go as a spectator on regularly-conducted hikes and to observe several lecture programs as part of his training. In some instances the coaching of unseasoned men is left largely to experienced ranger-naturalists. Staff meetings are a common procedure in several parks and some continue these meetings throughout the season.

In most instances, preliminary training of new men begins by correspondence, and they welcome this opportunity to prepare for the season's work. A wide variety of material and information sent to them for study which may include the following.

Schedules of lectures and field trips for the current or past season, and pre-season schedule; Ranger-naturalist Manuals, Ranger Manuals, books, professional papers, unpublished reports, check lists, Nature Notes, maps, bulletins, pamphlets, and reading lists; Uniform regulations; Information on quarters, equipment and supplies; Terms of employment, including hours of duty, leave regulations, etc.; Natural History Association functions and activities; Responsiblilities and probable assignments; and Procedure upon entering the park.

Pre-season training of season naturalists, after they arrive in the park, is ordinarily so brief that the time must be carefully scheduled to accomplish the best preparation in the shortest possible time. To illustrate how this is done in formal pre-season schooling, the Yellowstone methods for the season of 1939 are cited. Practically the entire force of 21 ranger-naturalists and all inexperienced seasonal rangers, numbering about 20, were included in this training. The Park Naturalist was assisted by his two permanent assistants and one Assistant Chief Ranger in directing the schooling. In addition, the Chief Ranger and other members of his force contributed to certain phases of the work at suitable locations where good illustrations were to be had concerning fire suppression, wildlife problems, general forestry practice, and park protection. Many of the experienced ranger-naturalists contributed to the program and all assignments were made in advance to allow for preparation. The principal program consisted of a two-day bus trip around the park visiting all of the major points of interest which the visitors normally see, for the purpose of orientation, instruction, and demonstration guiding. Evenings were devoted to round-table discussion.

Transportation and lodgings were furnished free by the Yellowstone Park Company but the men paid for their own meals and were not placed upon the payroll until after the pre-season schooling was over. To indicate the scope of the work, the tentative schedule which was closely followed is given:

TENTATIVE SCHEDULE

Saturday, June 10:

Individual conference with all new men.

Monday, June 12:

8:00 Meet at Museum. Introduction of new men and explanation of trip.
8:10 Leave Mammoth Museum.
8:30 Swan Lake Observation and discussion.
8:55 Discussion of Beaver at exhibit in Willow Park.
9:15 Appolinaris Spring - Trees of Plateau - by Park Forester.
9:30 Obsidian Cliff Exhibit - Geology and Indian Use.
9:50 Roaring Mountain (story in buses)
10:00 Nymph Lake (no stop - story in buses)
10:10 Norris Geyser Basin - demonstration conducted hike - Norris Museum - geology of basin.
11:05 Chocolate Pots on the Gibbon River (no stop - story in buses)
11:20 Beryl Spring (pause - story in buses)
11:35 Gibbon Falls (view from buses)
11:50 Tuff Cliff (no stop - story in buses)
12:00 Lunch, Madison Junction Mess.
12:45 Madison Junction Museum - History - National Park Idea.
1:05 Madison Junction Museum - Stephen T. Mather - Policies.
1:15 Firehole Cascade Exhibit - Geology.
1:35 Nez Perce Bridge - Indian Story - Chief Joseph's Retreat.
1:55) Fountain Paint Pot and Lower Basin. Paint Pots and Geysers.
2:15)
2:25 Great Fountain Geyser (story in buses - pause)
2:30 Firehole Pool (5 minutes)
2:45) Excelsior and Midway Geyser Basin - Orientation and guiding
3:00) methods.
3:10) Biscuit Basin - hike over trails - demonstration guiding.
3:30)
3:45 Giant Geyser - then via Daisy Geyser to Black Sand Basin (story in buses)
4:00 Greater Geyser Hill Hike - Orientation and demonstration guiding.
4:45 Dinner at Old Faithful Mess.
5:30 Cabin assignments.
6:30 Round Table Discussion and prepared talks on methods, policies, and objectives.

Tuesday, June 13:

7:15 Mess.
8:00 Leave Old Faithful.
8:15 Keplar Cascades (5 minutes).
8:35 Shoshone Point (5 minutes).
9:05 Arrive West Thumb.

9:10) Thermal Area Walk and demonstration guiding.
9:30)
10:30) Lake Fish Hatchery - stripping and story at hatchery.
10:50)
11:00 Fishing Bridge Museum - 15 minutes Ornithology,
30 minutes Lake Geology.
12:00 Lunch at Lake Mess.
12:45 Leave for Canyon.
1:15 Mud Volcano and Dragons Mouth - Nez Perce and General Howard.
1:50 Alum Creek (stop) - Buffalo - History and Management.
2:25 Grizzly Grounds - Discussion of bear feeding and lectures.
3:05) Artist Point - Story of Canyon.
3:40)
4:10 Inspiration Point - Canyon story continued.
5:00 Dinner at Canyon Mess.
5:45 Leave for Mammoth.
6:05 Dunraven Pass (Timberline trees, etc. en route).
6:35 Tower Falls - Geology of Canyon.
7:10 Petrified Tree - Fossil forests of Yellowstone - Geology.
7:25 Overlooking Hellroaring - overgrazing and wildlife problems.
8:30 Return to Mammoth.

Wednesday, June 14:

8:30) Terraces and Nature Trail - instruction and nature guiding.
12:00 Lunch.
1:00 Upper Terrace Drive - auto caravan methods.
Bunsen Peak Drive - instruction - geology.
2:45 Trail into Gardiner Canyon - Geology of area.
6:15 Naturalists' Dinner.
8:00 General meeting at Government Canteen Building.

Thursday, June 15:

Report to appointed stations and duty - new men observe.

Friday, June 16:

New men observe program.

The chief objection to this schedule is lack of sufficient time to cover important areas thoroughly. It would also seem desirable to secure services of regional geologists and biologists to assist with the schooling.

The results of a brief survey of many of the national parks and monuments regarding pre-season training methods are reflected in the following quotations from memoranda which were received from some of the areas.

"Our ranger-naturalists, mostly teachers from California schools, are not available until late June. Consequently, pre-season training is intensive.

"Inexperienced ranger-naturalists are conducted over each nature trail and to each point of special interest and given as much specific information as possible. Then the new man goes as a spectator with a group led by an experienced naturalist. If the trail or trip is especially complicated, he may go several times. Furthermore, when each new appointment is consummated, the appointee is sent a manual of information and such other literature as will aid him in his work. He is expected to digest this information and give particular attention to that part which pertains to his field of major interest."

"During the last five years we have not felt it necessary to conduct pre-season training for ranger naturalists, as our entire temporary staff has been filled from the graduates of the Yosemite School of Field Natural History. This school is in itself an intensive seven weeks' training course involving the geology, biology and history of the area. Our main dificulty is in getting our temporary men on duty early enough to handle heavy spring and early summer travel. We always allow our new men to accompany caravans, nature walks, and to attend lectures and programs in civilian clothes for at least a 5-day period before putting them in the schedule. In addition, all new ranger naturalists are required to attend the 3-day ranger training school to get the fundamentals of first-aid, fire suppression, law and order, wildlife policies, etc."

"In the past years each new man has been either instructed directly by the park naturalist or by various members of the temporary staff with previous experience in the area. Usually three days are devoted to this type of training. Because of the lack of personnel and the fact that the temporary staff enters on duty at a time when the flow of visitors is becoming heavy, the training period is necessarily restricted and is not as complete as might be desired. However, an attempt is made to familiarize all new men with each of our areas and the North Rim of the Grand Canyon."

"We generally fill nine seasonal ranger-naturalist positions. Most of these men have been with us for several seasons and there are very few vacancies, if any, each summer. We are therefore little troubled with men who are unfamiliar with this region. When new men are taken on we generally request that they arrive a few days early in order to familiarize themselves with their work and as much of the terrain as possible. Men who are already familiar with the park, either through previous work as rangers or through contact with the area in other ways, are preferred for any vacancy if their other qualifications are satisfactory."

"As to details of our training, we have a recommended reading list of books which we send out in advance of the time to report here, and another to be used after arrival. We require each man to take all of the Park drives and to hike to the river and back before giving any lectures. Likewise we require that he accompany, without uniform, one of the experienced naturalists on one or more caravan trips and nature walks, that he attend each type of lecture given and that he spend time as observer at the ranger information desk."

"Since they could not all report at the same time or even before the Naturalist program had to be started, it was impossible to have a pre-season training program for ranger-naturalists. However when all men had reported for duty, daily meetings were held for one week; these meetings were a sort of pre-season training in which objectives, programs, policies, and interpretational practices were discussed at quite some length."

"The temporary naturalist is given all of the available literature to read during his spare time, and usually is given considerable opportunity to digest this information completely. He studies the contents of the "fact file", which is maintained in most of the monuments. This is a file of 5" x 8" informational cards arranged alphabetically by subject. It is supposed to contain almost all of the known knowledge concerning the area. Excerpts from publications, as well as answers to the most common questions are included. The file is added to from time to time, and the summer temporaries make considerable contribution. It is located near the museum lobby, or the ranger office, and is available for inspection at any time. If the temporary ranger is stumped by questions, and the custodian is not around, he runs for the fact file.

"The temporary worker then accompanies the custodian and each permanent guide on their trail trips and through the museum, thus learning how each different man handles the various parties.

"He then takes a party himself. He is allowed to go on the first party alone, so that he will have an opportunity to gain some ease and poise without undergoing the nervous pressure of having an experienced man along. After the first trip he is then accompanied by the custodian or a permanent ranger in plain clothes who offers at the end of the trip suggestions for improvement. Such accompaniment is continued occasionally until the man is believed thoroughly broken in."

"Both men know the park rather intimately since they live and work within 40 miles of the area, and both are well acquainted

with the flora. Both men were taken out on the regularly conducted trips which were under the guidance of the park naturalist. They were also notified regarding various matters pertaining to policy, etc. The second day of their service here, these men were conducting parties."

"When they arrive in the park they spend the first week accompanying the experienced men on all of the conducted tours. They also attend all lectures and campfire programs and must become thoroughly familiar with all exhibits in the rather extensive museums. Each new man is supplied with a selected list of books and is expected to devote every spare minute to study.

"Each new man is given a list of 350 typical questions and is expected to become thoroughly familiar with the answers. This not only provides him with questions that have actually been asked but gives him a general idea of the weird variety of the questions he will encounter."

"During the past two seasons, 1939 and 1940, five days were devoted to pre-season training for ranger naturalists. The number of ranger naturalists employed during the 1939 season was 9 and the number for the 1940 season was 10."

"Fortunately, we have had little and gradual turn-over of staff, making pre-season training a minor problem. When a new man is selected for appointment as ranger-naturalist, he is supplied with the old manual, a bibliography of materials that will prepare him for his work, and a number of reports, outlines of the season schedules for previous years, literature issued by the Service, and by the Nature Association in the park. From this material, he gets a good cross-section of the park as reflected in existing literature and maps. From the manual and from the forms, reports, schedules, etc., he gets a conception of the organization and procedure within the staff. Careful and thorough study of this material makes it possible for the new appointee, upon arrival in the park, to go over the ground, visit the museums, and discuss in staff gatherings the work he will do during the summer."

The administration of ranger-naturalist personnel is simplified by systematic planning and written instructions. The duty assignments can be made so clear that accountability is very plain. Special qualifications should be taken into consideration when making assignments, and the schedule should be planned sufficiently far in advance that it will cover at least a two weeks' period. Care must ordinarily be taken to avoid too frequent duplication of lectures at any point, for obvious reasons, and if there are several nightly lectures, they should be closely coordinated.

The designation of one man to act as senior ranger-naturalist in charge of station details, facilitates the work and frees the Park Naturalist from many routine duties.

Regular supervision and constructive criticism in personal conference is an important factor in personnel management. Regular staff meetings result in a smooth-running organization, maintain morale, and permit stimulating discussions and instructions on various phases of the work.

A proper division of labor is naturally expected and impartiality should be apparent in the schedule.

Where questions arise between ranger-naturalists and other employees, it is wise that proper channels be followed in making necessary adjustments.

The importance of pre-season training justifies giving serious consideration to expanding and systematizing this work throughout the Service. There are many items that are applicable to seasonal employees in all Park Service areas which might be incorporated into a standard Ranger Naturalist Manual that could be made available to each ranger-naturalist prior to his reporting for duty. Such a manual might include general instructions, functions and responsibilities, policies, history, administration, ideals, objectives, and other materials having wide application.

Some of the methods used in training seasonal government personnel can be used with profit in schooling park operators' employees whose duties at times require them to give information to the visitors. The element of personal contact in the field and in meetings would be a valuable supplement to the methods which have previously been approved for their supervision and training in this connection.

Each Park Service area has peculiar problems, but all can derive profit from the experience of others in training seasonal personnel to a point of efficiency that will reflect credit to the Service.

MR. OBERHANSLEY: (Unwritten comment on paper).

In my own case I had two new men come on to the job this spring. I was fortunate in having men who were quite familiar with the park. However, I did insist that they come a week earlier. I took them on several trips, had them attend several staff meetings, and I went with them to several points of interest and made several trips with them through the caves, trips which they were supposed to guide, and they got pretty well prepared for their work and they stepped into the job and did just as good a piece of work as some of the old men. This problem is very much

tne same as the matter of permits. Each of us have our own local problems. I believe that if we could have a regular period devoted to pre-season training that more lasting values would result, but I don't see how it can be done.

MR. KING: At the Monuments we have no rangers or naturalists--they are all interpreters.

MR. SCHELLBACH: I would like to inject a thought about training of operators. We found the plan highly satisfactory on the North Rim. In tne spring when the employees come in, the manager calls the waitresses, bellhops, bus drivers, and others together in the lobby and we then deliver a talk to them on the park, outlining the principal points and principal information that they will need in answering questions. We find that system working very well, particularly with the waitress, since a visitor, in the course of ordering a meal is apt to ask her a question. They were so highly enthused with that procedure that there have been many comments as to the good relationship between the park and the operator. The bus drivers go on our trips and take in the lectures, and then when they go over these same roads with groups they are almost as good as our temporary men. We get excellent cooperation in that way.

DR. BAUER: I would like to have Dave Condon tell us about an experience he had.

MR. CONDON: Mr. Chairman, I have not had this experience as a naturalist but as a district ranger. All of you are probably familiar with the Yellowstone setup of district establishments. The district ranger has responsibility for a large variety of activities that go on in his district. Administering the district can be a big problem. A good example is in our geyser areas where a little bit of soap thrown into the pit can bring about the eruption of that geyser. Some visitors are just mean enough to play a trick like that to antagonize the rangers. I found that in the districts to which I was assigned I got one hundred per cent cooperation from the employees because as soon as they arrived on the scene I made it a point to contact each group. We were not able to meet these groups as one unit because we have large hotels and lodges, but by talking to each of these groups I not only got their cooperation with me as district ranger but I also got their cooperation with the naturalists on the program. As Mr. Tillotson said the tip plays an important role to these employees. They discover that by being courteous to the guests and giving them the information they desire, and in helping them in all other ways they usually profit by it. We impressed upon them the responsibility that they had to protect Yellowstone Park; it was just as much their responsibility as it was the naturalists and others, because if it were not for the Park they would not have the job they have and I would not have the job I have. The employees of the park saw that point and cooperation came readily.

MR. FAGERLUND: In Hawaii the Superintendent initiated a program of weekly sessions. I am the only naturalist there; we have no ranger-naturalists. Since the ranger staff assists considerably in our interpretive program, practice is had in interpretive delivery and in factual material to be presented. This is very helpful and will continue throughout the year.

DR. RUSSELL: If agreeable with the crowd, I would like the privilege of adding footnotes in some sections of the minutes where I know clarification is needed. If there is no objection I will take that liberty with the minutes of this meeting so as to make the records complete.

MR. ROBINSON: I have been sitting here and thinking about the practical experience that these men have had and how valuable some of this information would be in setting up a course of study for the Virginia Institute. How are problems solved and what are the practical needs for a new man coming into the work? If we could have the benefit of that experience it would help materially in planning a course that would prepare our students for actual service in interpretive work.

MR. DODGE: I would like to move that Dr. Russell's request of injecting footnotes be granted. (This motion was carried).

Saturday Afternoon
November 16, 1940.

Mr. Beatty, Chairman.

MR. BEATTY: In Superintendent Kittredge's absence, I am going to ask the next speaker to present his paper, "Cooperation Between Naturalists and Biologists." Dr. McDougall.

Cooperation Between Naturalists and The Biologist

Walter B. McDougall,
Regional Biologist,
Region IV.

ABSTRACT

It is extremely important that all material presented to the public be scientifically accurate and the park personnel should include specialists in that field of science which finds notable representation in the area. Biologists may be called upon to make investigations of biological problems, aid in training new personnel, check on the scientific accuracy of programs, and suggest ways of presenting biological facts in an effective manner. Naturalists may aid biologists by keeping census records of plants and animals and informing the biologists concerning current matters pertaining to biology of their regions.

The principal function of the park naturalist is to interpret the park to the park visitor. We believe this is one of the most important functions of the entire Service, in spite of what certain investigators may think about it. Because it is so important a function, it is doubly important that it be performed in the best possible manner. Above all else the material must be presented in an interesting way because if it is not interestingly presented, the visitors will not like it no matter whether it is really good, bad, or indifferent. This necessitates that the naturalist be one of those rare specimens of humanity who has a deep interest in, and a broad knowledge of, some branch of science and is at

the same time keenly interested in people. The mere fact that a man has a Masters degree or a Ph.D. degree does not qualify him for a naturalist position. In fact, such a man may be a very poor choice for a naturalist position because, although there are many notable exceptions, it often happens that by the time a man has acquired a higher collegiate degree he has become so vitally interested in his science that he has lost his interest in people, and a successful naturalist must have this interest in people along with his scientific knowledge.

Of practically equal importance to the presentation of the material in an interesting manner is the necessity that it be presented with scientific accuracy. Perhaps those of us who call ourselves scientists realize this need more than others because we know that the issuing of incorrect scientific statements is pernicious and such statements often seem to take hold of the public mind and become disseminated more rapidly than facts. Such dissemination of incorrect information, if it starts in a national park or monument, cannot help being detrimental to the prestige of the Service as a whole. It is for this reason that we believe every effort should be made to select men for naturalist positions who are specialists in the field of science that they are to present to the public. In an area where but one man represents the entire naturalist force, he must not limit his presentation entirely to one science; if his area is primarily archaeological he should be an archaeologist, while if it is primarily geological he should be a geologist, and I would make similar statements about areas that are primarily biological or primarily historical. On the other hand, in a large area the talents of the naturalist force should be so diversified as to enable each man to present, primarily, only material pertaining to his own field of science. I well remember my chagrin when I first entered upon duty in the Naturalist Division in 1929 and was asked to lecture on the geology of hot springs and on buffalo, neither of which I knew anything about. Of course, anyone with a reasonable amount of intelligence can "bone up" on a subject and learn enough to talk intelligently about it for 20 minutes, and that is what I did. I worked up a speech which I believe was a pretty good one and I delivered it every night all summer. As our good friend Dr. Bumpus once remarked, "McDougall got so he could give it with his eyes shut." But the trouble was that if the audience began asking questions at the end of the talk my ignorance of the subject was soon on display, because I had to begin admitting, "I don't know."

It is for these reasons that we believe it is very bad practice to entrust to an untrained CCC boy, or to an untrained temporary ranger, or to anyone else who does not have the proper scientific background, the work of interpreting scientific phenomena to the public. We believe the public is entitled to something better than that and we believe that the Service is always injured when it does not give to the public the best that is available.

Perhaps the above is a rather long preface to what I am called upon to say but it seemed necessary to make clear my attitude toward the problem. If the statements I have made are not true, then cooperation between naturalists and biologists could be of but little value.

The primary function of the regional biologists is not interpretation, but the regional biologists are at the service of the naturalists, in furtherance of the interpretive program, in so far as time will permit. The regional biologists like to receive requests for service. Like practically all Service personnel they are so overloaded with work that they may not always be able to comply immediately with all requests received, but they would much rather go into a park or monument at the request of a park naturalist or a park superintendent than to go in simply on their own initiative merely to see what is being done, or not done, for wildlife.

As to the type of service that the biologist may be called upon to perform, the most obvious is that of making biological investigations. The only way to get facts about either plants or animals in any particular park or monument is to make field investigations, and the naturalist, even if he is biologically trained, cannot do much of this type of work unless he does it by sacrificing all of his "off" days. Since there is only one regional biologist in each region and he has a great deal of office work and other administrative functions to perform, he cannot, of course, carry on any large number of biological investigations, but this fact should not deter any superintendent or naturalist from requesting such service. There will never be any dearth of willingness on the part of the regional biologist to carry on such investigations so far as his time will allow and, after all, perhaps the surest way to get more help for this work would be to present to those who control the purse strings a list of a hundred or so biological problems that require immediate investigation in the parks and monuments of the region.

A second type of service that could be rendered by the biologist in certain instances is that of aiding in the training of new naturalists or ranger naturalists. If there is no one in the park or monument who has had biological training, and the new man is to be expected to interpret biological phenomena, the biologist might well be called upon to give the new man a sufficient amount of preliminary training so that he would have a reasonable chance to make good in his new position. I recall that I repeatedly told visitors about the "hoodoos" in Yellowstone Park for several weeks before I had ever seen the "Hoodoos". I do not know just how much misinformation I gave about them but I am sure that if a geologist could have taken even a couple of hours to show me those rock masses and explain their significance to me, my interpretation of them would have been much more valuable both to the visitors and to the Service.

After the new man has been on the job for a while the biologist might well be asked to listen in on his lectures once or twice to check on the scientific accuracy of the biological information. The man might properly

request this service himself in the interest of better service to the public. Sometimes, it must be admitted, it is quite annoying after you have worked up a good story and learned to put it over effectively, to have a specialist come along and poke holes in it. I found it so, if I may be permitted another reference to personal experience. I worked up a narrative account of the geology of the hot springs to use on the trail and thought it was very good, and when Dr. Bauer or some other geologist would come along and point out parts of the story that were not scientifically correct, I did not like it at all. However, I think it should be recorded to my everlasting credit that I did make the changes that they suggested and that I appreciated the efficacy of the medicine even though it sometimes had a bitter taste.

Still another service the biologist might well be called upon to render is that of suggesting effective ways of presenting biological facts. I have heard Dr. Bryant complain about naturalists who merely give the names of plants or animals and say nothing more about them. The questions most often asked refer to the identity of plants or animals, but visitors are interested in ecological relationships if these are interpreted to them in an interesting and understandable manner, the name of any particular object comes to have a more lasting interest. In many instances the something additional, and a simple way of interpreting it, could be supplied by a biologist.

Naturalists may aid the biologists by building up check lists of plants and animals, by making the annual wildlife census report as accurate as possible, and by keeping the biologists currently informed concerning all matters pertaining to plants or animals within the park or monument. The more accurately the biologist is kept informed concerning biological phenomena in the area the more helpful he can be in improving the interpretative program.

I am sure that I speak for all regional biologists in saying that we are intensely interested in the interpretive program and that we will make every effort to render any service for which we may be called upon in connection with that program.

MR. BEATTY: Thank you, Dr. McDougall. I think you have added greatly to our understanding of the situation between regional biologists and naturalists. It occurs to me that the next three papers on the program are related and possibly much of the discussion will pertain to the fields of geology, park ranger and fire protection personnel. I am in hopes that we can postpone discussion until after reading of the three papers, but there may be someone who might wish to contribute to this special subject at this time, and if so, we will give him the opportunity.

MR. OBERHANSLEY: I am wondering if the regional biologists may not have organized data that might be highly valuable to the naturalists. Perhaps they have prepared check lists, that a new man coming into the region would like to have copies of.

DR. MCDOUGALL: We have not been able to get very far on the check lists. I do have check lists of the plants. Of course the lists are very incomplete but they cover both the national parks and monuments and the state parks in the region, so far as I have been able to gather, but I have not gotten very far with animals. I might make a confession. Of course pretty nearly everyone here knows that I have been a botanist all my life; I have never tried to do anything much with the animals until I got into the Park Service, and I don't pretend to know very much about them. I grew up in Michigan and spent sixteen years in Illinois, and I got so that I knew the plants of Michigan, Illinois, and Indiana so that I could name most anything there. Then I went to Rocky Mountain and Yellowstone National Parks. We had good books there and I got so that I knew the local flora. Then I was sent down to Southern California where everything was new, and finally to Region Three where everything was new again and no books to use. I have hopped around so much that I have not had time to learn the plant life of the various areas intimately. I am frequently reminded of the trip in company with the late George Wright and the late Roger Toll. The day before that fatal accident happened, George Wright was riding with me and said that he was glad to go on that trip because he expected to get a liberal education concerning the desert vegetation. I told him that I wished I knew half as much about desert plants as most people think I know. Since the regional biologist is expected to know everything about plants and animals, I will appreciate any help that I get from the park naturalists in helping me to learn more about the plants and animals of their areas.

MR. BEATTY: I think that in the future there will be a reciprocal arrangement which will be of benefit both to our Service and the Fish and Wildlife Service.

MR. MCKEE: If a qualified observer from the Regional Office or elsewhere enters a park and makes observations on 20 or 30 birds for instance, I suggest he leave that record in the park's file system. If the regional man wants to have a duplicate system, that is fine, but in any case the original records of a biologist or naturalist should be a matter of permanent record in the park.

MR. BEATTY: If no one has any further comment on this particular phase I suggest that we postpone discussion until after we have heard the next speaker. Before introducing the speaker I will take the privilege of reading a telegram that is addressed to a member of the conference. I was hesitant about opening someone else's mail, but in this instance I was assured that it was all right for me to do so. (The chairman read a telegram from the naturalists to Dr. Carl Russell. The message appears among the Resolutions appended to these proceedings).

DR. RUSSELL: That is a most wonderful assurance. I just want to say that I appreciate it very much indeed and that I will have more to say at a later hour.

MR. BEATTY: Mr. Kittredge has arrived and he is going to give us a discussion on the relation of the park naturalist to the administrative departments.

Relation of the Naturalist to the Administrative Departments

Frank A. Kittredge,
Superintendent,
Grand Canyon National Park.

ABSTRACT

The National Park administration involves the coordination of the activities of the several branches, each of which performs an essential service, although the Rangers and the Naturalists receive most of the public interest.

The Naturalist has an important and responsible position as interpreter of the park and representative of the Service. Research, while essential to a well-rounded Naturalist program, must, because of limited funds and personnel, be secondary to the interpretive program. Park Naturalists must largely rely on the scientific work of others, assembling and presenting in the most attractive manner possible knowledge already available. As park librarian and curator of the museums the Naturalist can do much to assist and coordinate the work of visiting scientists.

Ranger-Naturalists, as the park personnel most in contact with the public, should be selected with care, after full consideration, by the Superintendent and the Park and Chief Naturalist, of the qualifications of all available applicants and the specific duties to which they will be assigned.

An important aspect of the work of the Park Naturalist from the standpoint of park administration is his fiscal duties. It is essential that he thoroughly understand and comply with the fiscal regulations. He must prepare the estimates for his department, adequately

justifying all requests for funds. He is also responsible for seeing that, barring the most unusual emergencies, the expenses of his department do not exceed the budget.

It is more desirable for a Naturalist to be a man of broad interests in Nature subjects and diversified abilities than a specialist, no matter how able, in any one field. There must be close cooperation between the Naturalist personnel and the Ranger force. Each should have some knowledge of the other's work and frequent exchange of duties is desirable and necessary under the usual shortage of personnel.

The Park Naturalist carries a very integral part of park administrative responsibility and should be a part of the park staff contributing in staff conferences.

The Ranger-Naturalists as well as the Park Rangers are the "show window" of the national parks in interpretive and educational features.

The Naturalists occupy a very strategic position in the furthering of conservation and protection ideals.

National Park Administration involves the coordination of all of the activities of the several department or branch heads in the organization. There can be no prima donnas in any of the branches else there will be turmoil.

Every one of the departments performs a necessary activity in the well-rounded national park. Some of the branches occupy positions of less prominence than others. The work of some is intended particularly to be in the public eye while the activities of certain others are intended to be submerged.

The Park-Naturalists and the Park Rangers occupy a very enviable position. Our purpose in the National Park Service is to serve the public. That is why we exist. Those who serve in the more prosaic branches are preparing the park for the physical needs and health of the public and for the perpetuation of the park's physical condition—working in the background, so to speak.

But the Rangers are in direct contact with the public. Every person who enters by car is greeted by a Ranger. He has a wonderful opportunity to convey the personality of the Park Service to a greater percentage of visitors than anyone else. His contact in each case, however, is very brief, but infinitely important, if good.

The Park Naturalist occupies a still more enviable position in that he has the opportunity of talking to the visitor intimately regarding Nature, regarding the scenic, historic, geologic and other scientific features for a more or less extended time. He really has an opportunity to implant ideas, ideals, and ambitions in the visitors mind which may start him or her along the road of appreciation of Nature. He can really develop and strengthen conservation of our natural resources through his listeners.

INTERPRETATION vs. RESEARCH:-

There will probably always be discussion as to the balance between interpretation and research functions. Administration here plays an important part. Unfortunately funds are always too limited to do enough of either.

Without research we cannot advance. There must be a certain amount of study and research on the part of every Naturalist, else he loses his incentive and is likely to become an uninteresting automaton in the passing on of information.

Research by our own Naturalists is also an essential if the National Park Service is to keep itself up-to-date.

We would like every national park to be a shrine for research--each in its own special phase of nature--for all scientists. We would like our Park Naturalist to be recognized as a man of research ability--one who knows from first-hand knowledge of the science of that particular park and one in whom other technicians in that subject may have respect.

But, we have to recognize the fact that the National Park Service cannot compete with colleges and universities, institutions of research and Government research bureaus which are devoted primarily to research.

Our other most fundamental objective for the Naturalists is interpretation to the visitor. We cannot hope that every park can have the benefit of a man of great research ability. It is going to be necessary for the next Park Naturalist in Grand Canyon to rely upon the findings of his predecessors while at the same time carrying on what research he may along with his other duties of interpretation. It is necessary for all Park Naturalists to find and correlate the findings of others, and the best Park Naturalist ordinarily is the man who can assemble and interpret to the public most interestingly that which has been made available. The most valuable Naturalist is the man who can make Nature live within his listener.

There are many routine activities of the Park Naturalist which must be taken care of if proper park administration is to be observed.

There is the park library which the Park Naturalist must watch with an eager eye to see that new books are acquired. He must see that basic reference materials which may be needed in connection with major problems of the park are obtained. He must see that the library is properly catalogued so that data may be easily found when wanted by other park authorities or visitors.

The Park Naturalist should see that the permanent historical record is kept up-to-date and to be on the alert to acquire any additional historical data which may not have been previously recorded. He should see that all basic data relating to plants, animals, archeology, geology, etc., are acquired and made available as a reference library for those in the National Park who wish to study and for visitors who wish to do research along special lines.

RANGER NATURALISTS.

The careful selection of Ranger-Naturalists to serve during the summer seasons is of tremendous importance to any national park since it is in these men, as much as any others, who "make or break" the reputation of the National Park Service in the eyes of the general public. They are responsible for making known the wonders of the park and for promoting the ideals of the Park Service, therefore, the best combined judgment of both Naturalist and administrative officials should be used in making careful selections.

As a practical method of procedure it is suggested that prior to the consideration of individuals, the Park Naturalist and Superintendent tabulate the requirements of each specific position to be filled. Then relative qualifications of applicants should be tabulated. The tabulation should show at a glance such things as education, special field of training, previous experience, age, ability to lecture and especially personality. Thus, it should be possible for an unbiased selection to be made from among the best available men.

FISCAL PROCEDURE AS RELATED TO THE NATURALIST.

The administration of the fiscal matters of the Naturalist Department is one of those mercenary matters. To thrust such details upon a scientific train of thought is disturbing. But, after all, to find ones' branch or department without funds or oneself out of the work he loves for lack of funds is also distracting.

So, compliance with fiscal regulations is vital.

I wish to touch upon two phases. First - Preparation of the annual budget. Second - Living within the authorized budget.

(A) Preparation of annual estimate, including methods of justifying increases in the budget.

In the preparation of the budget there are three specific steps:

1. The Director advises the Park Superintendent of the budget approved amount for the following fiscal year, i.e., beginning July 1, or about 5 months hence.

2. From that information the preliminary estimates are prepared about February 15, for the fiscal year beginning approximately 16 months hence. This estimate must include all additional amounts required--over that approved for the July 1 appropriation. All such increases must be fully and clearly justified by facts. General statements are considered valueless by the Director of the Budget.

The Superintendent carefully scrutinizes the increases requested by the Park Naturalist, and weighs the need for such increases against the need for additional funds in other park accounts, as justified by other park department heads. On this basis the Superintendent's preliminary estimates for the entire park appropriation are submitted to the Director.

3. After the Park Service Budget Committee, at Washington, has reviewed the preliminary estimates the Park Superintendent is advised of the increases approved by that Committee for inclusion in the final estimates for the fiscal year involved, i.e., 16 months hence, which final estimates are required to be submitted annually about May 15.

GENERAL:--

In all accounts in the final estimates in which increases have been approved by the Director, each type of expenditure, known as objective classifications, must be set forth, both as to amount and the supplies and/or services proposed for procurement under that particular objective classification.

Needs that justify increased allotments in the 103, Research and Interpretation account, may, for example, include some of the following: Increased number of visitors to the Park since the last increase in naturalist personnel; abandonment of certain naturalist activities due to the lack of personnel; initiation of additional hikes, caravans, or other educational activities considered necessary to meet with public demands; additional personnel to operate newly constructed museums; additional personnel to handle contacts established through increased use of the educational program, etc.

It should be borne in mind that from the time a recommendation is made by the Park Naturalist for an increased allotment, this recommendation and justification must be strong enough to withstand scrutiny by the

Park Superintendent, Service Budget Committee, Secretary's Office, Budget Bureau, both Houses of Congress, and the President before it may be finally enacted into law. Therefore, a clear and concise justification supported by actual facts is the prime requisite to obtain increased appropriations.

(B) Living within the Budget. Preparation of working budget. Advance planning and approval by administrative officers. Administrative requirements kept in mind.

To provide adequate control of the entire park appropriation by the Park Superintendent, each department head in Grand Canyon National Park is required to prepare a working budget, using as a basis the approved allotment for all accounts under his jurisdiction. The budgets include in detail the funds required to pay each employee's salary, the estimated amount required for supplies, travel expenses, operation of movable equipment, etc. The preparation of this budget necessitates advance planning by the Park Naturalist to the extent of scheduling, EOD, and separation for all seasonal employees, as well as estimating the amounts of other expected expenditures by months for the entire fiscal year.

Since the estimates for a fiscal year's appropriation are initiated approximately 16 months in advance of the date the appropriation becomes available, many unexpected expenditures are necessary that could not be foreseen. For instance, here at Grand Canyon, the park officers were suddenly notified that for the past fifteen years the steam meters had been read incorrectly by the park operator, and henceforth the cost of steam would be increased more than 200 per cent. Since it was essential to heat the buildings that were using steam from the operator, the only other alternative was to decrease other park accounts and increase those accounts to which the steam is charged.

This example is given to show the necessity for adequate control over the entire park appropriation by the Park Superintendent. If each department head were allowed to expend all funds approved for his accounts, such unpredictable circumstances as just cited could not be successfully handled by the park administrative officers.

Before leaving the fiscal aspects of the Naturalists work, let me repeat that increased appropriations and consequent enlarged educational programs are obtained only through strong justifications, clearly presented.

DEVELOPMENT OF BALANCE IN PERMANENT STAFF - as between Lecturer, museum technician, researchers, regular rangers, administrators. There is little hope and perhaps not even a practical necessity of having all of the desired qualities represented by separate individuals. We cannot hope with our meagre funds, in most parks to have one man whose specific duties are lecturing and another whose duties are those of museum technician.

Also it probably is not desirable that we shall have one man doing research exclusively and another lecturing. It is necessary that the lecturer follow research lines at times to keep himself properly attuned to his job. It is necessary, in our diversified park work, for the lecturer and the researcher to have to do with administration, the preparation of the budget, etc., if his feet are going to be kept on the ground.

It is going to be most desirable for the Park Naturalists to continue to do rather diversified work if they are to keep the general National Park viewpoint rather than simply that of a technician.

Perhaps the greatest separation has grown up between the Rangers and the Ranger-Naturalists. The duties of each are so numerous and so important that it is natural and proper that there should be separate and responsible heads. However, the Ranger-Naturalists should be available, and willing to set aside certain of their duties in periods of emergency in the Ranger Department. Likewise the Rangers must be willing and capable of helping the Park Naturalist in emergencies.

Obviously the cooperation will mainly be on the part of the Park Ranger for his is the large force and the most flexible personnel.

There can be no reluctance on the part of the Ranger personnel in this cooperation of Naturalists requests are within reason and if due allowance is made for the fact that the Ranger personnel are not trained as lecturers or as scientific personnel. Ranger personnel who are eager to broaden their field of usefulness and eager to progress will be happy to undertake training which goes with the Naturalist branch in the preparation of exhibits and the giving of lectures. Eagerness and adaptability on the part of Rangers to be useful in the Naturalist Branch should be a sign of worthiness for advancement in the general National Park program.

And, after all, the Ranger and Ranger-Naturalist activities are very closely related. A Ranger at the checking station must know a great deal about the Park, its geology, its archeology, etc., if he is going to be able to answer the visitors questions. He cannot simply stand at the gate and tell people that they must inquire of a Naturalist. By the same token the Naturalist must be informed and prepared to answer with correctness questions regarding fire hazards, police duty and park regulations. After all, speaking broadly, the Park Naturalists duties are interpretation and protection and when all is said and done what are the Park Rangers duties excepting protection and interpretation.

In Grand Canyon we have a very fine working relationship between the Park Rangers and Park Naturalists. Just at the present time we have two Naturalists and six Rangers. The Park Naturalists are fully occupied with the present conference and therefore the Park Rangers have taken over the greater portion of the Park Naturalists regular duties. The Rangers are

giving the Yavapai Lecture, excepting Thursday, and are giving the evening talks at the Bright Angel Lodge.

The Rangers are expecting to alternate with the Park Naturalists during the winter period. What we are going to do when our Park Naturalist leaves us and our Assistant Park Naturalist takes a 26-day leave this winter I don't know. It looks as though the Park Rangers will take over the Naturalists Department completely.

As a matter of fact, this inter-relationship is a most healthy state of affairs because of the versatility which it develops and the training which all receive in the handling of the public.

Referring to the proper balance we wish that more Naturalists could be provided for.

I want to say in closing that the Naturalist Branch is a very fundamental part of the administration of any national park. We have our scenery which anyone can see and enjoy without assistance but from an educational point of view and from an interpretive point of view the naturalists are the show window of the national parks.

The naturalists are the ones who really make it possible for the public to absorb the deeper values which we have; they are the ones who really inspire people to come to the parks and get something worthwhile to take away in addition to the beauty and grandeur. They are the ones who start the young folks in thinking along lines of nature; appreciation of flowers, wildlife and scenery.

Without the naturalists in the parks, without the telling of the story of earthmaking, without the interpretation of the flora and fauna and without the leading of the coming generation along the path of appreciation of nature, park administration would be almost an empty shell.

We have our other activities--our landscaping, our engineering, etc.--all of which are means to an end, but the actual impressing of the park visitors of the national park ideals and policies; the hopes and ambitions of the late Stephen T. Mather; the conservation policies which mean so much to the Department of the Interior--these are your responsibility. I thank you.

MR. BEATTY: Thank you, Superintendent Kittredge. I am sure that I express the sentiments of the entire group here when I say that we are very happy to have you as one of our speakers and that your thoughts have been very acceptable to the group.

DR. RUSSELL: This is one of the critical points in the conference. Certainly that paper is one that no naturalist can pass up lightly. I think Mr. Kittredge has been very thorough in his analysis of the relationship between the Superintendent and Park Naturalist.

MR. KING: A program of development was undertaken very late in the Southwestern Monuments. We got our public works money late. Planning has lagged because of a heavy burden of routine duties. Consequently, when physical developments are about to begin in a certain definite area they might be instituted without taking cognizance of the knowledge possessed by the interpreter either in the field, or in headquarters. A specific example is this: A study group goes into a new area to decide upon the location of a headquarters building. Usually these parties are composed of an administrator, an architect, a landscape architect and an engineer. We know the parties cannot be too big or there is never any agreement. In my experience in the Southwestern Monuments, never have I or any other naturalist participated in one of these planning groups. I know of a couple of cases where the headquarters development was placed but in ignorance of the location of very important interpretive features. When it is called to the attention of administrators or their technicians they are almost always sympathetic. However, they should remember a very obvious fact. The Park Naturalist or his field representative in my case should know more about the features of the monument than anyone else and he should know more about how the public should be handled than anyone else. It is up to the administrator to correlate many things. When a headquarters building that includes a museum, lobby, and many such features is placed, we interpreters should have the right to present our opinion. The decision is always up to the administrator. The recommendation which the Committee might make would be something quite simple but all branches of the Park Service should take cognizance of the fact that a great deal of valuable information is in the possession of the interpretive branch and that branch should be consulted before final decision is made. I am sure that when a party is made up of all branches except the naturalists and the decision concerns the handling of the public and routing them in the interpretive channels, then our ideas should be weighed in the balance. I don't see how I can have overstated the case badly or been unfair to anyone.

MR. BEATTY: Mr. King brought up a good point but perhaps there will be a difference of opinion on the subject, probably due to local conditions. I know that our Superintendent has been very anxious to call in the naturalist on any program.

MR. KING: I may have overstated the case. I would refer more to the technical branches. I also know that there are two sides to the question, and we scientists have many times been impractical and ethereal when we should have been practical and down to earth.

MR. DOERR: I like Mr. Kittredge's idea and statement in regard to the prima donna. I am also reminded of the statement that Dr. Russell made that we have areas that are being planned now in which there is no naturalist participation and I would like to give a bit of emphasis to the comments that Mr. King has made. I would like to throw in this one suggestion. I have been very fortunate in my Park Service experience in working under men who have had the blinders off, and yet I feel that there is a big opportunity for naturalists to be of greater assistance to the administrative officers by being a jump ahead of them. Whenever a certain problem is coming up I have enjoyed studying that problem, and when the opportune time comes for the administrative officer to make some important suggestions relating to the study of that problem it has been my experience that the Superintendents are eager to get these suggestions. If we are forging ahead with the idea of being just as helpful as possible without stepping outside of our own field I don't doubt but that there are many Superintendents who would welcome our suggestions. We must not lose sight of the retention of our ideals, and at the same time seeing these things from the practical point of view.

MR. YEAGER: I think the Committee might well refer to an office order which was issued by a former Director of the Park Service on that very subject stating in brief that roads and trails should not be located without the approval of the Park Naturalist. Very often a road might go around a very important interpretive site. There is one other thing I want to add in connection with new areas. It is my feeling that a naturalist should be on one of the original survey parties to look the area over. When we were first discussing the idea of a regional naturalist and were making a list of the duties that would be his, one of these duties was listed as assisting in a survey of new areas. It seems to me that the naturalist is one of the very important members of a survey party, however large such a party may be.

DR. SWARTZLOW: I have been very fortunate concerning the Superintendents with whom I have worked. As far as the naturalists are concerned they can make the load of the Superintendent much easier if they will take a little time occasionally, to read the estimates in the accounting manual and to learn a little bit about administrative procedure. We can be of greater help to the office force, to the Superintendent, and to those who are charged with the handling of funds and the handling of procedure if we learn as much of that procedure beforehand as possible.

DR. BAUER: Mr. Kittredge has stated the case of the relationship of the Park Naturalist to the Superintendent in a splendid way. In fact it is very difficult for me to add anything or to make any suggestions at all. I think that most all of our Superintendents realize the importance of the naturalist in their setup, and I just want to express this thought that Mr. Edmund Rogers has expressed so often in Yellowstone: "This is not a one-man outfit." I think that if all of us realized that the Service itself is not a one-man outfit we would get better cooperation.

In reference to Dr. Swartzlow's remarks, my experience in Government service has impressed upon me the fact that the easiest and best way to get one's work accomplished is by following the recognized procedure.

MR. DODGE: I would like to say that I think Superintendent Kittredge's paper should be placed in the report in capital letters and that the Director should be requested to instruct every Superintendent and other administrative officer throughout the Service to read it. I have worked in only a few of the Park Service areas and have talked with only a few of the naturalists, but I have found that great differences exist regarding the attitude of various administrative officers toward their naturalists.

MR. BEATTY: It just occurred to me that it is one thing to read a paper and make a statement and another thing to live up to it. Mr. Kittredge has done both; he has demonstrated this by the cooperation that has been shown between the various departments, particularly the rangers and the naturalists in taking over the program. He and his staff are to be commended. I realize that this is an important subject and would like to have more discussion.

MR. DOERR: I would like to ask Dr. Russell to give us some of his experiences.

DR. RUSSELL: When I was a Park Naturalist I had that wonderful person W. B. Lewis as my Superintendent. There never was an occasion when I did not have full opportunity to take a proper place in the park organization. In spite of that fact, things like this happened: A new road was built from Yosemite Valley to Inspiration Point. As Park Naturalist I could assume a responsibility for safeguarding those natural features that might be affected by the road job. The road was put in and one bit of early glacial polish that F. E. Matthes had been watching for twenty years, was blasted out and lost to mankind forever. That was not the engineer's fault, and certainly not the Superintendent's fault. In a last analysis it can be pinned on the park naturalist. Yet, I think I can be excused because I was not idle while the road was being built. However, the fact remains that Mr. Lewis was one of the superintendents who would have welcomed my criticism or control on that problem and I did not provide it. I mention that incident to emphasize that there are two sides to the question. Some of the park naturalists I know are alert and fully prepared to supply needed guidance and they can give that guidance if they find time. The Superintendent in his rush to carry through will strive to be efficient; he will try to accomplish his ends in the physical development program. He will attempt to make the most of funds and man-days available. Usually the Superintendent will very gladly depend on the Park Naturalist or the archeologist or whoever is responsible for the presentation of natural values. We should not lay a charge against the Superintendents generally. We will have to assume some of the responsibility for ourselves. We need a system of procedure which

will insure a careful check of natural and historical values before physical developments are undertaken. The very fine presentation of the problem given by Mr. Kittredge will help to strike a balance. Mr. Kittredge has been Regional Director, Engineer and Park Superintendent. He has a background of experience that has made it possible for him to consider this subject. He has given us something good that will take a place in the permanent record, and if our own recommendation can be sensibly worded perhaps the final result will be a new method of approaching physical development programs.

MR. DOERR: I realize that the situation has not been ideal in all areas. The Ranger Naturalist does occupy a conspicuous place in the park organization, a place that I think is regarded with some jealousy by other departments of the park. I don't think we consciously tend to create that feeling of jealousy on the part of others, and yet I feel that that is the basis for a lot of friction. The thing I would like to arrive at is some means, some method, some procedure, whereby we can eliminate that friction. I dare say that I could at least visualize a situation of a park naturalist participating in community activities where both were present, one capable of a good talk where the other is not. I may be overstating the thing but I feel that there is that situation and that was one of the points that I had in mind in saying that I think we should plan our program to take into consideration that there are other activities in the park which are tremendously important and I think which could be given some publicity and which have educational value. I think we should plan our program so that we can definitely show the whole picture of park activities. We want to give the other people an opportunity to feel that after all they too are in an important spot.

DR. RUSSELL: You come back to mechanics again. Mr. Tillotson as an engineer, Regional Director, and former Superintendent thinks in good broad national park terms and he also thinks in terms of the mechanic-- of the engineer. I think that we must provide something in the mechanics of the local park administrative procedure that will give handling through the naturalist office for some of these critical problems just as we do now in the technicians offices of the Regional Office.

MR. TILLOTSON: I regret very much that I was not present to hear Mr. Kittredge's paper. It is one paper that I have been looking forward to hearing and discussing.

I am wondering how many people who come into our parks actually see and have contact with the Park Superintendent? A very large per cent meet the naturalist, at some time or other or in some way or other. It is difficult for the Superintendent personally to try to sell the park idea. The naturalist does meet the people and from that standpoint is selling the Park Service.

MR. KITTREDGE: There are people on the park staff whose duties necessitate that they take a submerged position; these include the engineers, the sanitary people, the landscape architects and several others. But the rangers and the naturalists are the two groups that are in the public eye all the time. When we build a water system, a sewer system, or a road, we don't sell the visitor anything but scenery. When a visitor comes into a park and contacts a ranger, this ranger sells the Park Service right then and there. The naturalists do not contact them at the entrance but they do contact them at the lectures, and there they have a chance not only to greet and welcome them but they have the opportunity to sell the idea of the beauty of nature. Our naturalists here are doing this with respect to geology and other things every night and every afternoon. In a National Park, a mistake is apparent if the visitor criticizes a landscape job. The landscaping should be submerged, so to speak; it should take a back seat in an area where natural plant growth is the rule. Contrast, then, the work of the landscape men and the work of our rangers and naturalists who must be right out in the public eye. The ranger and naturalist forces are the show window of the Park Service.

DR. RUSSELL: I believe that what these gentlemen and the park naturalists are striving for, Mr. Kittredge and Mr. Tillotson, is a recognition of the fact that their work goes deeper than selling their service to the public. We have seen a number of occasions where park values have been injured, in some cases even when a park naturalist was on the job. In other cases the physical development plan forges ahead in the most efficient way forgetting that some of that physical development pertains to the public contact work and that the Park Naturalist is vitally concerned with the handling of the facilities providing for the work done by engineers or landscape architects or whoever is concerned, and if we could find some way to take care of the naturalist in planning then I think that perhaps part of his question would be answered. And I say again that it is a matter of mechanics. Perhaps the Park Superintendents would agree that they would make full use of the technical services within their group. The address on "horses" that Dale King concocted extemporaneously is a gem. He was talking about a local organization when he stated it but it hits home on the park situation, the regional situation and the national situation. I wonder if the recommendation made by the Committee in this connection could not include a suggestion as to how the park naturalist should fit in to the mechanical procedure of handling plans. We know how technicians fit into the regional scheme but that system does not exist in the parks.

MR. KITTREDGE: As Mr. Doerr has said, there was a regulation several years ago to the effect that the naturalist as well as others be brought into the picture. How would it be to include a statement that the park naturalist be considered in the same manner as the landscape architect?

MR. BEATTY: I think the problem has been well summed up by Dr. Russell, and if there is no objection I am going to ask for the next paper, by Dr. Maxwell, Regional Geologist of Region Three.

Cooperation Between Naturalists and the Geologist.

Ross A. Maxwell,
Regional Geologist,
Region III.

ABSTRACT

The geologist can be of service to the Naturalist in both the research and the interpretive programs. Naturalists will find the geological staff helpful in conducting or collaborating in research essential to the development of the park story or in planning research programs to be carried out by seasonal personnel or cooperating agencies. The specialists' viewpoint will be useful in reviewing, or when advisable in preparing, popular articles on the geology of the parks. His advice also may be sought as consultant in developing park utilities when this work involves geologic considerations, and in the preparation of interpretive sheets and museum plans.

Each of the four Regional Offices have a geological staff. It is the duty of these geologists to give of their services when and where they are needed in park areas under the jurisdiction of the National Park Service. Much of their time is occupied with the geological inspection and review of the CCC work program in the State, county, and metropolitan areas. Yet they are also available for geological investigations in National Park, Monument, and Recreational Areas. This not only includes the geological approval of the CCC program in National areas, but this geological staff is also willing and glad to cooperate with the Park Naturalists in any way that they can in any area where they can be of assistance.

Most of our parks have at least one point of geological interest which will appeal to the visitor if presented to show the relationship between geology and the other sciences. For example: topographic features, soils, water, and the climate have played an important role in the location and formation of some of our archaelogical and historical sites. Furthermore, there is a relationship between archaeology and geology evidenced by the character of rocks used by early man in his home and in his tools. There are also geological reasons for the cliffs and caves in which he sought protection and home sites. All too frequently this part of the story is omitted.

There is even a closer relationship between the geological features and the biological sciences. Orogenic forces were in the main responsible for the origin and formation of the mountains, plateaus, plains, and ocean basins. These physical features influence climate, and climate is certainly one of the controlling factors in the distribution of the plant life. The terrain, climate, and vegetation have all had some bearing upon the types and distribution of the animal life, including the human kind.

It is needless to mention that geological features, such as mountains, volcanos, canyons, caves, and to a lesser extent, rocks, fossils, and minerals appeal to the laymen. Few are interested in the technical details and, in most instances, are undoubtedly bored if forced to listen. Nevertheless, a simple, streamlined, non-technical story concerning the significant geological features of the area will arrest the visitors' attention. If the majority of the park visitors are not interested, then the story needs reexamination, reorganization, and a more appealing presentation.

The geologist stands ready to aid the naturalist program in the following ways:

1. By research (collecting field data and abstracting technical reports).

2. By preparing the technical geological history of the area.

3. By adapting these data, in collaboration with the resident naturalist forces, for public presentation.

The Regional Geologist will render service to the naturalist program by doing research in areas where geological assistance is needed. Then, after the detailed facts have been obtained, aid the Park Naturalist in preparing the oral story or edit the leaflets that are given to the park visitors. He may also aid in collecting and arranging displays of specimens in museums or trailside exhibits. He may be of service to the naturalist who is not trained in geology by aiding him in organizing the geological story, arranging or adding new specimens in museum exhibits, or assembling basic data from technical journals and bulletins for the preparation of geological stories.

In most of the parks and monuments temporary rangers, ranger naturalists, etc., are added to the staff for the travel season. All too frequently these men have little knowledge of the geology about which they will be attempting to answer questions. They report at a time when the regular naturalist staff is overworked. Perhaps it might not be out of place for the Regional Geologist to aid the regular naturalist staff in conducting a short geological school that would give the temporary men more background for answering the many and varied questions asked by park visitors.

Fortunately, in some of the parks, one of the naturalists is a graduate geologist, or has had considerable geological training. Their geological knowledge, plus the pertinent information they possess concerning other features of the park, places them in an excellent position to prepare the geological story. Unfortunately, however, most park naturalists become so burdened with multitudinous and sometimes unrelated tasks that they have little time for research. If they do perform the research required for the preparation of the geological presentation, it is frequently conducted at the expense of the interpretive program.

In a few instances, CCC geological foremen have been able to achieve gratifying results from field research in park areas. True enough, these men have numerous duties to perform, but in most cases they probably have more time for field research than do the naturalists. In my opinion, the superintendent of an area notable for its geological phenomena, who does not seek geological assistance or encourage the employment of geological foremen in CCC camps, is missing an important opportunity to advance its purposes.

Professors and graduate students from universities, and research technicians from scientific institutions find interesting research problems in most park and monument areas. This is a possibility that should not be overlooked, for these men are generally willing to cooperate by giving copies of their findings to the National Park Service. Their reports may be of a nature that will materially improve and enhance the geological story of the area.

Geologists may further assist the naturalists by reviewing and commenting on museum exhibit plans. Technical guidance saves time in the actual arrangement of the exhibit material, and frequently results in more interesting and significant exhibits. Naturalists may find it helpful if the geologist will collect and label a standard reference set of rock, mineral, and fossil specimens from the area. The number on the specimen should correspond to a card index, where brief but explicit descriptions of the specimen with interesting facts and important uses can be obtained.

By attending the lectures or accompanying some of the parties which are under the guidance of the naturalists, the geologist can be of assistance by later preparing a talk for these interpreters which will emphasize some of the highlights of the geological story of the area.

MR. BEATTY: I think Dr. Maxwell has given a very clear picture of how the Regional Geologist can assist the park naturalist. The next speaker will be Chief Ranger, Perry Brown who will talk to us about "Cooperation Between Park Naturalist and Park Ranger."

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Cooperation Between Naturalists and The Park Ranger

Perry Brown,
Chief Ranger,
Grand Canyon National Park.

ABSTRACT

The chief duties of the rangers and of the naturalists consist of meeting and informing the public about the parks. Both wear the uniform of the National Park Service and both have authority to enforce the park's rules and regulations. The rangers and naturalists should both have scientific backgrounds. The ranger department has been set up to protect the park and the visitors, while the naturalists interpret the natural features of the area. The ranger department helps the naturalists in carrying on interpretive activities; likewise, the naturalists help the rangers in looking up specialized information, reporting fires, regulating traffic, etc. In slack seasons it might be worthwhile to hold conferences of rangers and naturalists in order to exchange information and ideas. The two departments should also cooperate in training seasonal personnel. The purpose of the work of both departments is the betterment of the National Park Service.

The naturalist department and the ranger department are united by a common bond - that of selling the National Park Service to the public. It seems to me that of all the duties performed by these two departments public service is the most important. With the time allotted for this talk it is hoped that I may be able to bring out the most important points on cooperation between the naturalist and ranger departments.

Before going any further I would like to say that the relations between these two departments in Grand Canyon National Park have been pleasant in the past and will continue to be that way.

But to continue with this discussion, there are several things that must be realized in approaching the subject of cooperation between the ranger and naturalist departments. Of primary importance among these is the similarity between the two departments.

The chief duties of the rangers and naturalists as well consist of meeting and informing the public, and the National Park Service must stand or fall according to the impressions conveyed.

Both the rangers and the naturalists wear the uniform of the National Park Service, and, as you all know, anyone who wears this uniform is considered a ranger. Such is the public's idea, - even the well-informed public. Together with the uniform of the Service, ranger-naturalists wear a badge and have the same authority to enforce the park's rules and regulations as a ranger.

Another similarity between the two departments are the qualifications which include, more or less, a scientific background. In keeping with this thought, nearly all of our rangers at Grand Canyon possess degrees in scientific subjects, or are otherwise qualified.

Although these two operations have likenesses, their activities differ to some extent. Let me quote in part from the Act of Congress which established the National Park Service (August 25, 1916): "* * * which purpose is to conserve the scenery and the natural and historic objects and the wild life therein, and to provide for the enjoyment of the same * * * of future generations". Under the provisions of this Act, then, the ranger department has been set up for the protection of the park and park visitors, and the naturalist department for the interpretation of the natural features of the park. Yet to function properly both departments must cooperate.

It is assumed that this cooperation exists throughout the National Park System, as is represented during the length of this conference by supplementing naturalist personnel with ranger personnel to carry on the regularly-scheduled naturalist activities at Grand Canyon. These activities at this time include the operation of the Yavapai Observation Station and Museum and the evening lectures at the Bright Angel Lodge.

With the limited number of personnel in both departments the need for this cooperation becomes more apparent. The naturalists cooperate with the rangers by giving out coordinated information and stand ready to fill in when sudden emergencies call rangers from their regular posts. Other points of cooperation exist when members of the naturalist department assist rangers in looking up specialized information, in preparing articles of general interest concerning the park, in reporting fires, regulating traffic, and reporting conditions in the park which are in need of being remedied.

Each department, then, is dependent to some extent upon the other for the successful operation of their respective activities - in the end both striving together for the betterment and recognition of the Service. How is this cooperation going to be maintained? To achieve this, the following suggestions are offered:

As we all know, there are periods in the year when travel to the parks becomes slack and we are less rushed. At such times, it seems to me, there would be considerable benefit derived by holding conferences or seminars, consisting of the rangers and the naturalists, for the exchange of important information and ideas. Subjects could be taken up which would consist of the scientific features upon which the park is founded so that the personnel of these two departments would be qualified to give consistent and reliable information to the public. These seminars would serve to coordinate the information given out by these divisions.

This procedure would afford an excellent opportunity for the rangers to receive instructions in the proper identification of plants and animals of the park and the art of collecting and preserving them for the park collections. This type of cooperation would be beneficial to the park in that it would assist in securing relatively complete collections of plants, mammals, birds, and other natural phenomena of the park. Also, this type of training would enable members of the ranger force, while on field trips or while stationed in outlying districts of the park, to collect and preserve any specimens not included in the collections.

It would also lead to a discussion of more or less mutual problems on the parts of the individuals taking part - discussions which could not help but be beneficial to the park. These seminars would lead to a mutual understanding of the problems faced by the two divisions, and these meetings of the rangers and naturalists would undoubtedly increase cooperation among them.

Another subject which would justify discussion at these conferences would be the preservation and protection of wildlife within the national parks, a subject in which both the naturalist and ranger departments are equally concerned.

At these seminars the rangers could lead discussions on park rules and regulations, the investigation of accidents, traffic control, and other varied ranger duties. This would be of assistance to the ranger department because the naturalists would then be equipped to handle any infraction of the regulations, or the investigation of accidents in the regular course of their duties.

Another manner in which better cooperation between the rangers and the naturalists could be achieved lies in the better solution of problems created by the use of temporary employees during seasons of heavy travel. As a rule the permanent employees try to work together, but the story concerning the seasonal employees is often different. Park visitors neither know nor care that the uniformed man talking to them at a checking station or at a museum is, or is not, a temporary employee. To them he is a ranger and as such he represents the National Park Service. It is strange but

true that usually one unfavorable impression from one of these men is remembered longer than a half dozen excellent contacts with other uniformed personnel. Therefore, it is of utmost importance to the park to see that these men properly represent it.

It is felt that cooperation between the rangers and the naturalists might best be achieved by the training of the seasonal employees of these departments together. By this is meant their entire training, including the giving of information, history of the park, first aid, park rules and regulations, fire fighting, and so forth. Training of the seasonal personnel of both departments together would no doubt increase their efficiency and allow for a better understanding of the problems faced by both departments.

We must remember that we are all working for the betterment of the National Park Service. Bearing that in mind, I hope that the ideas expressed in this talk may lead to a better understanding for cooperation between the ranger and naturalist departments.

MR. BEATTY: I would like, personally, to congratulate Mr. Brown upon his paper. Unfortunately we do not have in many of our parks too ideal a situation existing between these two departments. I don't know what your feelings are on this subject but I wish that every member of the naturalist and ranger staffs could read this paper.

MR. WALKER: I move that this assembly confer on Mr. Brown the honorary degree of Park Naturalist.

MR. BEATTY: We have another Chief Ranger in our midst. Do you wish to make a few remarks Mr. Herschler?

MR. HERSCHLER: I don't think there is anything that I can add since Perry Brown has said nearly everything that I wanted to say. I started in this Service with the intention of being on the naturalist staff. I was sidetracked and got into the administrative end. Going back to Superintendent Kittredge's reference to the prima donna (and I don't think there is any chance of that happening in Rocky Mountain), you may recall that many years ago a boy was lost and the Chief Ranger got a lot of publicity as a result of it. After the search ended I recall the Superintendent saying that he never got any publicity. The Chief Ranger should not have gotten any publicity either because the boy was never found.

Ray Gregg and I have quite a lot of fun. I compete with him quite often. I don't think Ray is trying to shove a load off on me, and every once in a while we have him doing something for the rangers.

MR. BEATTY: Thank you, Barton. The whole group is highly pleased that you have been able to attend this conference.

DR. RUSSELL: There is a district ranger here who attends by virtue of the fact that he is doing naturalist work--Mr. Chick of Shenandoah National Park.

MR. CHICK: I am glad to be able to do this sort of thing in Shenandoah. Being a district ranger, I can call on the other rangers for assistance; I have done that a number of times and the Chief Ranger has been very cooperative and has helped out in many ways. I think we can depart a little from our scientific discussions to let people know what the Service is trying to do and what the branches of the Service are striving for. I know the Chief Rangers would be very willing to do that for themselves. They are trying to get along in the same way that we are trying to get along. The same thing may be applied to the other technical branches and I don't want to steal Mr. Saari's stuff but I do want to say that I have called on the Foresters in the park to conduct an entire meeting.

I feel that we should, on occasion, depart from our discussions of the park's natural history and tell the visitors about what the various branches of the Service are doing. In the long run, we are all working toward the same interests. In doing this I have had the assistance of the Chief Ranger, who would address an audience on the subject of the duties of the park rangers, and of the park's forester. Other technicians might also be called to discuss their work. When Dr. Russell visited the park he mentioned to the audience, which he addressed there, what a lot of work had been done by people behind the scenes.

We find that many park visitors are interested in the activities of the Civilian Conservation Corps; I feel that we are doing a great deal of good by notifying the public about the work of these various agencies.

MR. BEATTY: In Yosemite for many years we have conducted a naturalist evening campfire program. Next year it is going to be called the Park Service program. Working through the Superintendent, we have arranged with the Ranger Department, The Forestry Department, and the various other branches all of whom will have a definite part in that program. The naturalist of course, will contribute, but all departments will have a place in it. We hope in that way to improve the relationship between all branches of the park.

MR. CONDON: I want to get back to Mr. Brown's paper. In his comments he remarked that some of the friction between the two departments is probably due to temporary personnel, and he suggested that the ranger-naturalist and the temporary ranger be given training together. In that way there would be greater cooperation. In our park that experiment has been carried out and has proven to be good. Some years ago I served as a ranger-naturalist; although I was 6 feet 3 inches tall I was still a butterfly-chaser. No effort was made to have the two groups train together. Today in our pre-season training trips the seasonal

rangers and the season ranger-naturalists are taken out together. Not all of these temporary men are the administrative officers' choice for the positions. Some of them are young men who come out to the west to have a lot of fun. But the opportunity they have for learning a number of interesting things on this trip tends to cut down that ridicule of the naturalists being "pansy pickers and butterfly chasers". I think the same situation exists in other parks. I know that in Yosemite rangers as well as naturalists go out on these conducted pre-season trips.

MR. HERSCHLER: There is one other thing that Perry brought out in his paper. He mentioned that as far as the visitor is concerned, there is no difference whatever between permanent and seasonal employees. If we go through our employment papers some of them are classed as temporary park rangers. I wonder if this group would not go on record as recommending the abandonment of that word "temporary"? It would take a lot of stigma out of it.

MR. BEATTY: Mr. Herschler has suggested that we go on record as recommending the abandonment of the name "temporary" and using the word "seasonal". I think it is just by force of habit that we continue to use the word "temporary".

MR. BEATTY: We will proceed with the meeting. If there is no further discussion I will call on Mr. Saari to present the next paper.

Cooperation Between Naturalists and The Fire Protection Personnel

Viljo W. Saari,
Regional Forester,
Region III.

ABSTRACT

Fires constitute the greatest menace to the enjoyment of the national parks and monuments. Fire suppression takes priority over everything except the safeguarding of human life. All fires caused by human agency are preventable. Education is the best means of fire prevention. Naturalists have opportunity and responsibility in this fire prevention campaign. Every large fire requires more overhead than is ordinarily locally available. Some naturalists do and all can assist during fire emergencies. To do so efficiently involves training obtained by attendance and participation in fire schools.

During the recent Region III Inspectors' Conference, Regional Director Tillotson stated that the National Park Service is no longer to be considered a service devoted exclusively to National Park Service areas, but that it is a National Service to the parks of the Nation. Its field of interest and cooperation has been expanded to embrace all parks, including National, State, County, and Metropolitan areas.

If the Service is to maintain its position of leadership in park work, it appears desirable periodically to re-examine our own house to see that it is in order and to reassure ourselves that the various divisions within the Regional Offices and the field are cooperating most effectively to carry out the responsibilities of the Service.

The protection of its areas is a fundamental responsibility of the National Park Service. Forest fires constitute one of the greatest threats to the preservation of the National Park System for the enjoyment of present and future generations. Therefore, it is essential that all practical steps be taken to prevent destruction of park values by fire.

The responsibility for the protection of the National Park areas from fire lies directly with the Superintendent or Custodian who, in turn, usually delegates that responsibility to the Chief Ranger and the park ranger organization.

It is the responsibility of the Branch of Forestry to give technical direction to all forestry and fire protection work. The general policies for this work are stated in the Manual of the Branch of Forestry, the latest edition of which was approved by the Director on September 6, 1938.

During the ten-year period 1930-39, inclusive, the National Parks and Monuments reported a total of 3,888 reportable fires. Of the total, 1,135 were caused by lightning, and the balance, 2,753, were man-caused and hence preventable. The total acreage burned during the ten-year period amounted to 74,648 acres; of this 49,871 acres, or 67%, were burned in 21 fires, each of which exceeded 500 acres in extent.

In considering these figures, several questions come to mind: Why were so large a percentage of the fires man-caused? Why was the burned acreage so great? To the first, one of the answers is, improperly directed or inadequate fire prevention endeavor. To the second question, perhaps the primary answer is inaccessibility and the lack of adequate competent supervisory personnel to handle large fires.

How can such situations be corrected? The obvious answer is: The employment of more protection personnel, the strengthening of the detection system, and the construction of additional fire trails and protection motorways to make the remote areas more accessible.

We all know that increases in personnel, whether protection, administrative, or interpretive, are very difficult to obtain. Similarly, additional physical improvements, especially protection motorways, tend to impair the wilderness character of the areas. Therefore, the obvious solutions must be discounted, or at least regarded as not of immediate attainment, and it becomes necessary to consider other possible solutions to the problem.

I would like to present the Conference the following question: Are we making the best use of all of the personnel available in the parks at the present time? In fire prevention work, for example, are the park rangers and naturalists taking full advantage of their opportunities to sell fire prevention to the visiting public and in this manner reduce the percentage of man-caused fires? It is not enough simply to place signs and to admonish the public to be careful with fire. Many people actually do not know how to be careful with fire and, therefore, the repetition of such a platitude does not make a sufficient impression to result in the adoption of practical fire prevention measures. Essentially, our problem with respect to man-caused fires is a matter of public education and interpretation which ties in with the field of the naturalist.

How much more effective fire prevention could be if the park naturalist would stop his auto caravan at the edge of a large burn and tell the visitors briefly how it happened, when it occurred, how it could have been prevented, and the countless years it will take nature to restore the destroyed vegetation. Brief cautionary statements during campfire talks and lectures, and the use of dioramas in museum displays, are other methods of putting across sound fire prevention practices. During trail trips point out the fire lookouts to the public and encourage the visitor to visit the lookout station. In this manner they will gain a first-hand knowledge of the effort the Service is making in forest protection.

The psychological tenet that "knowledge creates interest," which has worked so well in the naturalist program, also applies to fire prevention work.

The vegetative cover may represent a dominant value in some areas, a collateral value in others, and a limited resource only in a few instances. In every case the vegetative cover of an area constitutes a field laboratory for the naturalist, not only of itself but for the varied forms of life and phenomena which it shields and supports.

Going back to the figures once more, it will be recalled that of the total 74,648 acres burned as a result of 3,888 fires, 49,871 acres, or 67% of the acreage, was burned as a result of 21 fires which reached Class "E" proportions. We stated that one of the primary reasons for the burned acreage was the lack of trained overhead to handle large fires. It can readily be seen that we cannot get very far by simply requesting more protection personnel because each national park may have only one large fire

or less per season, or perhaps only one large fire in ten years. Therefore, the provision of a complete protection overhead to handle the occasional fire emergency is not always economically justified.

It appears that here again is an opportunity for the park naturalists to come to the help of the ranger organization. The handline of large fires requires a correspondingly large trained overhead, such as fire dispatchers, radio operators, camp bosses, scouts, fire line locators, division bosses, sector bosses, and crew bosses. For example, how much better fire dispatching service a park naturalist, familiar with the local park conditions and the park protection facilities, could give than a regional forester who has never been in the park before. The same is true in filling other positions where a knowledge of local conditions is one of the most important qualifications.

Park naturalists and ranger naturalists could "pinch-hit" in many of these positions if given basic training along fire protection lines. During the fire protection training school, held at Yellowstone National Park last spring, Assistant Park Naturalist Condon and other members of the naturalist force participated in all of the sessions of the school. I am advised by the Chief of Forestry that these men took an active part in fire suppression and were of great assistance to the ranger organization during the fire emergency at Yellowstone three months ago.

The basic training is available to all personnel in the fire protection training schools which are held annually in the national parks and monuments having fire problems. Your participation in the fire schools is earnestly invited.

The objective of the National Park Service in fire protection continues to be as stated a number of years ago in the Manual of the Branch of Forestry:

> "To make the park fire protection organizations the best trained and equipped and the most efficient forest fire protection organizations in the Nation because of the high scenic and recreational values at stake."

MR. BEATTY: Mr. Saari has suggested means by which the naturalists could assist in fire prevention and fire control. Before asking for discussion I would like to see a show of hands of the permanent naturalists who at this time do not receive fire suppression instruction. About seven. I had assumed that because we had that situation in our park that it was more or less a customary procedure. Undoubtedly there will be quite a bit of comment on this question because it occurs to me that it is rather difficult to handle park visitors and fires at the same time.

MR. GREGG: I think it is important that we attend fire schools and I think most of us do so. In this way we can get a basic understanding of the latest methods in fire control. But I think our big responsibility is the thing that Mr. Saari has mentioned which is to show the public the results of fire and most of us are already doing that.

MR. BEATTY: I wonder if Dorr Yeager can add anything to that.

MR. YEAGER: The only way in which I can help in fire prevention is by means of the posters that my branch has been issuing. So far we have made three runs totalling about 1500 posters. We have distributed these to the Regional Office and the Washington Office, and I think the Regional Office has sent them out to the parks. We are prepared to make additional runs also and I would welcome any suggestions that any of you have concerning them.

In connection with the preparation of museum exhibit plans, the regional technicians--that is, the geologists, historians, foresters, biologists, etc.--play a very important part in their formulation. We have to rely on them for scientific accuracy. We can tell what to put into museum exhibit and how to put it in, but as far as accuracy of the data is concerned, we have to rely on you, and for that reason I want to emphasize the necessity that all the technicians have an opportunity to see a plan when it goes to the Regional Office. In two or three cases plans have been approved by the Regional Directors and the technicians have not had an opportunity to review them. We assumed that everything was okay, made the exhibits, and then we had a kickback from the regional technician because he had never seen the plan.

DR. NEASHAM: I think one of the greatest values to the regional office would be to have a competent museum man stationed there, or at least one who would have frequent contact with the Museum Division. I know that when a plan comes in it passes over our desks, and we may give it technical criticism, but very often weeks and months elapse before it has the attention of a competent museum man. I think Region Four is very fortunate to have Mr. Yeager there on the spot; I would suggest that Mr. Yeager come to our region once in a while--he would save us a lot of time and worry.

MR. EPPLEY: In Region Two also we should delegate someone to spend a little time at the museum laboratories. It would help us a good deal. We have difficult problems to solve, and then again some of them are so small that we cannot always send them to the central museum division offices.

MR. SCHELLBACH: I think we naturalists should go on record stressing the need for a regional museum technician. It is just as important as having a regional naturalist.

MR. ROBINSON: I happen to know that in Region One if we had a regional naturalist there would be no doubt but that he would review any plans that had to do with exhibits. Mr. Tillotson could bear that out because he is the one who set up that system. For example, we have in our department a camp division. There are no camping plans that go through our office or approved by the Regional Director until that camping specialist has okayed these plans. In our region we need a regional naturalist as well as one who knows something about museums. I am the so-called museum expert in our office and I don't know anything about museums, but I have to sign the plans because I happen to be in the Recreational Planning Section. Now if we had a Regional Naturalist there, of course he would be depended upon to sign the plans before the Regional Director would approve them.

DR. RUSSELL: I can understand Mr. Schellbach's slant. He knows very well from his experience in the Washington Office what happens if today we write justifications for a museum position. We might get it, if we are really lucky, in three or four years. It won't do any harm to justify both the naturalist and the regional museum position. However, what we need now is one Regional position that can be set up at once. I have always been optimistic on the regional naturalist problem. We must take some step to provide the personnel needed to keep in step with the rest of the organization, and there should be no further delay in filling this gap in regional organization schemes.

MR. CHICK: The matter of fire prevention or at least fighting fires has a fixed precedence over everything else in the Service; it is a highly important thing. I think our interest in forest protection should go farther than it has gone and that we should take a more active part. I would like to suggest the use of movies for this purpose. They are easily available and would serve to interest many people. Also, I would like to suggest, for those parks that do not have lookouts available, that the naturalist get suitable material that would illustrate the part that lookouts play in fire prevention. I think we should make all this a definite part of our naturalist program.

MR. GALE: We certainly make every effort to put across the forest protection and fire prevention story in Grand Teton.

MR. BEATTY: I think we are doing all in our power to acquaint the public on fire suppression and forest protection.

MR. BURNS: Regarding public information on fire prevention we consider it a legitimate part of our museum functions to use exhibits dealing with forest fire prevention. This is right along the line brought up the other day br Mr. Brockman. It is just as much within the scope of museum work to make such a display as to tell the story of the flora and fauna or geology. If it is proper to have a museum exhibit showing forest ecology I think it equally desirable to show what happens after the forest burns up. Methods used in preventing and fighting fires are of interest to the public and may be also explained in museums.

MR. JACKSON: In case of a fire the skeleton force which is required to remain at public contact work should consist of rangers rather than naturalists because in case of a fire we can more easily dispense with the interpretive men than we can with the skeleton force of rangers. By looking at it from that point of view we automatically secure a little better spirit of cooperation with the ranger force.

DR. RUSSELL: I want to mention with reference to Dr. McDougall's very clear presentation regarding correspondence procedure, that we have a prescribed correspondence procedure. It must be observed if we are to avoid the confusion which would result if individuals in the Service corresponded freely with each other. Mr. Kittredge explained why we cannot loosen up too much and allow technicians and field men to carry on correspondence with each other without causing difficulties above them.

MR. BEATTY: We will go on with the next order of business. The next paper will be presented by Cliff Presnall.

Wilderness Use in Building Human Values

Clifford C. Presnall,
Assistant Chief,
Section on National Park Wildlife.

ABSTRACT

The Western Hemisphere, and the United States in particular, has a heritage of stamina, virility, and initiative derived from the reactions between modern civilization and primitive wilderness. The conditions necessary for such reactions never existed before, and presumably never will again. Preservation of as much of this heritage as possible is the unique function of the Service, and its vital contribution to national welfare. This paper discusses some of the means whereby the wildlife component of the national park wilderness areas may be more effectively used to perpetuate this heritage, to strengthen national morale, and to help instil in Americans a greater appreciation of the duties and responsibilities of citizenship in a democracy.

For several generations the National Parks of the United States have been recognized as the ne plus ultra of scenic perfection; their natural features have called forth a plethora of superlative adjectives and their benefits to the public have been ranked among the imponderables that come from music, art and religion. There has been a tendency to build up a huge, frothy, sugar-coated tradition of sweet sentimentality beneath which the true purpose and value of National Parks is often obscured.

The present emergency requires that an inventory of all national resources, including parks, must be stripped down to essentials. Considered thus, it is evident that the true purpose of the National Parks System is to help build and maintain the stuff of which America is made: the human resources, the qualities of initiative, self-reliance, and independence which raised our nation to its present eminence and without which our place in the sun would become a blister.

It has often been said that the dual purpose of the parks is to preserve outstanding scenic, historic, or scientific areas and provide recreation and enjoyment therein to the visiting public, but those are not purposes. They are means to an end. Building human values is the one and only purpose that justifies the existence and maintenance of the National Park System. Each type of area in the system contributes in its own way to the improvement of human resources. This brief discussion will be limited to the manner in which wilderness can best aid in building human values.

A full discussion of the importance of wilderness to our national welfare would require an article of book-length. For present purposes, a bare outline of the subject will be sufficient to indicate the magnitude of National Park responsibility.

The Western Hemisphere, and the United States in particular, owes its present status to 400 years of contact between civilized man and primitive wilderness. The wilderness challenged and developed intrepid explorers; it made stern demands upon the strength and endurance of the pioneers; it yielded only to self-reliant settlers; and among those who lived in it there developed a buoyant optimism, a love of freedom, and a wholesome philosophy that comes only from close association with nature. The conditions for such contacts never existed before, and presumably never will again. The vast momentum of human energy, resourcefulness and independence, built up through 400 years of struggle with the wilderness, is the thing that today distinguishes us from all other nations. We have a priceless heritage of stamina, virility, and initiative derived from the reactions between civilization and wilderness. Preservation of as much of this heritage as possible is the unique function of the National Park Service, and its vital contribution to national welfare.

Among the practical problems incident to performance of this unique function, those concerned with wildlife have proven particularly difficult to solve. It is impossible to maintain an absolute wilderness in a park visited annually by half a million people. It is equally impossible to allow each visitor to completely experience his own private idea of outdoor recreation. A compromise must be made in every wildlife management program, a compromise that provides the maximum of wilderness experience consistent with enjoyment of such experiences by a large proportion of those who visit the parks. The complex nature of the problem can be best demonstrated by brief discussions of a few specific wildlife management problems.

The bear-visitor problem is a classic example. Should we provide a staged show to which large numbers of people may motor in luxurious ease, or should we kill all the hold up bears, so that the sight of a bear will become the infrequent reward of a strenuous trail trip? Experiments that are starting in Sequoia and Yosemite lead us to hope for an eventual compromise in which a relatively large proportion of the visitors will be led to seek the thrill of photographing a bear in natural surroundings, even though only a few rods away from a highway. It will take several years to educate bears and people away from the zoo idea but the net benefit to the public deserves our most patient effort.

Dogs in National Parks constitute another problem of immediate concern. It is illogical to permit dogs brought in by a minority of the visitors to run at large, frightening wildlife to such an extent as to interfere with the enjoyment of all visitors; yet it is obviously unfair to penalize a dog fancier by putting him to the extra time and expense of kenneling his dog at an entrance gate far from where he wishes to leave the park. Here again a compromise must be sought, and a difficult law enforcement problem solved. Reports from several parks indicate that although present practice is an attempt at a solution, it is still far from satisfactory. It would seem that the existing dog and cat regulation, which states that the animals must be "on leash, crated, or otherwise under physical restrictive control at all times," is as fair a compromise as can be made. However, it demands rigid enforcement; any leniency around the campgrounds or residences will induce a lax attitude on the part of dog owners when they are out alone on the trails--the very place where the most rigid restriction is necessary.

The management of uncommon or endangered species presents difficulties peculiar to each specific case. At Yellowstone, Wind Cave, Platt, and Colorado National Monument we are faced with the triple problem of preserving buffalo, preventing abuse of the range, and giving the public a close acquaintance with these monarchs of the plains. Yet conditions vary so greatly as to require entirely different methods in the four areas. At Yellowstone it has been suggested that the buffalo ranch be eliminated. The ideal of wilderness preservation would require complete eradication

of the ranch buildings, hay fields, corrals, and show pasture even though this would force a very drastic reduction in the herd and compel the animals to seek range inaccessible to the great majority of the visiting public. But, as previously stated, wilderness preservation is justifiable only as a means of achieving wilderness use for the benefit of humanity. It would seem that the existing buffalo management program could be modified toward a more naturalistic presentation, but such modification should not be carried to the point where preservation per se takes precedence over use.

In seeking a balance between preservation and use it is apparent that the optimum condition must often entail a seeming overemphasis of preservation, since we must maintain a degree of preservation sufficient to insure not only present use but the continuation of wilderness use in perpetuity. The trumpeter swan program is a case in point. The precarious condition of that species and the urgency of saving it from extinction necessitate seeming over-emphasis of preservation. Regulations forbidding all human encroachment upon swan nesting sites until the cygnets have been hatched are amply justifiable in order to be more certain that future generations can benefit from acquaintance with this typically wilderness species.

The four management problems briefly stated in the foregoing paragraphs have been the subjects of countless hours of discussion. Great diversity of opinion has been expressed both within the Service and by outside agencies or individuals. There is need for greater unanimity of thought and action, for a well-considered and widely accepted criterion upon which to judge the practical value of all National Park Service activities related to wilderness. Perhaps the following statements may serve as a basis from which to evolve a clarification of the National Park Service wilderness policy.

There can be no blanket wilderness policy for the entire National Park System; it must vary to suit the amount and kind of emphasis placed upon wilderness values in the several types of areas within the system. The major policy, around which all necessary variations can be built, concerns itself with the National Parks and Monuments in which primitive values are predominant, areas containing superlative scenic or scientific features that most effectively contribute to national welfare through preservation and use of wilderness in building human values. Preservation of the primitive is necessary and desirable only to the extent that it permits optimum use now and in the future. Optimum use connotes enjoyment of wilderness benefits in as many ways and by as many people as can be permitted without jeopardizing the perpetuation of such use. Considering the fallibility of human foresight, it follows that present use should be kept slightly below the immediately apparent permissible limits.

Through a recognition and application of these principles, it is felt that national park wilderness areas may be more effectively used to perpetuate the heritage received from the pioneers, to strengthen national

morale, and to help instil in Americans a greater appreciation of the duties and responsibilities of citizenship in a democracy. By emphasis of true ideals and purposes an increasing proportion of park visitors may have closer association with the wilderness and thus acquire an increased pride in America, a new sense of the meaning of freedom, and a stronger desire for the continuation of such freedom. It has been well said that free people are motivated to their highest attainments by ideals, not by plans. Initiative is not developed by adherence to a multitude of circumscribing rules. A certain amount of regulation is necessary, but freedom is necessary if we are to continue to be a nation of free people.

DR. RUSSELL: Mr. Presnall's paper is closely related to the paper that I am going to present so it is reasonable that the discussion of the two should go together. I think I can give you the facts that I wish to emphasize without reading the entire paper. We can put the full paper into the minutes.

The National Park Service in National Defense

Carl P. Russell,
Supervisor,
Branch of Research and Interpretation.

ABSTRACT

During the past year the Service has collaborated with the Bureau of the Budget and Congressional Committees in surveying National Park programs for the purpose of determining the part that may be played by the National Park Service in preparing the defenses of the country. These studies in common with other investigations made by conservationists and educators, generally, point to the fact that preservation of American traditions, the teaching of history and the interpretation of natural history, promote patriotism, sustain morale and inspire love for country. The National Park Service is most advantageously situated to contribute to educational programs along these lines. It is, perhaps, one of the most potent agencies in imparting an understanding of the fundamental principles of American democracy and it works ideally toward the preparedness of the national mind.

In 1940 more than in any year since the National Park Service was established field officers and key men in the Washington office have turned introspective. In collaboration with budget officials and congressional committees they have surveyed the varied programs of the Service and analyzed the effect of National Park Service activities in the America preparing its defenses.

In 1940 conservationists and educators, generally, throughout the United States have, as never before, engaged in a searching examination of existing methods of providing citizens with a basis of knowledge of things American. They have done this because they believe that Democracy depends upon the wisdom of the people; because they believe that the people of the United States should be self-reliant in answering weighty questions. Reports and publications prepared in connection with these studies reflect the determination of the investigators to defend their institutions and their ideals against the anti-social forces now sweeping the world; usually they draw the conclusion that preservation of American traditions, the teaching of history and the popular interpretation of natural history can make important contribution to the preparedness program of the United States.

One of the discerning observations made in these studies of social needs comes from the pen of Archibald MacLeish of the Library of Congress:

> "The young generation in America distrusts statements of principle, declaration of moral purpose--all slogans are suspect--all tags are phony. This is a more sobering fact than our lack of planes, our lack of anti-aircraft guns or any other weakness in our physical preparedness. If the young generation in America is distrustful of all moral judgment then it is incapable of using the only weapon with which fascism can be fought--the moral conviction that fascism is evil and that a free society of men is worth fighting for. If all convictions of "better" or "worse" are fake, then there is nothing real and permanent for which men are willing to fight; the moral and mental unpreparedness of the country is worse than its unpreparedness in arms."

In this circumstance of mental unpreparedness is a formidable threat--a threat that involves all that we are, and all that we have in the way of spiritual, political and material possessions. If ever there was a challenge thrown before the men and women, and especially the youth of America, it is the problem posed by the circumstance of unpreparedness of the National mind. It is a challenge that calls for a great deal of practical thinking. Fear of actual attack by the war machine has focused our attention upon defense in terms of soldiers, supplies, guns and projectiles. Every effort is being made to provide defense against physical attack from without and sedition from within. The same effort must be

directed toward preparedness of the mind. Our true preparedness must be based upon unshakeable faith; armament must be backed by the deep rooted conviction of the tenets of the freedom that is ours.

The United States of America will persist as long as we who have inherited it believe that it is enormously worth preserving. We have taken it for granted that we may keep on forever celebrating the Fourth of July, but now it begins to dawn upon us that great nations do die. If ours is not to perish each citizen must discern what the United States is, really, and what it means.

In the historical shrines and the beauty spots of the National Park Service is a most precious part of our national heritage and ideal physical units perfectly prepared to assist the citizen in discerning what the United States really is. Gradually it has become apparent to a multitude of Americans that an important educational aspect is to be found in the public enjoyment of the national parks; that scenic and scientific appreciation, historical mindedness and national patriotism are intensified through their use. The Service has committed itself to a policy of preserving and presenting by striking examples, the comprehensive and varied story of earth forces and the progress of civilization in this country. From the standpoint of scope, the National Park stories now connect and constitute expression of much that is essentially American. In short, the National Park Service is most advantageously situated to develop a national perspective in social traditions and aesthetic appreciation of all that America has and stands for. It is an agency ready-made and prepared to contribute to the maintenance of confidence in the American way.

Making this wealth of national expression accessible and understood to millions of citizens is a great responsibility. It is, also, a great opportunity,--an opportunity that may well be seized just now and utilized fully, for it has a bearing upon national morale. In 1939, sixteen and a half million people enjoyed the areas under the administration of the National Park Service. Six and a half million visitors used the services of the park naturalists and their assistants. More millions enjoyed the programs offered by historians and their aides. In this large-scale program of teaching there is little that smacks of the academic; it is a part of the park visitors' vacation and quite in tune with his play-time attitude. It is recreation, I should say, in the best sense of the word.

To determine the effectiveness of the naturalist program and to obtain the frank appraisal of park visitors many of the park naturalists in 1940 suggested to participants in their guided trips and lectures that written comment be made on their personal reaction to the work. Thousands of letters were received and they continue to come. A few sample expressions will yield the gist of the response.

Instills Love of Country.

Thoughtful persons deplore the widespread sardonic spirit of doubt in America as to whether anything is worth fighting to maintain. Nothing could be a more effective antidote to this spirit than the work of the ranger-naturalists in telling so many thousands of their countrymen vivid chapters from the story of the good land which has become our heritage.--John M. Maguire, Harvard University.

Here is an informal, functional type of learning for both grown-up and child. It is part of the American outdoor heritage that city children especially need to round out their growing up.--Elizabeth Simpson, Berkeley, California.

I have been impressed by the great educational value of the naturalist service from a National standpoint. Citizens get a far wider and deeper grasp of the great and varied resources of our country through these National Park experiences than the majority could get in any other way. These services are a permanent contribution to national defense, which, after all, is primarily a psychological and moral attitude.--J. A. Leighton, Ohio State University.

Carl Sharsmith, the ranger-naturalist, leading the folks in songs and talking to them about their mountains seemed to be the spirit of democratic America at its best. Real patriotism does not have its deepest roots in a man-made flag, or institution, but in the very earth on which we live and for which the forefathers fought and out of which still comes most of our living. Respect and love for this country is what the ranger-naturalist teaches, and there can never be enough of that--Franz Gerstacker, San Francisco.

The greatness of the United States is largely invested in her marvellous natural treasures. The ranger-naturalist, the link between the public and the deeper values of the national parks, has a most important function in fostering the educational and even sentimental value of the greatest of all American institutions.--Erik von Kuehnelt-Leddihn, St. Peters College, Jersey City, N. J.

The National Park Service interpretive organization is doing a monumental work. Its activities are of the finest type for enlarging American life. The National Parks are, in my opinion, our Nation's expression of its better self.--Douglas S. Ward, Greeley, Colo.

It is highly important these troubled days that Americans learn of America in a way that endears it to their hearts. The national parks are a chain of natural jewels which, when understood in their full significance, swell this natural love of our country. Ranger-naturalist activity is doing more than any other one move to acquaint Americans with the true value of these surroundings....Preparedness is the keynote of all decisions now, but it is preparedness in character that is needed as much or more than in arms.--Sam Campbell, Three Lakes, Wisc.

An Antidote to War Hysteria.

The strength of our people came originally from the hills, from the primitive and the natural. We can use more of that strength now. If there ever was time when the natural features of our World need interpretation it is the time when the public seeks escape from the puzzling distractions of today's conditions. The ranger-naturalist provide the needed interpretation.--Stanley A. Cain.

In this world filled with turmoil it is a godsend to not only those who make the hikes, but thousands of others who visit the national parks, to have opportunity of thinking about something else other than the strife in the world.--Albert E. Sigal, Oakland, Calif.

National defense includes maintaining the morale of the nation--fostering religious, educational and recreational aspects of our national life. Without good morale 'the people perish.' In my opinion, as the shadow of war deepens over this country our people must be given increased opportunity of developing those mental and moral qualities that will keep us from national hysteria. National park activities help to give us a mental balance that will enable us to carry on.--W. A. R. Bruehl, Jr., Cincinnati, Ohio.

In addition to the obvious benefits of the national parks educational work I should like to mention two aspects which I think are especially important. It makes for clear, calm common-sense reasoning in these days of crisis. It gives stimulation to new and progressive ideas. Yosemite has helped me to get my feet more squarely on the ground in this respect.--Walter M. Miller.

Teaches Conservation Needs.

Through two summers of residence at Mt. Rainier and through travels which have taken me to many other of our national parks I have come to know the worth of the naturalist service and to feel that without it our parks can be little more than well policed recreational areas....I doubt if there is any other educational service which reaches and impresses so large a section of the public with direct teaching in the out-of-doors. And I doubt also if there is any educational agency that does so much good with each dollar spent. The thousands of people who attend the campfire talks and nature hikes cannot help but find some lasting satisfaction good for them and good for the country. Each one is certainly more appreciative of the meaning and need for conservation of our national resources and a little more proud of the country in which he lives.—Max Demorest, Yale University.

As park visitors understand the national park idea and management practices less money need be spent in protection. Many of our national mistakes of the past were due to a lack of public understanding of nature and her fine balances. The problems of soil saving, hawk and owl values, need for some predator population, recreational values of natural beauties, etc., should be understood by the citizen. The park naturalist staff can help to impart that understanding.—Mae E. Dennis, Spokane, Washington.

Fosters Appreciation of Natural Values.

The work done by naturalists to present to the visiting public the features of the national parks so that they may be understood and enjoyed is, to my mind, indispensable. Without it the parks would become only picnic grounds, to be looked at of course, but not to be understood and thoroughly enjoyed. The educational service afforded by the naturalist organization is a most important and valuable part of our system of American education.—Leland C. Wyman, Boston University.

The guided nature walks, the Junior Nature School and the museum lectures make Yosemite my ideal vacation spot. My son looks forward all year to the time when he can return to Nature School and the able guidance of Mr. Heile. He has learned such a number of valuable things, including the way to enjoy all of the great out doors.—Frances Walters, San Leandro, Calif.

In my opinion the ranger-naturalist service is the primary reason why many people return to the national parks. It is the

service that individualizes these areas and sets them apart. I believe this service constitutes the largest field class today. It is in reality a great school of the outdoors.--W. Helms, Lomita Park, Calif.

I appreciate the fact that there is a tremendous amount of work in the supervision of a national park. It occurs to me, too, that all of this work finds its expression in the public contacts made by the ranger naturalist. Without this naturalist service little of the other work would be known or appreciated by the public--H. Sterling Taylor, Berkeley, Calif.

Most of us have little time in a busy work-a-day world to pick up the knowledge so necessary to one's understanding and appreciation of the beauties of nature. When one gets this knowledge in such a pleasant way as is possible in the parks, it is to be recognized as a special benefit.--Olga M. Staatz, Milwaukee, Wisc.

I think that it is the service of the ranger-naturalists which makes people want to go back to the national parks after their first visits. It makes for a realization of the splendid thing the government is doing in setting these areas aside for public enjoyment and popular education.--Mrs. Robert R. Butturff, The White House.

The National Park Service has been reaching the public with the organized story of America for twenty years. Millions of citizens have enjoyed this offering and now a notable body of park users are prepared to argue for the continued presentation of the story; a presentation that is effective now in time of international turmoil and will always be effective in time of world peace. A significant outgrowth of the naturalist service developed in the National Parks is the nation-wide activity in teaching the values of natural resources in state, county and municipal parks. Not until this year was it known how extensive is the park naturalist work throughout the country. A survey has been completed within the past few months, and has been reported upon to this conference by Mr. Robinson of Richmond. He reveals that 77 programs employing more than 500 naturalists in 289 areas are being conducted along the same lines as are the naturalist programs in national parks. The programs studied in connection with the survey are public programs. If field programs conducted by universities, schools and clubs for the benefit of students and club members are counted the total number of areas involved becomes much larger and the geographic extent of the work is expanded considerably.

These programs feature lectures--given outdoors before a campfire, or in an appropriate museum or historic setting; museum exhibits; and

guided field trips. Subjects covered include plants, animals, geology, archeology, ethnology and history. The methods and objectives are the same as those defined for the naturalist programs of the National Park Service and it is obvious that the work in state parks is quite as effective as is the accomplishment of the national park naturalists. The fundamentals of nature appreciation can be taught at Bear Mountain, New York, quite as satisfactorily as is possible in Yosemite National Park. Wherever in natural beauty spots crowds of people gather on recreation bent there can the naturalist accomplish his interpretive objectives.

From the beginnings made more than twenty years ago in Yosemite National Park the field method of studying nature in the open rather than from textbooks and in laboratories has spread throughout the nation. The survey referred to previously reveals the following classification of the naturalists programs offered to the public:

Hotel	1	State Departments	12
Hospital	1	Metropolitan Districts	3
Societies, Institutes, etc.	13	County commissions	2
Museums	4	City Park & Recreation Depts.	15
Sanctuaries	2	National Park Service Units	23
Botanical Gardens	1		

Thirty-three states and Hawaii are represented in the recapitulation. Fifty-two of the programs are offered throughout the year and the other twenty-five are limited to the summer season. Thirty-nine state parks, thirty-seven city, metropolitan or county parks and twenty-three national parks provide naturalist services. The remaining one-hundred and ninety-one areas in which the work is done include recreational areas, playgrounds, botanical gardens, game sanctuaries and the countryside, generally.

Prior to 1920 there were but three naturalist programs in the entire country. From 1920 through 1929 the number increased to eighteen, most of them in national parks. The remarkable growth (69 programs) during the decade just ended is indicative of the expansion that may be expected in the immediate future, for the importance of the work is evident to all conservationists. The attitude of national park officials toward interpretive programs is reflected in the recommendation made by national park superintendents in conference at Santa Fe, New Mexico, in 1939:

> The interpretation of natural and human history in national park areas is recognized as a primary objective. The basis of such interpretation should be organized research. A sense of balance must exist in arranging research and interpretive functions, and the role of research, generally, in the National Park Service program should be reexamined. National Park Service problems are national in scope

relating to physical, biological, and human values inherent in some of the most perishable of Federal possessions. They pertain to mental health, constructive living, social traditions, enjoyment of life, and other basic matters bearing on the health, education, recreation and psychology of America's population. The National Park Service is most advantageously situated to develop a national perspective in ethnology, history, wildlife, and aesthetic appreciation of scenery.

The Advisory Board on National Parks, Historic Sites, Buildings, and Monuments during its October, 1940, meeting in Washington anticipated National Park Service cooperation with the Army and Navy in presenting the story of the national parks and historical reservations to the armed forces of the nation. The recommendation of the Advisory Board follows:

> The Advisory Board believes the National Park Service's interpretive program in national park areas, particularly the historical parks and monuments and the great national scenic areas, is one of the most valuable contributions by any Federal agency in promoting patriotism, in sustaining morale, and understanding of the fundamental principles of American democracy, and in inspiring love for our country. The Advisory Board would therefore suggest that the National Park Service's interpretive program should be expanded by every means including publications, radio, motion pictures, guide service, park museums, etc., during this period of national exigency. It further recommends the National Park Service should immediately undertake the encouragement of national pride in our new armed forces as well as our citizenry which is so essential for the defense and preservation of our country. With the present organization in the National Park Service we feel that this branch of the Government is the most qualified to undertake in cooperation with the Army and Navy and private historical agencies this essential element in our defense organization.

In conclusion it may be stated that 1940 has witnessed a critical review and a re-examination of those public agencies engaged in educational activities contributing to National understanding of American values and democratic principles. National Park Service programs stand out in high relief among the activities directed toward attainment of citizen appreciation of our national heritage. Because of the advantageous position of national parks in the social scheme they are to be recognized as especially well situated to develop a national perspective in native values and democratic ways.

Probably we are not placing too high an appraisal upon the value of national parks when we say that they constitute one of the most potent agencies in effecting mental preparedness and maintaining national morale.

MR. BEATTY: I think we all agree that Dr. Russell's remarks have been a source of inspiration and deep satisfaction to all of us.

MR. WILLIAMS: I think this group would like to know that the Army and Navy Departments are organizing definite recreation divisions through which recreation programs and services for the men will be provided. While there will be a central division in Washington, the responsibility for the program in the camps, posts, stations, and even on board ship, will be left to the respective commanders.

These officials have been given full authority not only in the formulation of the programs within the camps but in establishing relations with agencies in the communities. Through our relationship with the War Department and at the request of the Adjutant General, we have supplied the morale and recreation division of the Army with a portfolio of maps of every State, indicating the location of Federal and State parks and other recreational areas and also the cities that have park departments. Accompanying these maps are lists of our own officials, that is, the names of certain members of the Washington staff, the Regional Directors, Superintendents or other officials of each of the parks under the service and a list of the names of State and local park directors. The plan to be followed in making use of this material will be something like this; the heads of the morale and recreation divisions will establish relationships with the officials of the agencies in charge of these areas or departments and through that direct relationship endeavor to work out a plan whereby the men in the training camps and other centers may have the advantages of visits to the various parks throughout the country. The Army officials believe that this will be a very important service to the men in the Army and Navy during the rest periods and during the time that they can be away from training.

In addition the recreation officials of the Army have been supplied with information regarding the facilities and features of each of the parks so that the men may be able to choose those places which they would prefer to visit. Through this cooperative effort we should be able to render a kind of service to the men in the Army and Navy which the Secretary of War now considers very valuable.

MR. DOERR: It might be of interest to note that this contact with the Army and the Navy has been going on for some ten years, and it is a very effective contact.

DR. NEASHAM: Dr. Russell did not mention another phase in this program which has a distinct Pan-American angle intending to aid cooperation with

other Spanish-American nations. Mr. King, I know, has cooperated in connection with broadening the Pan-American idea in the interpretational program in archeological areas of the National Park Service. The same thing has been contemplated here in the Southwest for historical areas. Dr. Russell may have some further ideas about it because I know he is thinking of it very seriously.

DR. RUSSELL: I don't know whether you have been informed of the plan to bring some 15 or 20 South American National Park people to the United States. Dr. Leland of the National Park Service Advisory Board called a conference in the offices of the State Department recently and there was developed a general plan whereby we may have the beginning of an exchange of travel between South American National Park employees and the employees of the United States National Park Service. The South American countries want to send these people at the expense of their own countries. Once they are here the Government and Nelson Rockefeller will take them in hand and may pay their expenses for a tour of the National Parks of the United States. With them of course will go some of our National Park officials. Someone will have to function as interpreter.

MR. JACKSON: May I ask if the Editor-in-Chief is contemplating making arrangements with the Readers Digest Association? I mention that in particular because the Readers Digest Association is sponsoring many subscriptions which will be sent to leading men in South American countries. The editors of this publication and of the Park Service could cooperate in providing articles of timely interest concerning national parks.

MRS. DEAN: I think it would be a very valuable effort. The naturalists' program has already received a favorable reception wherever it has been presented. If this program could be further extended not only by drawing upon our own Service, but upon people who have similar interests outside of the Service, to prepare articles of scholarly type on subjects germane to National Park Service objectives, a very worthwhile contribution would be made. Such articles as you probably have in mind should be prepared with deliberation and sufficient time to insure thoroughness of research, not scrambled together with a deadline approximately two hours away. It might be well to have a theme for a prescribed series, coordinating the articles to this general theme. I am sure that Miss Story would welcome such a suggestion.

MR. ROTHROCK: There was one item that was omitted from our discussions, that matter of a Junior Naturalist Register. Would you care to discuss that and clean up the schedule. Dr. Russell and I examined the Register of Junior Naturalists and found that there were about 350 names on the general classification, 100 on the biological classification, 75 on the geological classification and 50 on the Forestry classification. It has been our experience lately that the men we wished to consider are way down on the list, not because they are not qualified but because the

examination was given so long ago that it is no longer representative. A great many of those who make up the register are not available. The register could be brought up to date by circulation of the list. Another remedy would be to give a new examination. In lieu of this the Service was invited to participate in the Junior Professional Assistant examination given in the spring of 1940. It was quite apparent from the limitations imposed that very little of the examination would be concerned with the naturalist work, hence there would be no assurance that those on this register would be qualified naturalists. The invitation was declined. Therefore, we have no current register. There are two courses open. We can request another examination. Before such an examination is given, however, it must be demonstrated that the present list is no longer of value to us. That is a pretty difficult thing to do when there are over 400 names on it. Even circulation of the list would leave a good many names on it. There is another approach to the problem. If you have tried to use the list and have found that the people on it are not satisfactory, you will have cause for asking for a new examination. However, it will be necessary to show that there are going to be a reasonable number of positions which are to be filled from this list. We have a difficult personnel situation ahead of us and if the present list is usable we should try to use it but if you can't get competent men, you should let us know so that we can go to the Commission with a case that they would be willing to consider.

MR. BEATTY: I think that instead of opening the question of Civil Service for general discussion, it would be a time saver if you would consult with Dr. Russell and Mr. Rothrock personally.

The meeting was adjourned until 8:00 o'clock in the evening, at which time committee reports were considered.

RECOMMENDATIONS AND RESOLUTIONS ADOPTED BY THE NATIONAL PARK SERVICE NATURALISTS' CONFERENCE November 13-17, 1940 Grand Canyon National Park

During the National Park Service Naturalists' Conference, November 13-17, 1940, at Grand Canyon National Park, the following topics were discussed, questions raised, and recommendations adopted:

I. Junior Nature Programs.

Question a. Should the park programs be integrated with, or extended to school curricula?

Recommendation:

The National Park Service, as an agency primarily concerned with conservation and interpretation, is interested in the extension of conservation education through our schools and youth organizations in the various communities in our land. Since the National Park Service can make a special contribution to this phase of education, it is recommended:

1. That increased emphasis be given to junior nature work in our national park areas where conditions are favorable, and that attention be called to this service by every legitimate means; i.e., personal contacts, correspondence, distribution of literature, radio, etc.

2. That where possible special helps be provided teachers, leaders of youth organizations, etc., visiting our national park areas so that they may have aids to enable them to interpret to groups in their home communities the principles of conservation as expressed in our Service areas.

3. That the park naturalist assume as an objective the seeking of ways and means for integrating our junior nature work with the school curricula and the programs of youth organizations of our American communities as far as practicable.

II. Relationship of Interpretive Program to the Park, Parkway and Recreational Area Study and to National Activities in the Naturalist Field.

Question a. What are the interests of the naturalists in State, Regional, and National Recreational Planning?

Question b. What are the interests of Recreational Planners in the Naturalist Program?

Recommendation:

The recreation planner and the park naturalist have a common objective in providing the American public with a purposeful recreation program. The recreation planner is concerned with the general program, involving the satisfaction of a variety of needs and interest of people. An important phase of this program is dependent upon an understanding and appreciation of nature, which is the primary function of the park naturalist. Because of this mutuality of interests and the vital contribution which the park naturalist can make to the entire recreation program, we believe that naturalist services should be expanded on a Nation-wide basis until it touches the lives of the entire citizenry.

Since the National Park Service is the Federal agency primarily concerned with the provision of public naturalist services, it is recommended that the National Park Service assume leadership in the realization of this objective.

III. Outside Park Activities of Naturalists.

Recommendation:

In light of the valuable contributions that the park naturalists can make in the field of education and conservation throughout the country, and keeping in mind the constant expansion through the years of the scope of the National Park Service areas, it is recommended that that portion of the present law restricting the park naturalists' activities to the confines of National Park Service areas be changed. This change can best be accomplished by striking out the word "therein" in the terminology of the present law authorizing educational activities in the National Park Service areas.

IV. The Interpretive Program and Winter Sports.

Question a. Can the naturalist serve the winter sport enthusiasts?

Recommendation:

Winter recreation activities are now definitely regarded as a proper function of the national parks. The rapid growth of these activities has resulted in the development of numerous problems relative to park policies and factors of protection which require solution. Because of this it is recommended that services and facilities of the Branch of Research and Interpretation be developed and expanded wherever practicable to encompass winter activities with the objective of (1) promoting a broader understanding of park ideals and policies on the part of winter visitors, and (2) reducing accidents through the medium of a proper interpretation of the hazards of winter activities by developing an understanding of the natural history of ice and snow.

V. Archeology and the Naturalist.

Question a. In the absence of representatives of the Branch of Historic Sites, what are the responsibilities of the park naturalist to archeology?

Recommendation:

Inasmuch as archeologic and historic sites and materials constitute values fully as important as natural phenomena it must be the responsibility of each naturalist to accomplish comprehensive and accurate inventory and protection of these features. Such activities must be correlated with the duties and functions of the Branch of Historic Sites.

VI. Special Features in the Naturalist Program.

Question a. Should the naturalist strive to devise a distinctive specialty in his service?

Question b. Indian demonstrations and living animal exhibits. Are supplementary museum features such as Indian demonstrations and living reptile-amphibian exhibits justified? Can bear shows be discontinued?

Question c. Nature trails and native flower gardens. Are they practical?

Recommendation:

1. The naturalist should strive to develop a program giving distinctive emphasis to the outstanding values of the area in which he is located. Special programs, such as Indian demonstrations, providing that they supplement the interpretation of the major values of the area, and are neither foreign to the area nor contrary to established policy, should be fostered by the naturalist.

2. Live animal exhibits should be restricted to cold-blooded species displayed in such a manner as to avoid the objectionable aspects of the general concepts of the zoo-type of artificial confinement, and further that this type of cold-blooded live animal exhibits be restricted to those areas in which such exhibits will have educational value distinctly supplemental to the interpretational program.

3. An elimination of bear shows and bear feeding is desirable from the standpoints of sound wildlife management and natural presentation to the public. Until such time as bear shows and feeding are eliminated, they should be administered as a measure of public safety and for publicizing wildlife conservation rather than as an entertainment feature.

4. Where practicable, self-guiding nature trails and native flower plantings should be established to supplement personal contact activities and museum exhibits, and further that informal plantings of native flowers in gardens adjacent to museums should be established to eliminate cut native flower exhibits.

VII. Museum Administration.

Question a. Museum visitor behavior. Can museum visitor reaction be recorded and interpreted advantageously?

Question b. Museum accessions. What practical procedure should be adopted to bring about a redistribution of collections now stored because they do not pertain to the park in which they are preserved?

Question c. Trailside exhibits. Have trailside exhibits and exhibits-in-place demonstrated that they have a permanent place in the interpretive program?

Recommendation:

1. Museum visitor reaction can be recorded and interpreted advantageously and, therefore, the study of such reaction should be undertaken as opportunity permits.

2. The paramount importance of museums for the twofold purpose of preservation and interpretation of material objects should be stressed.

3. Objects of scientific and historical value should be systematically sought for and collected with the specific needs of each park area in mind. It is desirable as a part of the approved museum plans to have each park prepare and maintain a list of material objects needed to develop and improve its reference and study collections as well as its public exhibits.

4. A central clearing house operating through the Museum Division should be established in Washington with facilities for research, transfer, and exchange, to increase the usefulness and value of park collections. By this means, objects which are duplicate, surplus or inappropriate and consequently of little or no value in one area may be transferred to another area where they will be most effective. Duplicate publications also may be distributed in a similar manner through this clearing house.

5. There is need for a simplified legal procedure for the exchange of surplus materials in park collections with outside institutions for specimens lacking in the parks. It is recommended that steps be taken to provide legal means to facilitate these exchanges which will be of great benefit to the National Park Service.

6. The preservation of park collections from deterioration and destruction is an important responsibility of the officers in charge of the collections.

7. The complete identification and the maintenance of accurate catalogs of all items in collections is to be consistently sought for at all times. The free exchange of information on collections is to be encouraged.

8. Since the Museum Survey is beneficial in long-range planning and in justifying additional museum support, the naturalists should cooperate with the Museum Division in completing the Survey records and keeping them continuously up-to-date. Copies of records should be on file in the parks and with the Museum Division. Museum attendance records should be kept as accurately as conditions permit. Accurate figures on the cost of buildings, equipment, and exhibits are essential, and naturalists should help as far as possible in assembling them.

9. Efforts should be made to complete an approved museum prospectus for every park and on the basis of this to include museum developments in the Master Plan, project construction program, and annual budget estimates. These important steps toward satisfactory museum conditions depend largely in scenic and scientific areas on the initiative of the naturalists, who are responsible for the primary definition of museum needs in their respective areas.

10. Trailside exhibits and exhibits-in-place, which are appropriate, effective, and relatively inexpensive devices, should be employed more extensively as interpretive aids in park areas.

11. The National Park Service should have authority to exchange as gifts its duplicate museum specimens with museums and educational institutions outside of the Service and that such authority should be sought after most diligently, even if Congressional legislation is required.

12. Museum guide leaflets should be given thorough trial as a means of increasing the effectiveness of park museums.

13. It is urged that extreme care be taken that all interested regional technicians have an opportunity to view museum exhibit plans before they clear the Regional Office.

14. A regional museum technician should be assigned in each of the four regional offices to aid the park naturalists in preparing museum exhibit plans, the installation of exhibits and the proper treatment and preservation of scientific collections.

VIII. Museum Service as a Part of Naturalists' Work.

Question a. Do statistics on museum visitors reflect a proper evaluation of services rendered?

Recommendation:

Present methods of recording statistics do not reflect a proper calculation of naturalist services rendered. We recommend that the present contact record form be retained but with the addition of an extra column recording visitor participation hours. (Visitor participation hours equals attendance times average length of contact in hours. Example: An auto caravan which lasts 3 hours, attended by 50 people, would show 150 visitor-participation hours.) Records kept in this manner would more closely represent the true relationship of conducted trips, and lectures to other types of interpretive services. It would be the duty of each park naturalist to determine the hour factor for each type of service rendered in his park.

IX. Coordination of Naturalist Programs.

Question a. Are Regional Naturalists needed?

Question b. Can park naturalists be spared for duty in Regional Offices?

Recommendation:

1. It is the concensus of this conference that the most pressing need of the Naturalist Division is the establishment of Regional Naturalist positions. It is urged that every effort be made to establish these positions as soon as possible and, pending their establishment, some member of the permanent naturalist staff be designated to serve in the capacity of Acting Regional Naturalist in each region. (Editor's note: Since the Regional Naturalist should be headquartered in the Regional Office, it might be practicable to assign naturalists from various parks for successive three-month tours of duty.)

2. It is recommended that appropriations be justified to finance the needs of Regional Naturalist positions rather than to support them from funds appropriated for other National Park Service areas within the respective regions.

3. The principal duties of the Regional Naturalist shall be to coordinate the activities of the park naturalists within his region in an effort to promote the uniformity of standards and the efficiency of interpretive programs. It is recommended that reports of park naturalists be utilized to the end that the duties of the park naturalist be simplified rather than complicated by the addition of the position of Regional Naturalist.

4. Park naturalists will be expected to visit regional offices whenever and for such time as these visits are mutually advantageous.

5. Regional Naturalists shall cooperate with agencies outside of the Park Service whenever feasible, but Park Service business shall always take priority.

X. Park Libraries.

Question a. Is a coordinated library program desirable?

Recommendation:

In order most efficiently to utilize the present materials in the libraries of the National Park Service and to intelligently enlarge these collections which are imperative to proper conduct of our research and interpretive programs, it is essential that there be a coordinated library program in the National Park Service. It is, therefore, recommended:

1. That a position of National Park Service librarian be established as soon as possible to supervise such a program.

2. That there be an increase in funds available for library purposes, and that these funds be furnished through a specific allotment item in the naturalist annual budget.

3. That a study be made to determine the feasibility of supplementing the regular library collections by a microfilm library with a master microfilm library in the Washington Office of the Branch of Research and Interpretation. By making microfilm copies of pertinent books and manuscripts now in Service libraries and in collections outside of the Service, the degree of library integration can be greatly advanced and much necessary material be made available quickly and at reasonable cost.

XI. Research: A definition of the park naturalists' responsibility to research.

Question a. Does the awarding of fellowships to naturalists promote research?

Recommendation:

Research must be universally recognized as the only foundation upon which a proper interpretive program may be built.

Inasmuch as the park naturalist, because of his training, continuous association with the area, and his recognition of the problems and needs

relative to administration and interpretation of park features, is best qualified to recognize the problems that should be solved; he is the logical one to direct, conduct or coordinate these researches. We consider that fellowships are definitely desirable in promoting the necessary research in the national parks.

XII. Natural History Associations and Other Cooperating Societies.

Question a. Is coordination of the programs of cooperating societies desirable?

Recommendation:

In the opinion of the Conference it is not desirable to attempt the coordination of the programs of the various Natural History Associations.

1. The Board of Directors of each Association has the privilege of setting the policy, since each is an independent body.

2. Each Association is formed with similar aims and is approved by the Secretary of the Interior; thus ample coordination is provided.

3. The superintendent of the park, although he need not serve on the Board of Directors, should be advised of the activities of the Association in order that they conform to Park Service standards.

XIII. Publications.

Question a. Are existing outlets for Service publications adequate from the park naturalists' standpoint?

Question b. What can the park naturalist contribute to PARKS?

Recommendation:

1. Both technical and popular publications are desirable and should be fostered in the park naturalist program. They should, however, be separate and distinct and so considered and maintained.

2. In the main, technical publications should be published through recognized scientific media.

3. Existing outlets for popular publications are at present inadequate. We feel that the present mimeographed form of "Nature Notes" does not accord with the type of material it presents, or the amount of time and thought entailed in its production.

4. By development of outlets through Regional Reviews and the proposed PARKS magazine, our needs in this field may be more fully met.

5. We believe that all such articles should be forwarded to the Editor-in-Chief for wider distribution.

6. The park naturalists are in sympathy with the publication of the proposed popular magazine PARKS and are willing and glad to contribute articles and illustrations insofar as time permits.

XIV. The Monthly Report of the Branch of Research and Interpretation: A policy to govern the issuance of the Branch report.

Recommendation:

1. That the issuance of the monthly report of the Branch of Research and Interpretation be continued in its present form but it be expanded and improved as circumstances may dictate.

2. That the preparation of the Naturalist's Annual Report be a matter of decision between the naturalist and his administrative officer.

3. That the Naturalist's Monthly Report conform to a standard form such as has been proposed at the conference for the revised Report Manual, this form being similar to that of the Superintendent's Monthly Narrative Report.

XV. Interpretive Sheets for the Master Plan: Recommendations and procedure to be followed.

Question a. What steps can be taken to integrate museum plans with the park Master Plan?

Recommendation:

It is recommended:

1. That each park naturalist prepare the work sheets and statements describing his interpretive program for the Master Plan for the area in which he is serving and for the Master Plans for other areas to which he is assigned.

2. That this work be seriously undertaken this winter.

3. That the interpretive presentation follow the general form outlined in the paper on this subject given at the conference and conform to such specific instructions as are necessary to clarify this procedure.

4. That the general plan for museum development be included as an integral part of the interpretive program.

XVI. The Naturalists' Relationship to the Park Operator.

Question a. What constitutes adequate supervision of kind and accuracy of information dispensed to the public by bus drivers and other operators' employees?

Recommendation:

We heartily endorse the recommendation on this subject adopted at the National Park Service Conference held at Santa Fe, October 1939, and the memorandum of the Director for the Washington and all Field Officers of April 3, 1940. We believe that the recommendations contained in the Director's memorandum constitute adquate supervision of the kind and the accuracy of information so far as present conditions permit.

XVII. Training of Personnel and Management of Interpretive Program.

Question a. Is pre-season schooling practical and what has been the effect of the Yosemite School of Field Natural History on naturalist personnel?

Recommendation:

The committee recommends that:

1. Pre-season training is a valuable asset to the interpretive program and that park naturalists should utilize every opportunity to bring the efficiency of their staffs to the highest possible state prior to assigning them to important interpretive duties.

2. Pre-season schooling is not practicable in many Park Service areas and the park naturalist should determine the type of training most suitable to the diversified conditions under which they operate. It is the opinion of the committee that the management of interpretive programs is the function of park naturalists.

3. The Yosemite School of Field Natural History has rendered invaluable service in training personnel for interpretive positions in the national parks and monuments and its graduates merit serious consideration for positions on the interpretive staffs.

XVIII. The Civil Service Register for Junior Park Naturalists.

Question a. Can the examination of 1933 be depended upon to provide eligibles for existing vacancies?

Recommendation:

1. It is recommended that the Civil Service Commission be requested to circularize all eligibles on the register resulting from the Junior

Park Naturalist Examination of 1933 for the purpose of determining how many of the eligibles are now interested in a junior park naturalist position.

XIX. Selection of Rangers Whose Duties Include Interpretive or Technical Work.

Recommendation:

It is recommended that superintendents at their discretion be allowed to request registers of eligibles for ranger positions from the junior professional assistant lists whenever technical knowledge is required.

XX. The Park Naturalist and Administrative Offices.

Question a. To what extent is it desirable for the naturalist to assist in park administration?

Recommendation:

1. Administration of naturalist activities will be facilitated by the more thorough study of fiscal and other regulations and bring a closer compliance therewith.

2. Very thorough advance planning of programs of development and careful preparation of estimates and justifications made at least 18 months in advance will further the naturalist program.

3. The park administrator should see that the park naturalist shall be given opportunity to study and report upon the effect or relationship of proposed developments upon the natural and historic features and upon the interpretation activities.

4. A park naturalist should be given opportunity to study proposed and new park areas having potential natural values coincidentally with others who are reviewing the area for the purpose of determining its eligibility and/or its treatment.

5. It is the park naturalist's duty to study and report to the superintendent upon facilities which he thinks should be made available for the betterment of the interpretive service.

6. The park naturalist occupies an important position in the administrative setup of the national park; the superintendent must depend upon the park naturalist for the proper presentation to the public of park values; the superintendent depends upon the park naturalist in a large degree for the general educational and inspirational impressions

received by the visitors (other than scenic qualities) and, therefore, the park naturalist should be given every facility in staff meetings, in the study of projects, and in the conferences regarding policies to assist the superintendent.

XXI. The Park Naturalist and Regional Technicians: A policy on cooperation.

Recommendation:

1. To utilize most efficiently the talents of all National Park Service personnel and present to the general public a completely representative picture of the National Park System, there should be full and complete interchange of information between park naturalists and regional technicians and, furthermore, there should be a complete cooperation between protection and interpretation personnel within each park.

2. Naturalists and custodians shall prepare requests for technical aid in as complete a manner as possible, including justifications, and submit (to the Regional Director) as soon as possible after the need for aid has become apparent.

3. In order that cooperation between park naturalists and regional technicians be more fully carried out, it is recommended that regional personnel be increased.

4. Park naturalists shall continue to interpret to the public not only the natural features of his area but also the work being done by Park Service personnel.

XXII. The Park Naturalist and Fire Suppression.

Question a. Should naturalists participate in fire schools?

Recommendation:

1. Inasmuch as fire constitutes one of the major hazards to the flora and fauna of a park, and since these are important phenomena upon which interpretive activities are based, it is desirable to have all naturalists, both permanent and seasonal, participate in fire-training activities.

2. This training will enable them to more satisfactorily perform whatever services they may be called upon to render during periods of extreme fire emergencies. Such training is also essential to aid the naturalists in the interpretation of pre-suppression activities to the general public.

XXIII. The Naturalists' Role in Sustaining National Morale and Preparing for Defense.

Question a. Has the interpretive program demonstrated effectiveness in developing and sustaining love for country?

Recommendation:

In the present emergency it must be realized that the National Park Service is especially fitted to meet the problem proposed by the circumstances of unpreparedness of the National mind, and to instil in our citizenry a more complete understanding of the duties and responsibilities of a citizenship in a democracy. The statements of thousands of park visitors, now on file in the Washington Office, testify to the fact that the proper interpretation of national park values stimulates a deep-rooted conviction of the tenets of the freedom that is ours. As further evidence of this fact, the Advisory Board on National Parks Historic Sites, Buildings and Monuments during its October 1940 meeting recommended as follows:

> "The Advisory Board believes the National Park Service's interpretative program in national park areas, particularly the historical parks and monuments and the great national scenic areas, is one of the most valuable contributions by any Federal agency in promoting patriotism, in sustaining morale, and understanding of the fundamental principles of American democracy, and in inspiring love for our country. The Advisory Board would therefore suggest that the National Park Service's interpretative program should be expanded by every means including publications, radio, motion pictures, guide service, park museums, etc., during this period of national exigency. It further recommends the National Park Service should immediately undertake the encouragement of national pride in our new armed forces as well as our citizenry which is so essential for the defense and preservation of our country. With the present organization in the National Park Service we feel that this branch of the Government is the most qualified to undertake in cooperation with the Army and Navy and private historical agencies this essential element in our defense organization."

It is, therefore, recommended that every means be sought to accomplish this high purpose.

XXIV. Future Naturalists' Conferences.

Recommendation:

It is recommended:

1. That the park naturalists of the National Park Service meet in conference bi-annually at some place and at such time as is most convenient for the conduct of meetings pertinent to naturalist activities in the National Park Service areas.

2. That regional conferences of naturalists in the various regions of the National Park System be held in years alternating with the national conference, at such time and place as is convenient for the conduct of meetings pertinent to interpretive activities in the region.

XXV. Editorial Committee.

Recommendation:

Editorial authority shall be delegated to the following officers: Dr. Russell, Mr. Doerr, Mr. Rothrock and Mr. Burns, to edit and amend any of these resolutions to bring them to standard wording.

XXVI. Resolutions.

Whereas the second National Park Service park naturalists' conference held at Grand Canyon National Park, November 13 to 17, 1940, has been conducted and consummated in harmony and accomplishment;

Be it therefore resolved the members of the said conference extend their grateful appreciation to those persons and organizations which have so markedly contributed to its success, namely; Director Newton B. Drury, and his Washington Office staff, particularly Dr. C. P. Russell and Mr. Howard E. Rothrock, who bore the brunt of making arrangements; the Supervisors of the Branch of Historic Sites, Forestry, and Recreation, Land Planning and State Cooperation who made it possible for their representatives to attend the conference; the Editor-in-Chief for representation; officials of the Fish and Wildlife Service and particularly Walter Weber for his clever cartoon; the Regional Officers, especially Regional Director M. R. Tillotson, for his friendly interest and helpful participation; Superintendent Frank Kittredge and his Grand Canyon National Park staff; special recognition to Assistant Superintendent Lloyd for his friendly interest and participation, Chief Ranger Perry Brown for special cooperation, and Messrs. Harry Ehrlich and I. J. Castro for the efficient service in recording the proceedings; Mrs. Frank Kittredge for her delightful hospitality; the Grand Canyon Natural History Association for

its memorable party and numerous other arrangements; Ray Williams, V. O. Wallingford and Daniel McDade for their conduct of the natural-color slide contest; the Fred Harvey Company for the fine services rendered.

Be it further resolved that we record our sincere regret regarding the departure from the Service to other fields of endeavor of Earl A. Trager, C. A. Harwell, and Edwin D. McKee; and that we express to them our best wishes for future happiness and success.

Resolutions were drafted by the Resolutions Committee to be sent to Dr. Herman C. Bumpus, expressing the naturalists' appreciation of the service that Dr. Bumpus has contributed to the interpretive program in his capacity as member of the Advisory Board and also to Dr. John C. Merriam who has been a guiding light, to Dr. Harold C. Bryant, C. J. Hamlin, and to Ansel Hall. These are the resolutions presented by the Resolutions Committee.

Sunday Morning
November 17, 1940.

Mr. Doerr, Chairman.

MR. ROTHROCK: Before the conference closes, I would like to thank the naturalists for taking hold of the assignments given to them. They came, in many instances, without any warning and were probably subjects that you would not have selected if you had been given a choice in the matter. The Washington Office appreciates your cooperation through the conference. Without the thorough preparation you have given your papers, this conference would not have been as successful as it has been; I want you to know that I appreciate the help you have given me in presenting these discussions.

MR. BURNS: I also would like to express my personal appreciation, and know I can also speak for Mr. Yeager and the Museum Division for the wonderful cooperation that you have shown and to thank you for the help which you have given us in arriving at a better understanding of your problems. We of the Museum Division constantly bear in mind that you are the men on the firing line and you are best acquainted with what is needed to get across the story of the parks. We know you fellows on the firing line need lots of the right sort of ammunition and although we are not in a position to give you all the ammunition and supplies you need, we do want to keep up a supply line of exhibits and devices such as we can make helpful in your work. It has been of help to us to hear your comments on your problems and I am taking away from this conference a great deal of value which I know will help me in turn to help you all the more. I just wanted to leave that thought with you, and I know Mr. Yeager joins me in the same expression of sincere thanks.

MR. ROBINSON: I am a representative of Region One. I can assure you that you have made an ardent supporter for your particular work. I think it would be a good idea to invite representatives of other branches to your future meetings, for I believe they would become as ardent as I am as a result of this experience.

MR. EPPLEY: I would like to add my statement to that. I have conferred with a number of park people but this is the most enthusiastic group that I have ever met. You are really interested in doing a good job. I certainly appreciate being here with you.

MR. WILLIAMS: I am convinced that the story of the real work of the naturalists is yet to be told. I have never had such a fine experience in mingling with professional people as I have with this group here. I am particularly impressed with your point of view, for you do not seem

to be thinking so much of the National Park Service as an institution but rather of the service to be rendered to people through the various parks and monuments which constitute the national park system and which we believe is the real purpose underlying their establishment.

Recently we had a meeting in Washington composed of representatives of national-private organizations and Federal departments concerned with recreation. Mrs. Roosevelt was likewise present and after listening to brief reports of each Federal agency she propounded this question, "How much, through recreation can we increase the realization of what citizenship means in a Democracy?" She then told of her experience with a group of 50 youngsters from small towns and rural districts who met with her at her home in New York State. "I got them together," she said, "because I really wanted to see what they were interested in and what they felt were the needs of other young people in a rural county like that, and they primarily said they needed recreation--recreation facilities." Mrs. Roosevelt said she was interested to find, however, that these young people haven't much idea about citizenship and the part that each individual must take in improving and advancing the services of government. Because of this situation she came to the conclusion that young people are most interested in recreation; therefore, she felt that through recreation we have to teach citizenship. As we begin to evaluate recreation service on the basis of its contribution to good citizenship it is my feeling, after my association with this group, that the work of the naturalists will loom larger and larger as an important factor in the recreation programs, whether they be carried out in our national areas, in the areas which are included in our local and State park systems, or in the communities.

We are often inclined to judge the merits of services on parks and monuments too largely on the basis of figures. For that reason the Federal Park Use Study was initiated this year, partly in order that we may discover the very best method of evaluating our real services to people. We can never know how many different people attend the parks but what we can and should know is, what real benefits those who do come derive from their visits. It is my conviction that the naturalist service is largely concerned with the human aspects of our services on parks.

MR. PRESNALL: You will accept one more expression of appreciation, I hope. Mr. McDougall and I are both in another bureau within the Department of the Interior. We both started at the same time as national park employees and we are both glad to be here working with you, and I want to assure you that I regard the cooperation between the Fish and Wildlife Service and the National Park Service as one of the finest cooperations in any branch of the Federal Government.

DR. MAXWELL: I appreciate being here and taking part in this meeting.

MR. OBERHANSLEY: I am quite sure that I express the sentiments of all of the naturalists when I say that it has not only been a real pleasure to have these representatives from other Bureaus and from various branches of the National Park Service with us but I feel that they have made a real contribution to the Conference. Let me say this for all the naturalists: we want to thank you for attending our Conference, we have enjoyed knowing you, and we hope to meet again.

DR. RUSSELL: I would like to give you just a bit more on the picture of how things stand in Washington. I think most of you are concerned about the set-up there, for the work in Washington affects your work. There is a Branch of Research and Interpretation and a Branch of History--both concerned with interpretive work in Service areas. As I said sometime ago there is a very congenial relationship existing between the branches and that relationship extends to the Regional Offices also. In our own branch offices there is a good physical arrangement of rooms and facilities which contributes to our disposition to work smoothly. We get along together very well, indeed. Rothrock and John Doerr are on one side of my office and Presnall and Cahalane on the other. Burns is farther away but we manage to keep together. We do not dwell on formalities; my doors are open to them and I do not hesitate to interrupt them. They come to my office and I go to theirs many times each day. We go to lunch together, converse very freely and keep each other well informed. They tell me what they think and I tell them what I think and misunderstandings do not last long. I want you to know that there is mutual understanding that makes for fair, direct action. Naturally, I have been pleased with the expression of confidence that you have given us. I can say for all of the workers in the Branch that we have in mind the field problem each time we try to answer a question in Washington.

The tone of this meeting has been good. We knew that we could attain a certain amount of success in bringing you fellows together but actually the good result has exceeded anything that I had looked for. Each speaker put good thought into his participation. That means that we have contributed something to the literature that will last. That is a mild boast! Actually the proceedings of the Conference may be one of those things that we turn to time and again and the people working in the general field of naturalist work may look to the record of this meeting, as something of a guide. It is evident that you applied yourself diligently in the preparation of the papers; while you have been here presenting them you have shown spontaneity, yet you have held to a high standard. I am sure that it would have pleased all Washington officials if they could have listened to all papers and discussions. I appreciate very much the attitude that was shown in the general undertaking of this Conference. It is not the enterprise of any individual. It is absolutely a field conference but the hard work that Mr. Rothrock did in preparing and planning should not be overlooked.

MR. LLOYD: As one of the oldest men in the Service and probably the only one here who helped to break Carl Russell into the National Park Service at Yosemite, I always marvel at Carl because with increased responsibilities he has lost none of his qualities of always being thoughtful in action and generous in his praise of fellow workers.

In the Yosemite in the early days when I was a publicity man I can remember that Carl was always trying to get me down to a substantial basis on something that would be solid and would endure beyond the next edition of the paper. Over the years that I have known Carl I can say that by training, progress and accomplishment, he is admirably fitted to serve as a leader of his fellow naturalists and as the Supervisor of the Branch of Research and Interpretation. I was in Yosemite when Mr. Mather first came there and said we were going to have an educational program. That was in the days when the biggest story told apparently was the one that pleased the visitors most. When the old rock crusher was torn down near the Pohono Bridge we lost one of the foundations of Yosemite story telling.

The interpretive functions of the naturalists have progressed a long way since the days when Mr. Mather, Mr. Albright and Dr. Bryant initiated the educational program. Through the years, Carl has proven a mainstay in the Service's research and interpretive program and here at Grand Canyon Eddie McKee has developed a naturalist department that meets with universal approval.

It is a pleasure in looking around this room to see the number of associates and friends that I have worked with in the Service and I will say that in the gatherings that I have attended in relation to the Service I have never seen a finer group of men--more sincere and earnest--and perhaps with a greater mission than you men who have gathered for this conference.

I have a suggestion and that is if you want to make your work a little bit easier, when you go home, look through your administrative manual and read what it says you can do with the funds allocated under Account 103. That is very important.

I am sorry that I have not had an opportunity to attend your sessions, but I have been engaged in showing some distinguished visitors around the Grand Canyon.

A few days ago I took a trip to the Indian School at Tuba City. I want to tell you that the Indian Service is now taking these Navajo children who were born and raised in the desert on nature walks and teaching them to identify the plants, rocks, and other natural features. It is very interesting to note that the Indian Service is trying to get across to the Indian

children in their educational program some features comparable to those that you are trying to put across to many of the millions of National Park visitors.

Carl, it is a pleasure to have you and your associates here, and once again the opportunity for renewed friendship is greatly appreciated.

MR. DODGE: I wish to extend to you all Superintendent Miller's most sincere invitation to visit any or all of the Southwestern Monuments you can reach in your travels. And, if you wish, we will give you road information as to the best routes to travel.

MR. DOERR: To you, Mr. Lloyd, and for the fine remarks you have made, we say "Thank you". And to you, Carl, for these highlights and guidance, "Thank You". If there are no other announcements, I consider the Second National Park Service Naturalist Conference closed.

COPY

WESTERN
UNION

Grand Canyon, Ariz.,
Nov. 16, 1940.

Dr. Carl Russell
Care Bright-Angel Lodge,
Grand Canyon, Arizona.

The Members of this Conference wish to express to you at this time our appreciation of your sympathetic and unselfish attitude toward our problems. We realize the heavy burden of your office and we pledge to you our continued devotion and loyalty.

(Signed) The Naturalists.

Register of the Naturalists' Conference
Grand Canyon National Park
Arizona
November 13-17, 1940

Gunnar O. Fagerlund	Hawaii National Park	Hawaii
Arthur Stupka	Great Smoky Mts. NP	Gatlinburg, Tenn.
Clifford C. Presnall	Sect. on Nat. Park Wildlife	Washington, D. C.
Donald E. McHenry	National Capital Parks	Washington, D. C.
Ned J. Burns	National Park Service	Washington, D. C.
Dorr G. Yeager	Museum Division	Berkeley, Calif.
Howard E. Rothrock	National Park Service	Washington, D. C.
Carl P. Russell	National Park Service	Washington, D. C.
Carl P. Swartzlow	Lassen Volcanic National Park	Mineral, Calif.
Myrl V. Walker	Crater Lake National Park	Medford, Oreg.
C. Max Bauer	Yellowstone National Park	Wyoming
David D. Condon	Yellowstone National Park	Wyoming
Bennett T. Gale	Grand Teton National Park	Moose, Wyoming
Maurice Sullivan	Acadia National Park	Bar Harbor, Maine
Newton B. Drury	National Park Service	Washington, D. C.
Lawrence C. Merriam	Yosemite National Park	California
Milo F. Christiansen	Region Three Headquarters	Santa Fe, N. Mex.
Russell K. Grater	Zion National Park	Utah
Frank R. Oberhansley	Sequoia National Park	California
Mrs. Francis S. Dean	National Park Service	Washington, D. C.
Albert E. Long	Boulder Dam NRA	Boulder City, Nev.
John E. Doerr	Rocky Mountain National Park	Estes Park, Colo.
Ross A. Maxwell	Region Three Headquarters	Santa Fe, N. Mex.
Earl Jackson	Montezuma Castle NM	Camp Verde, Ariz.
Carl E. Jepson	Petrified Forest NM	Holbrook, Ariz.
Matthew E. Beatty	Yosemite National Park	California
Howard R. Stagner	Petrified Forest NM	Holbrook, Ariz.
Aubrey Neasham	Region Three Headquarters	Santa Fe, N. Mex.
Erik K. Reed	Region Three Headquarters	Santa Fe, N. Mex.
W. Drew Chick, Jr.,	Shenandoah National Park	Luray, Va.
W. B. McDougall	Region Three Headquarters	Santa Fe, N. Mex.
J. Barton Herschler	Rocky Mountain National Park	Estes Park, Colo.
Robert C. Robinson	Region One, NPS	Richmond, Va.
Wilbur Doudna	Death Valley National Monument	Death Valley, Calif.
Donald C. Watson	Mesa Verde National Park	Colorado
Viljo W. Saari	Regional Forester, Region Three	Santa Fe, N. Mex.
H. Raymond Gregg	Rocky Mountain National Park	Estes Park, Colo.
Henry W. Lix	Hot Springs National Park	Arkansas
Robert H. Rose	Boulder Dam NRA	Boulder City, Nev.
C. Frank Brockman	Mt. Rainier National Park	Longmire, Wash.
Natt N. Dodge	Southwestern NM	Coolidge, Ariz.
Dale S. King	Southwestern NM	Coolidge, Ariz.
M. R. Tillotson	Region Three Headquarters	Santa Fe, N. Mex.
James B. Williams	National Park Service	Washington, D. C.
Jesse L. Nusbaum	Region Three Headquarters	Santa Fe, N. Mex.
David J. Jones	Wupatki National Monument	Flagstaff, Ariz.
Garrett G. Eppley	Region Two, NPS	Omaha, Nebr.
Frank A. Kittredge	Grand Canyon National Park	Grand Canyon, Ariz.
Edwin D. McKee	Grand Canyon National Park	Grand Canyon, Ariz.
James V. Lloyd	Grand Canyon National Park	Grand Canyon, Ariz.
Louis Schellback	Grand Canyon National Park	Grand Canyon, Ariz.
Perry E. Brown	Grand Canyon National Park	Grand Canyon, Ariz.