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DEVELOPMENT OF THE NATURALIST PROGRAM IN THE NATIONAL PARK SERVICE


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Regional Cultural History Project

Harold C. Bryant
and
Newton B. Drury

DEVELOPMENT OF THE NATURALIST PROGRAM IN THE NATIONAL PARK SERVICE

An Interview Conducted by
Amelia R. Fry

Berkeley
1964

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Harold C. Bryant, Assistant Director of National Park Service in charge of Branch of Research and Education, 1930-1939, Washington, D.C.

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INTRODUCTION

One day in 1964, during a series of interviews which were being tape recorded with conservationist Newton B. Drury, he suggested that perhaps in the next taping session we should include his longtime friend, Harold C. Bryant, an early pioneer in nature interpretation in the national parks. At that time we were about to finish Mr. Drury's account of his days as Director of the National Park Service, and it was easy to see that an account of the development of the naturalist program would make a significant addition to our attempt to preserve the memories of those formative years of the service.

Dr. Bryant not only had undertaken the first "vacationist education" service (at Yosemite for Stephen Mather) but, by force of logical progression, was called to Washington by Director Horace Albright to organize interpretation programs and personnel for the entire national park system. Those were times when

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the growth of the naturalist program--if there were to be one at all--required someone with thorough training in biology and the ingenuity to apply this knowledge to a situation unique at that time: the education of tourists on the wing, a random type of student body with a range of intellect and background as broad as the world's population. Mr. Bryant was the man on the spot at that time with the talent, training, and imagination for just such a challenge.

In this interview, held in the recording laboratory in Dwinelle Hall on the University of California campus, Dr. Bryant answered questions from Mr. Drury and myself, with occasional dialogues developing between him and Mr. Drury over such perennial uncertainties as the relative merits of the factual versus the inspirational approach. Mr. Drury also contributed his own comments and anecdotes during the process of the interview. Basically, however, the story unrolled to show how the idea of naturalist programs developed, where the earliest support was found, and what happened when, with fortunate timing, Dr. Bryant opened the Division of Education and Research in the National Park Service in Washington just

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before the New Deal came in with increased funds for all park operations, including interpretation.

Both Newton Drury and Harold Bryant checked over the manuscript for errors after it was transcribed. The only changes made from the original were those for clarification or more chronological development in the story. A sample of the tape is on file in the Regional Cultural History Project office.

This manuscript, produced by the Regional Cultural History Project, is one of several produced with Newton Drury about national parks. They form a part of a series on conservation which includes interviews with national park personnel, foresters, and other specialists in the field, all of which are available in the Bancroft Library of the University of California.

The Regional Cultural History Project records autobiographies which will preserve for posterity eyewitness accounts of historical events during the twentieth century. The Project is under the administrative supervision of Mr. Julian G. Michel, Assistant University Librarian, and the Bancroft Subcommittee of the Library

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Committee of the Academic Senate at Berkeley.

Amelia Roberts Fry, Interviewer
Regional Cultural History Project

17 February 1965

Regional Cultural History Project
Room 486
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DR. HAROLD C. BRYANT - CAREER OUTLINE

1908	B.A. Pomona College
1910	M.A. University of California, Berkeley
1913	Ph.D. University of California, Berkeley
1914	Economic Ornithologist at the Museum of Vertebrate Zoology, University of California
1915-1930	Nature Study for University of California Extension
1910-1930	In charge of education and research, California State Fish and Game Commission
1919	Summer as naturalist at Lake Tahoe resorts
1920	Summer as naturalist at Yosemite under California State Fish and Game Commission
1920-1930	Summers as a naturalist in Yosemite National Park
1930-1939	Education and research in National Park Service office, Washington, D.C.
1939-1954	Superintendent, Grand Canyon National Park

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EARLY NATURE TEACHING

Fry: We have today Dr. Harold C. Bryant with Mr. Newton B. Drury to give us some facts of life about the interpretation part of the National Park Service.

Drury: May I interrupt to get a little of the chronology? You are a graduate, Harold, of Pomona College?

Bryant: Yes, 1908. And I taught a year and then I came up here as a graduate student and took two higher degrees here on the University campus.

Drury: Isn't it true that your field was primarily that of the ornithologist?

Bryant: I was called an economic ornithologist at the Museum of Vertebrate Zoology, here on the campus, before I joined the California Fish and Game Commission.

Drury: How did you happen to join the Fish and Game Commission?

Bryant: First of all, I got a fellowship from the Fish and Game Commission of the state to do a special job on the food habits of the birds. They were complaining bitterly

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Bryant: that the birds were very destructive to crops, and so I took up the job of trying to find out just what birds do eat. I even wrote my doctor's thesis on the food and habits of the Western Meadowlark, because it was eating up newly-planted grain. Out here in the San Joaquin Valley the farmers would plow a field and scatter grain to harrow it in, then when it started to come up as a nice little plant the meadowlarks would get out there and eat it. But it was discovered that their stomachs were full of insects rather than this grain. This grain is taken by birds at a certain time of year.

Drury: You were a pioneer in that type of biological research?

Bryant: A good deal of work of that kind had been done in the East, but I was one of the first ones to undertake it on the West Coast.

Fry: How did you get into this ranger naturalist work, Dr. Bryant?

Bryant: That's interesting. I was here at the University as an ornithologist and quite interested in University Extension work, but also greatly interested in what we in those days called "nature study," in particular in the

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Two early naturalists at
Yosemite National Park:

Enid Michael, Ranger Naturalist Botanist
and Bert Harwell, Park Naturalist, 1926





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Bryant: public schools. Let's say that that was along in 1917, 1918, 1919, 1920 when I was trying to stimulate teachers to teach nature study in the schools. I did that under University Extension courses for years; we had built up one course called Six Trips Afield, in which we got many teachers and many doctors and their wives to meet on a Saturday afternoon. We'd first go over to Golden Gate Park in San Francisco, or over into Marin County. We'd go up here in the Berkeley hills and see the wild flowers and the birds and the trees and everything along a trailside. In fact, this friend at Sacramento got up the motto, "Learn to read a trailside like a book." That was C.M. Goethe, a successful businessman and philanthropist.

Drury: What was his relationship to the interpretive program in terms of the experience he and Mrs. Goethe had in Switzerland?

Bryant: This man traveled a good deal. He was quite surprised to find how children in the European schools learned their history by going to old castles and old fields of war and so on, and he was greatly surprised when

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Bryant: he found blind children taken out to study birds. They couldn't see one at all but they could hear a bird, so these blind children in European schools were taught to know their birds by their call notes and songs. So he came back all enthused about how every child in Europe had a chance to really get acquainted with his environment, and how little we were doing in America. He used to come down from Sacramento and talk to me in my Fish and Game Commission office and get all enthused, and he had experimented a little bit with children at a children's home. He and his wife had spent Sundays and holidays trying to do something with these children and he started taking them afield and was quite enthused about how children loved to get acquainted with the things around them and how fine it was when they could do that.

Yosemite

Bryant: So this plan was tried out a little bit for the tourists in Yosemite in 1918; talks were given to the assembled

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Nature Guide Trips



1921 class addressed by Loye H. Miller

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trip, ca. 1920



A baby bird absorbs the interest of these children, 1923.

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Harold C. Bryant with nature class in Yosemite, 1921. Original program of education started by H.C. Bryant and Loye H. Miller in 1920, now (1964) involves a Naturalist or Historian in every national park and hundreds of summer nature guides and historians.

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Below and Left: Guided groups, 1920





Below: Dedication of Sequoia Tree, Yosemite National Park, 1921. H.C. Bryant, speaking. Governor Friend Richardson, right; Stephen T. Mather, 2nd from right; Don Tressider; Bryant; acting superintendent Earnest Leavitt.



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Left: Nature Guide Trip group at Upper Yosemite Falls, 1922.
Above: Columbia Point, 1924.

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H.C. Bryant addressing group at Yosemite, ca. 1926.



Nature Guide Trip, May 1928, H.C. Bryant, naturalist



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Bryant: crowd at Yosemite and then they would be taken out on field trips.

Drury: Were you a part of that?

Bryant: I was a part of that.

Fry: Was that also University Extension?

Bryant: No, that was not the Extension, that was under the Fish and Game Commission; I was in charge of education and research for the California Fish and Game Commission. That first experience was largely because one of the fish and game commissioners had been in Yosemite and had seen all those vacationing people that didn't know what to do with themselves, and he came to me and said, "Now, you ought to go up there and give them some conservation talks," so I'd done that, and it worked very well.

C.M. Goethe and Lake Tahoe Resorts

Bryant: Mr. C.M. Goethe of Sacramento planned to see what could be done the next summer in an educational program for recreationists at a big summer resort. So we planned

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Bryant: in 1919 to go to Lake Tahoe resorts and try to get at the vacationist when he was enjoying things out of doors and hand him some useful information. We made the rounds of the Tahoe resorts, one after another. His idea was to catch the people when they were on a vacation trip, so you can use the term "education for vacationists." At the Tahoe resorts they were very glad to have me come there.

I would talk to their assembled group at night and then the next morning I'd say, "Now, we're going outdoors and see these things, and you come along with me, we'll meet at eight o'clock." I'd get big crowds of people to follow around and learn something first-hand. They got quite interested. Instead of the second-hand information one gets from a University professor or from a book, these people got around to dealing with the real thing itself and tried to learn about it. You have to go out of doors to do that. Instead of having it in words you went out and actually got acquainted with the thing itself. And that was fun.

I had good success except at one resort where the

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Bryant: people had such trunks of baggage and so many servants looking after their children, and did so much card playing, that my talks didn't go over too well. But at all these other resorts where there were campers who took things easier, they just enjoyed these field trips and enjoyed the illustrated talks that were given at night about birds and animals and wildflowers and so on. That was 1919.

Drury: It was the summer of 1919 which was just the year that the Save-the-Redwoods League was incorporated -- and only three years after the establishment by law of the National Park Service.

Fry: We need to put in one little note here about Mr. Goethe's official capacity in this project.

Bryant: He was a businessman and banker in Sacramento. He used to subdivide property. At the top of his letterhead there were just columns and columns of different subdivisions. He would buy up big acreages and subdivide them and sell these lots.

Drury: A very remarkable man. Of course he's now eighty-six or eighty-seven. He's become very deaf. Dr. Bryant

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Drury: and I were just commenting on the fact that we don't go to see him any more, at his request, because he finds that if we call him up on the telephone he can hear us but if we're there present his hearing device doesn't help him.

Bryant: We corresponded all through the years. He used to come down and talk in my office, and we continued to correspond through the years.

Drury: I don't think you can minimize the importance of C.M. Goethe in this whole program of nature conservation. There's no question that he had a great effect on Stephen Mather and Madison Grant and some of the pioneers, both in the formation of the National Park Service and of the Save-the-Redwoods League.

Bryant: Now, if we say that this educational work in the national parks is a great going program today, let's first of all give a lot of credit to a lot of different men. It wasn't just one man like Mr. Goethe or like Bryant or like Loye Miller down in Los Angeles that you can point to, but this is a case where many men had contributed already along this line. Then came a group of men who were so thoroughly interested in the project that that got it going.

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Drury: Of course, we think immediately of Thoreau and Audubon and John Muir particularly, who really on this coast gave the initial impetus to the interpretation and appreciation of nature.

Bryant: Agassiz was the man that urged us to "study nature and not books."

Drury: That's right.

I want to say something about Mr. Goethe which I don't believe ever has been recorded. It's hearsay evidence and therefore wouldn't hold up in court, but --

Fry: It'll be perfect for history.

Drury: Yes. [Laughter] Anyhow, this is what my brother Aubrey, who was very close to Mr. Goethe, told me: that when Mrs. Goethe, a very charming person, agreed to marry him, she made him promise that half of his time and means would be devoted to public causes. He was a pretty hardboiled businessman -- to this day he is. He told me, for instance, that he had forty ranches strung up along the Sacramento River, and when they have a freeze like this at present it unquestionably means probably a loss of hundreds of thousands of

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Drury: dollars to Mr. Goethe.

Bryant: Let me tell you what he told me one time which I think is very interesting. I have to embellish the story a little bit by saying that he was willing to say that "ninety-seven percent of all my earnings go into betterment work." He's been interested in every kind of thing -- Church Federation, the American Recreation Association -- he even got interested in immigration for a while, and now he's all off on eugenics. He believes in only starting things, not supporting them forever.

Drury: His function is sort of as the catalyzer, you know, giving the initial impulse and then -- well, he follows up, but he's not inclined to monopolize any movement. A very good citizen, and in the national parks and in the Save-the-Redwoods League we particularly owe a great deal to him, but there are other causes we don't even know about which are just as much indebted to him.

This will interest you, Mrs. Fry, as an historian; it shows the hazards with respect to keeping files and records. I've spoken to you about that before. In fact, only today I was talking to Dr. Hart at the

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Drury: Bancroft Library about getting some archives that are now in a rather flimsy structure at Monterey, put into the Bancroft Library -- Stevensoniana, collections of Robert Louis Stevenson including the original diary of Fanny Osborne Stevenson which was recently published. But Mr. Goethe told me that in a fit of orderliness in his household -- this was after Mrs. Goethe died and he was ill -- they cleared out a lot of his records, including all of the correspondence between him and Stephen Mather and Madison Grant and John C. Merriam pertaining to the establishment of the National Park Service. All of that material is gone. I only wish you could have an oral interview with Mr. Goethe on some of these things, because although he's a much older man I think he has a much better memory than some of us here present. [Laughter]

Stephen Mather and the Yosemite Program

Bryant: Now, let's go back to that time when we tried out this experiment of education for the vacationists. At that

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Bryant: time in the Washington office of the Park Service there was a man who had been editor of Century magazine, and who was brought in. About the only main thing that had been done was to get out a picture book on the national parks.

Drury: You're speaking of Robert Sterling Yard, who was the founder, incidentally, of the National Parks Association.

Bryant: Mr. Mather had brought him in and paid his salary himself for several years, until the government said "nay" and so there was at least one man in the group who at the time I got there had moved off into the National Parks Association.

I think the next story is about Stephen Mather and his interest in doing something in the parks that would be helpful to visitation, so he found out, through Mr. Goethe very largely, that I was at Tahoe. I went back to my camp one night, and there was a note that had been left for me, signed by Stephen Mather, and he said, "I'm down here at the El Tahoe Tavern and I want to talk to you. Will you come down and see me?" I took the old steamer down the length of the lake

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Bryant: and went over to the hotel and there I met Mr. Mather, who told me of his ambition that there should be something done for the visitors to parks and that it should be something very worthwhile in the way of fundamental education regarding the chief features of the parks and that he thought I ought to give up whatever I was doing and go to Yosemite and start such a program.

I said, "Well, I'm all signed up here. I can't possibly go this year, but I think maybe it could be arranged another year." So we talked quite a little. He had also gotten in touch with a man named Loye Miller, who was then in the Los Angeles Normal School, and he had asked him whether he could help in this program, so that in 1920 Loye Miller and I arrived in Yosemite and we started to organize an actual program for the visitors.

Drury: But you were not then with the federal government; you were still with the state of California.

Bryant: I was with the state of California and they continued my salary, and Mr. Mather dug into his pocket, and Mr. Goethe did the same, and the two of them paid us

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Bryant: a little expense money so that we could afford to go. We weren't paid any salary. We weren't regular government employees. We were just donating our services, but we had a little expense money.

Drury: I think very early you helped develop the idea that an understanding and appreciation of the works of nature tended toward their protection from vandalism and fire and other destructive forces.

Bryant: And I found these people were quite enthusiastic at the opportunity to go out afield and get acquainted first-hand with what was along the trailside, and we had great numbers of the Sierra Club members arrive up there and the doctors -- it's strange how doctors almost more than any other profession, except the teaching profession, would be interested in that sort of thing and learning something about their surroundings.

Drury: Well, doctors have developed the ability to consume a lot of matter. Didn't you find that there's a limit on what the normal average person can absorb intellectually or aesthetically?

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Bryant: We discovered that particularly in the evening talks at Camp Curry; we would try to narrow it down to just one animal -- a gray squirrel, for instance, an animal they saw every time they went afield. Then we'd say, "Now, tomorrow if you'll meet at eight o'clock here, a group of us are going out to see what we can see along the trail, and we'll show you a gray squirrel."

Then we had another very fine drawing card, a water ouzel and its nest, and we'd suggest that we were all going up to see the parent birds feed the young.

I can remember times when we got over a hundred people, and one person can't handle a hundred people. We tried to limit it to twenty people at a time.

Drury: That still plagues the National Park Service.

Bryant: They can't yell loud enough.

Drury: Of course I deplore the fact that at some of the historical parks and maybe at most of the major national parks we introduced loudspeakers, which I thought was a step downward. Dr. Merriam quoted from Elihu Root a wise saying that always appealed

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"...To go out afield and get acquainted first hand with what was along the trailside..."



H.C. Bryant examining a cornflower, 1924.

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Wildflower Exhibition, 1920



Pine Squirrel



Glaciation, Eagle Peak

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Sierra Club studies a rattlesnake, 1924



Gopher snake studies, 1922



Studying aquatic insects under Ranger Naturalist Harwood, Lily Pond, Sentinal Meadows, 1926

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Right: Trees along the Valley Rim. Below: Deer Fawn found by H.C. Bryant; Whiteheaded woodpecker









Bear



Spotting a bird at Inspiration Point. H.C. Bryant in exp. pointing. 1902

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Drury: to me to this effect: They were going to build an auditorium in the Carnegie Institution and they debated how large it should be, whether it should hold 1,000 people or 500 or 3,000 -- this was before the days of loudspeakers. Elihu Root finally dominated the meeting and said, "No, I think we'll build one with 500 capacity, for the reason that it is very difficult to tell the truth if you have to raise your voice to do it." Which psychologically has some basis. I know from my public speaking experience you speak more extravagantly, you're in a different emotional state, when you're speaking to a big crowd than you do when you're just talking in matter-of-fact fashion to a small group.

I think that is one of the things that you had to wrestle with as chief naturalist in the National Park Service, the problem of keeping these talks and the nature walks more or less intimate and informal.

Bryant: And also down to the ground level of the kind of people you were talking to. You couldn't talk over their heads.

Fry: When you went to Yosemite in 1920 did you stay there until 1930?

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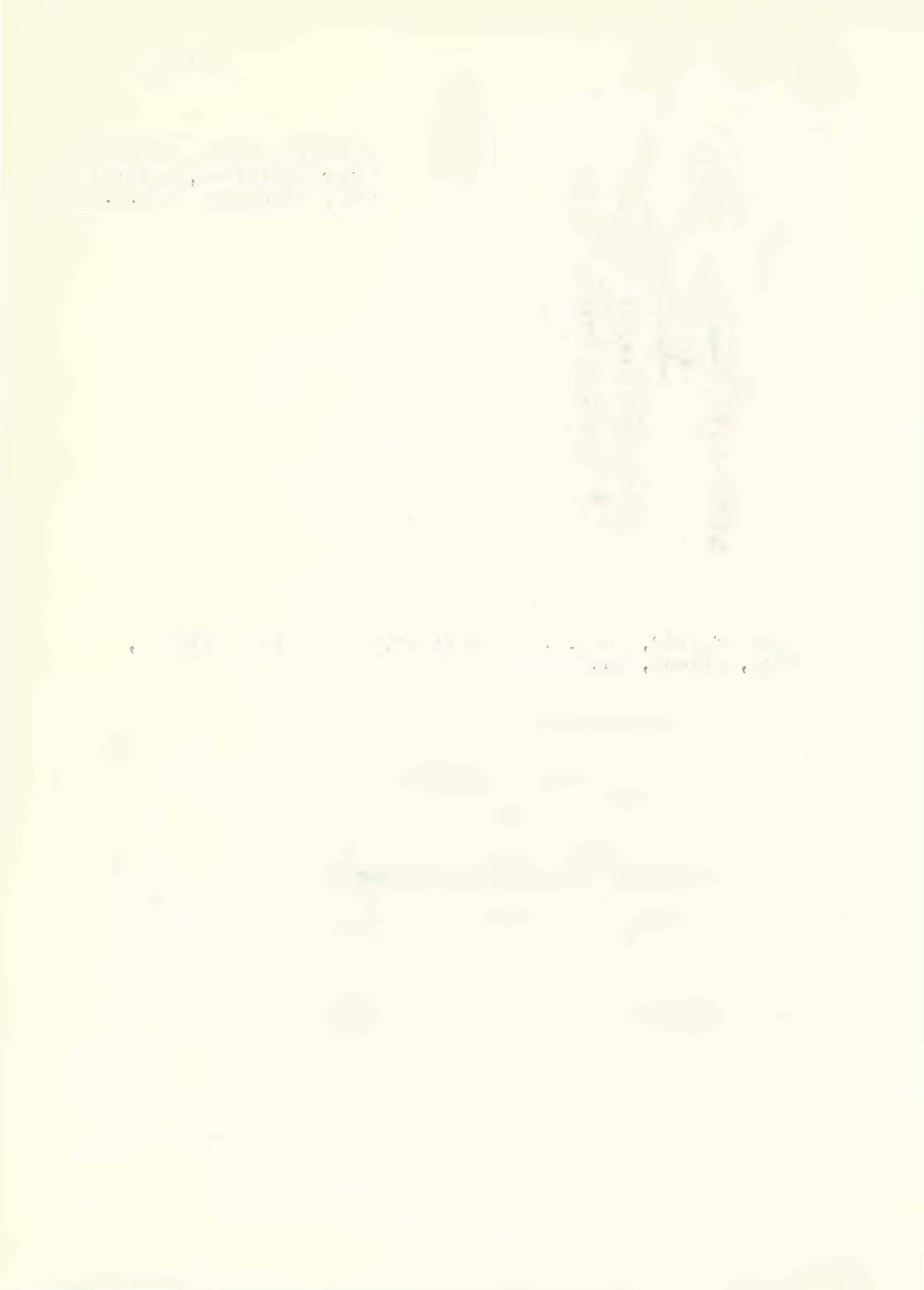
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Yosemite School of Field Natural History, established 1925, addressed by H.C. Bryant

Class of 1930, with, left to right, Naturalists Nichols, Smith, Bryant, and Harwell





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Bryant: Yes; that is, every summer. I was here on the campus during the school year; I had an appointment by the Regents each year, and also had the educational work for the Fish and Game Commission, but each summer I would go up and continue that work at Yosemite. We continued to make a demonstration or a trial of this thing to see how it would work.

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NATIONAL PARKS NATURALIST PLAN

Committee on Education in the National Parks

Bryant: But it wasn't very many years before especially the Sierra Club people would say, "We went to Glacier National Park this past year and we couldn't get any of this up there. Why don't they have this educational plan in Glacier?" And then they'd report on some other park that didn't have it, and they kept writing in to the Director of the National Park Service and saying, "How come at Yosemite we can get it but we can't get it at the other parks?" So finally by 1930 they invited me back to Washington to try to build a real organized program in all the national parks.

Fry: All this time you were at Yosemite were you being paid out of private funds?

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Bryant: By 1923 I began to be paid my expenses only, no salary, by the Park Service -- that is, I was taken on --

Drury: As a collaborator. That's what we call them now.

Bryant: Yes, but it wasn't exactly that. Then they began to pay me this small salary as a naturalist, but then I got no expenses.

Drury: That was when the salary of the director was $3,000 to $5,000 a year.

Bryant: I'm trying to think; I think I got $150 salary per month in those first days. I was there three months usually in the summer, and I lived in a tent with my whole family. I helped to raise my family up there in Yosemite, which was interesting.

Fry: When you went to Washington, how many people were there in interpretive work?

Bryant: I was the one and only educator in the park staff. This was 1930.

Fry: You mean anywhere in the United States?

Drury: There were naturalists in only a few of the national parks.

Bryant: Oh, yes, very few. There were one or two men. One

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Bryant: man was interested in the big game animals of Yellowstone, and so on, but there was no organized program of education in the parks until the first September I arrived in Washington.

Drury: This is something that probably Dr. Bryant will remember, but when he had the call to the National Park Service -- he was then with the California Fish and Game Commission -- you [Dr. Bryant] came down to San Francisco and we went out to lunch and you asked my advice as to whether you should join the National Park Service and leave California. I'm afraid I advised you not to. [Laughter] The National Park Service would have lost a lot if you hadn't detected the fact that my advice was fallacious. Of course I never dreamt then that I would ever have any relationship with the National Park Service.

Fry: This was Horace Albright who as Director of the National Park Service brought you to Washington?

Bryant: Yes. I think the main background there is that when Horace Albright took over as director he was thoroughly interested in carrying on this educational

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Bryant: program, and so finally he got me back to Washington and this too had a certain background; the reason why this work had a push ahead was because of the appointment of a committee on education in the national parks appointed by the Secretary of the Interior. Now, this committee was made up of a number of high-powered educators and it met under the chairman of the committee, Dr. John C. Merriam of the University of California Department of Paleontology. It got out first a sort of an outline of what a great educational program should be in the parks, trying to point out what should be done and how it could be done and so on.

So they also advised that someone should be put in Washington to organize and develop such a program, which now is called an interpretation program. In those days we talked about education and research. In fact, I went back to head up a division -- I guess they called it a division in those days -- of education and research. They had suggested that the man

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Bryant: should have good administrative experience and the power to get things done. So this boost by the committee report, which the Secretary had accepted, set the background for the plan to organize the work in all the national parks. By that time many complaints had come in about only one park putting on a program when here were all these other national parks -- something should be done all together in a big plan.

Fry: The Secretary at that time was an education-minded man, wasn't he? The ex-president of Stanford University?

Bryant: Yes, Ray Lyman Wilbur was Secretary when I went in, and the President was Hoover.

Drury: That's right. Wilbur came in midway in Albright's term there and then Horace served under Ickes for only a short time.

Bryant: That's right, then Albright got out and Cammerer came in.

Fry: So you went in with both superiors favoring this in a very sturdy way.

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Bryant: Both of them aided and abetted the whole program straight through and helped to develop it. Again it wasn't any one-man affair, it was because we got the aid of the National Parks Association and the Sierra Club in getting behind the program. Many organizations helped.

I think we ought to have this background, that Dr. John C. Merriam was chairman of this committee on education for the national parks, which afterwards became a legally appointed advisory board for the National Park Service.

Drury: More under administrative law than any statute creating it.

Bryant: So Dr. Merriam had a very great interest in everything in the parks, especially the scientific features that were in parks. He felt that something should be done about it.

Yavapai Observation Station, Grand Canyon

Bryant: For instance, he dropped in at Grand Canyon one time

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Harold C. Bryant, Grand Canyon, Arizona, ca. 1950

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Bryant: and got talking to some of the people that were standing on the edge of the canyon looking over, and he discovered that they were just hungry for an explanation. How was the canyon built? How far is it over there? Is the same kind of life over there as on this side?

Finally he came forth with a very wonderful idea that there should be some kind of a helpful station built on the rim and that certain facts, scientific facts, should be presented to the general public both in the form of a simple explanation by a man in charge and by a group of park exhibits. So there was built in Grand Canyon on Yavapai Point the Yavapai Observation Station -- named after an Indian tribe and carefully not called a museum.

Dr. Merriam first of all brought a group of scientists -- he was head of the Carnegie Institution of Washington, and he was in a position to know the best of the scientists -- and he said, "We'll pay your way." He invited them to Grand Canyon and he asked them, "How should this story be told to the

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Bryant: public?" And he got this --

Drury: First he asked the question and then he answered it. [Laughter]

Bryant: But anyway he got some good ideas from a lot of these visiting scientists -- mostly geologists.

Drury: But one person he didn't get along very well with.

Bryant: Well, it wasn't so bad. Bumpus could get along with most anybody. He followed Merriam as chairman of the advisory board.

Fry: You mean they agreed upon all of the varying aspects of the theory?

Bryant: That's right, and then administratively we tried to put into effect this plan and exactly what we would tell the public. So we found out all the questions they asked and said, "Well, we must answer this question for them and this question for them," and so on. And then we finally put out a beautiful summary outline of what should be given, the story of the Grand Canyon.

Drury: I was with Dr. Merriam practically every summer while this was being worked out, and I know the infinite

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Drury: pains that were taken and the tremendous amount of collaboration that was necessary. It wasn't just struck off in a few days or even a few months; it took several years to evolve it.

Fry: You didn't have very many funds or very much staff.

Bryant: No.

Drury: Didn't the Carnegie Institution make a small grant toward it?

Bryant: Yes, towards the building of the building and so on.

Fry: Are you giving this as a typical example, or was this unique?

Drury: This was the first one, and it's still the outstanding example of that kind of interpretation.

Bryant: This was one of the first attempts to put on an organized program in a park. It had been tried in Yosemite and now we were going to try and apply it to the visitor in Grand Canyon and try to see that he got the information that he wanted.

Drury: Do you mind my interpolating this idea? Prior to that, museums, so-called, had been established in some of the national parks; in fact the Yosemite Museum antedated the archeological museum at Mesa Verde and

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Drury: various others.

Bryant: This program at Grand Canyon was designed to help people understand three stories: First of all, what about the rocks of which Grand Canyon is made?

Second, how was the canyon cut?

Third, what was the effect on life in the canyon?

You see, in the story of the rocks we had the interesting story that down in the bottom of the canyon are some of the oldest rocks known on the crust of the earth. They go back about four billion years. That's an interesting story. Then you have all these layers of rock, one laid up on top of the other and so on. Everybody would ask, "Well, what is all that?" So we told the story of the rocks and the age of the rocks, how the young rocks were up on top; and then we had such help as that the top layer is just full of sea-shells and corals and all sorts of things that live normally in the bottom of the ocean, and we had to explain why you had these fossils that once lived at sea level or below now seven thousand feet up in the air. That gave us such a nice chance to say that what

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Bryant: was once down there has been raised up by the building of a great plateau, the folding up of a big plateau.

Then we tried to answer the question of how was this canyon built? How did it come to be? So we had the great story of the erosion. How the big river, the Colorado River, the second largest river in the United States, had cut this great deep canyon. The funny thing is that it was not cut as the average person would understand; that was one of the points we had quite a little difficulty in putting over. They thought that the river originally must have been up here where we were on the rim of the canyon, and cut and cut and cut until now the river is 5,000 feet down. But that wasn't it, you see. The river was always down there, and the plateau came up against the river and the river cut as the plateau came up.

Drury: Like cutting a board with a buzz-saw, so to speak. As you raise the board up the saw rips through it.

Bryant: We used to illustrate that with the example of a layered cake; the commonest way of cutting the layer cake is to take a big butcher knife and cut from the top down

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Bryant: to the bottom; but what if you took your cake over here and put your knife over it and pressed the cake up from the bottom? You see how you'd still cut it so that you could look down in and see the cake, all the layers in the cake, but you'd hold the knife still. It didn't move. Only the cake moved.

And then the third very interesting point was the life of the past and the life of today and how it was affected by this great gorge that had been cut out there, because we had animals that were found only on the north rim and animals that were found only on the south rim, and therefore the canyon had been a great barrier to the movement of life. We had wonderful fossils, you see. We found fossil footprints of dinosaurs and fossil footprints of amphibians and reptiles, great numbers of them, forty or more named animals that we've never seen a bone of at all.

Drury: Do you think there was too much emphasis upon factual matter and not enough upon the inspirational aspects of the Grand Canyon?

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Bryant: I'm glad you asked that, because if there was anyone who believed in the inspirational value of the parks it was John C. Merriam. He was the key man in this group of advisors who was always emphasizing that if we want to have the tourists think great thoughts, we must have them understand what they see when they come into a park.

Drury: See not just with the intelligence but with the emotions also. The aesthetic phase is just as important to him as the intellectual.

Fry: Once you have this intellectual lesson of the enormous history that's lying before you there, what more would you add to that? That has an emotional impact in itself.

Drury: If I may, let me try to interpret what we're talking about. Dr. Merriam's idea was that instead of having a dry-as-dust exhibit inside a museum, you'd sit out there, and here was the great landscape before you -- you couldn't miss it because you were a part of it. All of this interpretation of its meaning was something that not only Dr. Merriam but the inter-

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Drury: pretive force of the National Park Service and people generally felt enhanced the appreciation of its beauty and magnificence.

Bryant: The attention was always directed to the features in the canyon that told you these stores. We would say, "Here is a binocular, you look and this is what you see." We would bring it up from down there and put it right here where you can see this is what it looks like close at hand.

Drury: I think the story wouldn't be complete without saying a word at least about Louis Schellbach who in my opinion was one of the greatest spielers we ever had. He was a spell-binder and he told this story of the Grand Canyon, as it had been taught to him of course by the superintendent and by others, so eloquently day after day, month in and month out, and seemingly never losing the freshness of his enthusiasm for it. I think he was primarily an archeologist, wasn't he, in his profession?

Bryant: An archeologist, yes.

Drury: I remember one occasion when a bus tour came by the

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Drury: canyon and they stopped and were given this talk by Louis Schellbach and there was one little Japanese boy with thick-rimmed spectacles who sat there so enthralled by the thing that the bus went off without him. [Laughter] He just sat there dreaming about it.

But don't you agree that although Louis was histrionic, of course, and he showed off quite a bit, he was a very effective lecturer? And who was the other one? Christiansen? He was quieter than Schellbach, but possibly more of an original thinker.

Bryant: That's right.

Fry: This was in the thirties?

Drury: Yes.

Bryant: First of all, the first key man was Ed McKee who is still one of the greatest geologists on sedimentary geology in the United States and is working for the Geological Survey. He had been brought up in Washington, D.C., and had gotten into a boy scout troop headed by Francois Matthes, a great geologist, and that stirred his interest in geology and he finally came out as a naturalist there at Grand Canyon.

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Bryant: He wrote great tomes on the different layers of the rocks of Grand Canyon that were published by the Carnegie Institution. He was a truly fine scientific research man, not quite so good in his diction and talking and so on, but he did a wonderful piece of research. In fact, to this day he is known as the outstanding geologist on sedimentary rock.

Fry: And he helped you in this initial program?

Bryant: Oh, he was the naturalist there for years.

Fry: First you tried to find what questions the tourists asked most frequently, and you set up your exhibits around this. Then did you more or less follow this same procedure at all parks?

Bryant: No. It's about the only place that has an educational observation station.

Drury: In the interest of continuity, I think it would be interesting to have your appraisal of the Yavapai Observation Station as it is today. Have you any idea whether it has carried on in the spirit and the intent in which it was founded?

Bryant: Yes, even though at Grand Canyon now there is a fine

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Bryant: museum development known as a vistors' center. Instead of calling it a museum they call it a visitors' center, and that carries all the rest of the stories. But the geology and the paleontology story is still at Yavapai, and all the buses that go out along the rim all stop for passengers to hear this talk.

Fry: It seems as though you were very careful to get a program that would take in a wide span of the American public, say from an eight-year-old to an eighty-year-old, and from a machinist to a doctor. They could all understand this.

Bryant: When we had this man Schellbach, he was a little bit of a dramatist and he talked with his fingers, explaining layers and all the different things about it, and he could talk to the children and get a laugh out of them. He'd always start with this story about the man who rushed out to the rim and had a look and then turned back to his car and the people in it and he'd say, "Gosh, it's nothing but rocks. Let's go on and get something to eat." [Laughter]

Drury: I remember Louis Schellbach had one quip that he got

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Drury: off that was always good about how men had advanced because of certain things; he said, "For one thing, he had the opposing thumb and fingers, and for another he had a chin, unlike other animals." He said, "He's been sticking it out ever since." [Laughter]

Bryant: And then he had another very wonderful story that helped give people an idea of what past ages have been and where man comes into the picture.

We can go back four billion years when there was no life on the earth at all and take up life from the little tiny algae that had been found in those rocks in the canyon and on up to the animal footprints and so on, and then finally man comes into the picture, and we can show lots of Indian ruins all down through the canyon. And to try to give people some idea of the sequence and the amount of time that's gone by through the years, he'd always tell this story about the Washington Monument and the distance up here to where you have windows was so many years of time and so on, and then if you put a dime on the top of it the thickness would represent the era that's just passed, and then take up the era that we live in and

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Bryant: you put a little piece of paper flat on top of the dime on the Washington Monument and thus you'd have a comparable column that showed these great expanses of time.

Fry: I think any future historian interested in the history of ideas might wonder if you had any experience with groups who simply couldn't swallow this panorama that was laid before them.

Drury: I used to argue with Dr. Merriam on that, too. I don't think any person -- I know I couldn't -- could thoroughly absorb all of the detail, even though it were oversimplified and put in tabloid form. It was still too much for the normal mind to absorb.

Bryant: But at least we attempted to simplify it in such a way that everybody could understand it.

Fry: What about people who objected to the theory of evolution?

Bryant: That was interesting. We occasionally had reactions to that. We had such a fine chance to show evolution from the fossils of the lowest forms of plant life to trees very much like those we have today, and then

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Bryant: from the animals like the trilobite, a little crab-like creature that crept on the bottom of the ocean, clear on up to dinosaurs. We had it all laid out there and once in a while we'd find a fundamentalist who'd complain about that. Now my way of turning the subject a little bit was to say that that was the way God made things as far as our scientists could determine, and they couldn't have much of a comeback to that.

Drury: Well, anyhow, there they were. [Laughter] Even when you were superintendent of Grand Canyon in the forties you took your turn at the lecture, I remember.

Bryant: Yes, right along, trying to keep in touch with the public and understand what their reactions were. Whenever a naturalist was sick or had to get away, then I'd go out there and take over.

Drury: Now, let me tell you a story first so that this won't be too serious. Dr. Merriam was, of course, as a scientist much interested in the Scopes trial in which William Jennings Bryan took a very prominent part -- in fact at which he expired, probably due to

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Drury: the hotweather and his overeating. We all followed it very carefully. I remember about that time Dr. Merriam and some of us were up in the redwood country where at Arcata some zealous Republican had erected a bronze statue to William McKinley. It showed him in the traditional frock coat which is not a flattering costume for anyone, least of all a short man like McKinley. [Laughing] With a great big head and a bushy head of hair. As we passed by there, thinking of recent events in Tennessee at the Scopes trial, Dr. Merriam took a look at it and he said, "Do you know, I think if William Jennings Bryan had seen this statue of William McKinley he would no longer have any doubt that man was descended from the ape." [Laughter]

Aesthetics and Crater Lake

Bryant: And that brings in Sinnott Memorial at Crater Lake, where Dr. Merriam kept thinking, "Now, this is a beautiful thing, this is a beautiful scene. How do you teach beauty?"

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Fry: That's what I was going to ask you. If you try to teach the awesome beauty of Grand Canyon or Crater Lake you'd almost be gilding the lily. What more could you do than just let people look at it?

Drury: Well, here is something that Dr. Merriam in one of his lighter moods told me about some tourists there at the Grand Canyon. They looked at it and the man turned to his wife and said, "It's just about like an elephant; when you've seen it you've seen it." [Laughter] I suppose that's what you mean when you say you are painting the lily if you start to analyze it. And yet there is one school of thought that believes that appreciation of art and music and literature can be enhanced by the study of the aesthetics of the field.

Bryant: But Crater Lake was quite a different program from Grand Canyon. This was beauty that everyone reacted to: the blue, blue lake, down in a volcanic crater. Dr. Merriam spent a good deal of time trying to see what we could do there, and he got quite interested in nature appreciation and in books on nature appreciation. And of course when we came up there we had

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Bryant: to get around to art appreciation. What is there that is so artistic that appeals to people in the scene?

He finally tried a scheme that I don't think worked out too well, but at least it was a try. A number of good artists were brought to Crater Lake to sit down and paint into the picture what they saw, and then we set these pictures up. I remember Eugen Neuhaus had quite an angry scene, I think it was a storm over Crater Lake, and somebody else pictured it in bright sunshine. Anyway, a number of very fine artists went there.

Drury: Didn't Gunnar Widfors make a number of paintings of Crater Lake? He was a Swedish watercolorist, had been the court painter for the king of Sweden and for some reason or other came to this country. He was discovered by Stephen Mather, who sent him out to the national parks and up to the redwoods. I have three of his paintings of the redwoods. He was a very rapid worker; I remember I'd leave him in the morning at a spot and come back in the afternoon and he'd have one of those paintings completed.

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Bryant: When we left Grand Canyon the staff there gave me a wonderful Widfors.

Drury: The Cosmos Club has two. They're quite valuable today.

Bryant: Yes. Then we even experimented with hiring a teacher of art at the University of Oregon and bringing him down there to lead some of the trips and try to show people the beauties of the lake and so on.

But in the end we almost decided that if you give a person quietude and solitude on the rim of Crater Lake it would be better to have them get it themselves than to try to pass around from one person to another what beauty is. You immediately get an artist who talks about lines and forms and all sorts of things, and people didn't take to it too well. We just thought we'd put nice benches in the finest places to see the lake and let them go themselves and just soak it into their own souls instead of trying to have it taught.

Drury: I remember for instance Dr. George Ruhle talking up there. He was the park naturalist, and made a very eloquent presentation. He dealt superficially with

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Drury: this question of aesthetics. Dr. Merriam had an essay he published, the title of which is, "Why is Crater Lake so Blue?"

Bryant: The only answer he could give was the scientific answer. It has largely to do with depth of water and lighting and the reflection of the sky in the water.

So in the different parks we had different sorts of problems to meet. We couldn't use just any form that would fit all parks, but we had to take the chief features of each park and from that work out the story that was to be told the traveling public.

Drury: But we didn't have any devices comparable to Yavapai and Sinnott Memorial, did we, in any of the other parks?

Bryant: No.

Drury: Have you been to this new observation post that they've built on Klingman's Dome?

Bryant: No, I haven't. I've seen pictures of it. It's made of concrete.

Drury: Do you like it?

Bryant: Well, I don't know. I'm not one of those who think it is a terrible mistake, because I think you have to take change from year to year. You can't go back and

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Bryant: say that just because we used to use architecture that was rustic and made out of wood that we've got to stay with that forever. We've apparently had to get around to concrete.

Drury: Well, I don't know. You surprise me; you've evidently become more of a modern than I have.

Bryant: Perhaps a little more than John C. Merriam.

Drury: I still think that what you might call indigenous architecture, architecture based on the building materials that you find at the site, whether it is timber or stone, or even in Hawaii perhaps thatched roofs, would be more germane to the landscape than these modern atrocities. One of the pleasures that I took when I was in the National Park Service was knocking on the head many a plan which called for these contemporary designs which have since blossomed forth.

Bryant: Like the Jackson Lake Lodge at Grant Teton? All made out of concrete, and yet it simulates wood.

Drury: I know, and that again isn't genuine, of course. I think that bears somewhat on this thing we're talking

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Drury: about, the question of revealing the parks and all of their meaning as the natural features were created and not as they've been embellished by the hand of man.

I'm afraid that that's about all I should take time for, and I haven't done anything -- except I take full credit for bringing you here, Dr. Harold Bryant. I think it's been a very interesting discussion of a phase of the national park program that I will now not have to discuss in my own interviews with Mrs. Fry. [Laughter]

Fry: Thank you very much for coming, Dr. Bryant.

Transcribed: L.W.
Typed: S.R.

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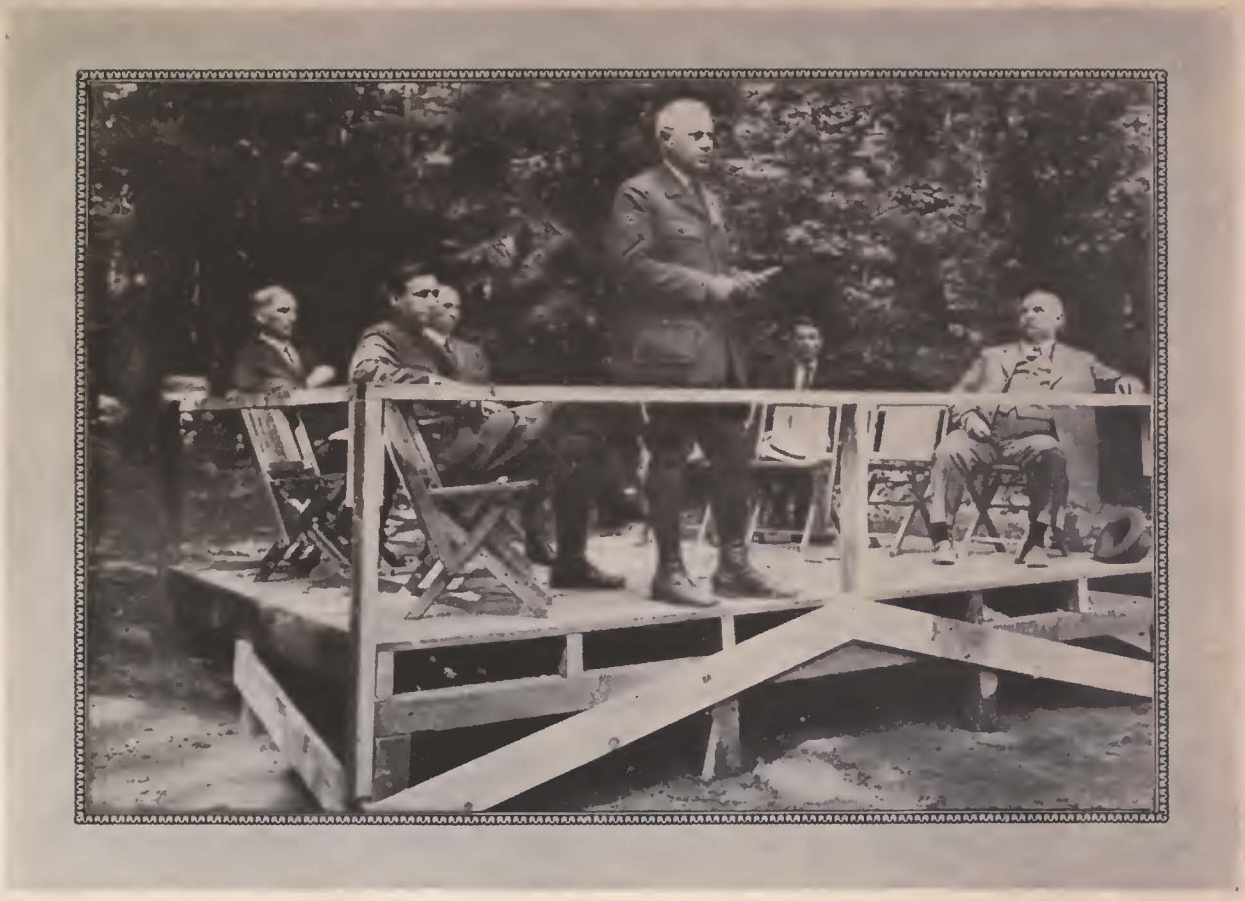
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Stephen T. Mather (standing) *and the author* (left foreground) *attend 1921 ceremonies in Yosemite*

From Guides to Interpreters

By Harold C. Bryant

WHAT is the bird with a yellow breast and red head?

What bird steals butter from our ımp table?

Where can I see a sequoia tree?

Are there rattlesnakes here?

These are familiar questions to nat-ralists with the National Park Service. or nearly half a century these ques-ons have been answered by men whose b it is to interpret the glories of nature the millions of visitors to the National arks, to increase the enjoyment and nderstanding of our great natural pre-rves. It was not always so.

The effective modern interpretative rvice was started by the first Director the National Park Service, Stephen . Mather. He wanted to make sure at every visitor to the National Parks as inspired by their beauty and ap-reciated their eternal values. Out of his wn pocket he hired Robert Sterling ard, an editor of *Century Magazine*, to repare a picture book about the parks. nown as the *National Parks Portfolio*, was sent to every congressman and ent through six editions.

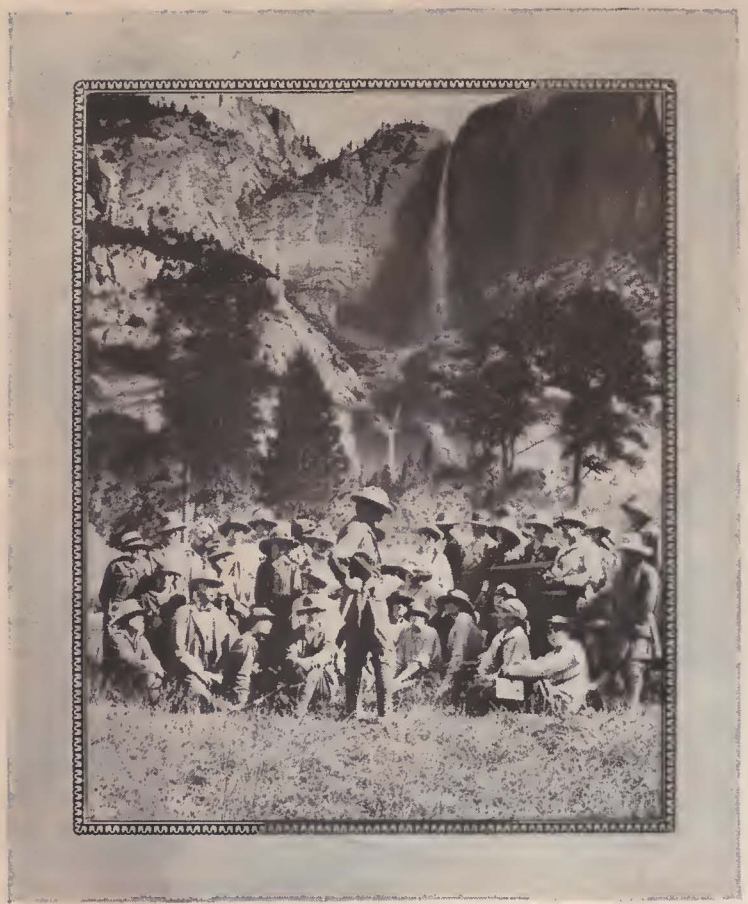
The Director's second step was to eate the National Parks Educational ommittee of seventy-five college presi-nts and educators. This was converted the National Parks Association in 1919, an organization that has been enormously helpful in publicizing the inspirational and scientific significance of the National Parks.

In that same year Loye Holmes Miller from the Los Angeles Normal School and I, from the University of California at Berkeley, were guiding nature study groups at Lake Tahoe. Mr. Mather visited us and by the following year we were in Yosemite organizing a free Nature Guide Service. A Sacramento business man, C. M. Goethe, who had been greatly impressed by guided trips for children and adults in central Europe, helped Mather finance the experiment. Soon other parks demanded a similar service. Superintendent Frank Pinkley trained his men in the southwest National Monuments to guide the public through Indian ruins. Visiting college professors were urged to give talks at evening campfires and to lead field trips.

In 1928 the Secretary of the Interior appointed a committee to study the educational problems in the National Parks. The chairman was Dr. John C. Merriam; Drs. Herman C. Bumpus, Vernon Kellogg, Frank R. Oastler and I comprised the rest of the committee to report on field studies. Our expenses were paid by the Laura Spelman Rockefeller Memorial fund. The report, submitted in 1929, listed some of the general principles and made a number of recommendations, among them the creation of an advisory board and a division of the National Park Service to administer an educational program in the parks. Both these recommendations were put into effect in 1930.

Since that time efforts have been made to place a naturalist or historian in every national park and monument. Improvements have been made in park programs for field trips, campfire talks, nature trails, museums, libraries and bulletins. The educational program is now known as the Interpretation Service and there are divisions of History, Natural History and Museums. State and city parks have installed naturalists as has the U. S. Forest Service.

When Loye Miller and I started our service in Yosemite in 1920 we were housed in tents and we had a table in the Chief Ranger's office. We conducted field trips, gave evening talks and held office hours to answer questions. A wildflower show helped visitors identify the flowers in bloom along the trails. Children engaged in special "bark-feeling" and "leaf-smelling" competitions and brought in new finds from their exploring trips. Now there are Junior



Loye Miller guides Yosemite visitors in the early 1920's



The author, on a Devils Postpile pack trip, about 1924

Museums and Junior Nature Schools.

There were nature trips around the Valley and longer ones to Eagle Peak, Glacier Point, Little Yosemite, and finally a weekly trip around the loop of the Hikers Camps. With the help of the University of California and other schools, bird trips were led by ornithologists, flower trips by botanists and insect trips by entomologists.

Museum materials were collected and by 1928 the American Museums Association and the Laura Spelman Rockefeller Fund had provided museum buildings in Yosemite, Yellowstone and Grand Canyon National Parks. Ansel Hall made park museums tell complete stories instead of becoming depositories for separate dusty exhibits. Then museum curators were added.

As other national parks followed Yosemite's lead there was a great demand for naturalists and historians. Men with the proper education and experience in the field were hard to find. A Yosemite School of Field Natural History was created and groups of twenty students were recruited throughout the nation. Graduates of the school went to work for the parks, and at camps for Boy Scouts and Girl Scouts. The course ended with a two-week high country trip and research work on marked ecological plots. This work has been continued by field school alumni who return each year to contribute to the ecological study that has been continuous for more than twenty years.

Before the field school was closed during World War II more than 300 students had been trained there. Now there are other schools, as well as the Horace A. Albright Training Center for rangers and other protective personnel at Grand Canyon with its fine new school building and apartments for the students and their families, and the Training Center for naturalists and historians at Harper's Ferry, Virginia.

Since 1930 studies have been made of wildlife in the parks. Much has been learned since the first survey with respect to existing status, unsatisfactory conditions and the orderly development of wildlife management. Until July 1, 1931, the Wildlife Survey was supported by private funds. Under government auspices since that time, this research project has developed much important knowledge on 279 birds and animals, the interrelations of organisms, feeding of mammals, protection of predators, and has studied coyotes, wolves, the surf bird and the trumpeter swan.

With the help of the park naturalists and historians the National Parks have become the great universities of the out-of-doors. The origin and history of the earth, the various species, and the habits and interrelations of plant and animal life can be taught with the superlative materials found in the National Parks.

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NATURE GUIDING

By HAROLD C. BRYANT

In Charge Nature Guide Service, Yosemite National Park

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NATURE GUIDING

By Harold C. Bryant

The past few years have seen the rapid growth of a movement to popularize the study of nature. Mountain and hiking clubs are emphasizing nature study resorts and summer camps advertise nature study field trips, and national parks are offering regular instruction in natural history. Organized work of this type has been denoted "nature guiding."

It is doubtful if anything excites a child more greatly than does the sight of some living creature. Nor is this interest in living things lost in adult life, for those who visit Yellowstone National Park usually have more to say about the live bears than about the geysers. The average person is more thrilled by the sight of a deer crossing the road in front of an automobile than by the enormous cliffs and waterfalls of the Yosemite. "What is the name of that tree?" "What bird is that?" "Does a deer actually lose its 'horns' each year?"—such are the questions that continually confront the summer camper. To hear a trained scientist treat of these very subjects of most interest in a lecture or, better still, to accompany a person who can actually name and tell the life history of plants, birds and animals along the trailside, wins the immediate approval of the vacationist.

In several countries in Europe attempts have been made to furnish to tourists and others guides qualified to furnish scientific information regarding the living things seen. That work of this kind should be better developed in Europe than in America is to be expected because of the greater amount of nature study training given in the public schools and the much greater emphasis on field work. Every school child in Sweden, Denmark and several central European countries is taken afield where first-hand information is to be obtained regarding plants and animals. A group of school children, each with a collecting box for plants or for insects, is a familiar sight everywhere. Thus far in the United States nature studies, along with other studies, have been pursued almost entirely within a school building, and then with subjects to be viewed under a microscope, resulting in a dearth of information usable in the open.

What better definition of nature guiding can we find than that given by Enos Mills, a pioneer in the field: "Nature guiding is helping people to become happily acquainted with the life and wonders of wild nature."

In America the first attempts at satisfying the desire for information regarding the living things seen along the roadside were made by such organizations as Audubon societies, museums, botanical and zoological socie-

ties and hiking clubs. One of the first private ventures in nature guiding was begun by Enos A. Mills in Estes National Park. Mr. Mills found that his guests at Long's Peak Inn were very receptive to natural history lore and he sought to furnish nature guiding as a feature of entertainment. The response from old and young was so immediate that he became sufficiently impressed with the work to write about it.

Full credit must be given Mr. Mills for the first adventure in nature guiding, as such, in a national park and for originating the term to describe this type of guiding as distinct from the usual horse wrangler type furnished. His "trail school" was the first of a group continually increasing in number.

The year 1901 seems to mark the beginning of emphasis on the field trip as an important feature in club educational work. In that year the Audubon Society of the District of Columbia inaugurated spring field excursions for the study of bird migration, and these have been maintained ever since. Wells W. Cooke, Dr. T. S. Palmer, Mrs. F. M. Bailey and other workers of the Bureau of Biological Survey willingly act as leaders. Similarly, field trips have been emphasized in Massachusetts and in Oregon with E. H. Forbush and William L. Finley as motivators.

In the summer of 1901, Dr. T. Gilbert Pearson, now president of the National Association of Audubon Societies, undertook work of this kind at the University of Tennessee. "Bird walks," as the excursions were called, were continued for seven successive seasons. Continuing his interest in this work, Dr. Pearson, in 1915, began encouraging field trips and lectures on birds in the various summer schools by offering financial assistance from the National Association of Audubon Societies. The results have been so favorable that the system has been continued from year to year.

In connection with university courses in geology, entomology and zoology, field trips often constitute a definite part of the work. Too often they are sporadic rather than regular. Dr. A. A. Allen, of Cornell; Dr. Joseph Grinnell, of the University of California, and J. O. Snyder, of Stanford University, are notable professors who have emphasized the field trip in classes in ornithology. Professor Lynde Jones, of Oberlin, and a few others have conducted transcontinental trips where field studies have been stressed.

In a few instances, field excursions comprise a part of the nature study program in the schools. The Los Angeles City Nature Study Department has introduced trips afield and annual trips to mountains and seashore for part of the program. These larger excursions number thousands, and yet are so organized as to bring both profit and pleasure to the children. At the present time many nature clubs and hiking clubs offer field trips and thousands are thus led to study nature first hand. Last year more than

2,000 persons attended field trips offered by the San Diego Museum of Natural History, but similar records by other museums are few in number.

In 1919 the American School of Wild Life Protection was established at McGregor, Iowa. This school has held regular summer sessions with emphasis on both class and field work given by specialists. A nature lore school founded by Dr. William G. Vinal, of the Rhode Island College of Education on Cape Cod, is another recent venture. Its term of one week seems wholly inadequate, but its emphasis on "learning by doing" is to be commended.

Boys' and girls' summer camps throughout the United States have found it to their advantage to offer trips afield under a competent guide, and early demands for trained field naturalists came from this source.

Nature guide work in the summer resorts of California really had its beginning in 1918, when the California Fish and Game Commission sent its educational director to Yosemite National Park to deliver a number of lectures. As a stimulus to further interest in wild life, field trips were offered which proved very popular. In reality, the concept of nature guiding was a product of the World Survey, which brought the idea from Europe and planted it in America.

This work caught the attention of Stephen T. Mather, Director of National Parks, and in the spring of 1920, through a cooperative arrangement with the California Fish and Game Commission, the National Park Service instituted a "Free Nature Guide Service" in Yosemite National Park.

Formal lectures and short ten-minute campfire talks are given alternately at the main resorts in the Park. Most of the formal lectures are illustrated with lantern slides, motion pictures, or whistled imitations of bird songs. The shorter talks often deal with some particular animal, bird or tree, or answer directly some often repeated question on natural history. Occasionally, visiting scientists help out by giving lectures. Outlying camps and lodges are included in the program.

The daily field trips offered the public form an important feature of the nature guide service, for here individual instruction is given and a direct personal contact made. So popular has this feature become that difficulty in handling the groups has been experienced. On many occasions, attendance on the morning trips exceeds fifty. Improved service to the public was attained by offering field trips at the back-country lodges and by offering all-day trips to the rim of the valley, the latter affording an opportunity to study changes in fauna and flora with a change in altitude. Although the trips start alternately from the different resorts, it was found that many would travel between the camps to repeat their experiences of the day before. Many teachers made use of the opportunity to make a longer and more thorough study by attending regularly.

To the child nothing is more interesting than the living thing. The second-hand information from a book may prove entertaining, but the information obtained at first hand in the open is entrancing. Why should nature study so often be taught within four walls when more stimulating subject matter and surroundings may be had out of doors?

Herb-smelling and bark-feeling games are played and the children familiarized with the life about them. Teaching children to "read the roadside" seems particularly worth while, for they retain the knowledge given them more accurately than adults, and their interest in natural history is being stimulated at the most receptive age.

Questioners appear by the hundred during the office hours held each day at the office of the Nature Guide Service. Some are attracted by the stuffed specimens, and still others by the sign inviting them to ask questions. During the height of the season over fifty questions are answered per hour as proved by actual test. What bird steals butter from our camp table? What is the plant that looks like a giant red asparagus tip? What is the name of the bird with a red head and yellow breast? What lizard has a red head and blue tail, and is it poisonous? Does the redwood grow in Yosemite Valley? What kinds of pine trees grow in Yosemite? Such are the questions asked by every visitor to Yosemite National Park. If no one is near at hand to satisfy such a craving for information, the problems which confront the visitor are soon forgotten. If someone is near at hand, interest is stimulated, and the visitor receives a thrill plus a contentment of mind which makes his vacation more worth while.

The need for reference works has been met by compact nature study libraries furnished by the California Nature Study League. Two such libraries have supplemented those at the Sierra Club Lodge and at the Museum. Stimulated by a lecture or by the experience on a field trip, many seek additional nature lore through the medium of books.

Although the Nature Guide program emphasizes study of the living thing, yet there are those who may be stimulated to study the living thing as a result of a study of a specimen. A fine fire-proof museum, where one may check knowledge gained afield, is a part of the educational program. Mounted birds and animals, insects and plants furnish opportunity for initial study by those incapable of tramping, and opportunity for a close view and further study by many others. In addition to supplementing the attractions of a national park, a museum always furnishes through its displays a glimpse of what is to be seen and enjoyed in the park. Furthermore, it furnishes excellent general headquarters for all educational activities.

A display of wild flowers is maintained throughout the summer months at each of the resorts, and through the interest of a local resident is contained throughout the winter, it being possible to display trees and shrubs

even though wild flowers are scarce. The success of such flower shows is made possible through the employment of a trained field botanist. During the summer season over four hundred different wild flowers, trees and shrubs are exhibited, each properly labeled and displayed. Many unable to climb to timber line have an opportunity to study the flowers of the alpine region, and everyone who notes an interesting flower in bloom may readily identify it by finding it in the display. Numbers of people have spent hours, notebook in hand, studying exhibits.

Beginning with the summer of 1922 a mimeographed set of notes under the heading, "Yosemite Nature Notes," has been issued weekly and posted and distributed free to all interested. Instructive notes on the various interesting species conspicuous at the time, have been largely utilized. Thus readers of the Nature Notes are able to follow the changes in fauna and flora with the advance of the summer.

Although primarily interested in teaching and recording the biological features of the Park, yet the Nature Guide Service has taken every opportunity to boost for the national parks, to preach conservation and proper sanitation. Furthermore, special interest has been taken in the new museum, and a number of botanical and zoological specimens have been prepared and added.

In 1921 a nature guide service was established in Yellowstone National Park. Emphasis has been placed on evening lectures by trained scientists, the community centers affording a unique opportunity for development along this line. Every center is furnished a nature guide lecture each evening. A museum attracts hundreds of visitors. Field trips do not form a part of the program.

Glacier National Park inaugurated a nature guide service in 1922 with the aid of the Montana State University. Here, also, emphasis was placed on a lecture program. The same year saw a beginning made in Mount Rainier and Sequoia National Parks.

The results of nature guiding are far-reaching. Apparently the contact made with the student is oftentimes lasting and, occasionally, even influences very definitely the future program of certain individuals. In 1921 a man became interested in the field trips offered by the Yosemite Nature Guide Service. He became particularly interested in wild flowers. Returning in the summer of 1922, he reported that although he has usually considered botanizing a suitable hobby for eccentric women, yet he had found there was really something in it and that he had chosen it as his own hobby. During the winter season he collected 367 different species of plants, properly mounted the specimens and labeled them. Returning in the summer of 1922, he asked for some sort of work that might aid him in his studies, and he was appointed to help out with the flower shows. This man has

continued his interest, and just the other day he wrote, reporting that an additional 200 specimens secured in another part of the state had been added to his collection, and another correspondent describes his herbarium as the finest she had seen.

The writer was returning to Berkeley from San Diego when, on passing through a small town and having stopped his machine at the curb, a lady approached and said: "You do not know who I am, but I was out with you on nature-guide field excursions in Yosemite last summer. With the start these trips gave, I have become intensely interested in the study of birds. I live at Laguna, where many shore birds are to be seen during the migration period. Can you tell me what bird answers to this description?" She followed with a careful description of the western willet so that there was no difficulty in solving the problem for her. To be able thus to stimulate students sufficiently so that they continue their studies of living forms after leaving the Valley is perhaps the most worth-while thing that can be accomplished by a nature guide service.

In the summer of 1922, a professor from an eastern institution came to seek rest and renewed strength in the Valley. His doctor had ordered him to do no studying on his own subject, which happened to be psychology. This professor immediately changed his viewpoint and began an active study of the flora and fauna of Yosemite National Park. He carried his botany with him everywhere he went and became so interested in the aid secured through the nature-guide program that he attended field trips and lectures regularly, and later even aided the guides when large attendance made an additional instructor necessary.

A school superintendent took the writer to visit the room of a grammar-grade teacher. A table contained a fine display of wild flowers. Pictures and specimens of birds were in evidence. The superintendent introduced her as one doing the best nature-study work in the city. The teacher replied that her inspiration had come largely from a nature-study course offered by the Yosemite Nature Guide Service.

There is abundant evidence to show that thousands have been awakened to the pleasure to be found in nature study and, with the proper inspiration gained, have gone afield with eyes and ears open to see and to hear more completely themselves and to pass on enthusiasm to others. It is also plain to see that thousands, having seen "game hog" pictures and had pointed out to them the necessity for conserving the natural resources, have more actively espoused the cause of conservation.

As E. H. Forbush has pointed out, the benefits of study in the field are two-fold, for: "The outdoor use of eye, ear, and limb, necessitated by field work, tends to fit both the body and the mind of the student for the practical work of life, for it develops both members and faculties."

Particularly in a democracy is it necessary to have the public kept in touch with the findings of science. "There is no more dreadful sight than ignorance in action." The more scientists make known the products of research to the citizenry, the greater the progress toward a triumphant democracy.

Biologists are beginning to fear the time when there will be no plant or animal life in its natural environment. The wilderness is fast disappearing and unmodified associations of plant and animal life becoming rare. The recent completion of a naturalists' guide has shown the preponderance of modified areas, with their introduced species, over the natural conditions. To be able to point out the danger of present tendencies "on the ground" and win support for a policy demanding that national parks shall be areas where native plants and animals are maintained in their natural state should mean much to this worthy movement for the preservation of natural areas.

The scientist who attempts popularization of his subject usually loses caste among his fellows. Work of this character is despised and considered trivial "in comparison with the stereotyped biology which can be learned from textbooks." At present the whole system of biological training discourages that "taste for field natural history and collecting, spontaneous in so many young people." The passing of the old-time naturalist is being felt with the setting in of a reaction which is evident in oft-expressed apprehensions in recent scientific literature. The success of this governmental project in popularizing natural history is a demonstration of the value of field study and should do much to alter this wrong point of view.

That nature guiding should first become popular in the national parks is obvious. National parks furnish something more than recreation, whether it be the recreation sought by those who, arrayed in white flannels or silk shirts, spend their vacation in an inanity of leisure, or those who, dressed in khaki, aspire to climb the highest peaks. On every side one meets living things which stimulate his curiosity and interest.

As Dr. J. Grinnell (1919) has so tersely put it: "The animal life of our national parks is one of their best recreative assets. The cliffs, the lakes, the waterfalls, and the forests each and together tend to stimulate the senses and the mind to pleasurable excitement; and the efforts to secure these pleasures in full measure bring vigorous bodily exercise. But the animals, provided interest in them is once aroused, undoubtedly constitute a more subtle and even more alluring objective, one that brings into play at keenest pitch those more or less latent senses and instincts which were of vital importance in the earlier stages of human history, for, among mammals, large and small, and among birds and insects, one encounters the moving elusive objective, the one characterized by mannerism, by chang-

ing form, color tone and pattern, and by sound of great variety. Moreover, the animal life, and the plant life too, presents innumerable problems of interrelations, of interdependencies and of a struggle for mastery, the contemplation of any one of which will provide unlimited stimulus for intellectual activity and enjoyment."

Who will not agree that: "Let the interest be keen, new facts will open up; new trees will grow; new birds will fly; new fish will swim; and then will our galleries be filled with new and glorious pictures of things worth seeing." And certain it is that when one has learned to "read the trailside as one reads a book," under instruction from a nature guide, his gallery will soon be filled with such pictures.

SECRETS OF NATURE

"Knowledge never learned of schools,
Of the wild bee's morning chase,
Of the wild flower's time and place,
Flight of fowl and habitude
Of the tenants of the wood;
How the tortoise bears his shell,
How the woodchuck digs his cell,
And the ground mole sinks his well;
How the robin feeds her young,
How the oriole's nest is hung."

—WHITTIER.

A School for Nature Guides

A national park should furnish both recreation and education. In every park there is more to be seen and appreciated than the particular phenomena for the preservation of which the park was created. In Europe the main concept of a national park is that of a place where fauna and flora are left undisturbed and where the student of nature may go to study them. In America this viewpoint is overlooked. Most visitors pass by the most interesting forms of life, neither seeing nor hearing them, perhaps, largely because they have not been led to appreciate their opportunities in this regard.

That Yosemite National Park might contribute more to the vacationist by means of an organized educational program emphasizing natural history opportunities, the Nature Guide Service was organized. In the work stress has been placed upon first-hand information from the living thing itself rather than upon printed or spoken words, although these also play a part. The opportunity of becoming intimately acquainted with birds, trees, flowers, insects, and other life is now afforded every visitor. The response of the public has been gratifying. Whereas two nature guides instructed a few hundred the first year (1920), it will take eight guides to care for the thousands who will seek instruction this coming summer.

Yosemite visitors may expect the same program of lectures and field trips as in former years with added facilities due to the completion of the new Yosemite museum. The main innovation will be a School of Field Natural History for the training of teachers of nature study and of nature guides. Training in intensive field study such as will be undertaken is not afforded elsewhere in the West. This school appears to be a particularly fitting outgrowth of the Nature Guide Service.

Teachers of nature study and of biology are seeking a training that will make them more familiar with conspicuous plants and animals. Leaders of Boy Scouts and Camp Fire Girls are seeking to fit themselves to interpret nature. Every summer vacationist wants to be able to identify interesting forms of life encountered. Training along these lines is not to be held in the West. The time and conditions seem opportune for the establishment of a school of field natural history. The outstanding growth of the Nature Guide Service in the national parks and the growing demand for trained leadership in nature studies for summer camps and summer resorts is creating a new profession—that of nature guiding.

Biology as taught in the average high school and college does not emphasize field study and as a consequence there are few persons who are able to recognize, name and properly study the living things along a trailside. Many, feeling themselves handicapped in this regard, are seeking

for instruction that brings a first-hand acquaintance with the living thing in its native environment. A fine new museum building and increased nature guide staff now offer proper facilities, and an auspicious beginning is assured for a School of Field Natural History in Yosemite National Park. In reality, it is a natural outgrowth of the now well-established Nature Guide Service.

The number of students in the 1925 session will be limited to twenty. Students will be accepted on the basis of date and written application after fulfilling educational requirements, two years of college work or the equivalent being considered a minimum prerequisite.

Course of Study

1. Physical geography and geology of the Sierra Nevada.
2. Classification and nomenclature (animal and plant).
3. Plant and animal distribution. Life zones.
4. Botany—(*a*) Common trees and shrubs. (*b*) Fowers. (*c*) Algae and fungi.
5. Zoology—(*a*) Invertebrates—insects; mollusks. (*b*) Common vertebrates—(1) Fishes, (2) amphibians, (3) reptiles, (4) birds, (5) mammals.

1. Field trips for study of fauna and flora of the valley floor at 8 a. m. daily.
2. All-day field trips every Saturday to the rim of the valley.
3. Special collecting trips for rarer forms.
4. A week's trip to the high lake and meadow country, affording studies at timber line.

Emphasis is to be placed on intensive field work, and each student will be expected to know and identify all the common Yosemite trees, shrubs, wild flowers, insects, fishes, amphibians, reptiles, birds and mammals. Grading will be apportioned as follows:

Field identification, 60 per cent; teaching ability, 20 per cent; notebooks, 10 per cent; preparation of scientific specimens, 5 per cent; familiarity with literature, 5 per cent.

The work will be of university grade. However, for the present, no university credit is offered, but a certificate showing that the work was satisfactorily completed will be issued.

It is hoped students will, on account of sociability, prefer to camp in a reserved section for students of the school. A tent for two with housekeeping equipment costs about $7 per week. Groceries and meat are to be had at practically city prices. Hotel or American plan camp accommodations are near at hand for those who do not care to camp. Free camp grounds are available to those who have their own equipment. If you

plan to camp in the reserved section, you should bring your own bedding. Send it by parcel post.

Outing clothes are in order at all times and places.

The teaching staff includes:

Harold C. Bryant, B.S., M.S., Ph.D., Economic Ornithologist, Museum of Vertebrate Zoology, University of California, and in charge of education, publicity and research, California Fish and Game Commission.

Ansel F. Hall, B.S. chief park naturalist, National Park Service.

Carl P. Russell, A.B., M.A., park naturalist, Yosemite National Park.

M. B. Nichols, Ph.D., instructor biology, Oakland Technical High School, nature guide.

Mrs. Enid Michael, park botanist and nature guide.

Roland Ross, naturalist, nature guide.

Robert Harwood, A.B., teacher of biology, Bakersfield Union High School, nature guide.

Leo Wilson, M.S., University of California, nature guide.

Regular instruction, June 29 to August 8; high mountain field trip, August 9 to August 14.

The school being a contribution of the National Park Service with the aid of the California Fish and Game Commission, no tuition or fees will be charged. Expense is thus limited to sundry materials, such as notebooks and collecting apparatus and transportation, food, housing and clothing.

The plan is to make the work supplement the lower division university courses in botany and zoology with the opportunity for field work bringing first-hand acquaintance with various living forms. Emphasis will be placed on the very knowledge, the lack of which many feel so keenly. Opportunity for practice in teaching, leading parties afield, in presentation of nature lore at the campfire and in writing nature notes will be given every student.

For further information apply to Park Naturalist, Yosemite National Park, Yosemite, Calif.

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