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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

1935 NATIONAL PARK

FILE NO.

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ARNO B. CAMMERER,
Director.

1735




August 19, 1935

The Director
National Park Service
Washington D. C.

Dear Mr. Director:

There is transmitted herewith the 1935 annual report
for Zion National Park.

Very truly yours,

P. P. Patraw
Superintendent

Inc. 1 in trip.

CC to Br. of Engineering

ZION NATIONAL PARK

Annual Report

1935

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ZION NATIONAL PARK

Annual Report

1935

General

This is the report of the administration of Zion National Park in its seventeenth year, and covers the period July 1, 1934, to June 30, 1935.

Zion National Park was established by Act of Congress approved November 19, 1909. It is the seventeenth park, in order of establishment. Located in southwestern Utah, it was first reserved as a national monument in 1908 with the name "Mukuntuweap", which was subsequently changed to Zion. The boundaries now include 148 square miles. [It is made accessible to visitors by an 18-mile road system, including the famous Zion Tunnel of more than a mile length, four trails from the valley to the rim, and a system of bridle and foot trails in the valley. Accommodations, of the lodge and housekeeping cabin types, and transportation service, are provided by Utah Parks Company, which also operates similar services in Bryce Canyon National Park, Cedar Breaks National Monument, and North Rim of Grand Canyon National Park. Two public auto camps, each supplied with running water, fuel wood, sanitary facilities, and picnic tables, and one also having individual cooking fireplaces, are maintained by the Government.

Railroad connection to the park is provided by Utah Parks Company buses from Cedar City, on the Zion-North Rim of Grand Canyon-Bryce-Cedar Breaks loop tour, during the summer season, June 1 to September 30.

The lodge is open each summer from June 1 to September 30, and the housekeeping camp, with cafeteria in conjunction, is operated throughout the year, as is also the south entrance public campground. Roads within the park are kept open all winter, snow removal operations being performed when necessary.

Use of the park by visitors is continuously and rapidly increasing. Travel figures for the year covered by this report show a total of 78,146 visitors, as compared with 59,219 for the same period last year, an increase of 32 per cent.

The year has been an unusually busy one, both on account of tremendous increases in travel, and on account of expansion of construction and improvement activities. Emergency funds allotted to the park have

accelerated the construction program to such an extent that from a protection standpoint it is years in advance of original programs. Building construction programs, on the other hand, have not been so favored, and there are several much-needed buildings yet to construct, including an administration building, a museum, and three sets of employees quarters.

Personnel

The permanent organization consists of superintendent, assistant superintendent-engineer, park naturalist, chief ranger, two rangers, chief clerk, clerk-stenographer, storekeeper-costkeeper, foreman, and a general mechanic. Three ranger-checkers and three ranger-naturalists are employed during the summer tourist season. Maintenance and construction forces are recruited from nearby communities when needed, on day-wage basis, their numbers varying from none to one hundred or more. There were no changes in the permanent personnel during the year.

The superintendent is also assisted by the assignment of engineers from the office of the Chief Engineer, and a landscape architect from the Branch of Plans and Design, in San Francisco.

Weather Conditions

Zion National Park was not excepted from the general drought conditions which prevailed over the entire western United States during the year of 1934. Hot, dry, windy days were the general rule during the summer months. The absence of precipitation caused the weakening, and in some cases the death, of trees and other vegetation in the valley and on the rims of Zion Canyon. The mean flow of the Virgin River through the canyon during the year ending September 30, 1934, was the lowest ever recorded since records have been kept.

These drought conditions were very definitely broken about the middle of November, however, and an abnormally wet winter and spring followed. Plant life in the park was luxuriant and especially beautiful during the spring of 1935.

The average monthly mean temperature for the period July 1, 1934, to June 30, 1935, was 62.1, as compared with the average monthly mean temperature for the past six years of 60.2; total precipitation for the same period was 16.09 inches, as compared with a yearly average for the same six year period of 13.24.

The following is a summary of weather conditions by months during the period covered by this report:

<u>Month</u>	<u>Mean Max.</u>	<u>Mean Min.</u>	<u>Mean</u>	<u>Maxi- mum</u>	<u>Mini- mum</u>	<u>Prec.</u>	<u>Number of Days</u>		
							<u>Clear</u>	<u>Partly Cloudy</u>	<u>Cloudy</u>
July	98.74	70.26	84.50	106	64	.75	21	9	1
August	96.20	69.68	82.98	104	63	1.52	15	11	5
Sept.	89.50	61.30	75.40	99	42	.25	23	6	1
Oct.	80.94	51.91	66.37	91	40	.59	19	10	2
Nov.	65.40	42.53	53.96	85	27	1.54	20	5	3
Dec.	55.03	33.52	44.17	67	21	2.20	22	4	3
Jan.	52.49	33.93	43.20	70	4	1.47	16	4	11
Feb.	58.64	36.28	47.45	76	25	1.80	15	6	7
March	59.35	35.87	47.61	78	24	2.34	16	7	8
April	70.73	45.56	58.14	82	34	1.90	12	11	7
May	75.39	50.39	62.89	87	38	1.75	10	13	8
June	94.73	63.00	78.86	102	33	None	29	1	-
Year	74.77	49.49	62.13	106	4	15.09	218	87	60

Travel

Eleven of the twelve months covered by this report show large increases in travel over the corresponding months for the previous year, and the total travel for the period, 78,146, as compared with 59,219 last year, was an increase of 31.96 per cent. June, 1935, was the record month, with a total of 16,302 visitors, and the largest single day during the year was Easter Sunday, April 21, when 2,002 visitors were registered. Winter travel has increased in greater proportion than summer seasonal travel.

The gratifying increase in travel is attributable largely to improvement of approach roads, and the extensive publicity program carried on by the National Park Service during the 1934 calendar year, in which were included numerous radio broadcasts, National Park stamp issue, and the filming of motion travelogue pictures. The Zion special 8¢ stamp was placed on sale on September 18, and 51,021 stamps were sold on the first day at the Zion National Park postoffice.

Maintenance, Improvements, Construction

Maintenance

Maintenance during the year has consisted only of campground maintenance and sanitation, cleaning sloughing and slide material from road gutters, routine trail maintenance, and minor repairs to buildings, water and sewer systems, telephone lines, etc. Improvements under E.C.W. programs are materially lessening unit costs of maintenance. During the winter a small amount of snow removal from roads was necessary.

Construction

Public Works

FP-170, South Entrance Service Roads. At the beginning of this report period, all that remained to complete this project was construction of two concrete bridges. These bridges were completed during August, 1934.

FP-175, Footpaths to Camp or Building Headquarters. This project was completed in August, 1934.

FP-16A, Five Room Residence. Constructed by contract, at a total cost of \$7,247.89. Completed on October 31, 1934.

FP-17A, Four Room Residence. Constructed by contract, at a total cost of \$7,054.83. Completed in November, 1934.

FP-18a, Comfort Station. Constructed by contract, at a total cost of \$2,587.73. Completed in November, 1934.

FP-20, Sewer and Water System Development. At the close of the last report period this project was completed except for construction of reservoir and installation of supply lines within the South Entrance Campground. The balance left in the allotment was sufficient to build the floor of a 50,000 gallon concrete storage tank, and walls and roof of one 25,000 gallon section of the tank, and the water system was placed in use in September. Walls and roof of the other half of the tank, and laying of the supply lines in the campground were completed as an E.C.W. project.

FP-21, Checking Station, East Entrance. This project was completed in the previous report period, except for building in cabinet work, and painting and staining of walls and woodwork. This work was accomplished in June, 1935.

FP-22, Employees Quarters, East Entrance. This building was constructed by park force account after unsuccessful attempts to get bids for its construction had been made. A stone building with three rooms and bath was erected at a cost of \$6,875.21, and the building was completed in January, 1935.

FP-24, Electric System, South Entrance Campground. This project was completed in February, 1935.

Emergency Conservation Work

A new drought relief camp was established in Zion Park in July, 1934, and occupied the quarters of Camp NP-2. This camp continued in the same location throughout the report period. The company in Bryce Camp NP-3 was transferred back to Zion in October, occupying a new camp constructed on the east side of the Virgin River and known as Bridge Mountain Camp NP-4. This company was again transferred to Bryce in May, 1935, for the summer.

Work accomplished by the two camps during the year consisted of the following:

Campground Development. Installation of 25 additional campsites in the south entrance campground, involving the construction of one mile of gravel-surfaced road, 20 fireplaces, 1,000 lineal feet of irrigation ditch and maintenance of one and one-half miles of irrigation ditches, transplanting of 700 trees and shrubs, and 1,600 feet extension to water system.

Campfire lecture circle constructed.

Stream Protection. Construction of 1,234 lineal feet of standard rock-filled basket dams, 35 lineal feet of masonry wall, and 1,864 lineal feet of toe dams.

Boundary Fencing. Eleven miles of 5-strand barb wire fence built on west boundary, across mouth of Paruniweap Canyon, and on east boundary south of Orderville Gulch.

East Rim Truck Trail. One mile completed.

Water System. Completion of 25,000 gallon section of reinforced concrete storage tank, installation of overflow system, and connection of two additional springs connected to supply main of Oak Creek water system.

Sewer System. Installation of 1,065 feet of 6" and 8" tile and 235 feet of filter trench to complete the south entrance sewer system.

Landscaping. Transplanting of 1,000 trees and shrubs for screen, decorative, and shade purposes; placing of 825 lineal feet of rock curb, and fine grading and placing top soil around buildings, parking areas, paths, etc.

General Cleanup. Four hundred dead cottonwood and fruit trees were removed and cut into fire wood; approximately 50 acres cleared of foxtail grass and noxious weeds for fire protection.

Buildings. Construction of one central toilet and one housekeeping cabin in employees cabin group; sanitary comfort station at Temple of Sinawava; oil warehouse, garage, and equipment shed removed and reconstructed in new Oak Creek utility area. Grading and surfacing of Oak Creek utility area also completed.

Roadside Improvement. Completion of cut bank sloping from Zion tunnel to east entrance on East Rim Road, and from Temple of Sinawava to Red Point on Floor of Valley Road; completion of catch basins at culvert intakes on Valley and East Rim Roads; and erection of 17 lineal rods of masonry protection guardrail on East Rim Road.

Administrative Trail. 3.25 miles of trail constructed from Virgin River Bridge to base of cliff at pass between Bridge Mountain and The Watchman.

Pine Creek Irrigation Ditch. 3,000 lineal feet of ditch reconstructed.

South Entrance Pillars. Two stone masonry pillars erected to mark highway entrance to park.

Insect Control. Spraying of ash and cottonwood trees over an area of 1200 acres for control of tent caterpillars.

Improvement of Nearby Highways

The construction and gravel surfacing of Highway 15 from LaVerkin Junction to Dalton Wash, commenced in the previous report period, was finally completed in September, 1934. Immediately a contract was awarded and work commenced on oil surfacing the entire section from LaVerkin Junction to the south boundary of Zion Park. This work moved along swiftly, and the contract was completed on April 23, 1935, after having been closed down on account of winter weather conditions from December to March 21. Roads leading to Zion Park from the north and the south are now all paved.

Public Service Operator

Zion Lodge was closed on October 16, 1934, and on the same day the new cafeteria and housekeeping cabin camp was opened for business. This unit is to be operated throughout the year, and the patronage during its

first winter of operation was encouraging. The lodge was opened for the 1935 summer season on May 18, under the management of Harley J. Hodgins. Patronage in all operations has been excellent during 1935, the increase in business being between fifty and sixty per cent over last year. Rail-bus business has increased one hundred per cent over the preceding year.

Activities of Other Agencies

Park employees served as observer for the U. S. Weather Bureau, and as recorder for the Virgin River gauge for the U. S. Geological Survey.

Educational Activities

The educational force consists of a permanent park naturalist and three temporary ranger-naturalists employed for periods varying individually from two and one-half to five months.

Educational work in Zion has, during the past year, shown very good advancement over previous seasons, both as to quality and quantity of work accomplished. Many more contacts were made than in any previous year, this year's total of 52,523 being 65.2 per cent greater than the 31,780 contacts reported in the last full year report (January-December, 1933). Park travel increase for the corresponding periods was 37.7 per cent. A proportionate increase in educational contacts is seen when comparing the last half of the current year with the period covered in the last six-months report as follows:

Contacts from September 30, 1933, to June 30, 1934,	13,393
Contacts from September 30, 1934, to June 30, 1935,	18,581
Percentage of increase,	31.3

These increases have been made with the same number of naturalists and the same program of trips and lectures as were used in previous seasons, and are chiefly attributable to better quality of interpretation, coupled with applied psychology.

Daily seasonal service consisted of two guided hikes up the Narrows Trail, two evening lectures, one at the public campground and the other in conjunction with the Zion Lodge entertainment program, and at least one group lecture at the museum. Occasional special hikes were also conducted. The museum is kept open with an attendant in charge nine hours daily.

Toward the close of this fiscal year, the trend of over-crowded itinerary and consequent shortening of length of stop of visitors within the park and at individual points of interest was observed to be in-

creasing. To meet the situation a new feature of educational service was adopted, that of stationing a naturalist for a few hours each day in Gallery No. 2 of Zion Tunnel as a contact point. This has proved successful not only from a statistical standpoint, as a great majority of park visitors stop at this point, but from the more important standpoint of interesting educational service to visitors because of the many features observable from this viewpoint.

A preliminary program of construction projects for educational services, including a central museum, wayside museums, and orientation stations, has been prepared in collaboration by park administrative officers and the office of the Chief Field Naturalist. Increase in park visitation has far outpaced the facilities and space available in the existing improvised museum building at the Grotto Campground, and the need for a larger, better located central museum has become urgent. Other museum development work has consisted of coloring 18 duplicates of the Zion relief model (in cooperation with Ansel F. Hall's laboratory staff); making approximately 150 lantern slides; compiling a bird check list of the park (including banding of over 500 birds); and starting a revision of the plant check list (350 specimens collected to date). The coloring by the park naturalist of the Zion relief model on exhibit at the museum has added much to its attractiveness and value to visitors.

Nos. 4, 5, and 6, Vol. 6, and Nos. 1 and 2, Vol. 7, of Zion-Bryce Nature Notes were issued during the year and distributed to a mailing list of 187.

Protection

The ranger force consisted of one chief ranger, two permanent rangers, and three temporary ranger-checkers. The south entrance checking station was operated continuously throughout the year, and the east checking station was closed for the winter on November 15 and opened on April 1. Entrance fees were collected at the south checking station throughout the winter, as opposed to the practice in the past of discontinuing the collection of the fee during the period of no educational service or accommodations inside the park.

No serious violations occurred during the year. It was necessary in more cases than usual to park motorists for excessive speed and other infractions of traffic regulations. Several minor automobile accidents occurred, but none were serious except in one case where an automobile left the highway on a curve and hurtled to the bottom of the canyon, the car being badly damaged and one passenger suffering broken ribs. Three minor automobile accidents involving E.C.W. equipment and/or C.C.C. enrollees occurred, in one of which an enrollee was slightly injured.

Morphine was stolen from the commanding officer's quarters at Zion Park Camp NP-2 on September 15 and recovered after a search of the barracks buildings.

A tent in which government tools and equipment were kept at the east entrance was broken into and several pieces of equipment stolen sometime between December 28 and 31.

Regular fire drills were held during the year. Two forest fires, both on the west rim, and one building fire in a partly completed residence in Oak Creek occurred during the year.

Rangers patrolled the boundaries during deer hunting season, and no violations were observed.

Forestry and Wildlife

Research activities in these two fields have been accelerated by employment of E.C.W. technicians, and approval of E.C.W. research projects. On August 30, 1934, a naturalist assistant from the Wildlife Division entered on duty and his efforts during the greater part of the period were directed toward a study of the bighorn sheep problem in Zion Park, and range study, including construction and mapping of fenced and unfenced range study quadrates. He also devoted considerable time to collection and mounting of plant specimens, and observation of birds and small animals and collection of specimens, deer, mountain lion and their relation to deer and mountain sheep, and porcupine depredations.

Mountain sheep were seen occasionally during various inspection trips into their range country, but information is yet incomplete as to their status, habits, and location of their permanent ranges. It has been determined, however, that the population is sparse, probably diminishing, and that predatory control on their range will be necessary if they are to be perpetuated in this area.

Deer are in the best of condition, and forage is plentiful, because of the large amount of moisture received during the winter and spring. Six deer were killed by automobiles; two wounded deer were shot; and three were found dead from natural causes.

A forestry foreman in Camp NP-4 has gathered a great deal of valuable data regarding forest conditions in the park. Several small areas infested with insects or fungi exist. In general the conditions require no action other than observation, and only a small amount of control work has been found necessary.

The customary spraying operations for control of tent caterpillars and other tree insects were carried on during April and May by E.C.W. labor.

In June, 1935, an annotated check list of birds of Zion National Park was prepared by the park naturalist for publication.

Bird banding operations were started in this park for the first time on November 7, and suspended in April. 545 individuals, representing 19 species, were banded.

Boxtail became so abundant that eradication by burning was necessary in order to eliminate fire hazard.

A check list of mammals of Zion Park was published in Volume VI, No. 2, Zion-Eryca Nature Notes.

Official Visits and Inspections

- July - Assistant Director H. C. Bryant; Ansel F. Hall, Chief, Field Division of Education; Robert Fechner, Director of Emergency Conservation Work; Dr. Herbert E. Gregory, U. S. Geological Survey.
- August - Director and Mrs. Cammerer; Mr. W. G. Carnes, Deputy Chief, Branch of Plans and Design; C. P. Russell, Field Naturalist; Leffler Miller, Museum Architect; Ansel F. Hall; Louis Schellbach, Museum Technician; E. D. McKee, Park Naturalist, Grand Canyon National Park; Earl A. Trager, Chief of the Naturalist Division, with Chapman, Brill, Scott, and Wilkerson, cameramen.
- September - Accountants Tillett and Edwards; Chief Engineer F. A. Kittredge; Mrs. Harold L. Ickes, accompanied by Dr. Sexton.
- October - Chief Auditor Gable; Dr. Adolph Murie, Wildlife Division.
- November - District Engineer B. J. Finch and Mrs. Finch, Bureau of Public Roads; Forest Supervisors R. C. Parkinson and W. T. Nichols; Regional Forester C. W. Pooler and Supervisors O. A. Arthur and J. A. Scott, Forest Service, Albuquerque, New Mexico; Supervisor C. A. Matteson from Fish Lake, L. E. Swanson, Salt Lake City, and Rex King, Safford, Arizona.
- January - Forester L. F. Cook.
- February - Chief Engineer Paul Arentz, State Planning Board; Brigadier General P. Whitworth, Commanding Officer of Fort Douglas District C.C.G., accompanied by Colonel Burnett, Medical Officer.

March - Frank Gulley, Regional E.C.W. Inspector, Denver; James C. Reddoch, E.C.W. Inspector, Washington D. C.

April - Chief Engineer F. A. Kittredge; Joseph Taylor, Water Rights Attorney; Ansel F. Hall; Assistant Director H. A. Tolson and Chief Architect T. C. Vint; Investigator H. B. Burte, Division of Investigations, Salt Lake City; Engineer A. B. Purton, U. S. Geological Survey, Salt Lake City; M. F. Lence, District Director of Five Western States, Department of Labor; Claude Edwards, District Manager, Fifth District of Utah, Department of Labor; Engineer E. A. Knowlton, Bureau of Public Roads, Ogden.

May - Supervisor Libby and Associate Forester Cook; Entomologist Donald DeLeon; Paul Wilkerson, Cameraman; Zeke Johnson, Custodian of Natural Bridges National Monument.

June - T. B. Plair, Forestry Inspector; H. E. Bailey, Assistant Forester; N. E. Dole, Junior Forester; Associate Architect T. E. Carpenter, Branch of Plans and Design; George Grant, N.P.S. Photographer; Colonel W. C. Sweeney, Commanding Officer, Fort Douglas District C.C.C.; Dr. E. P. Meinecke, Principal Pathologist, Department of Agriculture; R. D. Messler, U. S. Geological Survey; A. J. S. Eccleston and George D. Patterson, Division of Investigations.

Harry Langley, Architect, A. E. Borell, Wildlife Technician, and W. H. Wirt, Assistant Forester, all made frequent inspections of the park throughout the period covered by this report.

Receipts and Expenditures

Receipts

Automobile entrance fees	\$ 21,471.00
Grazing fees	00.00
Business concessions	125.00
Total	\$ 21,596.00
Deposited in U. S. Treasury to credit of Miscellaneous Receipts	\$ 20,575.00

Expenditures

Zion National Park, 1935

Administration, Protection and Maintenance	\$ 35,823.93
Equipment	777.70
Total	\$ 36,601.63

Forest Protection and Fire Prevention

Service	\$	41.72	
Equipment		<u>352.51</u>	
Total			\$ 394.23

Public Works

Roads and Trails		13,125.11	
National Park Service		<u>27,164.34</u>	
Total			40,289.45

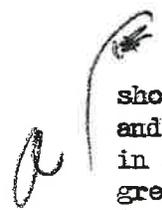
Emergency Conservation Fund

FD 570, Zion		7,014.81	
FD 870, Zion		23,967.60	
FD 970, Zion		25,848.34	
FD 1870, Zion		<u>16,784.08</u>	
Total			73,614.83

Total Expenditures			\$150,800.14
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ANNUAL REPORT OF PARK NATURALIST
ZION NATIONAL PARK
July 1, 1934, to June 30, 1935

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Educational work in Zion National Park has, during the past year, shown very good advancement over previous seasons, both as to quality and quantity of work accomplished. Many more contacts were made than in any previous year, this year's total of 52,523 being 65.2 per cent greater than the 31,780 contacts reported in the last full year report (January-December, 1933). Park travel increase for the corresponding periods was 37.7 per cent. A proportionate increase in educational contacts is seen when comparing the last half of the current year with the period covered in the last six-months report as follows:

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Contacts from September 30, 1934, to June 30, 1935, 18,581
Percentage of increase, 31.3

These increases have been made with the same number of naturalists and the same program of trips and lectures as were used in previous seasons, and are chiefly attributable to better quality of interpretation, coupled with applied psychology. The naturalists have been trained to present facts in such pleasing form as to encourage requests for further information, and impel attendance at more than one lecture or trip. This is accomplished in three ways: (1) Each naturalist is required to study interpretative methods and facts used by all other naturalists in Zion, Bryce, and Grand Canyon North Rim; (2) Constructive criticism is given throughout the season by the park naturalist, the superintendent, and the assistant superintendent; (3) Applied psychology is used in adapting interpretative methods to the audience, and in building up a desire for more information. I believe the last point is so valuable as to merit citation of an instance. At an evening lecture on history, a slide is shown that depicts the Towers of the Virgin, as first glimpsed by Captain Dutton in 1876; and after describing Dutton's reactions to this fine geological display, the lecturer digresses about as follows: "The thrill which Dutton experienced can be felt by each one of you as you gaze upon this view tomorrow, even though you may not be, as he was, trained to appreciate the remarkable geological story told by these rocks. The geology of this region is as simple as it is wonderful, and I only wish there were time now to explain it to you fully. It can be done much better when actually looking at the scenery, rather than with these inadequate slides, so I invite you all to meet me at the Temple of Sinawava tomorrow morning at 9:00", followed by a brief description of the trail trip. The same technique is employed on a nature walk: when a question comes up that is not readily explained by exhibits in place the leader invites the entire group to a lecture at the museum or lodge. In addition, each walk or lecture includes a brief advertisement of all other educational features.

The improvement in quality of educational work, resulting from methods described, is not presentable in statistical form, but is made evident to us by the reaction and comments of the public, and by the high morale of the naturalists as the result of a job well done. We all feel that the results attained during the past year are approaching the maximum efficiency that is attainable with present equipment.

During the last month of the current year the ever-growing trend toward speedier travel has become so acute as to require additional equipment (increased personnel) in order to contact a representative proportion of the visitors. With the aid of a temporary personnel increase (technical CCC enrollees) we have started experimental methods of meeting the situation; the best method so far developed being the posting of naturalists at strategic viewpoints (as the large tunnel window) where nearly all visitors stop and can be contacted in short informal lectures. This experiment has already produced such results as to indicate future necessity for additional trained men to replace the untrained CCC enrollees now used as a temporary set-up.

The situation will be further improved by the creation of a strategic stopping point, i.e., a well located central museum, for which preliminary plans were drawn up by the park naturalist during the past winter. In addition to this museum planning, several other museum projects have been carried on, as follows: Coloring 18 duplicates of the Zion relief model (in cooperation with Ansel F. Hall's Laboratory staff); making approximately 150 lantern slides; compiling a bird check list of the park (including banding of over 500 birds); and starting a revision of the plant check list (350 specimens collected to date).

This year we were able to expand research activities through the cooperation of ECW Naturalist Assistant L. F. Keller, who engaged in the following lines of study: Status of mountain sheep; porcupines in relation to forests; deer carrying capacity of all forage types in the park (done by means of seven range study quadrates); general wildlife conditions; and supervision of all ECW projects from a wildlife angle.

Clifford C. Presnall
Park Naturalist

SUMMARY OF WORK ACCOMPLISHED FROM JULY 28, 1934 TO JULY 1, 1935

MINOR ROAD CONSTRUCTION

- ✓ 240 lineal feet 1' x 8" trench excavated at ~~Union Pacific~~ gas station.
- ✓ 600' of fine sloping used for fill.
- ✓ 30 cu. yds. fill used in lecture circle.
- ✓ 110 cu. yds. fill used around Union Pacific gas station.
- ✓ 380' - 10' wide, graveling campground roads, spurs.
- ✓ 260 cu. yds. gravel crushed and hauled.
- ✓ 115 cu. yds. gravel spread on campground roads.
- ✓ 40 cu. yds. clay hauled for campground roads.
- ✓ 4500 lineal feet-14' wide minor road constructed.
- ✓ 75 lineal feet 3' x 3' drain ditch built to relocate road.
- ✓ 2 - 3' wide x 16' long pole bridges built, canals.
- ✓ 20 cu. yds. excavation for bridges.
- ✓ 12 cu. yds. masonry for bridge foundations.
- ✓ 240' - 8" curb stone placed and grouted at Union Pacific gas station.

FORESTATION

- ✓ 35 culverts placed in campground roads.
- ✓ 70 head walls for culverts poured.
- ✓ 70 lineal feet of rip-rap - 18" x 18" built at ~~Union Pacific~~ cafeteria.
- ✓ 420 lineal feet of small irrigation ditch constructed at South Campground.
- ✓ 1 1/2 miles of irrigation ditches cleaned.
- ✓ 28 small trees planted near Union Pacific Utility Area.
- ✓ 200 trees planted, Oak Creek Area, Lodge, Oak Creek Res., S. Checking Station.
- ✓ 100 small plants planted at East Checking Station.
- ✓ 3 small trees planted at East Checking Station residences.
- ✓ 10 trees planted at South Checking Station.
- ✓ 100 squaw bushes and service berry shrubs planted in U. P. Cabin Area.
- ✓ 550 squaw bushes and service berry shrubs planted in Campground Area.
- ✓ 150 shrubs planted at area near Lodge, Oak Creek, and Pine Creek bridge.
- ✓ 328 cottonwood trees planted near Cable Creek.
- ✓ 100 cottonwood trees transplanted.
- ✓ 30 evergreens planted at Oak Creek Entrance, Oak Creek, and Pine Creek bridge.
- ✓ 2 days of planting at Jolly's and Strunk's residences.
- ✓ Trees were transplanted from area east of Park boundary and Petrified Forest.

CAMPFIRE LECTURE CROUND

- ✓ Fine grading at lecture circle.
- ✓ 20 cu. yds. sand placed at lecture circle.
- ✓ 33 - 9" x 14" x 24" bench supports quarried, dressed and placed.
- ✓ 170 - 1/2" x 4" bolts grouted in bench supports.
- ✓ 20 cu. yds. excavation for bench supports.
- ✓ 130 cu. yds. excavation for lecture circle.
- ✓ 217 lineal feet of 4" curbing cut, dressed and set in lecture circle.
- ✓ 250 sq. yds. flagging cut and placed

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17 cu. yds. stone cut and placed for screen support.
110 lineal feet of 6" tile drain laid.
 $1\frac{1}{2}$ cu. yds. cement placed at screen base.
4 sq. yds. hot tar painted on screen supports.
14 - 5" x 13" x 42" steps cut, dressed and placed.
12 - 5" x 18" x 36" steps cut, dressed and placed.
17 stone blocks 6" x 8" x 22" to 18" x 14" x 27" dressed.
30' - 1" drain placed.
60' - 1" conduit placed.
8 loads of gravel for walks.
10 cu. yds. miscellaneous excavation.
180 cu. yds. excavation at incinerator.
Excavation used as backfill at lecture circle.

EXTENSION WATER SYSTEM

1500' trench excavated and backfill 1' x 3'.
141 lineal feet of 2" G. I. pipe laid.
240' 2" C. I. pipe laid.
715' 1" G. I. pipe laid.
504' $\frac{3}{4}$ " G. I. pipe laid.
11 water hydrants installed.
Two breaks in water line repaired, water line patrolled.

CAMPGROUND FIREPLACES

475 pieces of stone quarried for fireplaces.
360 stones quarried and dressed for fireplaces.
10 loads of flagging delivered.
20 fireplaces bases placed and cemented.
20 fireplaces built-each contained 18 stones 8" x 13" x 22" or 8" x 13" x 19".

FLOOD CONTROL & CRIBBING

1400 lineal feet of road built in quarry and revetment locations.
4515 cu. yds. rock hauled-average 7 miles to cribs from quarry location.
1234 lineal feet of standard crib built, 16' wide bottom, 3' wide top, 7'-6" high.
1804 lineal feet of standard 3' diameter, circular toe dam built.
2712 cu. yds. of excavation for crib.
1983 cu. yds. of backfill behind cribs.
2 small bridges crossing river and canal built.
85 lineal feet of 4' wide x 6' high thin wall built.
2500 sq. feet #6 6" square mesh galvanized iron wire salvaged.

SEWER MAINS

800 lineal feet of 6" tile sewer laid.
265 lineal feet of 8" tile sewer laid.
235 lineal feet $\frac{1}{2}$ " round, 36" diameter G. I. arch laid in disposal area.
1825 cu. yds. backfill.
2175 cu. yds. excavation.

STORAGE RESERVOIR

450 lineal feet of $\frac{3}{4}$ " G. I. pipe laid.
1819 lineal feet of 1" G. I. pipe laid.
40 lineal feet of 4" G. I. pipe laid.
50 lineal feet of 6" pipe laid.
70' - 6' tile drain laid for overflow.
15 cu. yds. rock excavated.
58 cu. yds. muck removed.
30 lineal feet $1\frac{1}{2}$ ' trench dug.
3000 lineal feet $1\frac{1}{2}$ ' x 2' trench dug to salvage 1" pipe.
594 cu. yds. backfill.
37 sq. yds. rubble masonry laid.
1 - 6' diameter 7' high wood stave tank erected.
650 lineal feet 24" path to storage reservoir built.
Built forms and placed reinforcing ^{and poured concrete} for 25,000 gal. unit of storage reservoir.

LANDSCAPING

Two days with 25 men general cleanup.
Landscaped parking area.
20 cu. yds. top soil hauled for lawns.
50 cu. yds. gravel hauled for yard roads, back yards, and walks.
Landscaped residence at East Checking Station.
500 lineal feet of 4" x 16" curb laid.
60 rock barriers placed at Union Pacific Cabin Area.
100 lineal feet 14' wide road graveled at U. P. gas station.
1600 lineal feet gravel walk built at U. P. Campground Area.
50 cottonwood trees planted in Union Pacific Cabin Area.
Completed parking area at East Entrance:
3 lawns planted at Oak Creek residences.
325 lineal feet of 8" x 16" curbing placed.
25 cu. yds. backfill curb excavation.
30 loads rock hauled to campground.

GENERAL CLEANUP

Approximately 400 dead cottonwood and dead fruit trees pulled and cut.
110 cords wood sawed in stove lengths.
35 cords of cut wood hauled.
30 cords of wood logged and hauled to saw from South Entrance.
100 acres of weeds eradicated.

BOUNDARY FENCES

5016 posts cut for fence line in Zion Park, hauled average of 20 miles.
12 miles of 5 strand barb wire fence built.
1 mile road repair for collecting posts.
3 miles of Farunuweap road re-built.
9 miles road built from Petrified Forest to boundary line and along fence line.

7 EAST RIM TRUCK TRAIL

1 mile of right of way cleared.
1 mile of truck trail completed.
1 pole bridge built.

1 IRRIGATION DITCH

300 lineal feet of ditch 2' wide x 18" deep excavated and rock lined.

7 ADDITION TO WATER SUPPLY

2 springs piped 100' to water main. 1" G. I. pipe used.

EDUCATIONAL & WILDLIFE RESEARCH

7 quadrats 40' x 40' constructed

1 FLOOD CONTROL & CRIBBING CONTINUED

450 cu. yds. overhanging rock blasted near Pine Creek bridge.
56 - 2 cu. yd. loads gravel hauled 4 miles-quarry to revetment for side road graveling.

ZION

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- Roadside Improvement - 1000 cu. yds. Completion of ban opening, and construction of stone catchment basins at culvert openings, Floor of Valley and East Rim Roads.
 - Administrative Trail - 3.25 miles. Trail completed from Virgin River Bridge to pass between Bridge Mountain and the Watchman.
 - Pine Creek Irrigation System - 3000' ditches dug and 1400 gallons storage.
 - Temple of Sinawava Comfort Station - Completed.
 - Guardrail (East Rim Road) - 17 rods. Construction of new masonry guardrail near east boundary.
 - South Entrance Pillars - 2 ^{units of Quartz Pillars} completed.
 - Oak Creek Warehouse - 80% completed during this period.
 - Oak Creek Equipment Shed - Completed.
 - Oak Creek Garage - Completed.
 - Completion of Grading and Surfacing, Oak Creek Area - 1300 sq. yds.
 - Tree Insect Pest Control - 1200 acres. Consisted of ash and cottonwood trees along Floor of Valley Road to control caterpillars, and also the cutting and burning of pest infected trees along the West Rim Trail.
 - Car Wash Rack - 125 man days. (~~90% complete~~)
- Maintenance of Transplanted Trees and Shrubs - 12.5 acres. This work consisted of the watering of trees already planted and the removal of noxious weeds.

207-01.4

 **COPY**

July 18, 1935

The Director
National Park Service
Washington D. C.

Dear Mr. Director:

Receipt is acknowledged of your Memorandum dated June
7, containing instructions for preparation of annual reports.

Very truly yours,


P. P. Patraw
Superintendent

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207-014

102244

UNITED STATES
DEPARTMENT OF THE INTERIOR
National Park Service
Washington



June 7, 1935.

MEMORANDUM FOR ALL FIELD OFFICERS:

Please transmit your Annual Report for the fiscal year ending June 30, 1935, in time to reach the Washington Office on July 31.

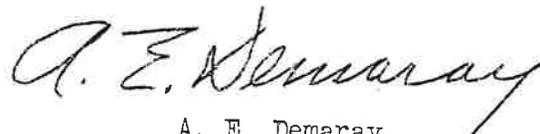
In the preparation of these data, you should study last year's report and submit only such material as will be useful for inclusion in the Director's report to the Secretary, not items merely of importance locally.

Travel figures need not be included in this report, except in cases of unusual winter or pre-season travel. However, in order that the Service's comparative travel statistical tables may be continued, you should wire travel figures for the year ended September 30, 1935, at the close of that day as in the past.

Should you have photographs of especially prominent visitors, or outstanding new work undertaken in the park the past year, these should accompany the report.

Instructions from the Secretary regarding the annual report have not yet been received by the Service. If these instructions embody any changes, you will be notified; however, this should be considered the final call.

PLEASE ACKNOWLEDGE RECEIPT OF THIS MEMORANDUM.



A. E. Demaray,
Associate Director.