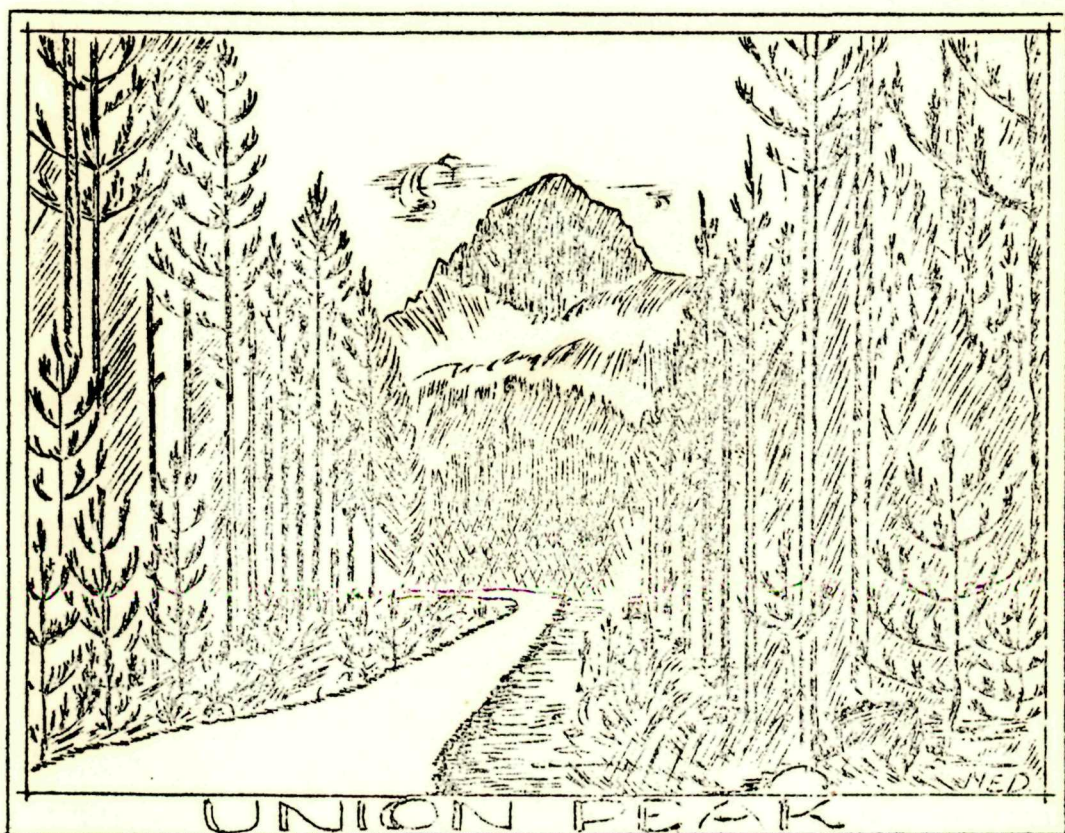


Nature Notes

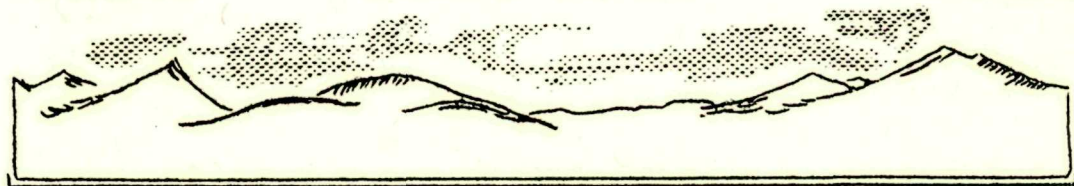
Crater Lake National Park



VOL. X

--- JULY-1937 ---

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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

CRATER LAKE NATIONAL PARK

NATURE NOTES

Volume X

July 1937

Number 2

Nature Notes from Crater Lake National Park are issued during the summer months. These pamphlets contain articles describing the natural features of the Park, Oregon Caves National Monument and the Lava Beds National Monument, the two monuments being administered by the staff of Crater Lake National Park. Copies of Nature Notes may be obtained from the Park Superintendent, Crater Lake, Oregon. The reprinting of the articles appearing in Nature Notes is encouraged. Please give credit to the pamphlet and author.

E. P. Leavitt
Superintendent

John E. Doerr, Jr., Editor
and Park Naturalist

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PREFACE

CRATER LAKE NATIONAL PARK

The park includes an area of 250 square miles on the crest of the Cascade Range in southern Oregon. The area was established as a national park in 1902, preserving the unsurpassed scenic beauty of Crater Lake, a deep lake, the clear fresh water of which reflects and refracts unusual hues of blue. Color is only one of the elements of the inspiring beauty of Crater Lake. Its setting is unique. The lake, having an area of 20 square miles, is cupped within the crater of an extinct volcano. Cliffs 500 to 2000 feet high completely surround the lake. The crater walls are partially mantled with hemlock, fir, and pine trees. On the gentle outer slopes of the mountain which one ascends in approaching Crater Lake there are deep canyons, magnificent forests and open meadows supporting a colorful display of mountain wild flowers. Hiking and fishing are popular outdoor sports during the summer months. Skiing is popular in the winter, the park being accessible throughout the winter months by the west entrance road from Medford and the south entrance road from Klamath Falls.

OREGON CAVES NATIONAL MONUMENT

This national monument, an area of 480 acres, is located in the Siskiyou Mountains in southwestern Oregon. The caves, named "The Marble Halls of Oregon" by Joaquin Miller, are truly marble halls. Underground water penetrating to great depth along fractures in the marble formation has dissolved out an extensive system of chambers. Water dripping from the ceilings and walls has decorated the halls and passageways with fantastic stalactites and stalagmites which stimulate one's imagination as well as one's appreciation of the beauties of nature in caverns never touched by sunlight. In the magnificent forest around the cave entrance there are trails along which one gets inspiring views of forest-covered mountains and valleys. Along the trails one can observe many species of trees, mammals, and birds.

LAVA BEDS NATIONAL MONUMENT

Located in northeastern California, the monument includes an area of 45,000 acres. As the name suggests, volcanic formations, some of quite recent origin, are of greatest importance. There are hundreds of lava tubes which were once the passageways for streams of molten lava. Volcanic cones rise above the general level of the adjacent country. There are excellent examples of "aa" and "pahoehoe" lava flows. Within the monument there are interesting historical features including battlefields of the Modoc War of 1872-73. There are important ethnological and archaeological features. Petroglyphs on cliffs and pictographs in caves are evidence that the region was inhabited by primitive people long before the coming of the white man.

The Editor.

The GEOLOGY of UNION PEAK

Union Peak is the most conspicuous topographic feature in the southwestern portion of the park, its summit being 7698 feet above sea level and over 1000 feet above the general level of the adjacent area. The upper 800 feet of the peak stands as a rock spire above a ridge-like base which is the drainage divide between Union Creek to the north and Red Blanket Creek to the south, both streams being tributaries of the Rogue River. Union Peak is visible from many parts of the park. From almost any viewpoint it is symmetrical in outline, being somewhat like an inverted "U". The summit of the peak is a ridge 50 feet long from east to west and about 15 feet wide from north to south. A sketch of a view of Union Peak appears on the cover of this issue of Nature Notes.

The relatively simple structure of Union Peak is the key to its geology. The spire of the peak consists of a gray igneous rock the minerals of which are too small to be recognized without magnification. This central rock mass has been broken into blocks by systems of fractures which probably formed as the mass solidified and cooled. There are relatively few blocks even closely resembling the typical six-sided columns which usually form as hot igneous masses cool and contract. There is a general radial arrangement of the planes of fracture in the spire-like mass of the peak.

Although most of the spire is composed of the fine grained gray rock, on the eastern side near the summit there is an area or mass of very different material. The material is dark gray to black. It consists of fragments of various sizes arranged in poorly defined layers whose inclination is toward the west, that is, toward the central portion of the peak.

Structures exposed around the base of the peak are also significant. At the eastern base of the peak there is an area in which a layered arrangement of material is also evident. Those layers are composed of numerous angular fragments, varying widely in size, and a great proportion of very fine material. The layers are inclined steeply toward the east.

At the western base of the peak layered material is exposed. Those layers, the top and bottom of each being irregular and rough, do not show any fragmental characteristics. The inner portion of each layer is composed of rather uniformly fine grained, dark gray to black rock.

Union Peak is described in Professional Paper No. 3 as being of volcanic origin.* The description states that the spire or central

*Diller, J. S. and Patton, H. S., The Geology and Petrography of Crater Lake National Park, U. S. Geol. Sur. Prof. Paper 3, p. 20, 1902.

portion of the peak represents lava which rose and solidified in the vent of a volcano. Such a conclusion must have been based on the exposed structures, described above. The layered fragmental material at the eastern base of the peak is a portion of the volcanic cone built by explosive activity, the major portion of the cone having been removed by erosion. The material at the western base of the peak represents a portion of the cone which was built by successive outpourings of lava flows.

The black cindery material near the summit of the peak presents an interesting relationship. The usual inclination of layers in a volcanic cone is outward from the center; however, in the mass near the summit the inclination is toward the center. Because of this relationship to the central spire the mass of cindery material may represent explosive fragments which fell on the inward facing slope within the crater of the cone, the inclination of layers having been controlled by the slope of the wall of the crater.

The structures visible at Union Peak indicate that it was a center of volcanic activity. The present physical features of the peak are the result of processes which acted since the cone was built by volcanic activity. Glaciers and running water are in part at least responsible for the partial destruction of the former cone which may have stood at an elevation somewhat higher than the present peak.

Just north of the peak there are several broadflat valleys. These are obviously of glacial origin. Valleys of similar origin exist to the south and west of the peak. It has been shown that Union Peak is a remnant of a once larger cone. The fact that the lower slopes show evidence of glaciation also indicates that the peak was at one time sufficiently large to permit of a heavy accumulation of snow which fed the glaciers on the slopes of the peak, glacial action having cut the U-shaped valleys to the north, south, and west. The isolated position and the spire-like character of the remaining portion of the cone is perhaps a measure of the extent to which material was removed by glaciation. The materials composing the cone would be much more easily eroded than the solid mass of rock which filled the central vent of the cone. By repeated glaciation the material of the cone was evidently stripped away from the "plug".

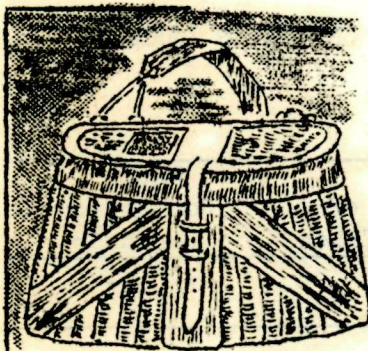
Union Peak is also of interest because of several detailed features. The blocks of rock in the talus on the southeastern and southwestern sides contain in abundance a mineral whose chemical composition is identical with that of quartz, but whose physical properties are sufficiently different that this variety is designated as cristobalite. This mineral was first discovered in Mexico and has since been found at relatively few places in the world. It is thus rather surprising to find the mineral in such abundance at Union Peak. Although the crystals are seldom more than 1 mm in their greatest dimension, they are well formed double-ended four-sided pyramids. The crystals formed as coatings in the cavities of the rock, evidently having been deposited from solution which filled or passed through the cavities.

Blobs of glass occur on fragments of rock at the summit of the peak. The glass is present on some fragments which are apparently the result of residual disintegration, and also present on fragments at the top of a crudely built "monument". The blisters of glass are distinctly superficial phenomena. The only logical explanation seems to be that fusion has been produced by strokes of lightning hitting the peak.

Carl E. Dutton
Ranger Naturalist

FISHING IN CRATER LAKE

JULY 1937



A creel census of the fish caught in Crater Lake during the month of July 1937 showed interesting results. Catches included two species, rainbow trout (Salmo irideus) and silverside salmon (Oncorhynchus kisutch). The table on the following page shows that 0.83 fish were caught per angler per hour of fishing. This figure is low because the census includes only the returns from boats fishing over the southwest portion of the lake. Fish caught over the northeast portion of the lake, in the vicinity of the Wineglass, as well as a few catches made in the southwest portion after 7:00 p.m. were not recorded. Very little angling from shore was observed during the month, consequently the census of boat fishing gives a fairly accurate check on the total fish catches. Analysis of the catch per hour of fishing indicates that every fisherman did not catch 0.83 fish every hour he fished. The good fisherman returned the bigger catches.

Needham (1937) recorded 0.21 fish per angler per hour in Convict Lake in California. (1) This is the only available paper dealing with lake economics. Comparison of the data for Crater Lake with Needham's report on Convict Lake indicates that Crater Lake is a good fishing lake.

Silverside salmon dominated the catches of the first three weeks of July. During the last week of the month there was a marked increase in the number of rainbow trout caught. This observation may indicate that the spawning procedures of the rainbow trout reduced the feeding activities of this species to such an extent that lures held no enticement for them.

The smallest fish taken from the lake measured 8 inches; the largest, a rainbow trout, measured 27 inches. This large fish weighed 7 lbs. and was a veritable veteran. A microscopic analysis of its scales indicates that it was starting the seventh summer of life. For the month the average length of fish caught was 16.46 inches for rainbow trout, and 16.11 inches for silverside salmon. The ages varied between 3 and 5 years.

(1) Needham, P. R., Methods of Measuring Angler's Catches in Inland Waters, Copeia, No. 1, April 10, 1937, pp 41-48.

Very few fish returned to the checking station were observed with empty stomachs. Autopsy of the fish revealed that the stomachs were crowded with water fleas, shrimp, snails, and periwinkles. As a rule the diet was predominately one of these foods. Mixed diets were not in order during July.

The favorite gear for trolling was the Davis spinner. This was used most successfully around the shores of Wizard Island. No deep water fishing was reported. Fishing in the 100 foot water with copper line might be encouraged. Fishing at such depths with copper line proved successful in a number of instances during the summer of 1936. Moreover, the most abundant supply of water fleas is found in the 100 foot stratum.

ANALYSIS OF THE RECORDS OF CATCH FROM BOATS ON CRATER LAKE

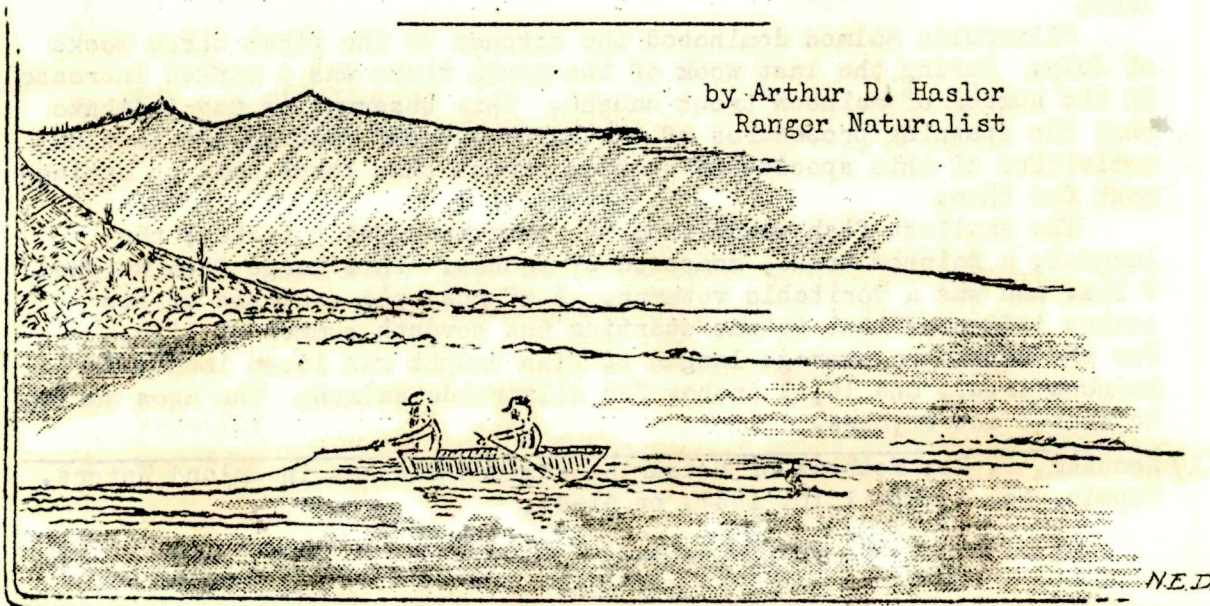
July 1 to July 31, 1937

No. of Boat Reports	No. of Anglers	Total Fishing Hours	No. of Fish Taken	Catch Per Angler Per Hour
317	721	920	767	0.833

ADDITIONAL COMPUTATIONS

1. Average hours fished per boat ----- 2.8
2. Number of fish caught per angler ----- 1.06
3. Average catch per boat ----- 2.4
4. Number of persons per boat ----- 2.2
5. Total weight of fish ----- 1280.0 lbs.
6. Average weight ----- 1.66 lbs.
7. Average length of rainbow trout ----- 16.5 in.
8. Average length of silverside salmon --- 16.1 in.

by Arthur D. Hasler
Ranger Naturalist



OUTLINE OF EVENTS IN THE HISTORY OF THE MODOC WAR

by
John E. Doerr, Jr. *Don C. Fisher*

Continued from the June 1937 issue of Nature Notes

Part I of this outline appeared in the June 1937 issue of Nature Notes from Crater Lake National Park. The first part covered the period 1846-1870. In southern Oregon and northern California those were years of struggle between the white settlers and the Modoc Indians. Many of the events leading up to the Modoc War took place in that period of years. Part II of this outline covers the years 1871-73, including the events immediately preceding the outbreak of the war and the first few months of actual warfare in the Lava Beds, an area now within Lava Beds National Monument in northeastern California. Part III will appear in the August issue of Nature Notes.

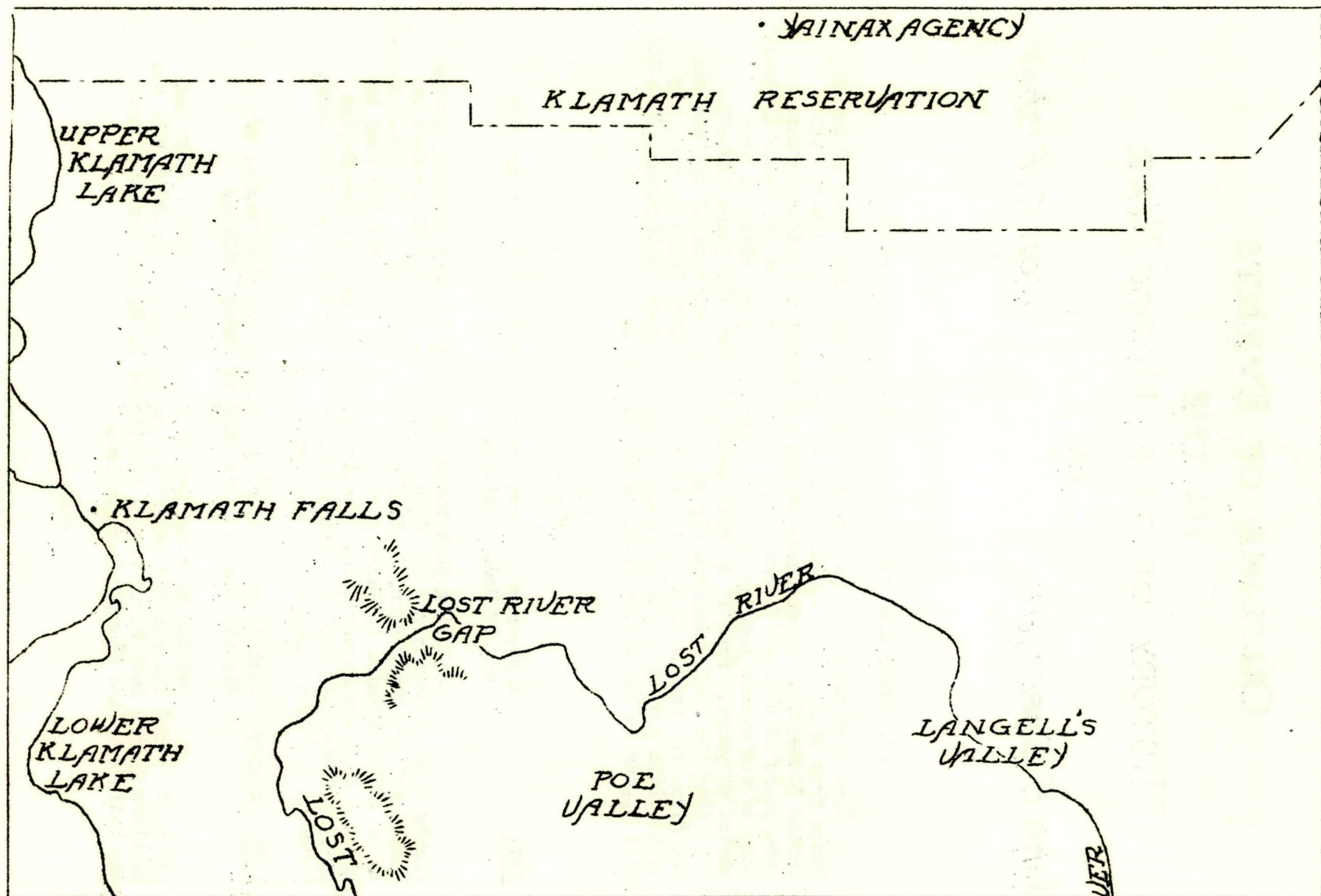
Part II 1871 - 1873

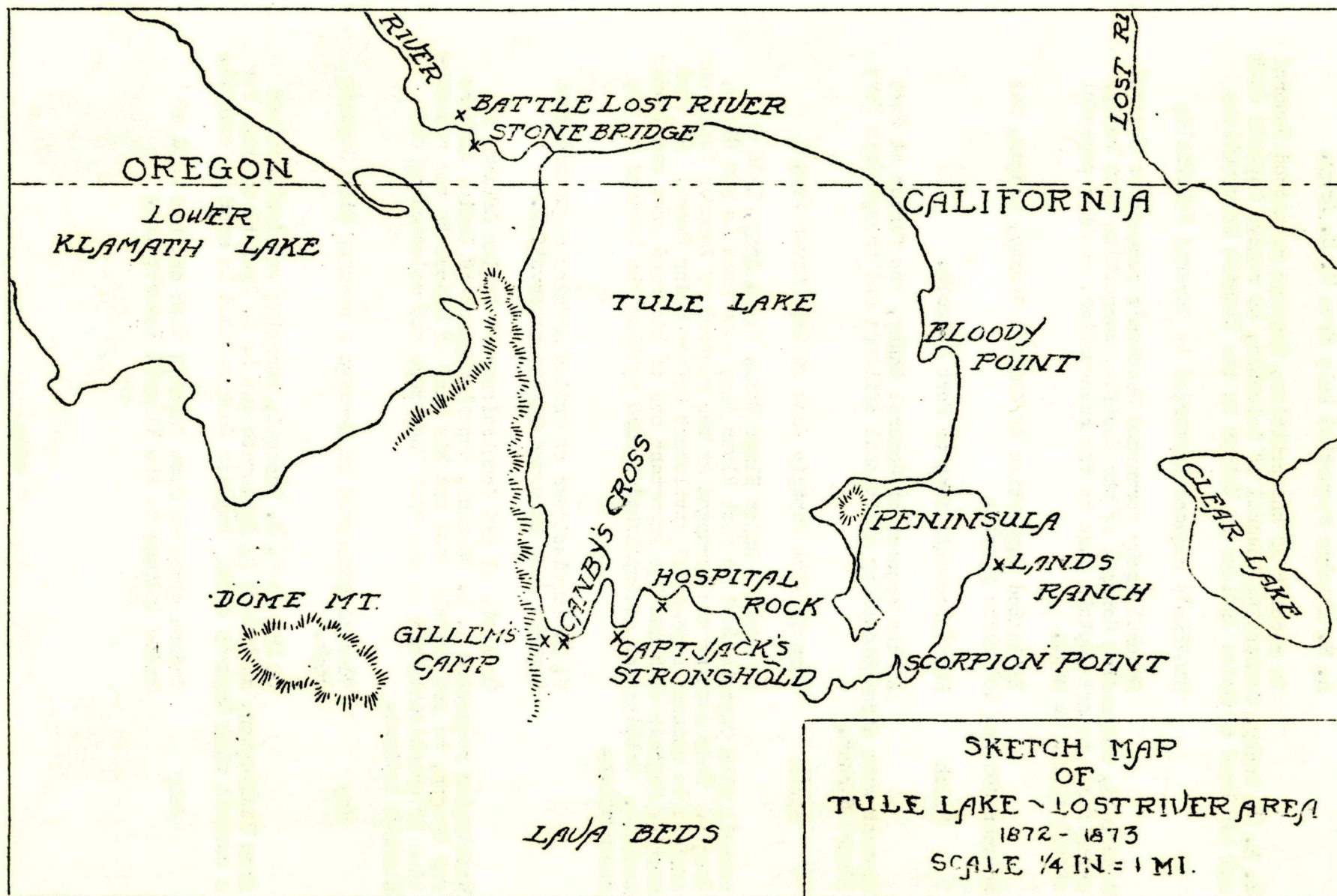
1871 A separate reservation recommended for Captain Jack's band of Modoc Indians.

Realizing that there was an unfriendly feeling between Jack's band of Modocs and the Klamath Indians, the Superintendent of Indian Affairs for Oregon, A. B. Meacham, recommended to the Commissioner of Indian Affairs in Washington that Captain Jack and his band be given a separate reservation. Pending action on his recommendation Meacham instructed Captain Jack and his band to remain at Clear Lake. Refer to the sketch map on the following pages.

1872 January Lost River settlers petitioned for the removal of Captain Jack and his band of Modoc Indians.

Instead of remaining at Clear Lake, Captain Jack and his band roamed the country molesting the settlers with the result the settlers in the Lost River region petitioned A. B. Meacham to remove the Indians to the Klamath Reservation.





A. B. Meacham requested help from U. S. Army.

On receipt of the petition, Meacham requested General E. R. S. Canby, Commanding General of Columbia, to remove Captain Jack and his band of Modoc Indians to Yainax on the Klamath Reservation.

Meacham's request forwarded to General Schofield.

General Canby forwarded Meacham's request to General Schofield, Commanding General of the Pacific, suggesting that before using force to get Captain Jack to the reservation, another peaceful effort should be made.

Estimated population of Klamath County, Oregon, was between 300 and 400 white people.

March Reenforcements sent to Fort Klamath.

At the request of General Canby, the forces at Fort Klamath were strengthened by additional officers and troops from Fort (Camp) Warner.

April Council with Captain Jack at Lost River Gap.

On April 3 Major Elmer Otis, U. S. Army, held a council with Captain Jack at Lost River Gap, near what is now Olone, Oregon. This meeting was arranged at the request of General Canby who desired to attempt a peaceful settlement before using force. At that meeting Captain Jack and the important men of his band were distinctly hostile. Nothing was accomplished toward getting the Indians to the reservation.

U. S. Commissioner of Indian Affairs requested that Captain Jack be moved to the reservation.

On April 12 the Commissioner of Indian Affairs in Washington requested T. B. Odenoal, Superintendent of Indian Affairs for Oregon, to get Captain Jack and his band of Modocs to the reservation if practicable and to see that they were not molested by the Klamath Indians.

May Odenoal attempted to arrange a meeting with Captain Jack.

On May 14 T. B. Odenoal, carrying out instructions from Washington, sent Ivan D. Applegate and L. S. Dyer to arrange for a council with Captain Jack. Captain Jack refused to meet in council.

July Orders given to move Captain Jack and his band of Modoc Indians to the Klamath Reservation.

On July 6, 1872, the Commissioner of Indian Affairs in Washington directed Superintendent T. B. Odeneal to move Captain Jack and his band to the Klamath Reservation, peacefully if possible, forcibly if necessary. This order from the Commissioner was the result of Odeneal's report on the failure of I. D. Applegate and L. S. Dyer to induce Captain Jack to meet in council.

November U. S. Army requested to force Captain Jack to the Klamath Reservation.

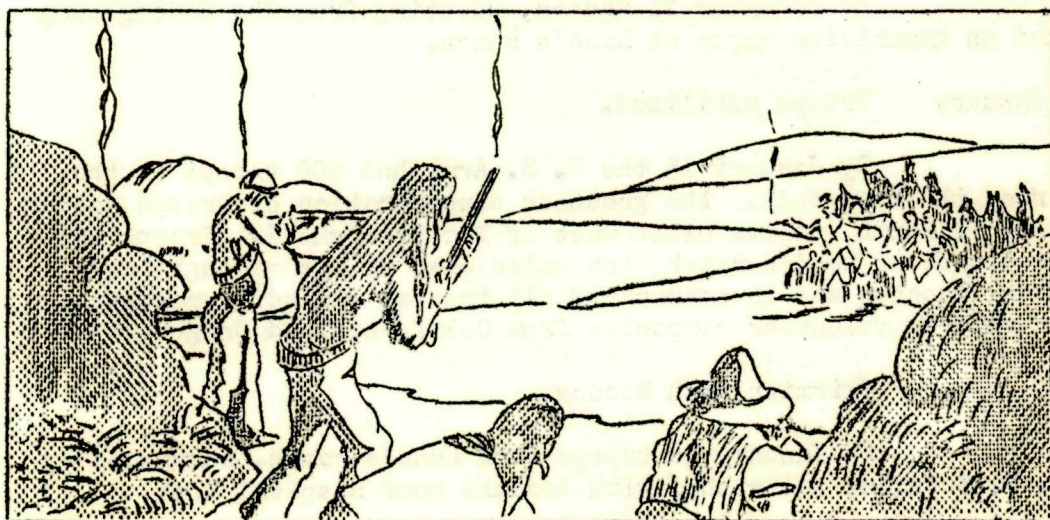
Despairing of a peaceful settlement, on November 27,, Superintendent Odeneal requested Major John Green, C. O. at Fort Klamath, to furnish sufficient troops to compel Captain Jack to move to the reservation.

Troops moved to Lost River.

On November 28 Captain James Jackson commanding 40 troops left Fort Klamath for Captain Jack's camp on Lost River. The troops, reenforced by citizens from Linkville (Klamath Falls) arrived in Jack's camp on Lost River about a mile above Emigrant Crossing (Stone Bridge) on November 29.

First battle of Modoc War, November 29, 1872.

Firing began immediately after the Indians refused to give up their arms. After driving the Indians from camp, Captain



HEL-M.E.D.

Jackson ordered the troops to retreat to await reinforcements. The casualties in this short battle included one soldier killed and seven wounded, and two Indians killed and three wounded.

Settlers massacred by Indians.

Retreating from the battlefield on Lost River to the Lava Beds south of Tule Lake, a small band of Modoc Indians under the leadership of Hooka Jim, on the afternoon of November 29 and morning of November 30, massacred 18 settlers.

December Captain Jack and his band prepared to defend themselves in The Stronghold.

For some months previous to the battle on Lost River, Captain Jack had boasted that in the event of war he and his band could successfully defend themselves in an area in the lava beds on the south shore of Tule Lake. It was to that area that the Indians retreated after the first battle on Lost River. The area soon became famous and is known today as CAPTAIN JACK'S STRONGHOLD. In selecting the place in which to defend themselves the Indians took advantage of the lava ridges, cracks, depressions, and caves, all such natural features being ideal from the standpoint of defense. At the time the Indians occupied The Stronghold, Tule Lake bounded The Stronghold on the north and served as a source of water for the Indians. Today The Stronghold is one of the interesting features of Lava Beds National Monument.

Encounter at Land's Ranch.

On December 21 Modocs, scouting from The Stronghold, attacked an ammunition wagon at Land's Ranch.

1873 January Troops mobilized.

By January 15 the U. S. Army had 400 troops in the field near the Lava Beds. The greatest concentration of troops was at Van Bromer's ranch, twelve miles west of The Stronghold. Troops were also stationed at Land's ranch, ten miles east of The Stronghold. Col. Frank Wheaton was in command of all troops, including regular army as well as volunteer companies from California and Oregon.

Skirmish with Modocs.

On January 16 troops from Land's ranch, commanded by Col. R. F. Bernard, skirmished with Indians near Hospital Rock.

Attack on The Stronghold.

On the morning of January 17, 1873, troops advanced on The Stronghold. The Indians, occupying excellent positions, repulsed

troops advancing from the west and east. A general retreat of troops was ordered at the end of the day. In the attack on The Stronghold on January 17, 1873, the U. S. Army lost 16 men killed and 5 officers and 44 enlisted men wounded. Under Captain Jack's command there were in all approximately 150 Indians including women and children. Of that number there were only 53 warriors. The Indians suffered no casualties in the fighting on January 17.

Peace Commission appointed.

On January 25, C. Dolano, Secretary of the Interior, appointed a Peace Commission to deal with Captain Jack. The Commission consisted of A. B. Meacham, chairman, Jesse Applegate, and Samuel Case. General E. R. S. Canby was appointed to serve the Commission as counselor.

Feb.-March Activities of the Peace Commission.

On February 19 the Peace Commission held its first meeting at Fairchild's ranch, west of the lava beds. A messenger was sent to arrange a meeting with Captain Jack. Jack agreed that if the Commission would send John Fairchild and Bob Whittle, two settlers, to the edge of the lava beds he would talk to them. When Fairchild and Whittle went to the lava beds Captain Jack told them he would talk with the Commission if they would come to the lava beds and bring Judge Elisha Steele of Yreka. Steele had been friendly to Captain Jack. Steele went to The Stronghold. After a night in The Stronghold, Steele returned to Fairchild's ranch and informed the Peace Commission that the Indians were planning treachery, and that all efforts of the Commission would be useless. A. B. Meacham wired the Secretary of the Interior, informing him of Judge Steele's opinion. In replying the Secretary instructed Meacham to continue negotiations for peace. Judge A. M. Roseborough was added to the Commission. Jesse Applegate and Samuel Case resigned from the Commission, being replaced by Rev. Eleazar Thomas and L. S. Dyer.

Troops moved to positions nearer The Stronghold.

April Gillem's Camp established.

Gillem's Camp was established at the edge of the lava beds, two and one-half miles west of The Stronghold. Col. Alvin C. Gillem was placed in command of all troops including those at Hospital Rock, commanded by Col. E. C. Mason. The site of Gillem's Camp is one of the interesting historical features of Lava Beds National Monument.

Activities of the Peace Commission.

On April 2 the Commission and Captain Jack met

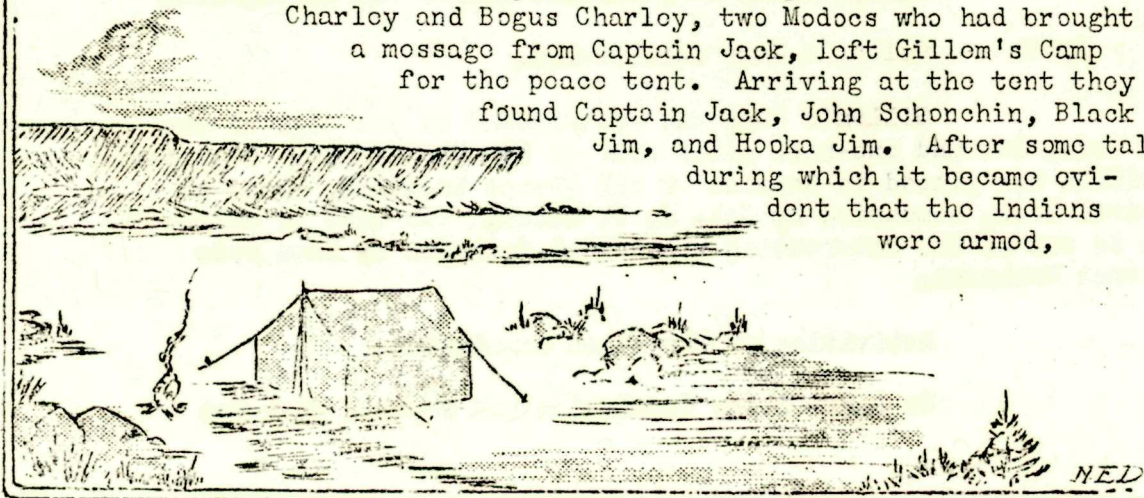
in the lava beds at place about midway between The Stronghold and Gillem's Camp. At this meeting Captain Jack demanded: (1) Complete pardon of all Modocs; (2) Withdrawal of all troops; (3) The right to select their own reservation. The Peace Commission proposed: (1) That Captain Jack and his band go to a reservation selected by the government; (2) That the Indians guilty of killing the settlers be surrendered and tried for murder. After much discussion the meeting broke up with nothing accomplished.

On April 5 Captain Jack requested a meeting with A. B. Meacham. Accompanied by John Fairchild and Judge Roseborough, Frank and Toby Riddle serving as interpreters, Meacham met Captain Jack at the peace tent which had been erected on a flat area about one mile east of Gillem's Camp. The meeting lasted several hours. Captain Jack requested that the lava beds be given to them as a reservation. The meeting ended with no agreement. After Meacham returned to camp a message was sent to Captain Jack, asking that he meet the Commission at the peace tent on April 8. While delivering this message, Toby Riddle, a Modoc woman, wife of Frank Riddle, a white settler, learned of the Modoc's plan to kill the peace commissioners.

On April 8 just as the commissioners were starting for the peace tent a message was received from the signal tower on the bluff above Gillem's Camp. The message stated that the lookout on the tower had seen five Indians at the peace tent and about 20 armed Indians hiding among the rocks nearby. The commissioners realized that the Indians were planning treachery. The commissioners agreed to remain in camp. In spite of warnings of treachery on the part of the Indians, Rev. Thomas insisted on arranging a date for another meeting with Captain Jack. On April 10 a message was sent asking that Captain Jack meet the commissioners at the peace tent on the following morning.

Murder at the Peace Tent, April 11, 1873.

On the morning of April 11 the commissioners, General E. R. S. Canby, A. B. Meacham, Rev. E. Thomas, and L. S. Dyer, with Frank and Toby Riddle as interpreters, and Boston Charley and Bogus Charley, two Modocs who had brought a message from Captain Jack, left Gillem's Camp for the peace tent. Arriving at the tent they found Captain Jack, John Schonchin, Black Jim, and Hooka Jim. After some talk, during which it became evident that the Indians were armed,



General Canby informed Captain Jack that the Commission could not meet his terms until orders came from Washington. In an angry mood John Schonchin demanded Hpt Creek for a reservation. Captain Jack got up and walked away a few steps. Two Modocs, Brancho (Barneho) and Siolux, armed with rifles, ran forward from where they had been hiding among the rocks. Captain Jack turned giving the signal to fire. The first shot from Captain Jack's revolver killed General Canby. Reverend Thomas fell mortally wounded. A. B. Meacham fell seriously wounded. Dyer and Riddle escaped by running. Had not Toby Riddle cried out, "The soldiers are coming!", Meacham would no doubt have been killed.

All efforts for peace ended when the Modocs carried out their plans to kill the commissioner. A cross marks the place where General E. R. S. Canby and Reverend Eleazar Thomas fell victims of Modoc treachery.

(To be concluded)

