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University of Montana--Missoula. Biological Station, Flathead Lake

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UNIVERSITY OF MONTANA, MISSOULA, MONTANA, U.S.A.
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TRAVELERS across Flathead lake by boat usually have their attention called to the "Pictured Rocks," on Angel Point, on the west side. Especially is this true when the boat puts into bay to the west, around or back of Wild Horse Island, for Dayton. On the way out as the boat rounds the point and steams out into the open lake the passage is close to the cliff on the shore, and the hieroglyphics are plainly seen by the passengers with the naked eye.

The cliff on which the writings occur is not in the Flathead Indian Reservation but about two and a half miles northeast of the place where the north reservation line cuts the west shore of the lake, in township 25 north, range 20 west, section 22. They may be easily approached from either side along the shore, the shelf or shore being narrowest at the cliff where the writings occur. Here there is barely room to walk along the shelf at the foot of the rocks, and one could step from the narrow shelf into the lake at high water. A few rods to the north is the house of a settler, but the country about is wild and unbroken.

The pictured rocks make up a cliff rising almost vertically from the clear waters of the lake. Along the face of the cliff, about waist high from the shelf on which one stands on leaving the boat, and as high as a man can reach, is the splendid series of Indian writings. It is the purpose of this paper to give briefly such information about these writings as is at present available, together with photographs taken by the writer.

Flathead Lake is in the northwestern part of Montana, and receives the drainage from almost the entire northwestern section of the state. It extends north and south, with a length of about thirty miles. At its widest portion east and west, it is almost twenty miles across. Its eastern shore is flanked by the Mission mountains, which come down quite abruptly to the water's edge. On the western shore the mountains are not so abrupt, leaving small tracts of tillable land between the lake and the steep mountain faces, although the mountains really begin at the water as on the eastern shore. The upper end is a broad and fertile valley, the old lake bed. At the lower end there is a morainal hill some 450 feet high, separating the lake shore from the beautiful Mission valley. More detailed information is given in the Bulletins University of Montana, "A Biological Reconnaissance in the Vicinity of Flathead Lake," with many plates, and "Lectures at Flathead Lake," pages 197-203, with illustrations, both by the writer.

Several spurs from the Cabinet mountains drop down to the waters of the lake on the west. One of these is Angel Hill, ending at Angel Point on the lake. As before stated, the cliff of this hill, where it ends at the lake, contains the Indian writings. By referring to Fig. 1 the exact location of these rocks may be determined.

The map is inaccurate in one respect. Between the "Pictured Rocks" and Wild Horse Island, a short distance from shore, and not much farther from Wild Horse, are two small islands. These are unnamed, and for convenience
Fig. 1. Map of Flathead Lake, showing the location of the pictured rocks. See also Fig. 2.
will be called *Twin Islands*. One of these, possibly both by this time, was at time of our visit occupied by an enterprising homesteader.

The cliff comes down abruptly to the water at Angel Point. A few large boulders have tumbled off into the water, and above the lake's level in middle or late summer is a sort of shelf between the lake and the cliff, a few feet above the water. One may by this means get close up to the writings, and for that matter touch them all. Plate III shows the relation of the cliff to the water, and the scant room at the foot of the cliff.

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**Fig. 2.** A portion of the shore line, reduced, from official survey, showing the location of the rock cliff on the lake shore. Compare with Fig. 2.

The water at this point is clear and deep. The following soundings taken August 14, 1904, show how deep the cliff extends below the surface:

Off point of "Pictured Rocks:"
50 yards off shore, 167 feet.
300 yards off shore eastward, 160 feet.
600 yards off shore, 170 feet.
Three-quarters of a mile southeast, 175 feet.
One mile southeast, 157 feet.
One and one-fourth miles southeast, 148 feet.
Half way between Wild Horse and Twin Islands, 158 feet.

The soundings were made by Maurice Ricker, now principal of the West Des Moines High School, with our specially constructed apparatus, a line with plumb bob, the line running between the wheels of a wire measuring apparatus. The soundings show that the comparatively level lake bottom extends to within a few feet of shore, and that the cliff rises abruptly from the lake bottom.

Landing at the point is not generally to be accomplished. The westerly winds from the low pass at the former lake outlet to the west usually blow eastward across the arm at Wild Horse bay. A wind usually blows up or down the lake. The currents meet off Angel Point, and the wind may blow from "any direction." There is no beach at the point, and boats of any kind, large or small, would soon be badly pounded on the sharp rocks.

On our visit in 1904 we had very fine weather and still water. The small steamer Bigfork touched easily among the sharp edges, for the lake was smooth as glass. We landed first on the evening of August 13, and returned the next day to spend some time. Prof. J. M. Hamilton, now President of the Montana College of Agriculture and Mechanic Arts, and the writer devoted attention to the writings while Mr. Ricker made the soundings. Our party was camped at Wild Horse Island.

Professor J. P. Rowe, of the University, gives the composition of the rock composing the cliff as follows:

The cliff is of quartzite shale, and probably belongs to the Burke formation, or at least Pre-Cambrian. The hardness of this rock is between 5 and 7, and withstands the weathering well. The walls would remain perpendicular for a long time, regardless of the agencies of disintegration. It is almost devoid of rifts and joints, and in many places where found makes perpendicular cliffs.

A few portions of the rock with the writings were broken off and brought to the University for study. W. D. Harkins, Professor of Chemistry in the University, examined the material used for making the hieroglyphics. He reports it as being oxide of iron.

The difference between the material used by the Indians in making these writings and ordinary paint is apparent at once when comparison is made. The Indian writings show up well in all photographs that have been taken. On the cliff at the southern or left hand end of the writings, some one had drawn the figure of a horse, some three feet long. It was a crude affair, clumsily executed with a brush an inch broad, made with a peculiar gray-brown paint. The photograph of the rock wall containing this picture, taken in the same manner as the others shows nothing of the picture on the plate. It is a clear blank so far as the horse is concerned, although the cliffs show as well as in the other pictures.
General view of the cliff on which the writings occur, taken a short distance off shore.
The rocks at the point form an angle, on both sides of which the writings occur. To secure suitable photographs of the whole series of figures on one plate is impossible. It is too far away to take photographs from the boat, and too low down. There is not room on shore. The writings must therefore be presented in a broken series, each picture representing a portion of the figures. Plate II gives a fair idea of the cliff and the writings, and in this a large number of the writings may be seen.

The total distance used on the face of the rock is about 35 feet; counting the curves and angles, about 16 feet more. The highest point above the floor of the rock is at the southern end of the writings, about 12 feet. For the most part the height is about as great as a man could reach, and from that down to the crumbling floor.

Apparently but little rock has fallen from the face of the cliff since the markings were made. The shelf or floor in front of the cliff on which the writings occur is from 5 to 10 feet wide, for the most part filled up, with barely room to stand. As it is quite sloping there is no chance to photograph from so close quarters. The shelf has grass and other vegetation growing on it. A few yards from the writings a beautiful syringa bush is growing, on either side, lending a charm to the view, and showing in striking contrast.

The writings were visited in August of 1907, and showed no noticeable change from that condition noticed in previous years. The water in the lake was a little higher on the rocks, the water a few feet deeper. But this varies much, from year to year and from spring to fall.

The writings themselves have many peculiar and interesting features. There are over 200 different and distinct marks or markings. As many as 15 distinct animals are shown; five of these are of buffalo, as shown by the humps on the back and by the shape of the body; one represents a deer, two have antlers of a moose and six are doubtful, mutilated more or less. There are 11 blotches, whose intent or meaning cannot be determined. There are 200 or more straight marks, some singly but mostly in groups. Some of the marks are very broad, as much as several inches. The last ones are undoubtedly made with the fingers and thumb, in groups of five, as though the hand were dipped into the writing material and then drawn down the face of the rock with fingers and thumb spread. It appears as though the writer got tired of making marks so accurately as would be indicated at first, and daubed it on in a hurry. The earlier or first markings were apparently made with much care, and are the highest on the rocks. Those at the right hand end are not so carefully drawn, and are all within reach.

The drawings seem to read from left to right. All the animals have their heads toward the left, their tails toward the right. The straight marks are vertical, or nearly so, on the rocks.

At the upper left end of the writings is perhaps the best series, certainly the best series of animals. First are two large ovals with an upward projecting appendage on the left side and two long lines extending downward. Within and without these lines are shorter lines, 14 in number, evidently
representing the chronicle of important events. Below these are five large spots, two broken lines, and a broken figure of an animal. To the right of the ovals and of the broken lines just mentioned are six animals. Five of these I take to represent buffaloes or bison, the sixth a deer. There is a blotch of color which seems shapeless near the broken animal. Still lower is an animal with broad horns or big ears, whichever is intended to be represented, and with a broad and upturned tail. The legs of this figure are broader than those in the other figures. This is plainly shown in Plate II. I take it to be a moose.

Below this last figure and to the left is a blotch, probably representing an animal like the one described. Immediately below this is the figure of a deer (?) with a slender neck and long legs. Below this is a series of some 30 broad marks, in a fairly straight horizontal line, alike except for a large, broad Y, the fifth mark from the left hand end. Below all, close to the broken bottom of the cliff, and just above the shelf on which the artist evidently stood, are three broad and bold marks.

In the central portion of this group of figures and lines is a very large letter T, the stem of the letter being broken by a rift in the rock, in Plate II showing as a horizontal line. Around this are several large blotches, the remnants of figures or lines. To the right of the stem of the letter T is a series of lines which might be construed as representing a house, but which evidently do not. This is shown in Plate II.

The preceding figures are on the first mass of rock, extending to the angle of the cliff, the angle being intensified in the picture by a black line. In this plate the other writings are not plain. It is necessary to move to the right, take a new point of view, and observe those figures and marks on the other face of the angle. The angle in the rocks is shown well in Plates V and VI, as well as the additional markings which are to be briefly mentioned.

In Plates V and VI may be seen the angle of the rock where the figures just described are to be seen. In this broken edge are many straight lines, showing that the rock cliff has not disintegrated since the writings were made. For the next fifteen feet the rock face is somewhat irregular and broken. First along the angle mentioned in the preceding, about as high as one's head, is a row of nine straight lines. Below this several feet is a row of 14, and a little lower two pairs of short lines; still lower are eight large, broad marks, two lone lines at the bottom. This is a total of 37 lines, large and small, in the angle of the rock.

To the right is a peculiarly made symbol, consisting of five arms from a small central body, three pointing down and two up. To the right of this is an animal, quite well executed, similar to one previously mentioned. It has a long head, blunt and broad horns, an upturned tail, short, and stocky legs. It was probably intended for a moose. There are 8 lines and a blotch below the animal. To the right is a large blotch, several times as large as the animal. Then comes another break or angle in the rock wall, and to the right are still other figures. By consulting Plates VI, VII and VIII, and espe-
cially Fig 4, the number and location of the figures or characters may easily be seen.

First in height are three very broad and large—not long—lines. Below these are five long lines joined by a bar at the top, then four to the right, then eleven of varying size ending at another rock angle. Below there are on the left three broad lines running vertical; then a diagonal figure, large, consisting of a central body which is long and quite broad, broader than any line, two short projections upward from the middle, four from below, a short, a long, a short, a very long one. Below this figure are ten vertical lines; to the right are seven and a figure. The figure is a rude oval, the left portion filled with paint, and with three lines projecting upward. This is plainly shown in Plate VII, which also shows the peculiar irregularity of the rock. The angle on the right of the writings is easily seen in the picture. Consult also Fig. 4.

Turning the angle again on a further portion of the rock to the right, the highest writings are four vertical lines; below these two rows of lines. The first row contains six, joined at the top by a bar, then six separate lines; the second is similar to the first, with seven lines joined by a bar, followed by seven which are not thus joined. Just below these to the right is a figure which looks like an animal falling with its legs uppermost, only it has five legs, and it is headless. These are well shown in Plate VIII.

Then comes another small turn in the rock and the last group of figures. These consist of some 30 or more straight lines, laid on in a hurry, evidently with the broad hand, on a surface with plenty of room. The last figure is the most peculiar of all. It is shown in Plate IV, to the right of the figure of a man, in Plate VI, extreme right, and Plate VII. There are two moons, below which is a figure which apparently resembles a pack horse, but probably does not. If it represents a pack horse the writings are more recent than if it does not.
Fig. 4. Drawings of the different figures and lines, to show their respective locations. The angles in the rock face are shown by lines. The figures are not proportionate in size; the drawings show location and appearance only.
DESCRIPTION OF PLATES

PLATE I.—The cliffs on which the writings occur, looking up the lake, north. The writings are within the lines drawn across the picture.

PLATE II.—This plate shows the left hand end, the beginning, of the Indian writings, showing the largest series of animals. The topmost portion of the writings on the left are not shown. Compare with Fig. 4.

PLATE III.—The cliff on which the Indian writings occur, looking down the lake, south. The writings are within the lines on the picture.

PLATE IV.—General view of the cliff and writings, showing them very much reduced. Owing to the curvature of the rock, the left end is somewhat out of focus. Compare with Plate V.

PLATE V.—This shows the character of the rock face, the broken angles, and the irregularities in the surface on which the writings are traced.

PLATE VI.—This plate shows the entire rock face from the edge of the water. Notice the shelf just below the writings, and the irregularities of the rock face.

PLATE VII.—This plate shows the right hand end of the writings, where some of the most peculiar and interesting figures are to be seen.

PLATE VIII.—The central portion of the writings is here shown, at one of the angles in the rock face. Note the crumbling under the writings, where the rock is softer.

PLATE IX.—By referring to Fig. 4 or Plate II, the portion of the rock face shown in this plate may be seen. It contains some of the largest marks and one of the unknown figures.