CATLOW VALLEY CREVICE HARNEY

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CATLOW VALLEY CREVICE

By

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On May 4th, it was reported in the press, that a large, open and newly formed crevice in the earth in Catlow Valley, Harney County, Oregon, had been discovered. The report indicated the crevice to be of great length and depth. This was confirmed by the writer on the occasion of a hurried visit to the area May 7th. A more extended examination was made on May 21st and the following paragraphs summarize the observations made at that time.

The crevice is located about a mile southeast of the Miller ranch and extends for a paced distance of somewhat in excess of 2 miles along a general northeast course. These relationships are indicated on the accompanying sketch. The area traversed represents valley bottom land which is essentially flat. This is made up of clays and silts with occasional interbedded lenses of sands and fine gravels. No information is available concerning the thickness of these sediments but the valley as a whole is underlain by basaltic lavas of Tertiary age.

The crevice was discovered about May 1st; how much earlier it may have existed is problematical. For readers unfamiliar with the area it can be stated that the country is semi-arid and very sparsely populated. Random travel is severely restricted during the winter and spring thaw seasons. The crevice could therefore have been in existence for quite some time before its announced discovery despite its proximity to the Miller ranch.

It is difficult to make an effective verbal picture of the crevice in a few words because visible characteristics vary over a wide range. The northeast third of the crevice is narrow and often only a couple of inches wide over a running length of several yards. It is further characterized by an abrupt, precipitous descent from the surface. By contrast, the southwest section of the crevice, extending from the meadow to a point about 200 feet east of the well, has a surface width of 8 to 12 feet, with occasional wider areas. Here, however, the surface width is a trenchlike enlargement which surmounts a narrow, vertical crevice. This surface trench has vertical sides and either a V- or U-shaped bottom. The depth is irregular, due to erratic accumulations of debris, but appears to be generally 6 to 8 feet. The narrow crevice coincides with the low point of the upper trench. It is similar to the narrow crevice occurring in the northeast section except for its exposure in the trench bottom rather than at the level of the land surface.

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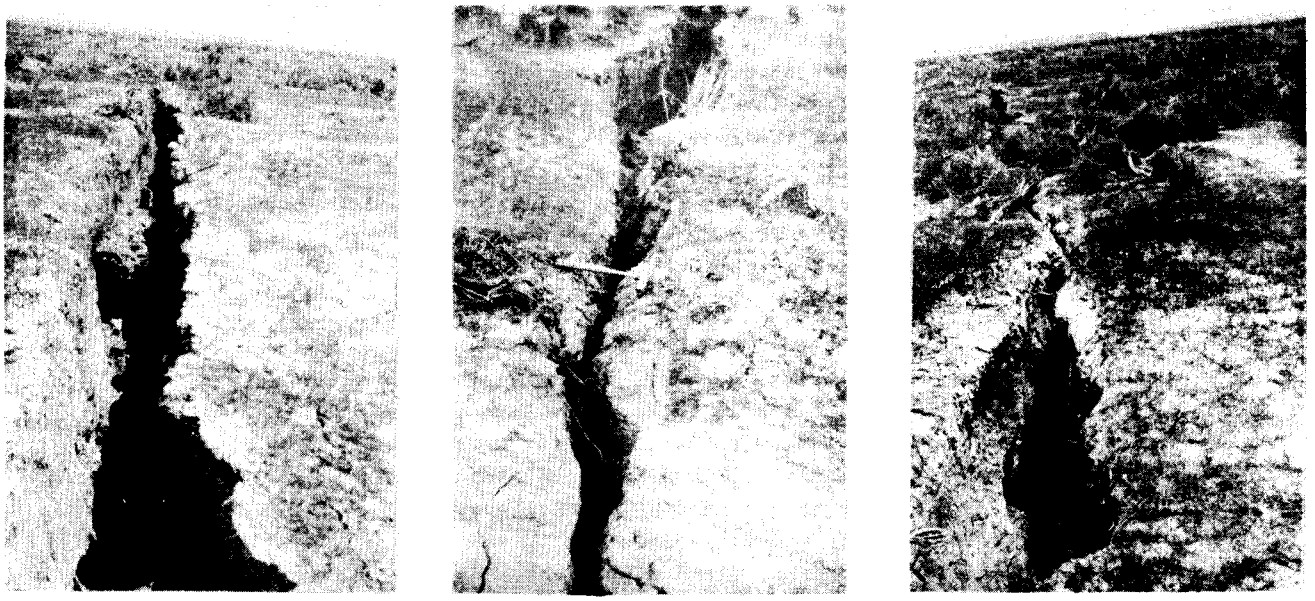
The foregoing paragraph describes the two different states of surface expression occurring at opposite ends of the crevice traverse. The intermediate section is characterized by a series of abrupt alternations between wide and narrow types of surface manifestation, with the wide, trench-capped stretches becoming narrower and less frequent to the northeast. The entire crevice exposure may be summed up as a gradual change from its narrow, clean state of occurrence on the northeast end to the wide, trench-capped condition on the southwest end. In this connection it may also be noted that what little slope there is to the land surface is to the south and southwest. The narrow northeast end of the crevice is therefore at its highest elevation; the southwest terminus at its lowest.

Two roads, two dry wash channels, and a fence cross the crevice and none shows evidence of malalignment or offset. Of these the fence is doubly important in that it shows no evidence of tightening, and hence no evidence of tensional movement at right angles to the crevice walls. Additional evidence of the lack of movement occurs in the form of short natural bridges in which the surface earth capping the crevice is wholly undisturbed, yet the open crevice can be seen to extend in an uninterrupted manner under the bridged area. There are several of these bridges. All are situated in the narrow section of the crevice. Most are only a few feet in length and the earth thickness from the ground surface to the top of the underlying cavity often appears to coincide with the depth level of the sage and grass root systems. In fact, vegetation itself serves to indicate lack of movement in that there are numerous instances of bushes straddling narrow widths of the crevice with their roots bare above the crevice, yet embedded in the earth of each wall with no evident pull or disturbance of any kind.

One of the most interesting features of the crevice is the way it cuts directly through an old dug well. The well was circular, with square lagging for about 12 feet below the collar. The original depth was 65 feet, according to local informants. In its present state the dug, circular portion is neatly bisected by a crevice 12 to 14 inches wide, and the upper timbered portion is exposed on all four sides by the surface trench. The well appears to be about 20 feet deep, with a tightly packed, level bottom composed of sediments, and at this level the crevice bottom continues as far as could be seen laterally. The circular portion of the well is still completely circular when viewed from above, or in other words, there is no distortion of the pattern despite bisection by the open crevice. Also noteworthy is the fact that the crevice continues persistently wide and clean-cut beneath the level of the debris-filled bottom of the upper trench.

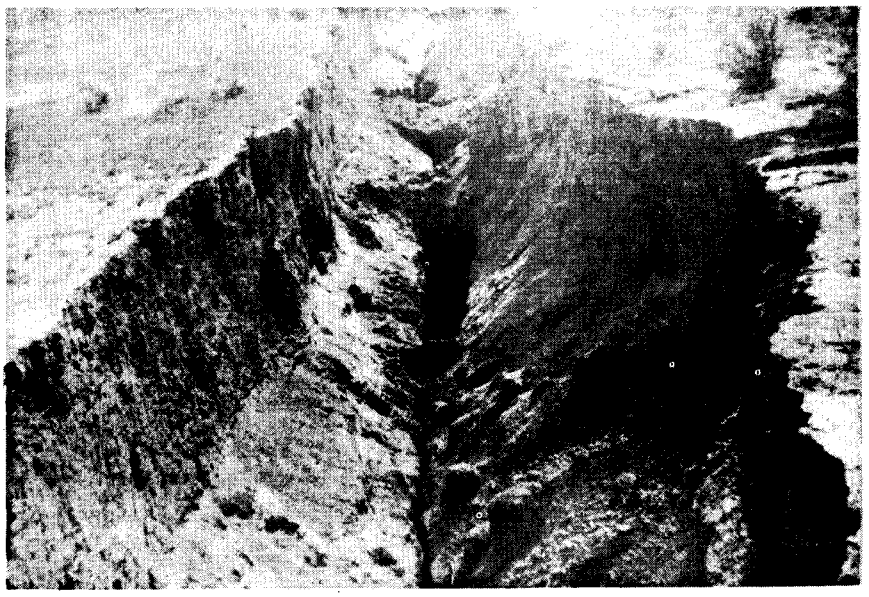
Much emphasis has been placed on the lack of evidence of wall movement. In this connection it can also be said that no earthquake is known to have been felt in this portion of Harney County during the late winter and spring. There was, however, a severe flood which occurred about three weeks prior to the discovery of the crevice and was due to breakage of a large reservoir dam in the Hart Mountains. The floodwaters were sudden and catastrophic in their action. They inundated a wide area surrounding the ranch house, and swept over the area traversed by the crevice. It is to be noted also that this flood occurred at a time when the ground was well saturated by the spring melt.

While evidence of wall movement is absent, evidence of erosion is abundant in all sections of the crevice traverse. This ranges from scouring and debris on the land surface to differential erosion in places along the trench walls. Of particular interest are little water channels cut in the land surface and leading to the crevice on the side from which the flood came, but not crossing it. Even though these channels are only a few inches in width and depth, they show conclusively that the flood waters fed into the crevice. Little channels such as these occur only on the higher ground where the crevice is narrow and least extensively developed. They represent isolated intake sites which lingered on during the period when the floodwaters were otherwise receding from this section of the crevice exposure. In the lower sections where the trench occurs, such intake sites are marked by erosional embayments of appreciable size. Like the channels, these embayments



Typical views of the narrow (eastern) portion of the crevice.
Note geologist's pick in center picture. (Photos by N. S. Wagner)

ADDITIONAL PHOTOGRAPHS IN PICTURE FILE

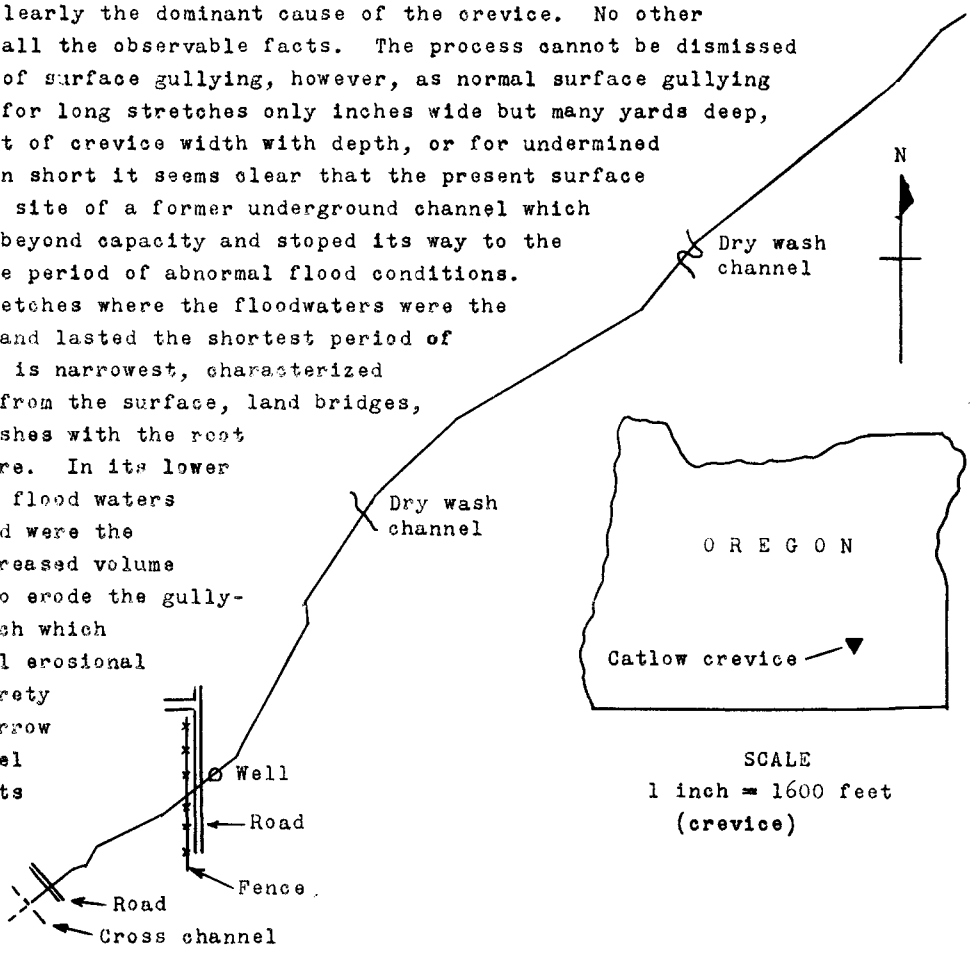


Wide phase of fissure between well and fence with narrow crevice at bottom of V-shaped section. (Photo by Eleanor McCormick)

CATLOW VALLEY CREVICE

are always situated on the side from which the floodwaters came. The best developed of these took out the road just east of the fence. Here the road is completely obliterated on the surface approach to the embayment, yet car tracks and road boundaries are clear and well defined right to the trench drop-off on the opposite side. This was well shown in the Oregon Journal's picture of the road and fence line (May 8, 1952) and it stands as another graphic example of how the crevice absorbed the floodwater during at least the last portion of the flood time. Yet other evidence of erosion exists in the crevice itself. Of particular note are circular, potholelike undercuts which occur in the walls at intervals where intake waters were concentrated in defined channels, or where changes in crevice direction favored development.

Erosion is clearly the dominant cause of the crevice. No other explanation fits all the observable facts. The process cannot be dismissed as a simple case of surface gullying, however, as normal surface gullying does not account for long stretches only inches wide but many yards deep, or for enlargement of crevice width with depth, or for undermined bridged areas. In short it seems clear that the present surface crevice marks the site of a former underground channel which became saturated beyond capacity and stoped its way to the surface during the period of abnormal flood conditions. In its higher stretches where the floodwaters were the least in volume, and lasted the shortest period of time, the crevice is narrowest, characterized by abrupt descent from the surface, land bridges, and straddling bushes with the root systems washed bare. In its lower reaches where the flood waters lasted longest and were the heaviest, the increased volume of water served to erode the gully-like capping trench which resembles a normal erosional gully in its entirety except for the narrow fissurelike channel descending from its bottom.



Sketch Map of Catlow Valley Crevice

Whether or not the subsurface waterway postulated here represents the trace of an early fault long since healed over on the surface, or the reflection of a joint pattern from the underlying lavas, is not important in explaining the origin of the present crevice.

Support for this theory of abnormal erosion of a subterranean waterway was observed in active operation at the time of the field examination. The loss of a large volume of irrigation water to the crevice in the meadow had been going on continuously for about two weeks according to local informants, and it was still continuing actively even though the portion of the trench that traversed the meadow had been since filled in by dozing. At best all that had been accomplished by the fill was a limited backing up of water for a few hundred feet in the lower end of the trench adjacent to the meadow and a shallow flooding of a local area adjacent to the filled portion of the trench. At the time of the writer's visit the water could be observed discharging into a series of little holes

along the line indicated on the accompanying sketch as a cross-fracture. Many of these holes were no larger than gopher holes, but at one which couldn't be approached nearer than 50 feet without wading, the water entered in such amounts, and with such velocity, that it could be distinctly heard from a considerable distance.

Because of a lack of time and of usable maps, no attempt was made to determine where all this water might be reappearing, but the fact that it was disappearing as just described is proof that a regional subsurface channel-way exists and leads away from the area. Thus the present setting is comparable to that postulated prior to the formation of the subject crevice; that is, comparable, except for possible details of gradient and the excess of water necessary for active up-cutting to the surface.

One more observation bears mention in conclusion. For those who may inquire as to where all the sediment from the crevice has gone, it is to be pointed out that the flood crest occurred in the approximate neighborhood of the point where the crevice trench debauched into the meadow. The bulk of the sediments from the crevice above could have discharged into this flood and have been carried away in a normal manner by the surface flood waters up until the time when the receding flood volume decreased to the point where all subsequent flow was handled by the newly opened subterranean escape route. By that time the upper reaches of the crevice had already been swept clean so that the floodwaters continuing in the meadow were free to concentrate upon the enlargement of the subterranean access points.

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CHROME MINING NEWS

The road to the Cyclone Gap mine in northern Siskiyou County, California, has been partially cleared of snow and a small crew began work at the property June 4 according to W. S. Robertson, Grants Pass, operator. Drifts of snow as much as 20 feet in depth were encountered on the road to the property.

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Lou Robertson is reported to be mining at the Mary Walker chromite claim on Red Dog Creek south of Galice, Josephine County. A road was recently completed extending to the property from the Old Chrome road.

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Hayes and McCaleb, Selma, Josephine County, have completed construction of a chromite concentrating mill at the McCaleb ranch, 12 miles west of Selma. Equipment includes a rod mill and jig. Ore will come from properties in the Pearsoll Peak area and in the Upper Chetco area. Operations are expected to begin in the near future.

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Carl Anderson is doing exploration work at the Red Dog Mining Company property in the Briggs Creek area northwest of Selma.

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E. K. McTimmonds, Selma, has exposed a new lens of chromite on the Lucky Star claim which is near the Oregon chrome mine northwest of Selma.

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Ben Baker is installing a small concentrating mill at the Sourdough chromite mine on Baldface Creek in southern Curry County. Baker and Bristol are the owners of the property.

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Josephine County is making improvement on the Galice road between Hellgate bridge and the Chrome Road junction in preparation for heavy ore and log hauling.

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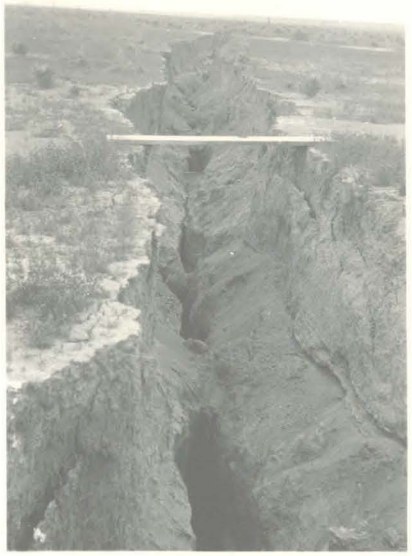
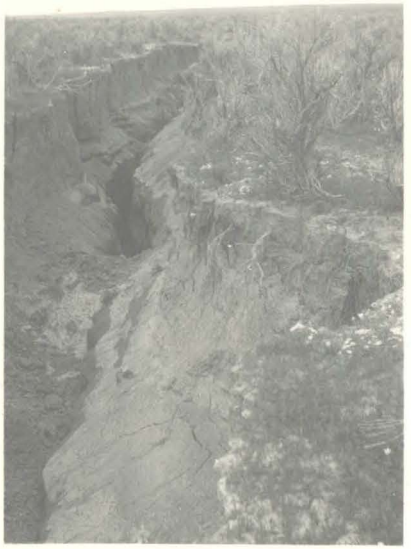
These pictures were all taken east of the well. They illustrate various instances of crevice enlargement with depth. The picture on the left also shows a washed-out enlargement representing a floodwater intake area. These local enlargements were always situated on the northwest side of the crevice, or on the side from which the floodwaters came. The bridge capping the narrow crevice at the end of the wash-out represented a remnant of completely undisturbed soil which had been undercut and left standing.



View looking southwest from the well. Surface exposure here 8 to 10 feet in width. Deeper main crevice ranges from 10 to 15 or more inches. Distance to road and fence line shown at the far side of the bare area is approximately 220 feet.

View looking back to the northeast showing fence and road in foreground and well in distance.

Close-up of fence line which shows no evidence of displacement, vertical, lateral or tensional.

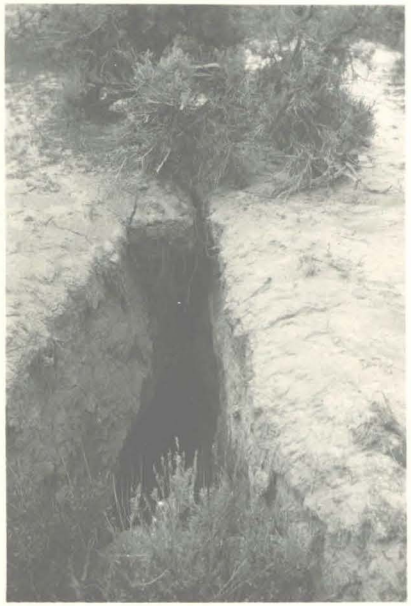


Westward extension of crevice. This was taken from the fence location so view represents a direct, uninterrupted continuation of the crevice as shown in the foregoing pictures.

Typical views illustrating how crevice narrows in the section of higher ground extending northeastward from the well. Stretches such as these alternate with wider areas in the vicinity of the well, but the wider areas become progressively narrower and less frequent with distance from the well to the extent that the above type of surface exposure characterizes the crevice throughout the eastern half of its extension as contrasted with the wide variety of exposure prevailing to the westward.

Views showing crevice where it crosses the eastern most creek channel shown on map. The left picture is looking eastward and the right picture westward along the fracture. Note lack of evidence of fracture on surface. This is present in both instances but most evident only in the left one.

Remains of small water channels extending to crevice on northwest side, but not crossing it.



Miscellaneous views. Most were taken to illustrate examples of undisturbed surface conditions as evidenced by lack of visible cracking or pulling of vegetation roots etc. While said evidence is present in these pictures it isn't apparent in a conclusive or striking manner.

The following pictures were taken by Eleanor McCormick, Frenchglen, about mid May, or a week earlier than the foregoing shots. The one below illustrates both the wide surface and narrow lower phases of the crevice in the area between the well and the fence. Also the V-shaped cross-section sometimes developed along the bottom of the upper surface phase of the crevice.

Differential erosion along the lower portion of the surface phase of the crevice. The location is west of the fence a short distance.

Irrigation water backed up in the crevice in the area adjoining the meadow due to attempted and only partially successful filling of the crevice in meadow to stop water loss.