June 1952 Portland, Oregon

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CATLOW VALLEY CREVICE

By

N. S. Wagner*

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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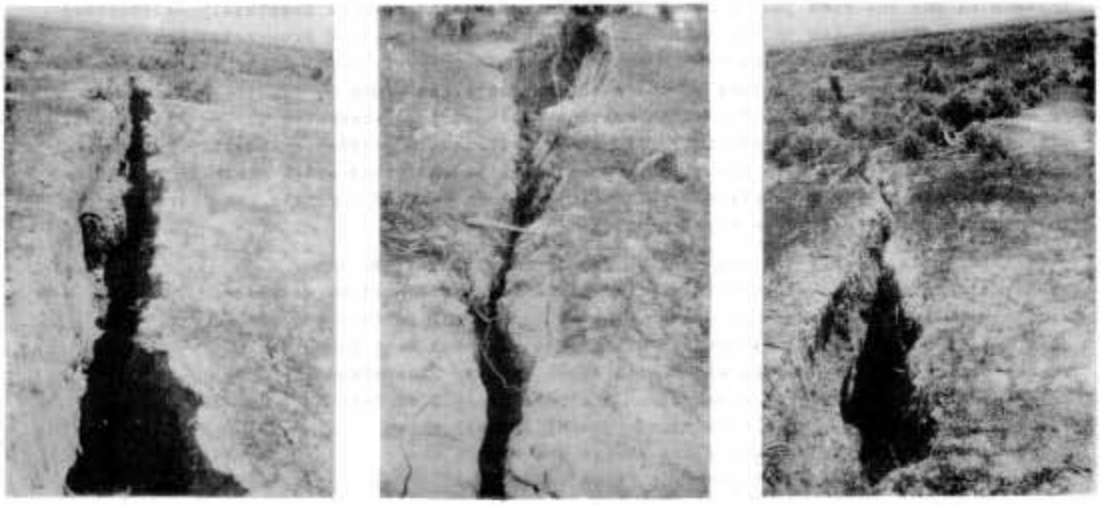
The foregoing paragraph describes the two different states of surface expression occurring at opposite ends of the crevice traverse. The intermediate section is characterized by a series of abrupt alternations between wide and narrow types of surface manifestation, with the wide, trench-capped stretches 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)

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

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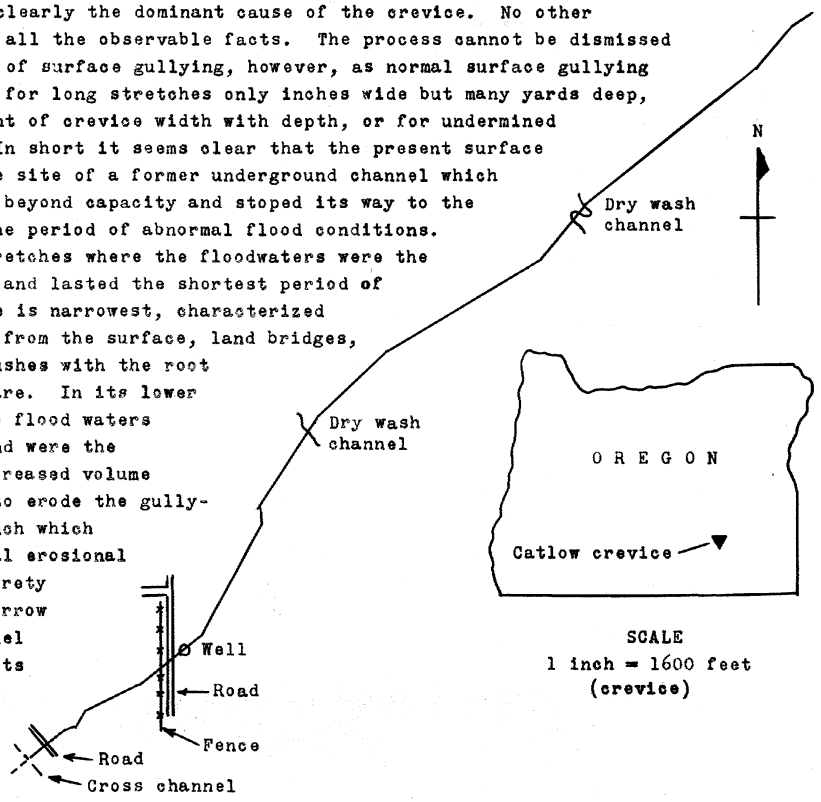
are always situated on the side from which the floodwaters came. The best developed of these took out the road just east of the fence. Here the road is completely obliterated on the surface approach to the embayment, yet car tracks and road boundaries are clear and well defined right to the trench drop-off 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 decent 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 debouched 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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STAPLES TAKES SABBATICAL LEAVE

Dr. Lloyd W. Staples, professor of geology at the University of Oregon, will take sabbatical leave for the academic year 1952-53. He has received an appointment as research associate at the University of California at Berkeley in the Department of Geological Sciences. His principal work will be in connection with X-ray studies of minerals using the new Philips apparatus which Dr. Pabst has installed in the Mineralogy Department. In addition Dr. Staples will make field studies of many mineral deposits of the Southwest.

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GOLD PLACERING RESUMED IN BAKER COUNTY

Pedro Bros., Huntington, have resumed placering operations on Connor Creek, a tributary of the Snake River in southern Baker County, Oregon. Their equipment includes a 3/4-yard power shovel, a bulldozer, truck and sluices. The gold is coarse and it is reported that it is found only on bedrock.

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BAKER COUNTY MANGANESE SHIPPER

According to the Baker Record Courier, manganese ore at the Sheep Mountain mine near Durkee, Baker County, is being produced. A company headed by Paul W. Wise, Boise, has leased the property from Bailey and Johnson who did exploration work on the Sheep Mountain vein during 1951. The ore, it is reported, will be shipped to Geneva, Utah. A new road 2-3/4 miles long has been built to the mine, a large bunker at the mine and a loading ramp at the railroad siding at Durkee have been constructed.

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DEPARTMENT AFTER-HOURS TELEPHONE NUMBER

The State Department of Geology and Mineral Industries has secured after-hours telephone connection CApital 5400. This number may be used to reach the Department when the State Office Building central telephone exchange is closed as on Saturday forenoons.

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BONANZA MINE ACTIVITIES

The Bonanza mine, Douglas County, is producing quicksilver metal and at the same time prosecuting a development program as rapidly as conditions permit. New work is being done at both the north and south ends of the ore body. A new stope has been developed above the 700 level at the north end. A new condensing system is being installed without any shutdown in production.

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DEPARTMENT GEOLOGIST RETURNS TO MAPPING PROJECT

Hollis Dole who has been on leave from the Department doing graduate work at the University of Utah during the academic year 1951-52 has resumed his mapping work for the Department in the Dutchman Butte quadrangle, southern Douglas County.

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OREGON STATE SUMMER SCHOOL IN GEOLOGY

The Oregon State College summer course in geological mapping under Dr. W.D.Wilkinson will begin in the last week of June. Camp will be established near Mitchell, Wheeler County, and mapping work started last summer in the Mitchell quadrangle will be continued during this field season.

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UNIVERSITY OF OREGON SUMMER FIELD COURSE

Summer field courses conducted by the Geological Department of the University of Oregon will be held in July at the Horseheaven mine in Jefferson County followed by stratigraphy studies at Coos Bay, Coos County. Field instruction will be given by Dr. L.W.Staples and Dr. E.M.Baldwin.

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METAL PRICES

Domestic price of lead has been reduced from 19 cents to 15 cents per pound New York. The price of zinc has dropped from 19½ cents to 16 cents a pound East St. Louis.

The price of copper remains in a somewhat cloudy position. The domestic ceiling is normally 24½ cents but the government has allowed a large increase in the government price for Chilean copper, and is pressing its allocation plan of 60 percent domestic and 40 percent foreign for the third quarter. According to the E&MJ Metal and Mineral Markets, June 12, 1952, several important domestic consumers have stated that they will not pay 35½ cents f.a.s. Chilean ports for copper when the metal was offered and sold at 33 cents f.a.s. New York equivalent to European buyers. Foreign consumers turned down fourth quarter copper at 32 cents.

Quicksilver is unsettled and has been available at $195-$198 per flask. The price has been consistently weakening over the past several weeks. Domestic production of quicksilver in the first quarter of 1952 totaled 3,050 flasks compared to 3,270 flasks in the last quarter of 1951. Imports for the January-March quarter, 1952, totaled 13,309 flasks. Consumption was 10,100 flasks.

General Services Administration has increased the base price of acceptable manganese ore at the government's purchase depot at Deming, New Mexico, from $2 to $2.30 per long ton unit. Other specifications remain the same.

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PROGRESS OF MINING LEGISLATION

H. R. 7956 - CHANGE DATE FOR BEGINNING ASSESSMENT WORK--MINING CLAIMS - Wood (Rep., Idaho). Committee on Interior and Insular Affairs. Would change date for beginning annual assessment work on mining claims in U. S. and Alaska from first day of July to first day of October. Also provides that on claims where assessment work for year beginning July 1, 1951, had been completed by 12 o'clock noon on July 1, 1952, assessment work required for year ending October 1, 1953, may be commenced immediately following noon on July 1, 1952.

H. R. 472 - MINING CLAIMS RIGHTS RESTORATION ACT - Engle (Dem., Calif.) (Leg. Bull. No.1, p. 4). In Committee on Interior and Insular Affairs. Would open to mining, development and utilization of mineral resources all public lands withdrawn or reserved for power development.

H. R. 4916 - DISPOSAL OF SAND, STONE, GRAVEL, ETC. -- PUBLIC LANDS - Regan (Dem. Tex.) (Leg. Bull. No. 15, p. 6). Mines and Mining subcommittee has under consideration an amendment brought back by Rep. Engle from California, which carries proviso that language of H. R. 4916 "shall not prevent the location and patenting under the United States mining laws of lands containing such materials, if such locations are based upon the discovery in said lands of other minerals, specifically named in the notice of location, which are now subject to location under the mining laws. Rights acquired under such mineral location and any subsequent patent issued thereto, however, shall be subject to and shall not interfere with the rights of any purchaser to purchase and remove materials which have been sold under the terms of this Act where such contracts of sale are made pursuant to notice of sale first published prior to the date of the recordation of said mineral location."

The bill, H. R. 4916, would remove deposits of sand, stone, gravel, pumice, pumicite, and cinders from acquisition under mining laws, and in National Forests permit their disposal by Secretary of Agriculture.

H. R. 6386 - MINERAL INTERESTS ACQUIRED UNDER BANKHEAD-JONES FARM TENANT ACT - Burdick (Rep., N.D.) (Leg. Bull. No. 12, p. 4). On May 28 Mines and Mining subcommittee held hearing but took no action. Bill is companion to S. 2563 by Langer (Rep., N.D.) et al. See STATUS OF BILLS - SENATE.

(From American Mining Congress Bulletin Service, June 16, 1952.)

ASSESSMENT WORK

It is unlikely because of the short time remaining before the end of the assessment year, that Congress will give attention to the bills in committee designed to exempt mining claims from annual assessment work. To conform with the federal law, annual assessment work must be completed by noon of July 1 ending the assessment year. If such work is under way but not completed, it must be prosecuted "with reasonable diligence" until completed. Proofs of labor should be filed with the County Recorder within 30 days after completion of the work. If claims are on O and C land, proofs of labor should also be filed in the office of the Bureau of Land Management, Swan Island Station, Portland, Oregon.

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RICE BROS. CHROMITE MILL IN OPERATION

The chromite concentrating mill near Takilma, southern Josephine County, built by Rice Bros., has started production. Concentrating equipment includes hydraulic classifiers, a jig, and two concentrating tables. Chromite ore for the mill is coming from the Chollard mine near Takilma.

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CHETCO MINING COMPANY OPENS ROAD TO MINE

The Chetco Mining Company owned by F. I. Bristol, Ed Knox, T. T. Leonard, and Ben Baker, has opened the road to chromite properties in the Upper Chetco River area of Curry County and mining operations are now under way. F. I. Bristol reports that deep snow was removed from 6 miles of road constructed last fall. An average depth of 7 feet was encountered with a maximum depth in drifts of 42 feet.

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HAROLD WOLFE RESIGNS

It is with regret that the Department announces that Harold Wolfe, Department geologist stationed at Grants Pass for several years, has resigned to go into other work. He will be succeeded by David White, now geologist in the Portland office of the Department.

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HUGE CAPITAL INVESTMENTS GO TO CANADA

As reported by Graham Towers, governor of the Bank of Canada, in the 1951 Annual Report of the Foreign Exchange Control, new mining ventures and the oil boom in western Canada were the principal factors in attracting more than $1,500,000,000 in foreign investments into Canada during the past two years. Direct investments from the United States in 1951, exclusive of reinvested earnings of foreign branch plants and affiliated companies, amounted to $259,000,000, with the greatest proportion, possibly nearly half, invested in western oil, iron ore in Labrador, other mining ventures, and pulp and paper. Canada's official reserves of gold in United States dollars increased $37,000,000 to $1,778,600,000 at the end of 1951. (Taken from Wallace Miner, June 5, 1952.) Currently the Canadian dollar is worth about $1.02, American dollars.

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