

GOOD ROADS ECONOMY PROVED BY DEMONSTRATION AT PICNIC

With a crowd of nearly 1000 people in attendance, the county road builders' picnic was held at the Tenbar ranch Sunday, with a program of athletic and feature contests given in connection. A good roads demonstration in which the high cost of traffic on poor highways was contrasted with the low cost on properly constructed roads was an educational feature which proved especially popular. The demonstration graphically showed the experiences of William Beach, as "Farmer Jones," who at first fought the good roads movement, then, after seeing his son's car repeatedly stalled on a poorly constructed highway, decided that a greater initial expense was cheaper in the long run.

Bucking contests, in charge of Ralph Dunn, foreman of the Tenbar ranch, were pulled off in Round-up style and resulted in the first prize being awarded to Peck Creight and second to John Bates. In the volley ball games, L. Harryman, C. E. Huffman, O. M. Benson, Cleo Howard and R. O. Wise constituted the winning men's team and Maude Schmitz, Margaret Wise, Mrs. H. R. Reed, Camille Kaye and Mrs. C. D. McIlroy were the members of the premier women's team.

In the tug of war R. C. Colver, A. L. Shultz, James Wakefield, H. Seide,

K. O. Bulck, A. S. Schropt, R. G. Smock, Carl Larson, H. Reed and C. D. McIlroy won for the men and Mrs. C. D. McIlroy, Mrs. T. O. Grinstead, Mrs. M. Schmitz and Mrs. H. Seide were the winners in the women's contest.

Other events were decided as follows, winners being given in the order of their placing: Free for all foot race, J. M. Smith; Floyd Niles; fat men's race, Andrew Jaquot, Charles Haines; free for all ladies' race, Katharine Helgeson, Helen Sumner; boys' race, Raymond Marchand, Elmer Bladeau; ice cream contest, Waldo Schmitz, Erwin Wiencke; high jump, Roscoe Coons, broad jump, J. M. Smith.

LAVA BUTTE IS OF LATE DATE

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sure, or, more probably, a parallel or offset fissure. Two miles southeast of Lava butte, following the fault fissure, brings it into close and parallel relation to the high, rough flow of comparatively fresh lava shown on the Deschutes forest map in the direct line of the Lava butte flow. It is conceivable, at least, that both flows have their origin in one and the same fissure system, and

this points plainly to the north slope of Newberry crater as the probable locus of its origin.

The great fault fissure is clearly not the collapsed roof of a lava tunnel. For one thing, it is much straighter than the only known tunnel in its vicinity. The roof of this tunnel is collapsed, so far as known, and not continuously for miles. And then there is the unmistakable displacement of the walls, the surface of the ground being constantly 10 to 40 feet higher on the northeast side than on the southwest side of the fault.

The existence of a causal relation between the great fault fissure and the associated recent lava flows is most probable. The fissure is essential to the eruptions, but the reverse is not necessarily true, for the fissure in question is marked by the extrusion of lava for only a relatively small part of its length. About nine miles southeast of Bend, on the road to Burns, the road is crossed by a long, straight, north-south escarpment, with a moderate but very regular and constant upthrow to the east, the downthrow being, as with the Benham falls fault, on the side toward the Deschutes river, the general relation of the fault tending to accentuate or deepen the Deschutes valley. The cinder cone of Horse butte is, possibly, on this fault, which is otherwise unmarked by an extrusion of lava that can be seen from the road.

The extrusion of lava, we may reasonably suppose, is restricted at the outset to the wider and more freely open parts of a fissure, and these parts naturally tend, under the corrosive action of the lava, to become

wider and more open, while the narrower parts are quickly clogged at a great depth and no lava reaches the surface through them. Another consideration tending to restrict and localize the eruption is the probability that below the great Columbia basalt is a vast thickness of unconsolidated and saturated volcanic ash and lapilli, through which, apparently, it must be difficult to open or maintain a conduit for the extrusion of molten lava.

To summarize: The great Benham falls fault fissure is not to be regarded as necessarily older or newer than Lava butte and its associated lava flows, for it is essentially contemporaneous. Or, better, the development of the fissure, with its probable offsets, expansions and contractions, in obedience to the great earth stresses, determines the development of the crater, or series of craters, and their marvelous products.

Two series of test borings have been made in connection with the investigation of the Benham falls project. First, in 1913, diamond drill or core borings on the various tentative dam sites, with a view to selecting the most feasible site. Second, in 1919, percussion or churn drill borings on the floor of the proposed reservoir, for the purpose of throwing additional light upon the ground water relations and the buried gorge of the Deschutes river.

The records of the first series of borings are included in the published report (Oregon Cooperative Work, Deschutes Project), of the 1913 investigation, and the corresponding samples are stored at the U. S. R. S. headquarters in Hermiston, Ore.,

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where, by the courtesy of Mr. H. M. Schilling, engineer, we were able to examine them. The amendments and additions suggested by this examination are here incorporated with the original printed records.

The most serious discrepancy is the failure of the original record to recognize the diatomaceous earth, or diatomite, for practically all of the so-called clay and silt should be thus translated. Water derived from porous lava and volcanic ash is naturally rich in silica and hence favorable to the development of siliceous organisms, including diatoms.

One essential condition appears at first to be wanting, and that is stagnant water, since, in the swift current of Deschutes river, the minute siliceous organisms would be swept away as fast as formed. This difficulty is, however, more apparent than real, for on, and especially in the muddy bottoms, of the long, deep and quiet reaches of the river, where carbonic and various organic acids are actively decomposing the lava and liberating silica, all the conditions are favorable to the formation and accumulation of diatomite. These

conditions, it will be noted, are most fully and ideally developed on the Benham falls reservoir area, and it is to this quiet and unobtrusive transformation of the silica by combined organic and chemical agency that, in large measure, we owe the availability of this area for reservoir purposes.

The Buried Gorge of the Deschutes River.

The part of the Deschutes river valley to which this investigation relates is divided naturally, though very unequally, by the transverse rhyolite ridge by which this south-to-north stream is abruptly deflected to the eastward for two miles before finally plunging over the ridge in Benham falls, with a drop of approximately 100 feet in little more than half a mile, and more than 600 feet in the 10 miles between Benham falls and Bend. In comparison with this, note the average gradient of about two feet per mile between the head of Benham falls and the extreme head of the proposed reservoir, or much less than one foot per mile if we follow the meanders of the

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