

## REPORT ON ARTESIAN BASINS.

Prof. Russell of Geological Survey Discusses Subject Affecting Large Areas in West.

In a Preliminary Report on Artesian Basins in Southwestern Idaho and southeastern Oregon, Water-Supply and Irrigation Paper No. 78, now in press, United States Geological Survey, Prof. I. C. Russell discusses a subject of great interest as affecting large areas of private and public lands in the West.

The region embraced includes, in a general way, the Snake River Plains, Idaho, and large portions of Malheur and Harney counties in Oregon. Within this region four artesian basins are noted: the Lewis or Snake River basin, lying in both Idaho and Oregon; the Otis artesian basin, in Otis valley, about six miles north of Drewsey; the Harney artesian basin, in the broad valley in which lie Malheur and Harney lakes; and the Whitehorse artesian basin, situated about 10 miles east of the higher portion of Stein Mountain—all three in Oregon.

The portion of the Lewis artesian basin in which flowing water may be obtained is situated along Snake River between Glenn's Ferry and Weiser, where the rocks on each side dip toward the canyon of the river. The margin of the basin in Idaho is not yet actually mapped, but within it are included the Snake River plains in Ellmore, Ada, and Canyon counties, and the country in Owyhee county which is drained by northward-flowing streams. In Oregon its boundary is still less definitely known, but it includes the greater part of the northern third of Malheur county. Within these limits, the artesian head, or the elevation below which flowing wells may be expected, is about 2500 feet above the sea.

Persons wishing to put down artesian wells can find the 2500-foot contour for this region by consulting the following topographic sheets, published by the United States Geological Survey (which may be purchased of the Director of the Survey for five cents each), namely, the Mountain Home, Bisuka, Boise, Silver City, Nampa, and Weiser sheets. There are no good maps of the region in Oregon embraced within the Lewis artesian basin. A rough estimate of the agricultural land in Idaho and Oregon lying within the Lewis artesian basin and below its known artesian head shows it to be not less than 1000 square miles.

Otis Valley is a structural basin in which about 1900 acres are now under irrigation, and in which about 10 or 15 square miles of good land are below the probable artesian head suggested by the elevation at which warm springs come to the surface.

The Harney artesian basin embraces roughly the region drained by streams flowing into Malheur and Harney lakes, and includes perhaps two-thirds of Harney county, the length of the basin north and south being about 135 miles, and its breadth east and west approximately 50 miles. A rough estimate based on the general map of Oregon indicates that the era within which artesian water may be expected in this basin is about 1000 square miles, but this

includes Malheur and Harney lakes and the swamps bordering them.

The Whitehorse artesian basin, containing perhaps 30 square miles of good land, lies east of Stein Mountain. The apparent shape of the rocks beneath the valley and the presence of warm springs seem to warrant a careful test of the artesian conditions of the valley with a reasonable expectation of obtaining flowing water.

Professor Russell insists that all wells drilled should be cased with iron casing and that the records of all wells drilled in these artesian basins should be carefully preserved, and suggests that, in every state in which artesian basins occur, laws should be enacted prescribing that every drill hole in an artesian basin should be properly cased, that every artesian well when not in use should be securely closed, that every abandoned drill hole in an artesian basin should be completely filled with impervious material, and that the observance of these laws should be rigorously enforced.

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