SPRINGS, TUNNELS, AND KARST TOPOGRAPHY OF THE OZARKS

by

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(Abstract)

This talk was illustrated with approximately eighty Kodachrome slides chosen for their scenic value as well as to illustrate the various features resulting from the differential solution of the dolomites and limestones of the Ozark Uplift of Missouri.

The largest springs and the greatest number of solution features are present in the Salem Plateau area west of the St. Francois Mountains where the surface formations range in ascending order from the Potosi and Eminence of the upper Cambrian through the Van Buren, Gasconade, Roubidoux, and Jefferson City of the Ordovician. These formations are equivalent to portions of the Arbuckle lime of Oklahoma and Kansas. A few fairly large springs are present in the area underlain by the Mississippi lime in southwestern Missouri within the Springfield Plateau province and on the west flank of the Uplift.

O. E. Meinzer of the United States Geological Survey classified springs into eight magnitudes with those averaging 100 second feet or 64,600,000 gallons of water per day or more being of first magnitude. Of sixty-nine springs of the first magnitude in the United States, eleven are in the Ozark area of Missouri with one just over the southern border in Arkansas.

Big Spring in Carter county, Missouri is the largest of the group and is second only to Silver Springs in Florida. Big Spring averages around 250,000,000 gallons per day but is estimated to have flowed 840,000,000 gallons one day during a very wet season. As a basis for comparison, Tulsa's daily summer water consumption could be supplied by a minimum spring of the first magnitude.

Slides of the springs illustrated various types. Most flow from hill-sides or from the base of cliffs. A few flow out of cliff faces and fall several feet while others rise in pools in valley floors. At the outlets of some of the springs, the enlargement of the solution channels seem to be more closely related to the bedding and bedding planes, while other outlets are localized by prominent vertical joints such as may be seen at Roaring River Spring in southwest Missouri. Round Spring is unique in that it may first be seen to emerge in a basin surrounded by steep walls of dolomite formed by the collape of the roof of the tunnel through which the water flows. The water continues out of the basin, through the tunnel for approximately a hundred feet and out into a spring branch.

Some pictures of old water mills, relics of the past, which add picturesqueness to some of the sites, were shown.

Karst topography is developed over much of the Big Spring country. Many sink holes are present, Grand Gulf near Koshkonong and Thayer being one of the largest. It is a collapsed cavern one half mile long and more than

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one hundred feet deep. A natural bridge remains across this chasm. Grand Gulf is included on the Thayer, Missouri topographic sheet. The sheet covers an area which is pock-marked with sink-holes, some of them very large. It is believed that these drain into Mammoth Spring, the second largest of the area and located in Arkansas. The sink-holes are generally found within topographically high areas.

Tunnels exposed by stream erosion and roof collapse are to be seen. In several instances, tunnels cut through the necks of meanders of surface streams causing them to shorten their channels and to flow underground for short distances. One of these is located on Barren Fork of Sinking Creek, Section 27-Twp. 31 N.-Rge. 4W, Shannon County, and can be located on the Round Spring, Mo. topographic sheet. This tunnel can be traversed in a boat. The tunnels are known to the natives as "sinks."

Geologists can find much of interest in the Big Spring Country, the center of which is not over a day's drive from Tulsa. The cold water of the springs makes possible the only trout fishing in this part of the country with three of the Missouri State Parks maintaining trout hatcheries.

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