

THE SPOKANE FLOOD: A DISCUSSION

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The interpretation which Bretz¹ gives to sand and gravel beds found at the mouth of the Tucannon River, below Riparia, on the Snake River, Washington, seems to me very plausible, indeed. I examined these sand deposits for the state of Washington, before the "Channeled Scabland" idea was published, and at that time came to the conclusion that the river had been dammed.

The condition, as Bretz pictures it, is a lake about 250 feet deep at Riparia and 50 feet deep at Lewiston. I am inclined to believe that this lake was deeper. At Lewiston and at Clarkston there are gravel terraces over 100 feet above the Snake River which extend to the floor of the canyon. These seem to correspond to the Riparia dam. Above Lewiston and Clarkston are terraces at about 200 and 400 feet above the river. The highest of these may represent the delta of the Snake as it entered this lake, for its altitude is about that of the Wallula Gateway ponding. At Wawawai, 30 miles down the river from Lewiston and 50 feet lower in elevation, is a terrace lying 100 feet above the river. At Central Ferry, much the same condition exists. The gravels of these terraces are composed largely of well-rounded granite, porphyry, and metamorphic rocks washed from the Idaho mountains.

A much higher series of terrace gravel, sand, and pumice deposits occur along the Snake River from Wawawai to Lewiston. The Lewiston orchards are located on a terrace over 600 feet above the river, at least 1,300 A.T. At Wawawai, terrace deposits of sand, gravel, as well as very large boulders of granite, occur at least 500 feet above the river, or 1,150 feet A.T.; and pumice-dust terraces lie even higher, running up to about 1,500 feet A.T. These deposits in places can be traced, more or less satisfactorily, all the way down to

¹J Harlen Bretz, "The Spokane Flood Beyond the Channeled Scablands," *Jour. Geol.*, Vol. XXXIII (1925), pp. 97-115.

the lower terrace. They occur within the steep tributary canyons where they probably would have been completely destroyed had they been formed during the original canyon cutting. They seem to me to belong to the damming episode of the Wallula Gateway, which I think must have occurred previous to the building of the Riparia dam, because the Riparia delta, though far upstream, is much lower than the Wallula ponding.

It seems to me that there is evidence enough to indicate that these two river-lakes (of two episodes) were each filled with sediment and then each flushed out. After the higher filling of the river channel, which occurred during the damming at the Wallula Gateway, the lake thus formed must have been almost completely flushed out before the Riparia dam was formed.

The lower slopes of the Snake River canyon at Wawawai are noticeably steeper than the upper and are nearly free from talus. This break in topography may represent a second cycle of erosion, antedating the Spokane flood. The removal of the talus probably occurred during the flush, which followed the breaking of the Riparia dam.

There is one question, which, when answered, may throw some more light on the whole situation. Should not both the Snake and Clearwater rivers have borne floods during the time of the melting of the Spokane ice, for the great Rocky Mountain glaciers were melting and feeding water into these streams? The occurrence of large bowlders of granite in the high terraces suggests the presence of floating bergs.