Tlie Washington Mine (Bath), Written for the Mining and Scientific Press.

The Washington quartz mine, at Bath, was the first discovered gold-bearing quartz vein in Placer county, Cal., and is one of the latest to be equipped with a mill and made productive. It is situated in a locality famed even in California for an enormous output of placer gold, and for what is more uncommon still, long-lived placer mines.

The miners of 1849 and 1850 found a little section of the Middle Fork of the American river and Volcano canyon, leading up from the river by the Washington mine, remarkably rich in gold. Tracing upward in the minor side canyons and gulches, the old channels of Forest Hill and Bath were discovered by them, and at or about the same time the Hancock & Watson quartz ledge, now the Washington, was discovered. Later, in Volcano canyon, a number of other ledges were discovered.

The great richness of the placers and the inevitable mistakes with quartz mining in the '50s and early '60s led to the concentration of mining enterprise on the placers exclusively. While the cessation of mining on the quartz ledges was actually due to the mistakes of the mining and to the then superior attractiveness of the adjacent placer mining, the elapsed years of abandonment brought forgetfulness and misunderstanding of these real reasons, and made the local explanation of the neglect the easy one: that there was nothing in the ledges. The present successful operation of the Washington mine is proving that even local opinion can be in error in a declaration as to what is in a quartz ledge.

The Washington Mining Company's Mill, Bath, Placer County, Cal. (See Page 130.)

As a fact, the Washington ledge and other ledges of its immediate vicinity have an intimate connection with the rich mined-out placers of Forest Hill, Bath, Volcano canyon and the Middle Fork of the American river close at hand. The ledges are, in fact, the remnants still in place of the lodes, the erosion of which made the placers. The old Neocene Middle Fork of the American river, which Lindgren has described in his monograph, "Two Neocene Rivers in California," and in the Colfax Felio of the Geologic Survey, and which Ross E. Browne has mapped in the Xth Report of the California State Mineralogist, originally flowed from a location line about where the Middle Fork at Channel Bar now is but 1500 feet over it, northwesterly over what is now Volcano canyon, but in the reverse direction, to Bath, from which point it has been followed by the mining of the Paragon, Mayflower and Dardanelles

claims around a great bend which brought the old stream under Forest Hill and nearly to the Middle Fork line again before it turned northwestward in the Dardanelles claim. Under the town of Forest Hill is the remnant of an old stream channel that preceded the Neocene river just described. Its line of flow would seem to have corresponded with the direction of the upper portion of Volcanoi canyon, that above Bath, crossing transversely, flowing west over the line of the Neocene channel where cut away by Volcano canyon.

The Geological Survey (Placerville and Colfax Folios) maps, show extending from Kelsey, in El Dorado county, to Bath, a belt of serpentines, the direct northward continuation of the mother lode eruptive formation developed in Amador and El Dorado counties. The characteristic Mariposa slates of the mother lode formation, at Kelsey changes from a northward to a northwestward course. The latter is generally described as the line of the mother ode formations; but it is at least a question whether the mother lode formations do not divide at Kelsey, the eastern fork preserving the general direction of the lode to Volcano canyon and Bath, in Placer county. In Volcano canyon the serpentine formation is in contact on the east with slates and with diorite, the latter in wide dikes along the line of the main contact of the slates and the serpentine and in the serpentine. The west contact of the serpentine is with an amphibolite schist. On both contacts there are strong quartz lodes that -are gold bearing, and in the middle of the serpentine is a large vein or altered dike with sharply defined walls, the hanging wall being a diorite dike. This lode is a variety of magnesite, carrying gold, but neither pyrite or quartz. A number of rich pockets have been mined from the surface of these ledges, and the old channel placers at Bath and Forest Hill were noted for the number of large quartz boulders containing gold that were found. The relative situation of the ledges and the placers in the existing stream channels is reasonably conclusive evidence that the placers were derived from the erosion of the lodes from 1000 to 3000 feet—if not, indeed, more—in depth. Over $20,000,000 of gold are known to have been taken out of placers that must have its original situs in these lodes. Whether or not the remnants of these ledges that are still in place are as rich as the eroded portion must have been, is a question that is at the present time unanswerable.

The Washington ledge, as above stated, was early found to be gold bearing at the surface. It lies on the east side of the serpentine belt at a contact between it and a large body of diorite. It is a few hundred feet southwest of the old Neocene channel in the Paragon mine. The hydraulic pit on the rim of the channel contains many large boulders of float quartz from the ledge. The ledge is opened by a tunnel 1400 feet long. At the inner end it is 450 feet below the surface. From Volcano canyon it is practicable, by successive tunnels, to get 1000 feet additional depth, should the final result of exploitation in the upper level justify it. The width of the vein in the tunnel and slopes varies from 2 to 9 feet. The quartz is banded, of the variety known as ribbon rock. It carries visible free gold and high-grade gold-bearing pyrite associated with mariposite, the characteristic mother lode mineral first discovered and named in the mother lode mines in Mariposa county. At the tunnel entrance is the mill, an illustration of which appears on the front page. It was recently put on the mine, and is the first mill on the ledge, except the small, inefficient affair used in the early '50s to work some of the rich pocket rock at the surface. It has ten stamps, automatic feeders, rock breakers and concentrators, all run by a 35 H. P. boiler and engine. The plant was built by the Union Iron Works of San Francisco. The mine is operated by the Washington Quartz G. M. Co., with H. T. Bell superintendent.

The enterprise is notable to the locality of Forest Hill as the initial enterprise looking to the development of a quartz mining industry. Its continued commercial success is expected to lead to the early development of other quartz properties, long overlooked at Forest Hill and Michigan Bluffs.

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