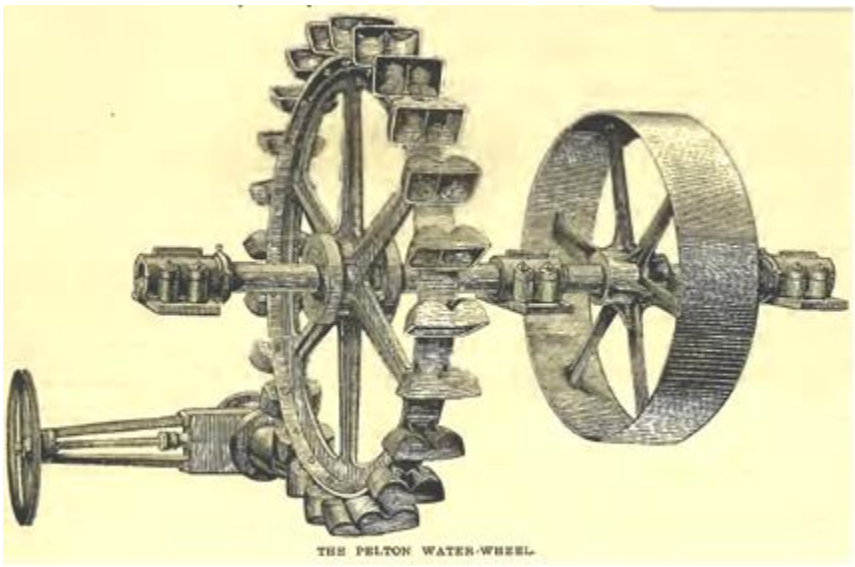
The Pelton Water-Wheel.

From the time the memory of man runneth, the rivers flowing westward from the great Sierra Nevada range have been wending their way down the mountain canyons and through the valleys and plains, without thought of utilizing the vast resources they afforded. Upon the first discovery of gold on this coast, water was found to be an element of prime necessity in all mining operations. At first its use was confined to the working of cradles and running sluices. When the era of quartz mining came in, it was found equally necessary in all reduction processes, even before thought of as a source of power. To make it available over any considerable extent of country, it was necessary to divert the streams from their natural channels and bring them down on the divides that separate all the great water courses, at such an elevation as to command a large extent of country. Early in the fifties, many ditch and canal enterprises had been inaugurated, which have been constantly multiplying and enlarging, so that all that portion of the State bordering the foothills is now. covered by mountain streams, affording water facilities of inestimable value, both to the mining and agricultural interests.

It soon became evident that water so generally distributed ought also be made a source of power in mining operations, and thus dispense with costly steam plants. How to utilize it with such high pressure and in an economical way was the problem. No turbine wheel was adapted to or had ever been run under such conditions.

As has been generally the case when a great want exists, means have been found to supply it. Several years of persistent experiment developed what is known as the "Pelton wheel," illustrated on this page, and which is now running a great deal of the mining and manufacturing machinery on this coast where waterpower is available. Its great value to mining and industrial uses is now universally recognized, and it is coming largely into use in all parts of the world.



THE PELTON WATER-WHEEL.

The first application of this motor was at the Idaho mine, at Grass Valley, Nevada county, some seven years ago, where a test was made of the various wheels in use to determine their relative value. The Pelton developed at this test over 90 per cent of efficiency, and was so far in advance of all competitors that it was immediately adopted by that company. Thirteen of them were at once pat in to run their mills, hoists, pumps, air compressors, etc., in fact affording all the power for these extensive works. During all this period nu break-downs or delays of any moment have occurred, tough the pumping and hoisting has been carried to a depth of 1600 feet.

It may be stated in this connection, illustrating the value of such a power, that the Idaho Company spent some $45,000 in bringing water to their works, which amount was almost covered by their first year's run.

The advantages of the Pelton wheel as a motive power are so many and so obvious that large expenditures are now being made by many companies in bringing in water to make this power available. It is no exaggeration to say that this marvelous little motor has effected a complete revolution in mining operations wherever it has been introduced. The cost of working low- grade ores has been so greatly lessened that many mines are now being worked with substantial profit, which had to be abandoned years ago under the too expensive system of steam-power.

One of the most interesting and important applications of power now attracting wide attention is that of utilizing water-power from distant localities by means of electrical transmission. In many cases the source of power is too remote to be availed by the ordinary system of ditching or piping, or cannot be obtained at points where required with sufficient head. The advances that have recently been made in electrical transmission warrant the belief that power will soon be carried in this way, at least 20 miles, with comparatively small loss. Many Electrical companies are now guaranteeing to transmit from 60 to 75 per cent of the primal energy developed a distance of from five to ten miles. By this means there are few localities in the country where the advantages of water-power cannot be availed of. To show what is now being done in this way, the Big Bend Tunnel Co. of Butte county, operating on the Feather river, are putting up an electrical plant, transmitting power over an 18-mile circuit, for the purpose of running pumps and hoists, the power being furnished by a Pelton wheel located a mile below the outlet of their tunnel.

The Chollar mine of Virginia City is also putting in a Pelton wheel at the Sutro tunnel level of their shaft, to be ran under a1500-foot head, which is to drive five dynamos of 100 horse power each, the power thus developed being conveyed to the surface and then to their mill some half a mile away.

The magnitude and extent of operations of this character which are being projected or in course of development will soon convince the most skeptical that, though electricity is a rapid courser, when we come to understand how to harness it to its work, it is destined to do most of the heavy hauling of the world.

The business of the Pelton wheel has recently been put into an organization known as " The Pelton Water-Wheel Company," and will hereafter be conducted in this city at 127 First street, under the general management of Mr. A. P. Brayton, Jr., with Mr. L. A. Pelton as consulting engineer.

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