HARNESSING NIAGARA.

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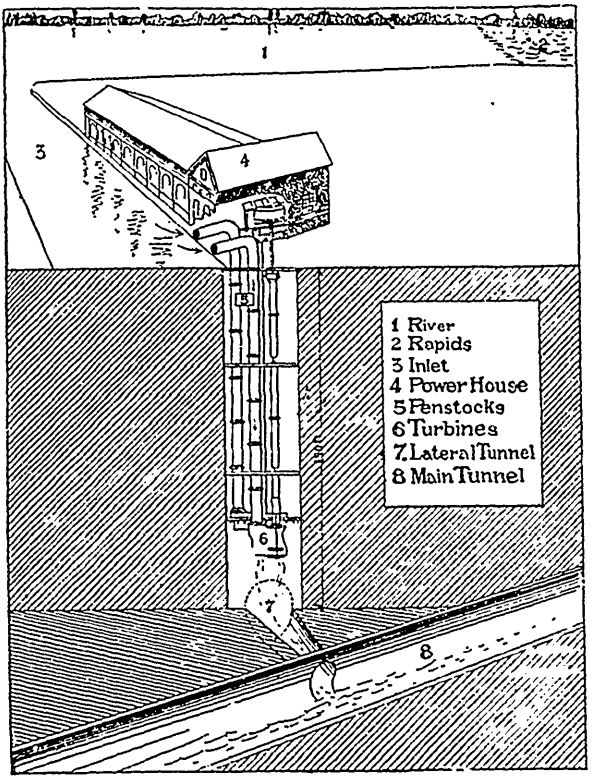

The harnessing of Niagara is one of the greatest feats of modern engineering. For years engineers have watched the power going to waste down the great cataract, and studied how it could be made available for mechanical purposes. The only device for using it was the building of a canal opening out of the river above the Falls, and emptying into it at the edge of the bluff a mile or two below the Falls. Power was thus carried to several mills built on the bank, but it was a mere cipher compared to the great force daily poured over the great precipice, a force which has been estimated to equal nearly 6,000,000 horse-power, enough to drive all the machinery on the continent.

Many plans for using this power were made, only to be abandoned, till Mr. Thomas Evershed, an engineer on the Erie Canal, devised the scheme of digging wheel-pits above the Falls, placing turbine-wheels at the bottom of the pits, conveying water from the river to turn the wheels —which should be used to generate electricity— and carrying off the waste water through a large tunnel. The plan was found feasible, and in 1886 the Niagara Falls Power Company was incorporated. Millions of dollars and the service of the most skilful engineers in the world were employed in carrying out the plan. Work was begun in 1887, and in January, 1894, the first great turbine-wheel was set at work.

The manner of using a part of the tremendous power of the cataract, though constructed on so gigantic a scale, is simple An inlet canal 1,500 feet long, 500 feet wide, and 12 feet deep opens from the river at a point about a mile and a half above the Falls. A short distance from the side of the canal nearest the Falls, and near the end farthest from the river, are two wheel-pits 160 ft. deep, and at the bottom of each is a 5,000 horse-power Girard double turbine-wheel. From the canal to these pits are head-races fitted with sluices through which the water is admitted to the wheel-pits. Both the canal and the head-races are lined with solid masonry, and the gates which regulate the supply of water are opened and shut by automatic levers. In each wheel-pit is an immense iron tube reaching from top to bottom of the pit, made of boiler iron. The tube, called a penstock, is seven feet in diameter, and the water pours down this pipe into the wheel-case in which the turbine revolves.

The turbine shaft revolves at the rate of 250 times a minute, and the speed can be increased to twice that number of times. The vertical shaft of the turbine is attached to a propeller shaft which rises to the floor of the power-house—built over the wheel-pits—where it is attached to a very large dynamo.