

THE CANADIAN PLAN FOR UTILIZING THE POWER OF NIAGARA FALLS.

In the SCIENTIFIC AMERICAN for March 5 last we gave an illustrated article descriptive of the great tunnel works on the American side of the Niagara River at the falls, by which the gigantic water power is to be utilized. This remarkable work is now nearly completed and several new manufacturing establishments have located near the tunnel, from which power will be taken.

While so much has been done on the American side, active steps have also been taken toward the utilization of the power of the great falls on the Canadian side. The Canadian Power Company was recently organized under charter granted by the Parliament of Ontario at its last session, with the following officers: President, Albert D. Shaw; vice-president, Francis O. Stetson; secretary and treasurer, William B. Rankine.

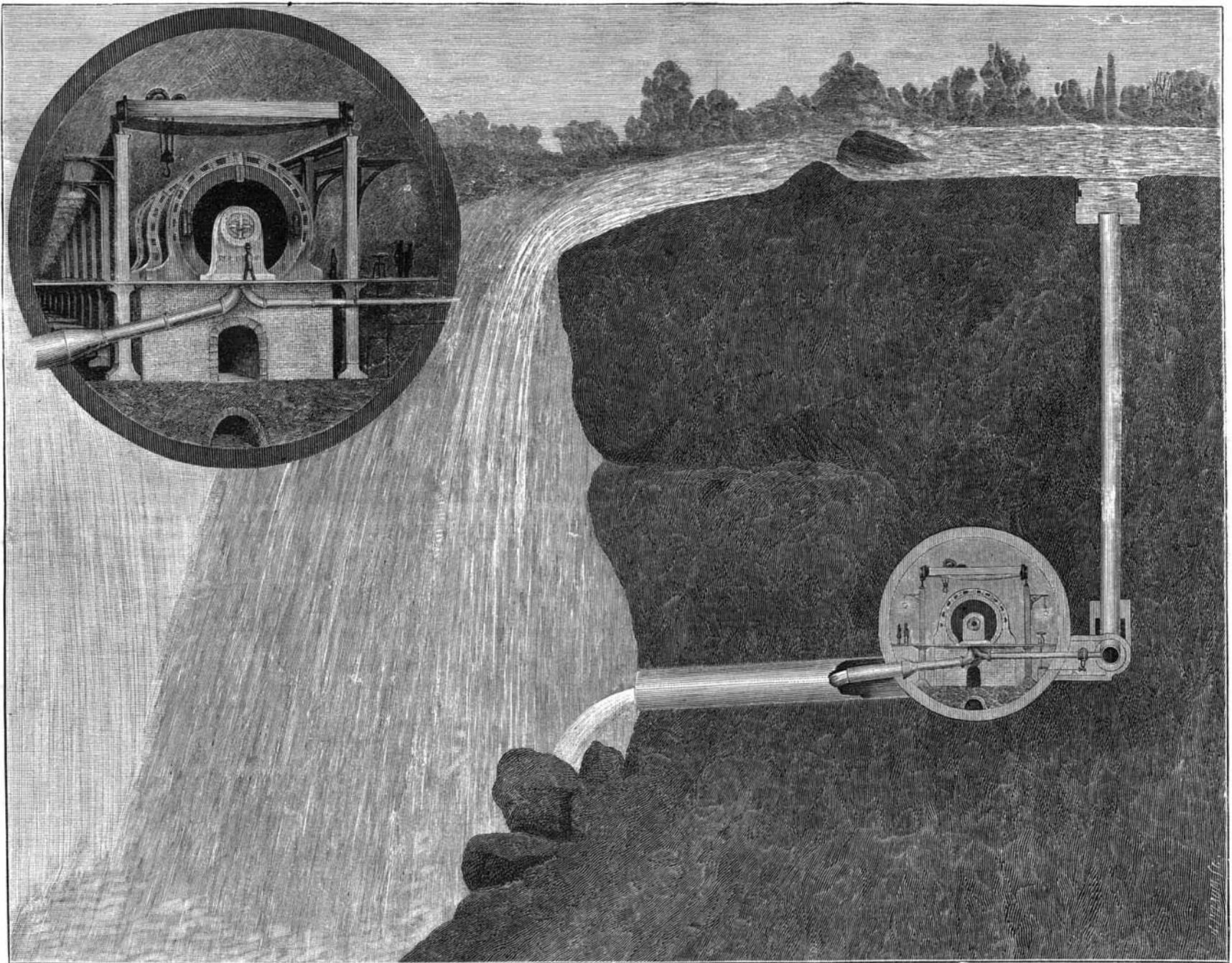
The valuable concession of the water power privileges on the Canadian side of Niagara passed into the control of this new company, 60 per cent of whose stock is owned by the Cataract Construction Company, the

proposed. This scheme involves a tunnel, but is very much simpler and radically different in many respects from that which is now being developed on the American side of the river.

Our engraving gives a very excellent idea of the whole scheme. A tunnel is constructed directly under the river near the falls, and water is taken in from the river above by large vertical pipes, and after passing through the turbines is discharged through a short canal out under the falls and thence into the river below. At the left hand corner of the same illustration is seen a more detailed view of this tunnel. Some idea of its size can be gained by comparing its diameter with the height of the men seen in the foreground. Large Ferranti dynamos, similar in construction to those now in use in the Ferranti station at London, are to be directly driven by powerful Pelton water wheels. The size of these units has not been definitely decided upon, but they will doubtless be very large. The immense traveling cranes which are seen will be used in moving machinery to the different parts of the tunnel.

Professor Forbes, of London, and the eminent engi-

where the fabric is touched by the solution, the dye is discharged, or it might be modified, and a pattern or effect is produced on the piece. Where an irregular effect is required, the discharging agent is applied to the surface in the form of a spray or in splashes, and where a design or pattern capable of reproduction or repetition is desired, the use of one or more revolving rollers, carrying design surfaces in relief, is preferable, which surfaces apply the solution to the fabric as it is moved past the roller, and practically print the design. These surfaces are made and the roller adjusted so as not to press too heavily upon the pile. For example, they might be made of felt or other comparatively soft material, compound, or fabric, and be of a porous nature, so that they could be kept saturated with the solution from the interior of the cylinder or from any other suitable source. In some cases, when producing an irregular or splashed pattern, a roller might be employed, which would throw the solution upon the fabric in splashes of regular or irregular size, and adjusting means for increasing or diminishing the number and size of the splashes at pleasure might be provided. The strength of the discharging agent is



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company which is now developing the tunnel scheme on the American side. It will be seen that one corporation really controls all the water power privileges on both sides of the great cataract, and has at its command a water power estimated at more than 3,000,000 horse power.

It is the intention of the Canadian Power Company to await further practical developments on the American side before determining what the character of the works shall be. It is proposed to make the Canadian side furnish the means for the transmission of power to Buffalo and other distant points. As is well known, the possibilities on the Canadian side within the limits of Queen Victoria and Niagara Falls parks, where the company has exclusive rights, are very great for the development of cheap electric power. A tunnel of less than 800 feet in length would furnish ample outlet for an intake that would develop hundreds of thousands of horse power, and all the necessary works could be constructed at a very low cost compared with the extensive operations on the American side.

Several plans for utilizing the water power on the Canadian side have been suggested by different eminent engineers, and the accompanying illustrations represent one of the most original and interesting yet

near Ferranti have both given a great deal of study to the proposed works on the Canadian side of the falls. Those in the best position to judge expect to see work commenced some time in the spring under the management of the ablest engineers in this country and abroad.

Of the complete ultimate success of both undertakings there can be no question, and electricity will here play an important part in the solution of the great problem of securing the economical transmission of large powers. We are indebted to the *Electrical World* for our illustration and the above particulars.

Ornamenting Piled Fabrics.

This relates to ornamenting cut pile fabrics, as velvets, velveteens, corduroys and such fabrics as cannot conveniently be ornamented by the ordinary process of printing. In preparing the fabrics for treatment, they are dyed with colors that are susceptible of being discharged or modified by the action of certain discharging or modifying agents which are afterward applied. To produce the required pattern upon the dyed fabric, a solution of chloride of lime or ordinary bleaching liquor is applied at the required places to the surface of the dyed fabric. The result is that,

varied to suit the nature of the dye in the fabric. In some cases, coloring matter may be added to the discharging solution, so as to color the portions of the fabric affected by the solution; and to prevent blurring or spreading of the discharging or modifying agent, heat is employed in some suitable manner, so as to rapidly dry off the solution or fix the colors.

Curious Foundations.

The *Railway Review* tells of a novel method of laying foundations in swampy soil recently employed by an American engineer. The building to be supported was a low wooden one which it was proposed to use for the storage of machinery. Casks were set in holes in the ground along the line of posts and were filled to the depth of about one foot with iron turnings. The posts were placed in the casks, which were then filled with iron turnings compactly rammed in place. A solution of salt and water was slowly poured over the turnings, under the action of which they solidified into a hard mass. The heat of the oxidation of the iron was so great that the posts were charred. This also served to act as a preservative, and to that extent the iron turnings are probably superior to concrete under similar conditions.