

Here there need be no dam at all, and if there is one it is built only to facilitate the drawing-off of the water from the stream. The method employed for obtaining an artificial fall here is to carry the water along the hillside, sometimes in pipes but more often in an open channel or canal. In this way the stream rapidly drops below the level of the comparatively level canal (or closed conduit); and in the end, after a mile or two, the water will be brought to a tank or 'forebay,' perhaps 500 or 1,000, or even several thousand feet, above the stream. From this tank high pressure pipes are taken down to the Pelton wheels which drive the generators before the water returns to the stream. Here, if, for example, the head or fall is 2,000 feet, one-hundredth part of the water required at a twenty-foot dam will give the same power. On the other hand, unless the natural lie of the ground is very favourable, the capital cost of the works may be much higher. The very long and strong steel pipes, required to drop this great distance and to withstand this great pressure, are themselves one of the main items of expense. Naturally they will not be vertical, as they must follow the slope of the ground; so that a fall of 2,000 feet may involve a pipe from 4,000 to 6,000 feet long. Examples of this class of high-fall development are found in every mountainous country, the vertical head of water amounting in one case to over a mile and in many cases to several thousand feet. In India the hill stations of Simla, Mussoorie and Darjeeling are all served with power from this type of scheme, the last-named being the pioneer hydro-electric station of India (1897-98). There are certainly *hundreds* of other sites where similar works could be constructed, but most of them remain to be investigated even when they have been located. Amongst those now being examined in detail one of the most promising is on the Jaldaka River in the Bengal Duars, on the borders of Bhutan, for the use of which an agreement has already been entered into; another is the Kundah River scheme in the Nilgiri Hills, which Messrs. Tata are developing.

Storage reservoir works

I have already explained that in addition to hydro-electric schemes depending on the flow of a river or stream there are also others which depend primarily on monsoon storage. India has the distinction of having been the first country in the world to develop