cases where it would be decidedly advantageous to so modify the design of waterworks as to bring some of this water power into external use, and seeing that every 1,000 horse-power developed by the combustion of coal absorbs some 10,000 or more tons of coal per year, it is evident that the use of this asset would be to the national advantage.

In most upland waterworks a large proportion of the water caught in the impounding reservoir overflows in the winter, and the power from this, as well as that available from the compensation water, is generally wasted. A further loss of power is caused by throttling the outlet valves of the reservoir, the amount lost varying with the season, and being greater in the winter than in the summer.

As an illustration, it may be pointed out that, assuming the surplus power available between the impounding reservoir and the beginning of the aqueduct amounts to 500 horse-power, this could be utilized to operate turbines driving direct-current or alternating-current dynamos, and the electric power so generated (which could, if necessary, be transmitted to a considerable distance) would be sufficient to provide all the light and power required by a town of considerable size and importance, and the revenue obtainable, with very reasonable charges, would be in the neighborhood of £15,000 per annum, sufficient to warrant a substantial outlay of capital on the necessary works.

A further advantage of combining power plant with upland waterworks lies in the fact that, as storage works on a large scale are often an essential part of a waterworks, a small proportion only of the cost of such works would be chargeable against the power scheme, and the outlay on pressure pipes, which would probably be comparatively short in length, ought not to be heavy.

In some cases where suitable loads can be obtained, it should be possible to harness for power purposes most of the floods, and thus to utilize a large proportion of the mean rainfall, instead of only the average of three dry years, as is the case with waterworks alone.

The idea of utilizing surplus water power in upland waterworks is not by any means new. A proposal to use for lighting and power purposes the power (about 400 horse-power) available at the Longdendale works of the Manchester Corporation was reported on by Sir Alexander Kennedy as long ago as 1899; although nothing was done at that time, hydro-electric works have since been constructed for utilizing some of the power locally by Mr. Holme Lewis, the present water engineer of Manchester. Dr. Deacon, in 1902, described how a portion of the surplus power in the aqueduct of the Vyrnwy works was utilized at Oswestry to operate "Brotherton" engines. More recently, in the Birmingham waterworks, water turbines and dynamos have been installed for using a portion of the power available in the compensation water.

When the difference between the level of the impounding reservoir and that of the town to be supplied is considerable, it may be at times possible, without prohibitive additional cost, to construct the power house some distance from the impounding reservoir, and at a lower level, in order to secure a greater pressure at the turbines and utilize a larger proportion of the potential power. Although such a case might be complicated by compensation questions, it would afford some advantages, such as the possibility of taking additional water from neighboring watersheds, and thereby increasing the capacity of the power plant, and the reduction of cost of the machinery due to the greater head of water. The cost of generating power (the load factor remaining the same) varies inversely with the power and the pressure of water.

One very important problem which would arise in connection with water power works is that of providing a market for the power available. In some districts, small towns or villages in the neighborhood of the works could be supplied with electricity in bulk for lighting and power purposes; in other districts, light railways, saw-mills, wood pulping, mines, quarries, chemical and other works might be supplied on mutually advantageous terms; and in the future agriculture should also provide a market for electric power; in fact, there should be few districts in which a market could not be obtained or created.

It is possible that, in the first instance, some opposition might be raised in parliament to the combination of works for the joint supply of water and of power, but in view of the national value of cheap power for industrial purposes and the necessity of conserving coal supplies as much as possible, such opposition might not be great.

The importance attached by parliament to the supply of power after the war can be gathered from the fact that the Board of Trade had recently appointed a committee "to consider and report what steps should be taken, whether by legislation or otherwise, to ensure that there shall be an adequate and economical supply of electric power for all classes of consumers in the United Kingdom, particularly industries which depend upon a cheap supply of power for their development."

The writer has not attempted to deal exhaustively with this subject, but has rather endeavored to bring forward some considerations which appear to him to arise in connection with water power installations, in a form likely to provoke useful discussion.

SALT ROADWAY IN UTAH

Part of the Wendover highway in Tooele county, Utah, is constructed of solid salt. Between Timpie and Wendover the line of the highway traverses a flat area, crossing at one point a salt bed about seven miles wide. For a considerable portion of the year this bed is covered with water, which, while it thoroughly saturates the roadway, is never of sufficient depth to impede the progress of vehicles. When dry, the bed is found to make an admirable pavement, with salt two to three feet deep, hard and smooth.

A bill to empower the president to take possession and control of Niagara Falls power plants, and appropriating $20,000,000 for the purpose, was introduced into the United States Congress January 9th by Representative Waldo of New York.

Canada Foundries and Forgings Company is understood to have had a prosperous year. The company is still operating all its Welland plants to capacity, and in fact did so throughout the year. The Delaney plant in Buffalo, recently purchased by the company, has received additional orders for ship forgings, and the earnings have permitted the retirement already of $100,000 bonds, reducing the outstanding issue to $130,000.

The annual report of City Engineer Brian, Windsor, Ont., shows that during the past year the city has laid 45 miles of paving, 43½ miles of sewers, and 125 miles of cement sidewalks. The paving cost approximately $200,000. Fifteen thousand dollars worth of new sidewalks have been constructed, and two large bridges are almost completed at a total cost of approximately $75,000. This year's sewer construction included the Gladstone Avenue sewer, which has been completed, and the Parent Avenue sewer, furnishing an outlet for the east end of the city, and which will cost approximately $38,000. The Parent Avenue job will not be completed until the coming spring. In addition to these big trunk sewers, smaller ones, namely, the Louis, Catarabui, and Montmorenci, the Grove and Jeannette Avenue sewers have been built, costing approximately $20,000.