ECONOMY IN WATER SUPPLY.

The question of the provision of fresh sources of water supply is becoming more important every year, and therefore all water authorities should take the greatest possible care to conserve the existing supplies.

With proper regulations and strict supervision the consumption of water can be kept within legitimate limits, with due regard to the comfort and health of the consumers.

Regulations for this purpose were originated and have been in force with the best results for a great number of years in towns where the supply of water has always been given on the constant system. Closer attention to this question has in recent years led to great economies, as may be instanced in the cases of two important towns in the West Riding of Yorkshire, where the consumption of water has been so materially reduced that whilst in both these towns a constant supply has been fully maintained, the expenditure of large amounts of capital on additional works which otherwise would have had to be incurred has been considerably deferred.
All waterworks authorised by Parliament have to be maintained out of revenue, in accordance with the provisions of the Waterworks Clauses Act, 1847, which is now incorporated in all special Water Acts.

In the case of gravitation works, so far, at any rate, as impounding reservoirs are concerned, there is practically no depreciation. An earthen embankment fifty years old is probably a stronger structure than one ten years old.

In pumping schemes, first-class machinery which was erected seventy or eighty years ago is in existence and in good condition.

Large trunk mains are in existence and in good condition which have been in use for a much longer time than is now generally allowed for the period of repayment.

Under these circumstances it is permissible to doubt whether some of the severe restrictions with regard to repayment of loans now in force are really beneficial either to the consumer or to the ratepayer. They afford, however, a very strong reason for the exercise of the strictest economy in the distribution of the water, so that if possible a revenue may be earned sufficient to provide the necessary payments to the sinking fund and to avoid a rate in aid.

This question arose during the present session of Parliament in the case of a Bill promoted by an important Water Board which was formed in the year 1897, when the undertaking of a Waterworks Company was transferred to four constituent authorities.

In 1899 it became apparent that larger works were necessary if the Water Board were to perform their duties properly, and accordingly in that year the construction of an additional storage reservoir was commenced. This reservoir was estimated to cost £157,000, and the Local Government Board, having approved of the scheme, sanctioned the borrowing of that amount of capital, but granted only thirty years for the repayment of the loan.

The Water Board promoted a Bill to authorise the construction of additional waterworks and to sanction sixty years as the period for the repayment of the loan for the works proposed to be authorised by the Bill, and also to sanction a like period for the repayment of the loan for the construction of the works already sanctioned by the Local Government Board.

The Water Board had previously applied for an extension of the time for the repayment of this loan, but this was refused by the Local Government Board, who also opposed the application in Parliament.

It was shown that by reason of the Board having to provide the sinking fund through such an abnormally short space of time as thirty years a rate in aid was inevitable.

The result was that the committee granted fifty-five years for the
repayment of the loan required for the works proposed under the Bill, but refused to interfere with the decision of the Local Government Board with regard to the period of repayment of the existing loan. They, however, expressed the opinion that on the evidence before them it was a case in which a more extended period might reasonably have been given by the Local Government Board, and that this was a case in which that Board might review their decision, and they invited the Water Board to appeal to the Local Government Board for reconsideration of their case. This was done, with the result that the Local Government Board extended the time for repayment to forty years. This, however, is still too short a period in such a case.

With the strictest economy, however, the water authorities must from time to time be faced with the necessity of providing additional supplies of water, and before this becomes urgent care should be taken to ascertain, by observations extending over as long a period as possible, the rainfall of the district from which the supply is to be obtained, accompanied, in the case of surface supplies, by stream gaugings where possible, and, in the case of pumping schemes, the rest level of the water in the area in which the well is to be sunk.

All these are necessary before a scheme can be properly placed before Parliament for consideration, and generally their ascertainment is a hurried one leading possibly to unnecessary opposition and expense.

The information to be obtained from the British Rainfall publications is useful, but as a rule it has to be supplemented at the last moment by special observations extending over a short period, whereas, if water authorities would co-operate and arrange for rainfall observations to be carried out by, or in conjunction with, the Director of British Rainfall, they would, at a comparatively small cost, be in possession of the information whenever required.

The geological conditions should also be fully investigated. The geological survey maps are valuable as far as they go, but frequently when preparing water schemes for the consideration of Parliament it is found necessary to obtain the requisite geological information by special and private survey, whereas so far as correct maps are concerned they ought to be available at any time at a reasonable cost.

It is probable that most of the material necessary for the completion of the geological survey on a scale of six inches to the mile is practically now available, but the maps are not published for the reason probably that the Government departments consider that there is not sufficient demand for them, and that, therefore, they might be published at a loss. The old one-inch maps are being issued at a largely increased price, and thus the cost of obtaining such information as exists, and which should be available for, and in the possession of, every water authority, is increased.
Supplies of any magnitude from surface sources are becoming difficult to obtain, except at very great cost, and in many areas dependent upon underground sources it is becoming difficult to obtain sites for wells, except at the risk of encroaching on existing public or private supplies.

Possibly the ultimate solution of these difficulties may come through a combination of authorities, who will be able to afford to go to considerable distances if necessary in order to obtain supplies for their districts, and to obtain and undertake the preparation of the necessary information with regard to rainfall, geological conditions, and the ascertainment of the level of underground waters over large areas in a manner that possibly no single authority could afford to do.