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PARLIAMENT OF TASMANIA.

THE GREAT LAKE AND THE RIVER SHANNON:

REPORT BY THE ENGINEERING INSPECTOR TO THE CENTRAL BOARD OF HEALTH.

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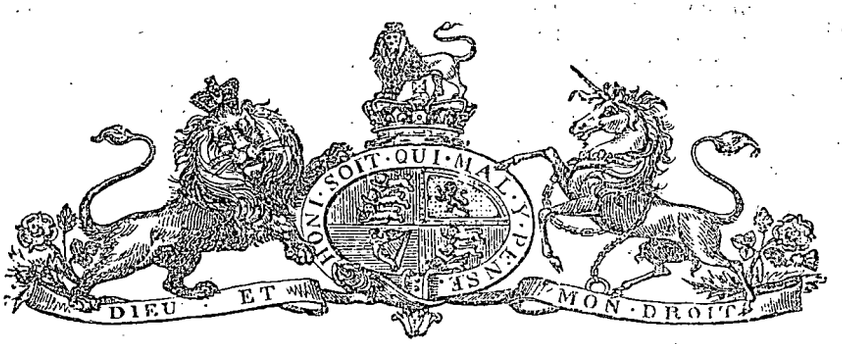

THE GREAT LAKE AND THE RIVER SHANNON.

The Honourable the Minister of Lands and Works.

SIR,

I HAVE the honour to inform you that in accordance with your instructions I have visited the Great Lake and its outlet, the River Shannon, with the view of ascertaining the practicability of obtaining from that river a supply of water for the Clyde Valley should such be needed to replace any taken from Lakes Sorell and Crescent, and to report to you as follows :—

I.—*Is there water available for the purpose?*

1. The first question to be considered is, whether there is sufficient water available for the purpose without injury to the rights of those who are at present entitled to its use?

2. The only outlet of running water from the Great Lake is the River Shannon, which, after a meandering course of about 36 miles, falls into the River Ouse, to which, although it does not supply half the water that flows down it during the whole year, it probably supplies more than half that flows down during the drier months. The explanation of this is, that though the Ouse has a greater watershed to drain with probably an equal depth of rainfall, it has no such reservoir as the Great Lake provides for the Shannon to store part of the excessive rainfall of the wet months for use in the dry. The riverain proprietors on the Shannon and Ouse have the first right to such of the water of the rivers as they can use. I think the best gauge of the quantity of water that can be used in a country capable of irrigation is the quantity required to irrigate it. This quantity is usually taken to be that which will provide for a distribution of water of a depth of four inches over the whole surface every month during which irrigation is required. As most of this water returns to the river, the provision of it for irrigation provides also for mill power, domestic use, and all other purposes.

3. This four inches of water a month to the acre is equal to 18 cubic yards, or over 3000 gallons a day. It has been stated that there are 6000 acres in the district capable of irrigation. But with delivery at a high level this irrigation area would probably be greatly increased, and that to safeguard the interests of the riverain proprietors it would better to assume that 20,000 acres could be served. This would require a daily quantity of 360,000 cubic yards of water, or over 60 million gallons. If provision were made for the supply of this quantity at all times, the riverain proprietors would be far better off than they are now, for, though often more than ten times this quantity of water flows down the river in a day, as often there is not one-twentieth part of it—and this when it is most needed.

4. The following estimates of the quantity of water flowing down the Shannon are based on these data :—The area of the watershed of the Great Lake is about 225 square miles, of which 44 are occupied by the lake itself. From the meteorological returns for the four years 1890-93, it appears that the average rainfall at the Lake Station for those years was exactly 37 inches a year. (On the higher grounds of the watershed it was probably more). As nearly all the watershed lies within five miles of the lake, and much of it is open rocky country, sloping rapidly to the lake, it is certain that the greater part of the rainfall runs into it. And as rain falls, on an average, 182 days every year, the evaporation cannot be excessive. I therefore think it is quite safe to reckon that of the 37 inches of rain that falls 27 inches is carried off by the Shannon. This would give a mean daily outflow of 1,432,000 cubic yards—a very ample supply if it could be depended upon.

5. But nothing whatever is done at the outlet from the lake to control and regulate the outflow. The large rainfall of some months is allowed to run away as fast as it can ; and when the lake is already low, a heavy northerly gale, by driving the water to the outlet, may leave the water so low as to stop the outflow. Besides, the 37 inches of yearly rainfall, which gives a mean of over 3 inches a month, really falls very irregularly, the monthly fall varying from over 9 inches to under one-fifth of an inch. When such a small quantity falls probably much less than half of it reaches the lake, which, in such dry seasons, is always low ; even then, without making any allowance for evaporation, there is not provision for an outflow of more than 66,000 cubic yards a day—not one-twentieth of the average quantity. But, as 66,000 cubic yards represents an evaporation of only $\frac{3}{1000}$ ths. of an inch from the surface of the lake, it is certain that there would then be no provision at all for outflow.

6. These figures make two points evident : the first is, that if any large regular supply of water is to be obtained from the Great Lake some arrangements must be made for regulating the outflow from it. And the second is, that if such arrangements are made there is a very ample supply for all the possible requirements of both Shannon and Clyde valleys.

II.—*The work required to take the water into the Clyde Valley.*

7. In the year 1861, the Commissioners appointed by the Governor of the Colony, Sir H. E. Fox-Young, to report upon the subject of Irrigation, employed Mr. A. Martelli, C.E., to advise on the matter. Among other proposals that he made was one to supply water to Bothwell from the Shannon. He proposed to take the water from the river at the place where the "Tea-tree Scrub," (now called on the land charts "Blackman's Rivulet") falls into it, and to convey it through an open cutting fifteen miles long into the Weasel Plains Valley, that drains into the Clyde above Bothwell. No plan is given in the Report of the course of this cutting ; but, from the examination I made of the country, I think it quite feasible to take the water from the point named and get it by gravitation into the head of the Weasel Plains Valley at the place where the zigzag in the Great Lake Road crosses the dividing range between the Shannon and Clyde valleys at Hunterston.

8. The channel shewn in cross-section by Mr. Martelli would deliver about 240,000 cubic yards of water a day, with a fall of two feet to the mile. He estimates the cost of the work at £6000,— a sum I think quite inadequate, especially as Mr. Martelli evidently thought that a sufficient supply could always be drawn from the river in the dry season without any regulating works at the Lake, and so does not include any such works in his scheme. Furthermore, he makes no provision for cutting through rock, though the channel, especially in the first three or four miles of its course, would pass through hard greenstone. It is very likely that by the time the whole work was finished the outlay on it would be £10,000.

III.—*Lakes Sorell and Crescent.*

9. As I am convinced that the water supply of the Clyde Valley, and a provision for irrigating the Tunbridge Plains, could be secured by utilising the water of Lakes Sorell and Crescent at a far less cost than would be required to carry out the Shannon and Tunbridge schemes, I will make you a further report on the two lakes, and the work necessary to secure the two objects I have named.

IV.—*The water-power of the Lakes.*

10. With your permission I will also prepare a memorandum on the very important question of the valuable asset the Colony possesses in the water-power available in connection with the lakes I have visited.

In conclusion, I have to acknowledge the assistance I have received from the local knowledge of the country possessed by Mr. Harris, of Tunbridge, who accompanied me, and Mr. Early, the Resident Police Officer at the Great Lake.

I have the honour to be,
Sir,
Your faithful Servant,

A. MAULT, *Engineering Inspector to the Central Board of Health.*

Hobart, 25th September, 1897.

WILLIAM GRAHAME, JUN.,
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