FILTERS. STIRLING WATERWORKS.

THE WATER SUPPLY OF STIRLING.

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THE Stirling Waterworks are situated on the Touch hills, about four miles to the south-west of Stirling. The water is collected into three main reservoirs from the streams and springs within the collecting area, which extends to about 1300 acres. The total capacity of all the reservoirs, settling pond, filters, and clear-water basins is about 190,000,000 gallons.

The two lower reservoirs (Nos. 1 and 2) forming the original works contained together about 18,000,000 gallons, and were constructed about the year 1845, under the late Mr. Thom, C.E., of Greenock. These two reservoirs served the town until the year 1866, when reservoir No. 3 was opened. The capacity of reservoir No. 3 is about 45,000,000 gallons, and was constructed under the late Mr. Francis Mackison, C.E., Stirling, at a cost of about £9100. Owing to the ever-increasing demand, and the extension of the district supplied, the storage capacity of the reservoirs again proved insufficient, and in the end of the dry season of 1880, after the water had been cut off the most of the public works and only an intermittent supply granted for a few hours daily for domestic use, the water was reduced to about three days supply in the reservoirs, when the weather changed and rescued the Commissioners from a serious dilemma.

At this time the Commissioners—Provost Anderson being then Chairman—resolved and obtained powers to construct a fourth reservoir, called reservoir No. 4. This is the last constructed, and is the largest of the series of reservoirs in connection with the Stirling water supply. It is situated in the valley of the Touch burn, about 1¼ miles above the filters, and is about 900 feet above the mean level of the sea. It is nearly half-a-mile long, averages 400 feet broad, and contains when full 122,000,000 gallons. It was partly constructed under the late Mr. Francis Mackison, C.E., Stirling, and completed by his successor, Mr. Andrew M'Luckie, who was appointed engineer by the Commissioners. The embankment is 1030 feet long, 350 feet broad at the base, and is 74 feet high in the centre, above the original ground. 160,000 cubic yards, or about 200,000 tons of earth, clay, and pitching were used in the construction of the embankment, and

notwithstanding the great height, no settlement was perceptible after completion. This reservoir was opened on the 26th May, 1885, by Provost Yellowlees, and since the opening there has been no scarcity of water within the district supplied.

The storage capacity of the reservoirs having proved sufficient for the time being, and the quality of the water being excellent, the Commissioners resolved to endeavour to improve the colour of the water, and to remove any sediment which it contained, by means of filteration, and so render the water more pleasing to the eye. For this purpose they applied to Parliament for powers to construct a series of filters, clear-water basins, and other works; and the Act of Parliament having received the royal assent, the works were thereafter proceeded with.

The filter works were commenced in the spring of 1894, and completed in the spring of 1896, and consist principally of a settling pond, four filter beds, and two clear-water basins. The four filter beds are each 76 feet by 52 feet, and 7 feet deep. The walls are constructed of Portland cement concrete, backed with clay puddle, and faced with white enamelled firebrick. The sand through which the water is filtered was partly obtained from Loch Sunnart on the west coast, partly from the east coast, and partly from Oporto in Spain. It is all of excellent quality for the purpose, and was all thoroughly washed and cleansed in sand-washing machines specially fitted up for the purpose, and for afterwards washing the sand from time to time as required.

After the water is filtered, it is stored in the pure-water basins, which occupy the site of the original distributing or No. 1 reservoir. Two of these basins have been constructed, each measuring 100 feet in diameter and 17 feet deep, and contain 760,000 gallons each when full to the overflow level. The walls are formed of concrete faced on the inside with white enamelled firebrick. From these basins—which are situated at a height of 450 feet above the mean sea level—the water is conveyed into the town by two main pipes, one of them 12 inches and the other 8 inches in diameter. Immediately below the clear-water basins a meter-house is erected, through which the main pipes pass. Two Deacon meters are fitted on the mains in the meter-house for the purpose of registering the quantity of water passing into the town.

An attendant's house has been erected in connection with the filters, and a hall for the convenience of the Committee when inspecting the works.

The filter works were opened on the 23rd April, 1896, by Provost Kinross, in presence of a large and representative company. They have proved a great success, and the beneficial results have been highly appreciated by the community.

The contractor for the works was the late Mr. Alexander Gall, of Alloa, his son, Mr. William R. Gall, acting as principal manager; and the manner in which the contract has been completed is another proof of the good and conscientious manner in which Mr. Gall executed all his undertakings.

The estimated cost of the filter works—including piping supplied by Messrs. R. Laidlaw & Son, of Glasgow; valves, head stocks, and sieves, supplied by the Glenfield Company, Kilmarnock; enclosing the ground with stone walls, re-making the road of access, and building attendant's house, &c., but exclusive of Parliamentary and law charges, was £13,300, and the actual cost was £13,600.

To commemorate the opening of the filters, a bronze shield has been fixed on a large boulder between the two clear-water basins, and bears the following inscription:—

To commemorate the opening of the Filters in connection with the Stirling Waterworks, by Provost Kinross, 23rd April, 1896.

M'Luckie & Walker,
Engineers.

Alex. Gall, senr.,
Contractor.

A visit to the filters would well repay the visitor. The view from the grounds when the air is clear is very extensive and varied, embracing the valley of the Forth, Firth of Forth, the Forth Bridge, the Ochils, Braes of Doune, and the Grampians.