

*Lake Ohau.*—Some surveying will be needed here to determine the best manner to proceed. It appears as though a considerable head could be secured by damming the outlet of the lake and carrying a race a few miles along the terraces to the south of the Ohau River. This, too, would be a very expensive piece of construction not warranted at present.

*Ohau River.*—There is an excellent site for a dam just above the wagon-bridge over this river, and it is thought that a race would be carried down the river for a few miles to advantage. I do not think that anything more than the head created by the dam could be utilised to advantage. This is, of course, very expensive. Surveys would have to prove or disprove either idea.

*Waitaki.*—The best place we could find in this stream for any development-work was in the gorge near the confluence of the Ahuriri. Here there are foundations suitable for damming this stream to the height mentioned. The works would have to be exceedingly massive, and this is in the same expensive list as many of the other power-locations examined; and, although there is so much power-development possible, the demands do not now warrant even surveys.

*Clutha.*—We examined this stream in numerous places, and found none where it would be possible to develop power without excessively large dams. Then, too, the variations of this stream are exceptionally great between low water and "flood." Any power-station of the usual type would be completely submerged by such a flow of water as is usual during the "flood," and all electrical apparatus would be almost hopelessly ruined. There is also a good deal of silt and shingle moving in the stream, caused by mining and dredging. This would play havoc with the water-wheels and gates. The expense of development here is too great and the difficulties too many to warrant work being done.

*Manuherikia.*—In many respects the location examined on this stream is a valuable one, but there were no surveys of the district and it has not been possible to secure any. I do not think, however, that it is worth while under the present conditions to try to develop this water. There is so much mining-work going on that the water is very muddy the greater part of the time. This alone would render a stream unfit for power purposes, unless there were nothing else available.

*Lake Hawea.*—By means of a dam 50 ft. high at the outlet of this lake it will be possible to secure a maximum head of 192 ft. by cutting a tunnel through the narrow piece of land between this lake and Wanaka from the lagoon to a point near trig-station U, as outlined on P.W.D. 20668. This would make available nearly 120,000-horse power theoretical for continuous service, or for eighteen-hour service fully 160,000-horse power theoretical. In order to utilise this a tunnel of 550 square feet in cross-section, or 26½ ft. inside diameter would have to be constructed. If two tunnels were used each would have to be 19 ft. inside diameter; or, if three were used, each would have to be 15¼ ft. inside diameter. Of course, these tunnels would not have to be round if it were found best to make them some other shape. The location for the power-house is an excellent one. Dunedin, the principal customer, is distant 116 miles in an air-line, but by almost any feasible route this would be increased to over 150 miles at least. This, however, is not a prohibitive distance, but indicates something of the expense that will have to be incurred to utilise this energy. The remoteness of this location from the railroad would make hauling a very large item of expense. This is an extremely valuable site, however, and will be fully developed some time; but for the present a location that can be developed at less expense would answer the purpose better.

*Lake Wanaka.*—If an attempt is made to bring water across into this lake from Hawea, it will preclude any plans to utilise the water from this lake by means of a dam at its outlet. The plan mentioned is probably the best one for this district.

*Lake Wakatipu.*—This is the most popular lake of the colony. The only plan proposed to utilise the flow from this lake is to put a dam at its outlet and raise the level of the lake. This would submerge some very valuable property at Queenstown and Kingston, as well as in numerous places all around the lake. This, and the expense of the dam and whole equipment, will probably preclude doing anything of the kind. The present outlet of the lake, however, seems an excellent place for a dam. There is rock cropping out across the channel and on each side which ought to insure good foundations, and there are near-by quarries for construction-material.

*Shotover River.*—This stream flows through a very strange and rugged country. The flow of the stream is not equalised by any lakes, and the mining and dredging along its course keep it muddy continually. Although there is a location near where the Arrowtown Bridge crosses it where a dam could be erected, the condition of the water and the expensive works necessary will probably preclude anything being done here. A survey, however, is the only thing that will decide finally if this is a suitable location. Under present conditions, however, the muddy water should settle the point against it.

*Lake Te Anau.*—This is one of the most beautiful lakes. There are two plans to utilise its waters—the one to take them across to Manapouri and utilise them under a pressure of about 137 ft., the other to take them through Lake Hankinson and a tunnel to the Tasman Sea. The former plan I do not think is practical; the latter is surely exceedingly expensive, and the plant when finished, in order to deliver its product, would have a long line over exceedingly rugged country, where it would be hard to care for it. Both schemes would require a high dam at the present outlet of the lake, and both would be exceedingly expensive. Surveys would have to be made to determine the feasibility of each or both.

*Lake Manapouri.*—There are two plans to utilise the waters of this lake—the one to take the water through a tunnel to the ocean, the other to utilise it by means of a dam at the outlet of the lake. If the Te Anau waters are taken to the sea, there will be a very limited amount left to be taken from Manapouri. However, if either plan be carried out, the other never will be. Surveys will have to be made to determine the merits of each plan.

*Waiau River.*—This stream has several places in it where dams can be erected and the fall created utilised. Surveys, of course, will have to be made to determine where this can be best done. All of these places, however, will require long, high dams that will be very expensive to build.