use before becoming useless by decay or being destroyed by fire.

Transportation.—One of the most formidable problems of this development was that of transportation. All machinery, cement, pipe, provisions and other supplies, as well as all kinds of labor had to be transported by sea from Victoria, 45 miles down the coast to the mouth of Jordan River. The Straits of Juan de Fuca at this point are exposed to the sweep of the open sea from the west and there was no pier and no natural or artificial protection at the point of landing. Bulky freight was loaded on scows at Victoria and towed by a small tug to Jordan River. The scows, on arrival at the Jordan River landing, were hauled up on runways laid on the flat beach until they were out of reach of the waves, and were then unloaded by derricks.

Making the journey to and from Victoria and beaching the loaded scows in stormy weather was precarious in the extreme, requiring a high degree of patience, courage and skill. Passengers, mail and light freight were landed on the beach in dories.

Although much trouble and some minor accidents occurred, not a single piece of the 6,400 tons of material and equipment handled, nor a single one of the several thousand passengers carried was lost.

From an engineering standpoint the development in its present initially completed state perhaps presents by itself no very unusual features. But when consideration is given to all the elements involved in carving out of a wild, remote and almost impenetrable and trackless wilderness a reliable and highly efficient hydro-electric system, planned for large expansion along accurately predetermined lines, this development presents very unusual interest. Very few hydro-electric developments have presented a greater array of formidable obstacles, many closely concealed, and few have been carried through to successful completion on lines as closely adhering to those originally planned, despite the meagre data on which these original plans were perforce based.

The entire work was under the direction of Mr. Wynn Meredith, of Sanderson & Porter, from the first pioneering to the final completion of the initial installation of the first 4,000-kilowatt unit.

The preliminary reconnoissance and surveys were under the immediate charge of Mr. A. B. Carey.

The final location surveys and all construction work were under the immediate charge of Mr. E. E. Carpenter, to whom we are indebted for the data forming the basis of this article.

ORE PRODUCTION IN MILLIONS.

Metal production at the Consolidated Mining and Smelting Company's smelter at Trail in September reached a value of $715,696, of which 38.2 per cent. was in gold, according to figures recently made public. This is the highest monthly production for the present year and exceeds the average for the previous two months by about $300,000. Ore treated at the smelter totalled 26,099 tons, so that the average value per ton was a trifle over $27. As the greater part of the ore smelted came from the company's Rossland mines which are regarded as low grade properties, this average is considered satisfactory. The Consolidated Company's metal production for the first three months of this fiscal year totals $1,567,867.

Ore production in the Kootenay and Boundary districts for first week in November totalled 51,014 tons, making a total for the year to date of 2,162,902 tons. Smelter receipts for the week were 44,756 tons; for the year, 1,939,934 tons.

THE HYDRO-ELECTRIC PLANT OF THE SHERBROOKE RAILWAY AND POWER COMPANY AT SHERBROOKE, P.Q.

An interesting hydro-electric plant was recently finished for the Sherbrooke Railway and Power Company, at Sherbrooke, Que. The plant was designed by Messrs. Ross and Holgate, of Montreal, and the work was done under their supervision. Mr. C. L. Cate, described the design and construction of the plant very fully in a paper read before the Canadian Society of Civil Engineers, on October 24th. The following abstracts are taken from the paper:—

The city of Sherbrooke is situated 100 miles south-east of Montreal on the main line of both the Canadian Pacific Rail way—Montreal to Halifax—and the Grand Trunk Railway—Montreal to Portland. It is also the terminus of the Boston and Maine, and Quebec Central Railways. Excellent water power is provided by the Magog River, which joins the St. Francis within the city limits. The population, at present 17,000, is increasing at the rate of 5 per cent. per annum.

The Sherbrooke Street Railway Company was incorporated by Act of the Legislature of the Province of Quebec in 1895 and began operating in 1896. Power was supplied from a power house in the centre of the city on the south bank of the Magog River, about 1,200 feet from is junction with the St. Francis River. About 100 feet above this power house was a timber dam, built in 1860, and the company had rights to half the flow of the river, the other half being used by several factories on the north bank. The head was 19 feet and the power house capacity 350 K.W.

In the spring of 1910 the Street Railway Company was succeeded by the Sherbrooke Railway and Power Company. Following the inauguration of the old company the population had increased 70 per cent., and the railway had become inadequate, but its expansion was impossible because the old plant was barely able to carry the original car equipment and more power could not be obtained at that site.

The Railway and Power Company proceeded at once to secure the entire power at the old dam, and purchased rights higher up the river so that the water could be raised an additional ten feet. A power 600 feet farther down the river, having a head of 18 feet, was also secured, together with the drop between these two powers. The total head available was about 57 feet, and this has all be utilized in the new plant.

The drainage basin of the Magog River has an area of 815 square miles, of which 283 square miles are in Canada and 532 square miles in the United States. The soil is of comparatively slight depth and the small streams are nearly all rapid. This would tend to make the flow of the stream very irregular and not so valuable for power purposes were it not for the two large storage areas contained in the basin. The greater of these storage areas, Lake Memphremagog, is 30 miles long and has an area of 45 square miles. The difference between extreme high and low water in this lake is five feet, but only a little more than a foot is under actual control at present. In designing a plant, allowance was made for an improvement in this respect, which is likely to be realized shortly. The second storage area is provided in Lake Magog, lying some 8 miles down stream from the outlet of Lake Memphremagog, with an area of 4.8 square miles and a controllable variation of 4 feet.

This lower storage is under the control of the city of Sherbrooke, and the Memphremagog storage is regulated by the Magog Manufacturing Company at Magog. This in no way lessens their value to the Sherbrooke Railway and Power Company's present plant as it is to the general advantage that the flow be kept as constant as possible. Moreover, there