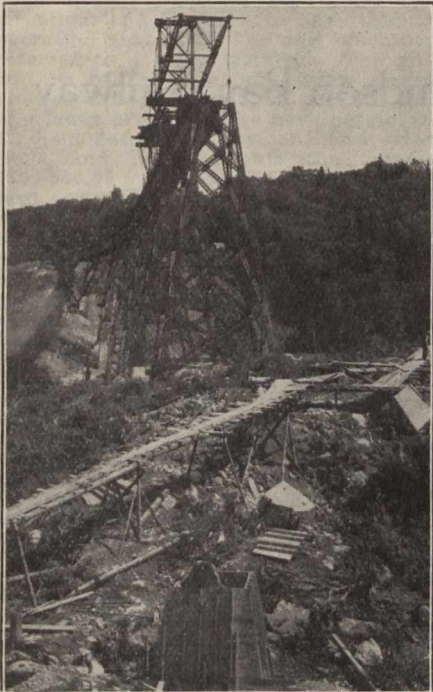


of the river. The intermediate girders consist of one 85 ft., five 75 ft., ten 60 ft., and two 30 ft. spans. The structure is designed under the Dominion Government specifications, class 1 loading, and is a splendid piece of work. Due to



A.C. and H.B. Ry. Erection of Viaduct at Montreal River.

some poor work in concreting the piers and having to re-build some, the erection was slow. However, track was laid over this viaduct and track laying proceeded north of it in Oct., 1911.

At the date of writing track is at mile 104½. At the north end track laying has progressed to mile 117 to date, leaving a gap of 12½ miles, which, it is expected, will be finished by the middle of June. The principal reason for the slow progress made in track laying is on ac-

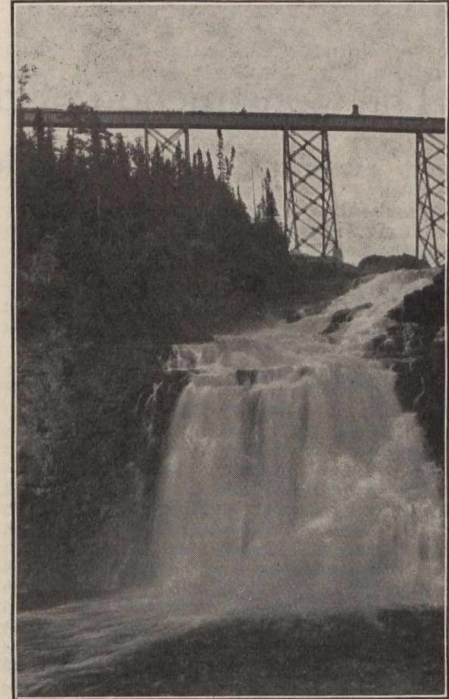
ish Columbia fir, it is necessary to build these bridges from end of steel. The old line from Sault Ste. Marie to Hawk Lake Jct. is through a most difficult country to build in, and the location secured, while good work on the whole, shows it. The line to Hawk Lake Jct., with the new extension, and on to Michipicoten is badly handicapped with heavy grades and sharp curvature, 1½% uncompensated grades and 12° maximum curves. To improve this, grade and alignment would require extensive re-locating, hence, for the present, this is not contemplated. The route is very picturesque and travellers have a treat in rugged scenery awaiting them on the opening up of the Algoma Central for traffic, north of Sault Ste. Marie.

While the above work was progressing south of the C.P.R. main transcontinental line a location was made north to the National Transcontinental Ry. at the new town of Hearst (or Grant) the first division point west of Cochrane and 101 miles north of the C.P.R. This location is on the same grades and curvature as the Hawk Lake-Hobon section, viz., 6.6% compensated grade and 6° maximum curves. Louis Whitman, locating engineer, had charge of the location, with Sanford Hazelwood and W. H. Wilkie in charge of the parties. The route traversed by this line is through rough country for 30 miles north of the C.P.R., north of this the line enters the great clay belt of Northern Ontario and the grading is light. The south 30 miles, however, brings up the average cost of this line to about \$30,000 a mile, including track and structures.

The crossing of the C.P.R. and the Canadian Northern Ontario Ry. (under construction) is made at grade. There are very few bridges on this 100 miles, and none at all of any size excepting some bay crossing of Oba Lake, where four pile trestles are driven, one of them being 1,302 ft. long with deck 10 ft. above the water. The balance of the bridging consists of pile structures, the largest, the crossing of the Mattawishiquia river, near Hearst, at the junction with the National Transcontinental Ry., being 700 ft. long.

The grading quantities on this 100 miles will be, approximately 360,000 cu.

perior Construction Co. for the construction of the section complete, including grading, bridging, track laying and ballasting. To date 60% of the grading is completed, and it is expected track laying will be started about June 15 at



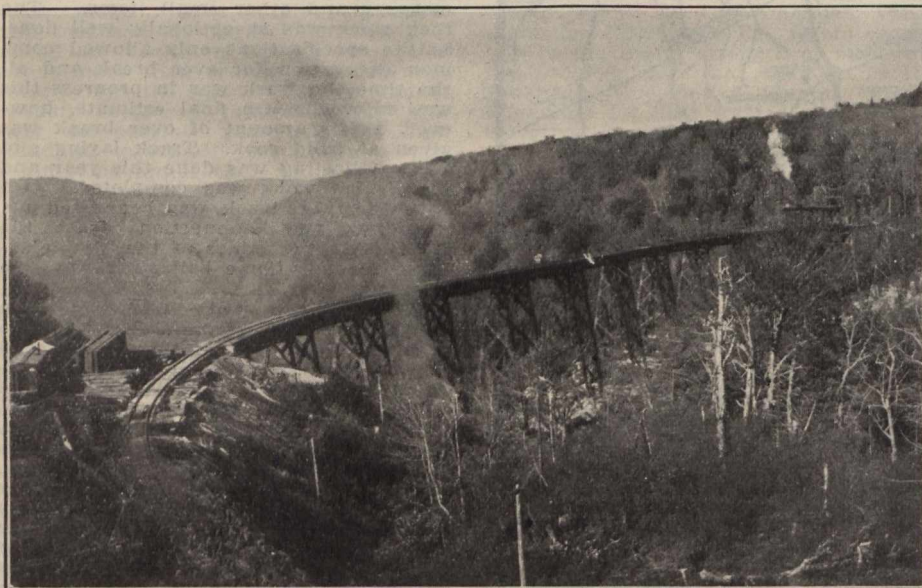
A.C. and H.B. Ry. Viaduct and Falls of Montreal River.

Hobon and reach the C.N.O.R. crossing in October, thus placing the A.C. and H.B. Ry. in a position to deliver construction material and supplies to the contractors for this line at Oba.

Explorations for further extensions of the A.C. and H.B. Ry. to the north of the National Transcontinental Ry. have been made. A copper metallic circuit telephone line has been constructed from Sault Ste. Marie, through to Michipicoten Harbor and extensions to the mines and north to Hobon and Hearst (Grant) will be made this summer.

At Sault Ste. Marie, new terminals, consisting of a modern locomotive house, machine shops, stores and office building and a new terminal station and office building are all contracted for and the work started. This work involves the expenditure of about \$500,000, and includes an extension of the main line to reach nearer the centre of the city of Sault Ste. Marie, and a new yard at Tagoma, the industrial centre, where extensive alterations and additions to the terminal facilities are being made. The company will also build a large coal and ore dock at Michipicoten Harbor, in the near future.

The above work has all been in charge of the writer, as Chief Engineer, since the beginning, with a staff of division and resident engineers. G. F. Horsey and C. Le B. Miles have charge of the work at the north end, and L. C. Maxwell and J. A. Hedgecock at the south end as division engineers. W. C. Franz is General Manager and G. A. Montgomery, Superintendent of the A.C. and H.B. Ry., as also of the Algoma Eastern Ry.



A.C. and H.B. Ry. Montreal River Viaduct and Yard.

count of the excessive amount of bridging and trestling on this line.

Between Sault Ste. Marie and Josephine Jct. there are about 16,000,000 ft. b.m. of bridge timber in 140 structures, besides 100,000 lin. ft. piling. Some of these bridges are very large, and as all the bridge timber used, excepting a few thousand feet cut in the country, is Brit-

yds. solid rock; 250,000 cu. yds. loose rock; 1,500,000 common excavation, and 3,500,000 cu. yds. overhaul. There will be about 80,000 lin. ft. piling and 1,500,000 ft. b.m. bridge timber, besides other lesser items. Corrugated ingot iron pipe is used in culverts, no concrete at all, and a few native timber culverts. In Aug., 1911, a contract was let the Su-

**Driving Wheel Speeds.**—A simple method of determining driving wheel speeds is given by the Baldwin Locomotive Works, as follows: To obtain revolutions per mile, divide 1,680 by the diameter of the driving wheel in feet; to obtain revolutions per minute, multiply the speed in miles per hour by 28, and divide the product by the diameter of the driver in feet.