

Beginning of Construction.—The preliminary survey immediately followed the work of reconnaissance, and construction, which was begun in Aug., 1910, was well advanced before the preliminary survey party was withdrawn from the field. Altogether 400 miles of line were located, about equally divided east and west of Red Deer. Plans and profiles of this location have been filed and approved by the Board of Railway Commissioners, giving the Alberta Central Ry. Co. access to the Brazeau coal fields on the one hand and the fertile prairies of central Alberta on the other, with a prospect of a through line to the coast, in which event considerable traffic would be developed in both directions.

Little of interest remains to be said with regard to the location which followed the reconnaissance, except that deviations from the route mapped out for the locating engineer were slight and consisted of more or less surface development for the purpose of gaining sustaining ground or distance. In one instance only in the rolling prairie country the locating engineer made a slight deviation, expecting to find better sustaining ground, only to return to the route mapped out after many weary miles of useless work. An important part of the work of preliminary location, however, was that of the topographer, upon whose work at the close of each day the locating engineer depended for the final adjustment of the located line to the contour of the ground. The value of accurate topographical work can hardly be overestimated, although seldom fully appreciated in the work of railway location.

RECORD OF RECONNOISSANCE OBSERVATIONS AND CALCULATIONS

Date	Hour	Field barometer reading	Elevation above sea level	Corrected barometric reading	Stationary barometer (if any)	Location and remarks

Another feature, and by no means the least important, is the type of profile developed and the economic value of this location in country which is obviously hostile to a 0.4% grade. On the long stretches of maximum grade referred to in a previous paragraph, heavy cuts and fills were unavoidable, and looked almost forbidding, and would only be justifiable when the volume of traffic reached an average of twelve trains per day operated as a through line. The line located will, therefore, in course of time, it is assumed, admit of grade reduction to this extent without abandoning right-of-way, bridges or townsites. The maximum grade for present requirements was fixed at 0.8%. The application of an 0.8% maximum grade to the profile of a 0.4% location will eliminate nearly all of the heavy work, and in many instances leave a mere surface line for present construction.—Engineering Record.

Editor's Notes.—The Alberta Central Ry. Co. was, as above stated, incorporated by the Dominion Parliament in 1901, the provisional directors being G. W. Smith, W. A. Moore, G. W. Greene, Red Deer, Alta.; D. J. Munn, New Westminster, B.C.; J. T. Moore, J. Flett, R. C. Clute, Toronto. It was given power to build a railway from tp. 38, range 23 west of the 4th meridian westerly to Red Deer, thence westerly to tp. 39, range 7, west of the 5th meridian. In 1903 the company was given additional time for construction and power to extend its line easterly to tp. 39, range 11, west of the 4th meridian. It obtained another extension of time for construction in 1905, and again in 1907, in which year the names

of J. J. Gaetz and J. C. Moore were added as provisional directors and that of W. A. Moore struck out. Another extension of time was granted in 1909, and authority given to build additional lines as follows:—From the westerly terminus near Rocky Mountain House to the G. T. Pacific Ry. near Yellowhead Pass; from the easterly terminus near the elbow of the Battle River to Saskatoon or Warman, Sask., and from near Red Deer southerly and easterly to Moose Jaw, Sask. The company's powers were considerably extended in 1909, when it was given authority to extend its Saskatoon line to Fort Churchill, Hudson Bay, with a branch through Pas to Port Nelson, Man.; to extend its Moose Jaw line to the International Boundary in tp. 1, range 16, west of the 2nd meridian; a line from between Red Deer River and Cygnet Lake northeasterly to Blackfields and on to Lacombe, Alta.; three branch lines into the Big Horn Range, between the North Saskatchewan and Brazeau Rivers; two branch lines in ranges 20, 21 and 22, tps. 43, 44, 45 and 46 west of the 5th meridian, and another branch along the Brazeau and Pembina Rivers.

The organization of the company was completed in 1909, J. T. Moore being President and J. G. MacGregor, Chief Engineer. The first location plans for the line from Red Deer to Rocky Mountain House were approved in 1910, and a contract was entered into with the Dominion Government under the act granting aid for construction, for the building of a 70 mile line between these points. Construction was started and carried on during the season by day labor

under the direction of the Chief Engineer, and there was a "display" of tracklaying in the presence of the Minister of Railways, Aug. 11, 1910. It was reported that about 20 miles of grading had been completed up to Dec. 31, 1910. A contract was let for grading early in 1911 to D. F. McArthur, Winnipeg, for the line to Rocky Mountain House, and at Dec. 31, 1911, track had been laid on seven miles.

It was reported early in 1909 that the C.P.R. was about to take over the charter and complete construction of the line, but this was denied. It was, however, understood that the C.P.R. would ultimately become possessed of the line, and in Jan., 1912, an official announcement was made that the transfer had taken place, and at the C.P.R. annual meeting, in Oct., 1912, a resolution was passed approving of the lease of the A. C. Ry. for 999 years at a rental equal to 4% interest on the bonds issued for construction. The company continues its separate existence, but it is officiated and controlled by C.P.R. men.

After the lease to the C.P.R., the construction programme was rearranged, a new contract was entered into with the Dominion Government for aid, and at the end of 1913 about 20 miles had been completed, which it is expected to open for traffic this summer.

Soon after the company began locating its lines the Canadian Northern Ry., either directly or by one of its subsidiary companies, filed plans for a line from near Stettler to Rocky Mountain House, and started construction. This led to a lengthy fight, which has been terminated by the conclusion of an agreement, ratification of

which has been secured from the Dominion Parliament.

An arrangement has been made, and approved by the Dominion Parliament, under which the Canadian Northern Western Ry. will use a certain portion of the line, and the A. C. Ry. will use jointly with the C. N. W. Ry. an extension which it proposes to build. The details of the agreement were given on pg. 175 of our April issue.

New Books, Etc.

Any of the books mentioned may be obtained through Canadian Railway and Marine World at the published price.

THE MANUAL OF STATISTICS; Stock Exchange Handbook for 1914. 1,100 pages, 8 by 5½ in., cloth. The Manual of Statistics Co., 20 Veysey St., New York. \$5.

This is the 36th annual issue of this standard publication, which adequately presents the organization, finances and position of all the leading railway and industrial companies of North America, as well as those in which U.S. and Canadian investors are interested in Mexico, South America, and the West Indian Archipelago. Since the issue of 1913 was compiled there have been numerous issues of new stocks, and changes in the organization of many of the companies noted, all of which changes are incorporated in the present edition. The tabulated statements give a great variety of information, and the stock exchange reports, add other features which render the manual an important volume of reference for the investor and the public man.

TESTS OF BOND BETWEEN CONCRETE AND STEEL. By D. A. Abrams. 238 pages; 6 by 9 ins.; illustrated; paper. Published by the University of Illinois, Urbana, Ill. Free.

This bulletin, no. 71, of the University of Illinois Engineering Experiment Station, covers an exhaustive series of tests on the strength of bonds between concrete and steel, and gives the results obtained by pulling out bars embedded in blocks of concrete, and also the results of tests made to study the bond stresses developed in large reinforced concrete beams. Nearly 2,000 tests are reported, and a wide range of conditions are represented.

TRACTIVE RESISTANCE OF A 28-TON ELECTRIC CAR. By H. H. Dunn. 63 pages; 6 by 9 ins.; illustrated; paper. Published by the University of Illinois, Urbana, Ill. Free.

This bulletin, no. 74, of the series being issued by the University of Illinois Engineering Experiment Station, records the results of tests made to determine the tractive resistance of a 28-ton electric car when running on a straight track in still air. The tests were planned to eliminate wind resistance. The results are fully expressed in the form of a curve, the coordinates of which are car resistance and speed, showing that the resistance varied between 5.25 and 26.12 lbs. per ton at 5 and 45 m.p.h., respectively. In addition to these curves, and tabulated results, the bulletin describes the car tested and methods of conducting the tests.

Air ingress openings in locomotive ash pans should be of sufficient area to ensure the presence of atmospheric pressure under the fire when the grate is working at its maximum fuel rate.

An arbitrary factor of safety for locomotive boiler construction is said to be in contemplation by the Interstate Commerce Commission.