into the machine and boiler shop. It was not exactly suited for a locomotive shop, as it was very high roofed, but it has been altered so as to make it suitable to meet all requirements. The machine shop occupies the southerly end, and the boiler shop the northerly end, the two being divided by a central wall, in which there is a large brick chimney, remaining from the old packing days, which has been found useful for handling the blacksmith shop smoke, the blacksmith shop heretofore occupying the west side of the machine shop. The dimensions of the machine and boiler shop are 185 by 85 ft.

To the west of the machine shop is the old foundry building, retained in the new layout, and which is 50 by 70 ft., with a cleaning room annex, 50 by 20 ft. A coal and iron building adjoins the foundry. The new blacksmith shop is located in the L of the foundry building, and is of brick, 70 by 50 ft. This department, being removed from the west side of the machine shop, provides needed room in that shop for expansion.

The old stores building, to the east of the machine shop, which contains the Master Mechanic's office, will be removed, and another larger brick building, 165 by 45 ft., erected to the south, to house this department. The Master Mechanic's office will also be in the new building. To make way for this building, the carpenter shop, where most of the passenger equipment used on the line was built, will be removed. A new power house, 50 by 40 ft., will also be erected on the site of the old carpenter shop, to the west of the new store house. To the south of the new stores building were three lumber storage sheds, one of which has been removed. The new carpenter shop, 220 by 70 ft., will be located on a new piece of ground to the southwest of the old shop area, and will contain three shop tracks. It will be of brick, on concrete subwalls, spanned by steel roof trusses, and with a monitor roof. It will contain all the machinery now housed in the old carpenter shop.

The new paint shop, already built, is 175 by 60 ft. of brick, concrete and steel construction, and contains three tracks. It replaces the two track paint shop removed to make room for the locomotive house extension, the old oil and waste house is to be removed and replaced by a more modern structure, the details for which have not been decided on. It is expected that it will be about 40 by 30 ft., and it will contain a good oil handling system.

The shops are in charge of G. M. Robins, Master Mechanic. E. M. Green is General Foreman, Machine Shop, and R. G. Price, Car Foreman. We are indebted to J. H. Walsh, General Manager, for permission to secure the information on which this article is based, and to G. M. Robins for the detailed information obtained.

Flange lubricators on the forward driving wheels of all passenger locomotives are recommended by the German Railway Administration Society, and also on the rear wheels of locomotives having a tender as part of the locomotive. The lubricator cup is generally placed above the running board, and the lubricator so attached that the vibration or the movement of the driving springs cannot influence its position against the flange. A grease and tarry compound and crude oils are two of the lubricants used.

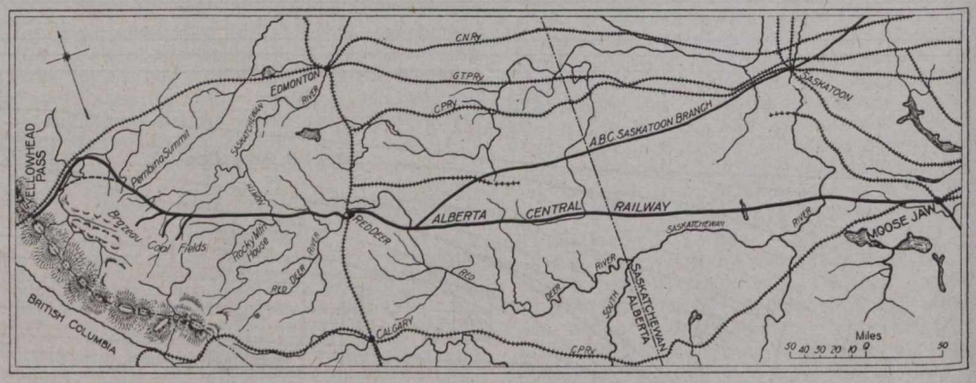
Old car trucks were put to a novel use recently on the Southern Pacific Lines, when a threatening washout of a section of the line was prevented by throwing a large number of old trucks down the embankment, thereby forming a solid retaining wall.

The Inception and Location of the Alberta Central Railway.

By J. Grant Macgregor, M. Can. Soc. C.E., formerly Chief Engineer, A.C.R.

Opportunity to open up a large tract of fertile prairie land gives access to the Brazeau coal fields and ultimately form a link in a new transcontinental railway was the germ in the idea of the Alberta Central Ry., construction on which was begun in 1910. Upon its locating engineer rested the responsibility of choosing a route that would allow at once a low first cost and later economical reduction of grades to the requirements of a trunk line. The reconnoissance surveys to find this route are believed to be of interest and will therefore be described in some detail.

The charter of the Alberta Central Ry. was granted by the Dominion Government in 1901, and, with subsequent amendments, provided for a line from Moose Jaw, Sask., to the Yellowhead Pass, on the boundary line between Alberta and British Columbia, a distance of approximately 700 miles. It stipulated as an intermediate objective point the town of Red Deer, Alberta, and provided for a branch running to Saskatoon in a northeasterly direction from a point on the main line 100 miles east of Red Deer. An act of amendment in 1911 embraced extensions from Saskatoon to Hudson Bay Moose Jaw southerly to the international boundary, and several minor branches to the Brazeau coal fields.



Map of Alberta Central Railway, as projected, and surrounding territory between Moose Jaw and Yellowhead Pass.

This map was drawn to show the situation at the inception of the A.C.R., and shows only one line west of Edmonton to Yellowhead Pass, instead of two, the Canadian Northern and Grand Trunk Pacific, as there now are. Other lines now existing in the territory covered are also not shown.

Advantages of Line.—A glance at the map will at once show the tremendous advantages to be expected of a line so located, on account of the extent and exclusiveness of the territory to be served. In this, however, the anticipations of the original promoters were doomed to disappointment, for no sooner had surveys been made and plans filed than two more companies were in the field with plans for divergent routes across the same territory. The competitive companies referred to, being stronger organizations, with greater interests at stake, followed up their surveys with their construction forces, and in a comparatively short time were in indisputable possession of their respective routes. Considering, however, that there is a zone of country from 50 to 100 miles wide tributary to those lines, much valuable territory still remains to be served by the Alberta Central Ry. The country referred to lies east of the town of Red Deer, principally between the Red Deer and South Saskatchewan Rivers. It is remarkable that although this region consists of a very large portion of the most fertile prairie land in the Provinces of Saskatchewan and Alberta, its invasion by railways is of comparatively recent origin. Many conflicting reports were in existence with regard to its character until the first survey was made for railway purposes. Experienced pioneers from the Dakotas, Montana and Washington proved the fallacy of previous reports by settling themselves comfortably on the land long before the advent of the railways—believing faithfully that their solitude would not remain long undisturbed.

The country lying to the west of Red Deer, as far as the foothills, is of a very different character, and may be described as beginning with park prairie country, bordering on the prairie country above described, and gradually increasing in diversity of contour and density of vegetation until it mingles with the virgin forests of the foothills. The soil is a rich black loam, affording abundant moisture and luxuriant grass—ideal conditions for the mixed farmer and rancher.

Reconnoissance.—As the work of reconnoissance involved the determination of the resources and possibilities of the country as a revenue producer, in addition to the usual surveys for the determination of its physical character, the foregoing introductory remarks as to its general character may not be devoid of interest. Where lines are projected in regions the resources of which are more or less unknown, it is important that the work of reconnoissance should be of the twofold character mentioned. This article is designed to deal principally with the work of reconnoissance and location.

In Aug., 1909, the writer was authorized to investigate the possibilities of a direct line from Moose Jaw to the Yellowhead Pass. The advantage of a direct line between points mentioned suggested to the original promoters another link in the transcontinental lines of the Dominion, and special emphasis was laid on the request that whatever was done in the way of reconnoissance, the ultimate object would be the location of a line with low grades, the maximum to be 0.4% in both directions. At the same time it was generally understood that for the present the Alberta Central could be no more than a colonization railway, the feature of low grades being only admissible where the cost would compare favorably with that of similar railways or branch lines built for colonization purposes.

Character of Ground.—Between Moose Jaw and Red Deer no difficulty was experienced in finding low enough summits to admit of a 0.4% ruling grade in each direction, with a reasonable amount of surface development to secure sustaining ground