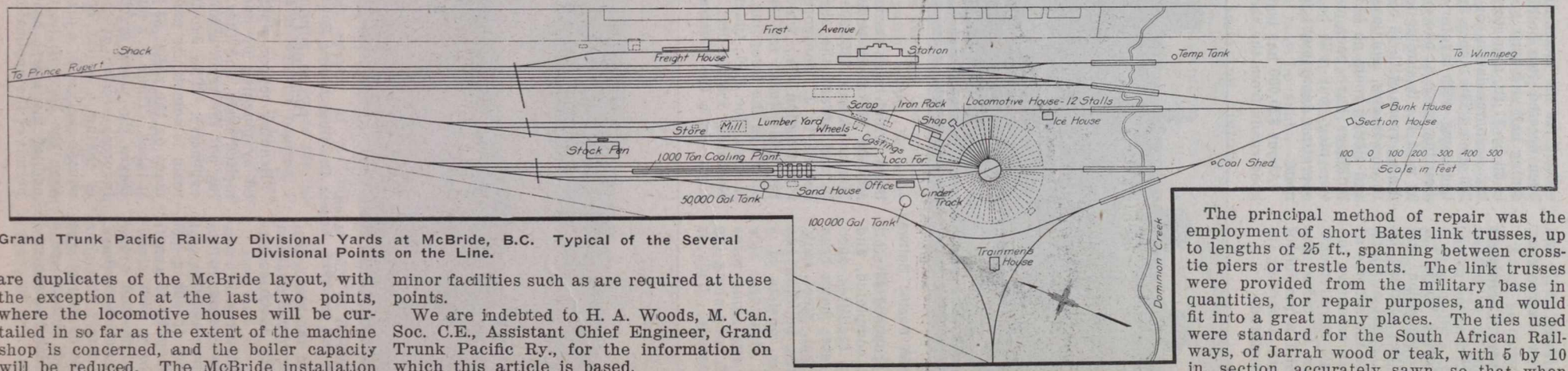
Divisional Facilities on the Grand Trunk Pacific Railway.

The accompanying plan shows the G.T. P.R. divisional yards at McBride, B.C., which are typical of the facilities which are being provided at other points along the portion of the line now under construction. These facilities are being constructed at Prince George, Endako, Smithers and Pacific, and be a station, 165 x 48 ft., with a long platform. There will be a freight house, 80 x 40 ft., with a platform 185 ft. long. Opposite the freight house there will be a 120 x 60 ft. stock pen. In addition, the plans call for a trainmen's house, sectionmen's house, bunk house, coal bins, and other



Grand Trunk Pacific Railway Divisional Yards at McBride, B.C. Typical of the Several Divisional Points on the Line.

are duplicates of the McBride layout, with the exception of at the last two points, where the locomotive houses will be curtailed in so far as the extent of the machine shop is concerned, and the boiler capacity will be reduced. The McBride installation is complete, and the others are under way.

In the McBride layout the terminal plans call for a 12 stall locomotive house, with a machine shop to the rear. The locomotive house will be heated by hot air, from a fan house midway in the outer wall. As contemplated, the final capacity of the locomotive houses will be 48 stalls, in four 12 stall sections, each section with its own heating fan arrangement. In the McBride installation there is a 1,000 ton coaling plant, which it is the intention to eventually replace with an oil fuel station. The other four points are being equipped with oil fuel stations, each of which will contain a 350,000 imperial gallon storage tank, with provision for extension to include two other similar tanks. There will also be a service tank, under which will be located pumps, which will take the oil directly from a sump into which the tank cars drain, and deliver it either to the service tank or the storage tank. These tanks will be provided with heating coils, measuring apparatus, etc., supplied with steam from the locomotive house boilers. Each of the five points will have a 100,000 gallon steel water tank, and a 50,000 gallon steel service tank.

The initial layouts in these yards will only have repair tracks near the locomotive house for car repairs, but it is the intention in the future to add a planing mill and store, and storage bins for repair parts, etc., as well as additional shop buildings as shown.

Opposite the locomotive house there will minor facilities such as are required at these points.

We are indebted to H. A. Woods, M. Can. Soc. C.E., Assistant Chief Engineer, Grand Trunk Pacific Ry., for the information on which this article is based.

Canadian Pacific Railway Double Track and Alternative Routes.

The C.P.R. has in operation 1,445.35 miles of double track line, and it has also in operation 525.20 miles of track which give alternative routes to the previously existing lines. The following table shows the location and mileage of the sections of double tracked lines:—

	Miles.	Miles.
Eastern Division:—		
Montreal (Windsor St.)—Smiths Falls Yard	129.18	
Montreal West—Brigham Jct.	44.72	
Montreal West—Mile End	7.19	
Montreal (Place Viger) — Ste. Therese	20.11	
Montreal Terminals (additional mileage)	0.71	201.91
Ontario Division:—		
Smiths Falls—Glen Tay	14.87	
Junction of Lake Ontario Shore Line (near Agincourt)—Toronto	13.40	
Toronto—Guelph Jct.	39.20	
Toronto (Bathurst St. Jct.—Hamilton	39.07	
North Toronto line	3.97	
London terminals	1.41	
Windsor terminals	0.36	112.28
Lake Superior Division:—		
Romford Jct.—Sudbury	6.80	
Azilda—Geneva	30.00	
Roberts—Woman River	25.90	
Nemegos—Esher	25.50	
Healy—Bolkow	19.10	
Depew—King	27.10	
Heron Bay—Peninsula	8.40	
Selim—Pays Plat	13.60	
Cavers—Gurney	11.00	
Fire Hill—Ruby	4.00	
Navilus—Port Arthur	7.90	179.30
Manitoba Division:—		
Port Arthur—Molson	386.06	
Winnipeg terminals	9.20	
Winnipeg—Virden	180.60	
Whitewood—Broadview	14.60	590.46
Saskatchewan Division:—		
Broadview—Grenfell	16.00	
Indian Head—Swift Current	194.20	210.20
Alberta Division:—		
Swift Current—Java	6.00	
Calgary terminals	6.20	12.20
British Columbia Division:—		
Hopgood —Kamloops	25.50	
Revelstoke—Taft	24.40	
Kamloops—Tranquille	8.00	
Ruby Creek—Vancouver	81.10	139.00
		1,445.35

Following are the location and mileage of the alternative routes:—

	Miles.
Ontario Division:—	
Glen Tay and mileage 87.4 Peterboro Subdivision	181.10
Manitoba Division:—	
Molson and Winnipeg terminals	36.70
Virden and McAuley	36.60
Alberta Division:—	
Java and Bassano	229.80
Gleichen and Shepard	41.00
	525.20

Repairing Bridges in the South African War.

A. F. Stewart, M.Can.Soc.C.E., Chief Engineer, Mackenzie, Mann & Co., Ltd., Toronto, gave an address on this subject recently to the Canadian Society of Civil Engineers', Toronto branch, of which he is Chairman. Some of the points brought out, demonstrating the resourcefulness of the engineers conducting the repairs, would prove of great value to construction men.

The Boers had four methods of interrupting communication on the railways with the object of impeding the British advance: Blowing up bridges, blowing up the rail joints on a section of line, blowing up trains, and turning over sections of line, so as to render the rails useless by spiralling.

In the hasty repair of bridges, the engineers were materially assisted by the small flow of water in the dry season, and in consequence it was possible frequently to throw across shorter bridges at a lower level than the permanent structure, on a low level deviation, the permanent line taking the higher level on account of the high water in the rainy season.

The principal method of repair was the employment of short Bates link trusses, up to lengths of 25 ft., spanning between crosstie piers or trestle bents. The link trusses were provided from the military base in quantities, for repair purposes, and would fit into a great many places. The ties used were standard for the South African Railways, of Jarrah wood or teak, with 5 by 10 in. section, accurately sawn, so that when built up in bird cage form they made a solid pier. Most of the temporary piers were thoroughly bedded on the ground level, the soil being hard, but in some instances, where trouble was anticipated from washouts concrete foundations were placed, to which the ties were anchored. Where the pier height was great, triple cribs of ties were in some instances used, the three cribs being tied together, at about every fifteenth course, with cross rails.

The Railways and City Smoke Bylaws.—Judgment was delivered recently in Toronto, on a motion on behalf of the C.P.R. to quash a conviction for allowing smoke to issue from its locomotive house there, contrary to the city bylaw. In giving his judgment, the judge said:—"If the railway is subject to the operation of the bylaw in question, the magistrate could convict on the evidence before him, but I am of the opinion that the railway in its operation is not subject to the municipal bylaw, but is subject to the Dominion Railway Board's regulations. The conviction will therefore be quashed without costs and with protection to the magistrate."

Assuming fuel oil and coal to cost the same on the B.t.u. basis, there is said to be a saving in favor of the former of about 25% due to the lesser volume of air required, which, in the case of coal, carries a large amount of heat out of the stack with it.