

whole distance from Fort Livingstone to Fort Edmonton is 516 miles.

It will be observed that this long stretch of road will require for its construction some 39 miles of light work marked as "very easy," 160 marked as "easy," and 50 as "heavy," the latter chiefly representing bridging, which becomes costly owing to the numerous rivers, running through deep gorges, that have to be spanned. After passing Edmonton, the railway once more crosses the North Saskatchewan, and then the Pembina and Mead Rivers; its course, with a slight trend to the northward, being nearly west until it strikes the Athabasca River where the latter issues from the Rocky Mountains. Here the road turns sharp to the southward, in order to reach Yellow Head Pass at a level of 3,200 feet. At yellow Head Pass the route lies due west until Tete Jaune Cache is reached, at the Grand Fork of the Fraser, where the line strikes off parallel with the latter river, due northwest, until it reaches Stewart River, about fifteen miles north of Fort George. From Edmonton to Yellow Head Pass is 283 miles, and from Yellow Head Pass to Stewart River 200 miles, making a total of 516 miles through a mountainous region, but happily one not presenting any great difficulties to the engineer. Of the whole distance, however, only 155 miles can be set down as "very easy" of construction, while 305 are regarded as "easy," and 103 as "heavy."

Stewart River is the most northerly point attained by the line. From thence to Bute Inlet, 236 miles, the route is nearly due south, the long slope to the northward having been rendered necessary in order to discover a moderately easy location for the road through the "sea of mountains" that lies between Bute Inlet and Fort Edmonton. On this last section the most difficult portion of the work is encountered. None is "very easy;" sixty miles are reported as "easy," while 140 miles are "heavy," and 83 "very heavy." The construction of the Canadian Pacific, in fact, for the last forty or fifty miles will probably be one of the most remarkable engineering achievements of our time.

The Cascade Mountains rise up bold and precipitous, almost perpendicularly from the coast; the gorge or canyon, through which the Homathco River rushes to the sea being the only one by which the line can in that direction reach its destination. For some time it was feared that the lightest gradient obtainable would be excessive for a distance of from fifteen to sixteen miles, with a considerable amount of tunnelling. But between thirty and forty miles from Bute Inlet the Homathco divides into two branches, and by a careful survey of the east branch it has been found that a grade may be obtained of 107 feet (maximum) to the mile, and that, too for two or three miles less than by the west branch, while an additional advantage is secured from a level rest of about three-quarters of a mile in the ascent of the grade. A division of the assumed cost over the several sections will result as follows:—

## THUNDER BAY TO RED RIVER.

	Miles.	Per Mile.	
Very easy	170	at \$15,000	= \$2,550,000
Easy	90	at 20,000	= 1,800,000
Heavy	120	at 37,000	= 4,440,000
Very heavy	23	at 80,000	= 2,640,000
<b>Total</b>	<b>413</b>	<b>Total</b>	<b>\$11,430,000</b>
Or, say, \$28,000 per mile.			

## RED RIVER TO LIVINGSTONE.

	Miles.	Per Mile.	
Very easy	200	at \$15,000	= \$3,000,000
Easy	71	at 20,000	= 1,420,000
<b>Total</b>	<b>271</b>	<b>Total</b>	<b>\$4,420,000</b>
Or, say, \$16,300 per mile.			

## LIVINGSTONE TO EDMONTON.

	Miles.	Per Mile.	
Very easy	300	at \$15,000	= \$4,500,000
Easy	140	at 20,000	= 2,800,000
Heavy	86	at 37,000	= 2,072,000
<b>Total</b>	<b>516</b>	<b>Total</b>	<b>\$9,372,000</b>
Or, say, \$19,000 per mile.			

## EDMONTON TO YELLOW HEAD PASS.

	Miles.	Per Mile.	
Very easy	60	at \$15,000	= \$ 900,000
Easy	150	at 20,000	= 3,000,000
Heavy	78	at 37,000	= 2,701,000
<b>Total</b>	<b>283</b>	<b>Total</b>	<b>\$6,601,000</b>
Or, say, \$23,000 per mile.			

## YELLOW HEAD PASS TO STEWART RIVER.

	Miles.	Per Mile.	
Very easy	75	at \$15,000	= \$1,125,000
Easy	155	at 20,000	= 3,100,000
Heavy	80	at 37,000	= 2,710,000
<b>Total</b>	<b>230</b>	<b>Total</b>	<b>\$5,335,000</b>
Or, say, \$23,000 per mile.			

## STEWART RIVER TO BUTE INLET.

	Miles.	Per Mile.	
Very easy	40	at 20,000	= 800,000
Easy	140	at 20,000	= 2,800,000
Very heavy	83	at 80,000	= 6,640,000
<b>Total</b>	<b>263</b>	<b>Total</b>	<b>\$10,240,000</b>
Or, say, \$46,500 per mile.			

## SUMMARY.

Thunder Bay to Red River	\$11,430,000
Red River to Livingstone	4,420,000
Livingstone to Edmonton	9,772,000
Edmonton to Yellow Head Pass	6,601,000
Yellow Head Pass to Stewart Riv.	5,335,000
Stewart River to Bute Inlet	12,425,000

**Total** ..... \$50,973,000

Or	Miles.	at	
Very easy	905	at \$15,000	= 13,575,000
Easy	885	at 20,000	= 17,700,000
Heavy	419	at 37,000	= 15,502,000
Very heavy	121	at 80,000	= 9,680,000
<b>Total</b>			<b>\$50,977,000</b>