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Cast Iron Wheel Records.

By H. H. Vaughan, M. Can. Soc. C. E., Assistant to Vice President, Canadian Pacific Railway.

Practically all railways have abandoned any form of cast iron wheel record which follows the history of each individual wheel. Apart from the enormous amount of work in reporting and entering the movements of several hundred thousand wheels which are in service in a large system, it is practically impossible to avoid incorrect numbers being reported. The difficulty of straightening out the errors that arose, errors which frequently were not disclosed for years after they actually occurred, and the correspondence involved in the attempt, were sufficient reasons for discarding a system that did not furnish sufficient useful information to justify its expense. The writer has not investigated methods used on other roads to describe them with accuracy in this paper, but believes that apart from the records maintained for guarantee purposes, the only systems in general use are those in which the average life of wheels removed from service for various causes, is determined in various ways. It is usual to show a figure for the average life of

12 to 18 years to be shown for wheels, when as a matter of fact they are lasting about 5 or 6.

The figures showing the life of the actual wheels removed can be obtained with considerable accuracy and with simple reports and records. Each wheel is marked with its number, the date cast, etc., so that no complications are introduced by recording the date put into service and the date removed. While no record is usually kept of any time the wheel may be out of service, or the movements of the car under which it has been placed, these factors are relatively unimportant on a large number of wheels, and the average life of the wheels removed is a figure of sufficient importance on any road to justify the records and statements required. It should properly be kept by weight of wheels, so that any alteration that occurs in the life of wheels under the same weight of equipment may be distinguished from the changes due to the introduction of a greater proportion of heavier equipment or similar causes.

known, the number removed in each year's life for each cause may be expressed as a percentage of the number made and this percentage may be compared year by year to determine the comparative service obtained from the different wheels.

As the records are compiled in the C. P. R., no attention is paid to the date the wheel is put into service. For wheels made in any one year, the number removed in that year are taken as being removed in the first year of their life, those removed in the next year, as in the second year of their life and so on. This introduces an inaccuracy in the case of any particular wheels placed in service towards the end of the year, but the error becomes unimportant after a year or so and the labor of compiling the record is greatly reduced. The statement obtained by this system is shown in fig. 1— which gives the results for 600 lb. wheels cast by the C. P. R. in 1902, the first year for which this statement was prepared. Similar statements have been made up for the same weight of wheel with its subse-

FIG. 1.—RECORD OF SERVICE GIVEN BY C. P. R. 600-LBS., 33-INCH "CAST IRON WHEELS," A & B SERIES

Year Cast, 1902. Number of Wheels, 30288. Serial Numbers. A 84889-106990, B 1-8177

Year	Worn Flange			Slid Flat			Broken or Chipped Flange			Broken Wheel			Total Operating Defects			Total Manufacturers' Defects			Removed from Tenders			Total Number Removed		
	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent	Number	Percent	Total Percent
1902	6	0.02	0.02	149	0.49	0.49	8	0.03	0.03				163	0.54	0.54	14	0.04	0.04	118	0.39	0.39	295	0.97	0.97
1903	139	0.46	0.48	503	1.66	2.15	38	0.13	0.16				699	2.31	2.85	332	1.09	1.13	814	2.69	3.08	1845	6.09	7.06
1904	362	1.20	1.68	535	1.77	3.92	41	0.14	0.30				958	3.17	6.02	670	2.21	3.34	264	0.87	3.95	1892	6.25	13.31
1905	915	3.02	4.70	408	1.35	5.27	36	0.12	0.42				1382	4.56	10.58	780	2.58	5.92	82	0.27	4.22	2244	7.41	20.72
1906	1081	3.57	8.27	254	0.84	6.11	21	0.07	0.49				1391	4.59	15.17	816	2.70	8.62	21	0.07	4.29	2228	7.36	28.08
1907	961	3.17	11.44	231	0.76	6.87	46	0.15	0.64				1262	4.16	19.33	676	2.23	10.85	17	0.06	4.35	1955	6.45	34.53
1908	771	2.55	13.99	159	0.52	7.39	21	0.07	0.71				983	3.25	22.58	734	2.42	13.27	12	0.04	4.39	1729	5.71	40.24
1909	641	2.12	16.11	100	0.33	7.72	15	0.05	0.76				785	2.59	25.17	539	1.78	15.05	12	0.04	4.43	1336	4.41	44.65
1910	465	1.53	17.64	88	0.29	8.01	10	0.03	0.79	3	0.01	0.01	579	1.91	27.08	413	1.36	16.41	2	0.01	4.44	994	3.28	47.93
1911	223	0.74	18.38	39	0.13	8.14	7	0.02	0.81	2	0.01	0.02	289	0.95	28.03	294	0.97	17.38	1	0.00	4.44	584	1.93	49.86
1912	138	0.45	18.83	30	0.10	8.24			0.81			175	0.58	28.61	188	0.62	18.00	1	0.00	4.44	364	1.20	51.06	

wheels obtained by dividing the number in service by the number removed per year, but this figure is not of much value, as it depends more on the rate at which the number of wheels in service increases than on the actual life of the wheels removed. Thus if the number of wheels in service remained stationary for a period of years, while the number of wheels removed increased 25%, it would indicate a decrease in the average life of the wheels of 20%, while if during the same period the wheels in service had increased 50%, the same increase in the number of wheels removed would indicate an increase in the average life of 20%. Now if the increase in the wheels in service had taken place in two or three years, it would have had comparatively little influence on the wheels removed, so that an increase in the life of the wheel might be shown by these figures, while a reduction had actually occurred. In addition reports of wheels removed on foreign lines are not obtained correctly, especially for wheels removed on handling companies account and in general it is not uncommon for a life of

While the average life of wheels removed affords valuable information over a period of years, it does not enable the result of any variation in the quality or service of the wheels to be detected until considerable time has elapsed, and then only in a general way. When the wheel foundry methods of the C. P. R. were revised in 1908, it became desirable to introduce some system by which it could be determined whether better service results were being obtained or not, without the complications of the old individual records. This was accomplished in a satisfactory and simple manner by comparing for each year make of wheels, of the same weight and manufacture, the number removed for various classes of defect in each year of their life. This system does not require any additional reports over those commonly used. The only information needed is the make of the wheel, weight, date cast, maker and cause of removal, items that are likely to be reported accurately and which are those required for a record of any kind. As the number of wheels of any group cast in each year is

quent modification to 645 lbs. and 625 lbs. up to 1912, one of the advantages of this system being that with the records that had been kept it was possible without too much work to go back as many years as necessary to compare the results with those of previous years.

This statement, fig. 1—while giving all the information that is obtained for the wheels it refers to, does not enable any comparison to be made easily, and for that purpose a series of such statements for wheels made in successive years are combined as shown in fig. 2. This statement shows the number of the wheels of the weight it relates to made in each year, and the percentage removed in each year of their life for all causes, except worn flange, slid flat and removed from tenders. A similar statement, fig. 3, shows the percentage removed each year for worn flange, and slid flat and similar statement, fig. 4, shows the percentage of broken wheels and broken and chipped flanges for the same series. It is evident that similar statements may easily be prepared for any cause of remov-

al it is desired to investigate, but those shown are the ones that have been considered important. The elimination of wheels slid flat, worn flanges and removed from tenders, leaves a balance, that while not corresponding to the classification of manufacturers and operating defects, is broadly affected by the quality of wheels turned out, so that the statement, fig. 2, is a record of the foundry output in this respect.

made or purchased for renewals. The former will evidently not be placed under foreign equipment to the same extent, but as this number has been under 10% of the total number placed in service each year its effect can be allowed for.

The reliability of the statement as a whole is confirmed by the fact that since 1908 it shows a decreased percentage of wheels removed and that the average life of the

An important point in this statement is the general agreement of the results shown throughout the life of any series of wheels with those shown in the first year or two. It appears almost certain that if the wheels are of good quality and carefully inspected there will be less poor wheels to fail in the first year or so, and this result will persist throughout their life. This result is certainly true in the case of 1904 and 1908 wheels and if it is confirmed by further experience, this form of statement furnishes a simple method of determining within a comparatively short time the service that may be expected from any group of wheels without the necessity for complicated records.

Figs. 3 and 4 are also interesting statements. Wheels slid flat, or worn flanges are not chargeable against the foundry, but they may be largely affected by the shops. Careless tapping and mating, cars down on side bearings and sundry other causes for worn flanges are all avoidable and results may be followed by means of this report. Slid flat wheels are also caused by improper maintenance and operation and may be

FIG. 2—STATEMENT OF C. P. R. 600 & 645 LBS. WHEELS REMOVED EXCEPT ACCOUNT OF WORN FLANGES, SLID FLAT AND TENDERS

Percentage Removed each year

Year Cast	No. Wheels Cast	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Lbs.
1912	15384	.06												645
1911	42105	.04	.25											..
1910	35710	.04	.27	.85										..
1909	53390	.03	.38	1.11	2.28									..
1908	36165	.11	.56	1.09	1.98	3.16								600 & 645
1907	66730	.30	1.52	3.69	5.85	8.78	12.03	10.						..
1906	63819	.13	1.05	2.36	4.37	6.19	8.39	10.76						..
1905	49239	.13	.83	2.40	4.53	7.10	8.98	11.01	13.50					600
1904	32852	.07	.67	1.60	2.84	4.94	7.18	8.62	9.92	10.99				..
1903	35108	.16	1.38	3.45	5.84	8.16	10.96	13.61	15.29	16.54	17.33			..
1902	30288	.07	1.29	2.64	6.33	9.09	11.47	13.96	15.79	17.19	18.19	18.81		..
1901	27749	.16	1.10	3.45	6.30	9.15	11.92	14.1	16.6	19.0	20.38	21.60	22.78	..

FIG. 3—C. P. R. WHEELS REMOVED ON ACCOUNT OF WORN FLANGE AND SLID FLATS

Year Cast	No. Wheels Cast	1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		7th Year		8th Year		9th Year		10th Year		lbs
		W	F	W	F	W	F	W	F	W	F	W	F	W	F	W	F	W	F	W	F	
1912	15384	.07	.62																			645
1911	42105	.01	.26	.04	1.50																	..
1910	35710	.01	.21	.07	1.95	.16	3.33															..
1909	53390	.01	.47	.05	2.25	.14	4.50	.36	5.47													600 & 64.5
1908	36165	.02	.53	.10	2.31	.33	3.83	.71	5.13	1.42	6.09											..
1907	66730	.02	.56	.20	2.41	.84	4.84	1.97	6.52	3.70	8.19	5.67	9.44									..
1906	63819	.03	.73	.19	3.52	.81	6.13	2.34	8.53	4.39	9.98	6.43	11.27	8.29	12.16							..
1905	49239	.04	.60	.42	2.67	1.89	4.72	4.28	6.39	7.69	7.97	10.79	8.99	31.41	9.64	15.32	10.14					600
1904	32852	.06	.27	.40	2.57	2.01	4.58	5.44	6.35	9.36	7.74	13.87	8.88	17.36	9.49	19.86	9.81	21.30	10.0			..
1903	35108	.03	.33	.44	1.99	2.46	3.61	6.01	4.93	9.84	5.80	13.31	6.64	16.40	7.35	18.51	7.70	19.72	7.96	20.55	8.13	..

FIG. 4—C. P. R. WHEELS REMOVED ON ACCOUNT OF BROKEN FLANGE OR WHEEL

Year Cast	No. Wheels Cast	1st Year			2nd Year			3rd Year			4th Year			5th Year			6th Year			7th Year			8th Year			9th Year			10th Year			&
		B	F	W	B	F	W	B	F	W	B	F	W	B	F	W	B	F	W	B	F	W	B	F	W	B	F	W				
1912	15384	.02																												600 645 lbs.		
1911	42105	.01			.04		.002																									
1910	35710	.01			.04			.07																								
1909	53390	.01			.06		.003	.10		.19		.005																				
1908	36165	.02			.08			.14		.21		.005	.28	.02																		
1907	66730	.07			.18			.34		.53		.005	.68	.01	.85	.02																
1906	63819	.05			.37			.61		.87		1.13	.005	1.35	.005	1.85	.02	1.52	.011													
1905	49239	.03			.17			.46		.65		.80		1.04	.004	1.19	.01	1.31	.016													
1904	32852	.04			.12			.29		.48		.62		.71		.82	.003	.87		.93												
1903	35108	.03			.16			.29		.46		.64		.77		.87		.96	.003	1.04	.006	1.11										
1902	30288	.03			.16			.30		.42		.49		.64		.71		.76	.01	.79	.01	.81										
1901	27749	.02			.11			.19		.31		.46		.54		.63		.67		.70		.76										
1900	31060	.02			.13			.29		.40		.53		.61		.67		.74		.79		.83										

FIG. 5—MANUFACTURER. A. Percentage Removed Each Year

Year Cast	No. Wheels Cast	1st	2nd	3rd	4th	5th	6th	7th	Lbs.
1912	24975	.04							645
1911	19527	.05	.47						..
1910	8950	.08	.53	1.51					..
1909	8614	.14	.60	1.49	2.62				..
1908	23018	.04	.61	1.38	2.92	4.54			..
1907	14000	.04	.35	1.02	1.98	3.20	4.61		600
1906	1800	.16	.55	1.05	3.00	4.11	5.61	6.78	..
1907	4000		.22	1.90	4.32	7.36	11.36		600
1907	4000	.10	1.12	2.60	4.48	6.23	10.21		600

wheels removed has since that time increased as follows

Year	Manufacturers' Defects.		Operating Defects.		TOTAL	
	5 Yrs.	2 Ms.	4 Yrs.	5 Ms.	4 Yrs.	8 Ms.
1908	5	2	4	7	4	9
1909	5	7	4	9	5	11
1910	5	4	4	9	5	11
1911	5	9	5	0	5	4
1912	5	11	5	5	5	7

This statement shows several interesting features. There is evidently a decided variation in the percentage of the wheels removed of different years make, and it is only reasonable to suppose that where a larger percentage is removed in a given time, say 6 or 7 years, the life of the wheel is less. If this be granted some years makes are evidently considerably superior to others, for instance those made in 1904 were far better than the average, while those made since 1908 have been uniformly good.

If all wheels made were accounted for, there would of course be no assumption involved, but by an inspection of fig. 1 it will be seen that of the wheels made in 1902, only 51% have been accounted for in 1912. It is improbable that 49% are still in service and the difference is therefore to be accounted for by wheels placed under foreign cars or removed on foreign roads and not reported. This discrepancy might be reduced if the number of wheels of any make placed under foreign cars were deducted from the number made before calculating the percentage, but it would introduce a complication of doubtful advantages. The chief effect of this factor is in comparing wheels received under new cars with those

largely reduced by care.

It will be seen from this statement that there is comparatively little difference between the wheels removed for being slid flat of the various years make. There is, however, a most decided difference in the number removed for worn flange, the wheels made in 1906 being considerably better than those of previous years, while there is a still greater reduction in 1908. The percentage of 1908 wheels removed in 5 years

1903, 1904, and 1905. In 1908 the method from this cause is only about 40% of the number removed in an equal time of the 1906 wheels and less than 20% of the corresponding number for the wheels made in

flanges from manufacturer A were about equal to the earlier C. P. R. wheels, and greater in number than from the C. P. R. wheels made after 1907. Those from manufacturer C are closely the same as

worn flanges, slid flat, and removed from tenders. These diagrams illustrate the statement that a group of wheels that show up well in the first two years will show correspondingly good results throughout later years. They are also interesting as showing the great difference between various groups of wheels and the improvement that took place in 1908 and subsequent years. Figs. 11, 12, 13, and 14 show the wheels removed for worn flange, slid flat, broken or chipped flange and broken wheels for the C. P. R. 600 lbs. wheel, for which statements were given in figs. 3 and 4, and illustrate in an interesting way the numerical results which have been referred to.

Reference has been made throughout this paper to the revision of the C. P. R. foundry methods in 1908 and to the results obtained since that date, which evidently show a considerable improvement. Prior to that date the mixture had been handled by

FIG. 6—MANUFACTURER. A.

Year Cast	Wheels Cast	1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		7th Year		Lbs.
		W	F	W	F	W	F	W	F	W	F	W	F	W	F	
1912	24975	.03	.11													625 & 645
1911	19527	.03	.28	.12	1.46	.41	5.27									645
1910	8950	—	.39	.10	1.97	.26	3.28	.70	4.70							"
1909	8614	—	.37	.07	1.47	.26	3.28	.70	4.70	1.46	6.02					"
1908	23018	.02	.19	.08	2.07	.20	3.59	.66	5.03	4.32	2.29	5.13	3.66	5.82		600
1907	14000	.04	.31	.14	1.59	.43	2.98	1.20	4.32	2.29	5.13	3.66	5.82			600
1906	1800		.78	.17	1.50	.34	2.22	1.12	3.44	1.90	4.44	2.96	4.82	3.35	5.26	"
							MANUFACTURER. B.									
1907	4000		.05		.90	.02	.313	.10	5.53	.52	6.55	1.79	7.73			600
							MANUFACTURER. C.									
1907	4000		.05	.02	.68	.02	2.15	.52	4.10	.87	5.32	2.34	6.77			600

of taping was carefully gone into and the work carried on with greater care, so it would appear that the proper carrying out of this work is most important to avoid injury to wheels from worn flanges. To the end of the 4th year the 1909 wheels are even better, so that the 1908 results were not simply accidental, but the consequence of greater care and better methods.

Fig. 4, showing broken and chipped flanges and broken wheels, is also instructive. Unfortunately no distribution is made between broken and chipped flanges, but two facts are certainly shown. The most important is that broken and chipped flanges have been greatly reduced since 1908, and since there seems no reason for any change in the chipped flanges, it is to be hoped that the broken flanges have been largely eliminated. The second is that broken wheels are a most unimportant factor, the number rarely amounting to one tenth of 1% in 10 years. These facts are of the greatest interest as showing the excellent

service that may be obtained from a well made chilled wheel. Figs. 5, 6, 7, show similar statements for the wheels supplied by three separate manufacturers, giving the same information for the same weight of wheel as figs. 2, 3, and 4. It will be seen in fig. 5 that 1907 wheels from manufacturer A compare very closely with the 1908 C. P. R. wheels on the percentage removed for foundry causes, but that for the balance of the groups of wheels, poorer results are shown. In fig. 6 the removal of wheels for worn flanges from manufacturer B is exceedingly small, while the number removed from other manufacturers compare with the later C. P. R. results. Wheels from manufacturers B and C were received under new cars, so that it would appear that in the case of B particular care was taken with the taping. In fig. 7 there is a peculiar circumstance. The broken and chipped

plotted records for a number of different from C. P. R. 1908 and 1909 wheels, but there are practically no broken flanges and no broken wheels from manufacturer B. This question is being investigated, but without any reason being so far obtained.

Before leaving this description of these records it is interesting to note that they

brands and numbers and as the records show in some years very good wheels were made and in others the results were not as good.

In 1906 and 1907, considerable trouble arose, a large number of failures occurring in service, caused, as was subsequently discovered, chiefly by iron of widely varying silicon content, but of the same brand, being used indiscriminately. The system of inspection was not sufficiently thorough to reject all wheels of improper quality, and while the records in use at that time did not indicate anything unusual, sufficient trouble developed in service to draw attention to the irregularity in the wheels. Ira B. Lesh was engaged to organize the manufacture on a basis in which the mixtures would be accurately determined by chemical analysis and the inspection effective to reject any of the product that was not of the proper quality. A proper mixture is of course only one of the factors entering into the manufacture of a satisfactory wheel and considerable attention was paid to other points as well with the results that obvious defects disappeared while the records show that a permanent improvement was obtained.

It is not the intention to make this paper one of the manufacture of chilled cast iron wheels, but in view of the enormous importance of the subject, it is interesting to describe the lines on which the C. P. R. practice has been developed and discuss the opportunities for improvement.

The writer considers one of the most important factors in obtaining good wheels is that of inspection. Absolutely uniform and perfect foundry practice is of course the great thing to obtain and the most difficult, but that is the portion of the subject which would be better described by some competent wheel manufacturer. Inspection should detect those wheels which for any reason depart from the accepted quality, and for this purpose the wheels to be tested should be selected with care and sufficient wheels broken from any days run to en-

FIG. 7—MANUFACTURER. A.

Year Cast	No. Wheels Cast	1st Year			2nd Year			3rd Year			4th Year			5th Year			6th Year			7th Year			Lbs.
		B.	F.	W.	B.	F.	W.	B.	F.	W.	B.	F.	W.	B.	F.	W.	B.	F.	W.	B.	F.	W.	
1912	24975	.02																					645
1911	19527	.02			.07	.01																	"
1910	8950	.03			.18		.26	.01															"
1909	8614	.03			.23		.42					.58											"
1908	23018	.03			.11		.19					.32			.42								"
1907	14000	.01			.11		.17					.31			.38								600
1906	1800	.11			.17		.34					.40			.46			.57			.68		"
							MANUFACTURER. B.																
1907	4000						MANUFACTURER. C.						.02					.02					600
1907	4000				.08		.16			21		.29			.31			.05					600

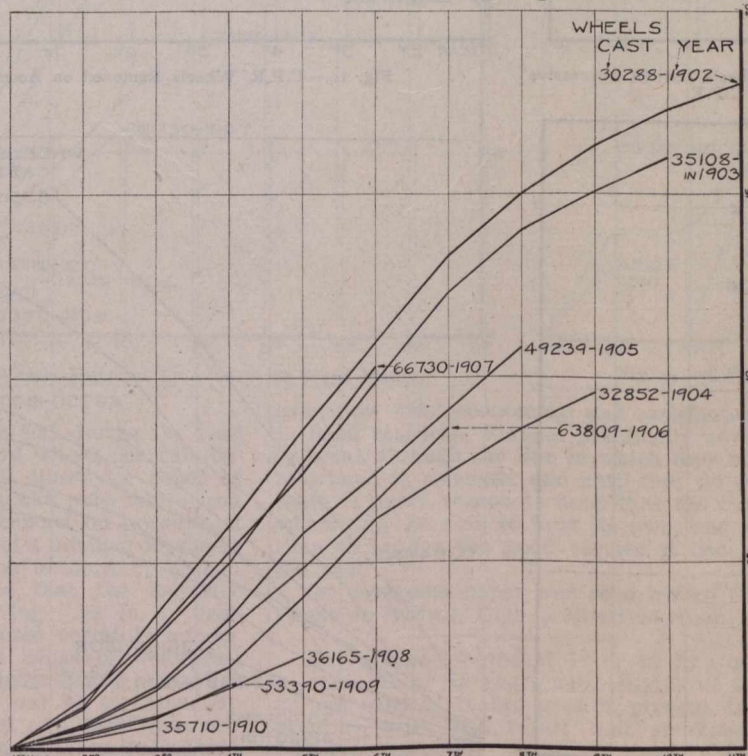


Fig. 8.—Failures Caused by Manufacturers' Defects on Wheels Cast in Successive Years for 60,000 lbs. Capacity Cars for C.P.R.

may be easily plotted and figs. 8 to 14 show weights of wheels of C. P. R. make. Figs. 8, 9, and 10 show the percentage of wheels of 600 lbs., 650 lbs., and 700 lbs. weight respectively, removed for causes other than

sure the rejection of any that are either too hard or too soft. This may be accomplished by comparing the tapes and chill tests and rejecting all soft and hard wheels until it can be determined within reasonable lim-

membered, that out of the ordinary lot of wheels, 60% will run through their life and be removed without any defect that reduces the life of the wheel so that it looks very much as though the question of getting the

tensively used on the C. P. R., and the trouble that occurred was caused by its improper use and not on account of its quality. Since that time its use was abandoned for about two years and it has subsequently

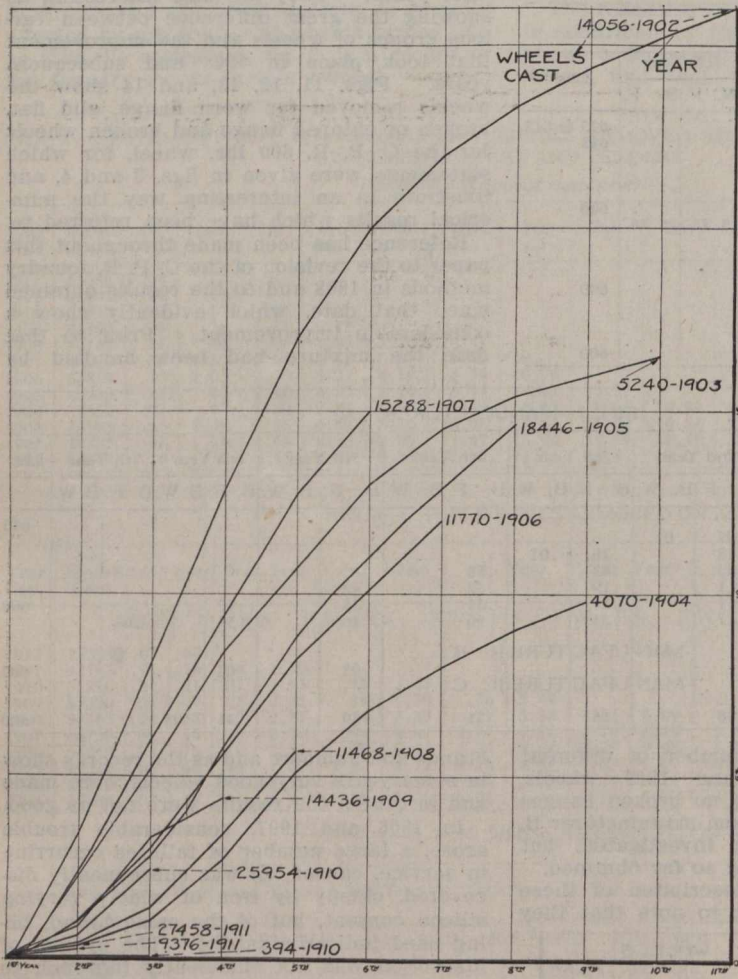


Fig. 9.—Failures Caused by Manufacturers' Defects on Wheels Cast in Successive Years for 80,000 lbs. Capacity Cars for C.P.R.

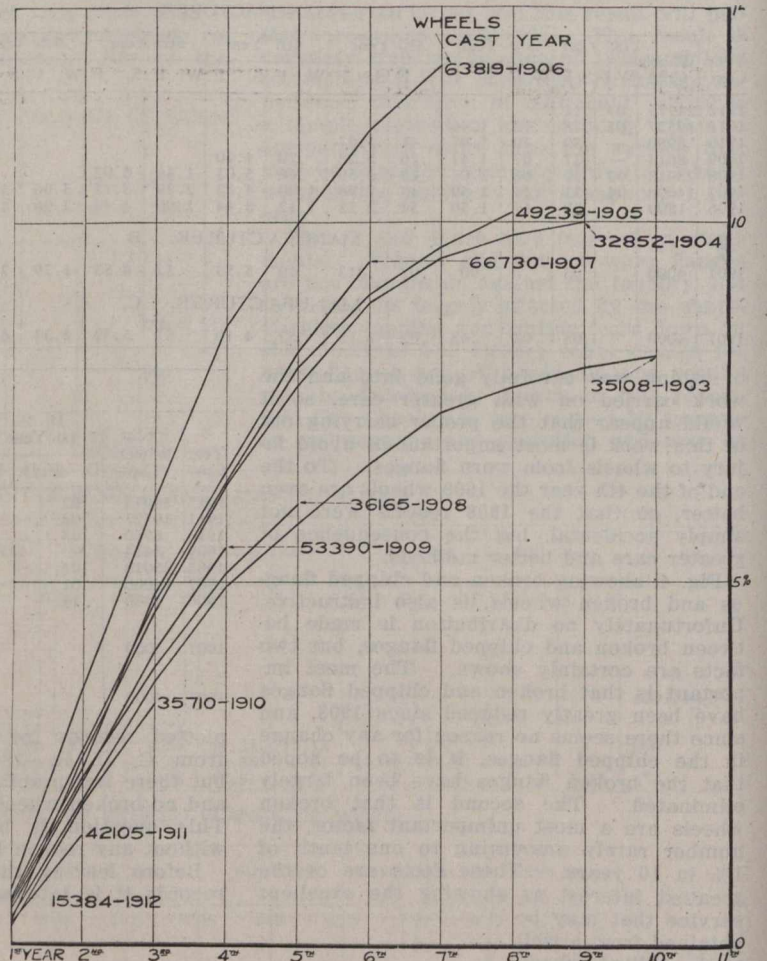


Fig. 12.—C.P.R. Wheels Removed on Account of Slid Flats.

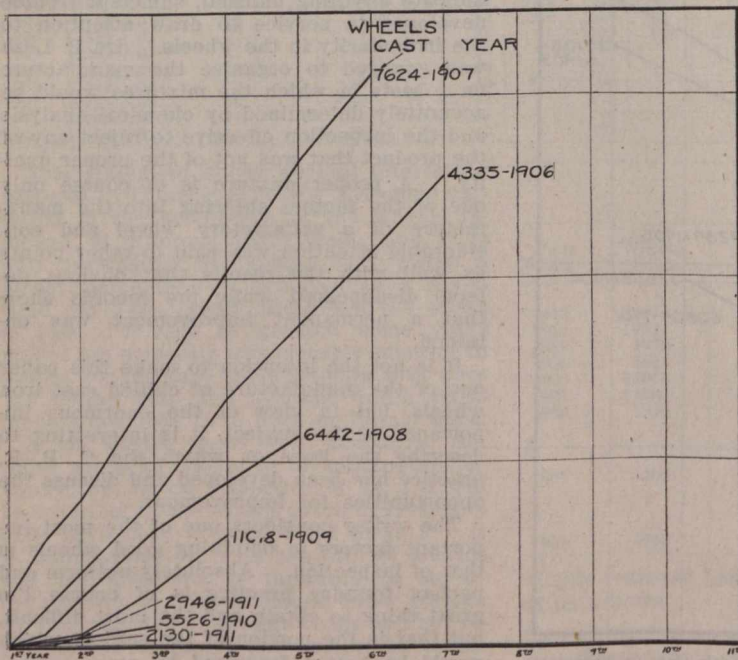


Fig. 10.—Failures Caused by Manufacturers' Defects on Wheels Cast in Successive Years for 100,000 lbs. Capacity Cars for C.P.R.

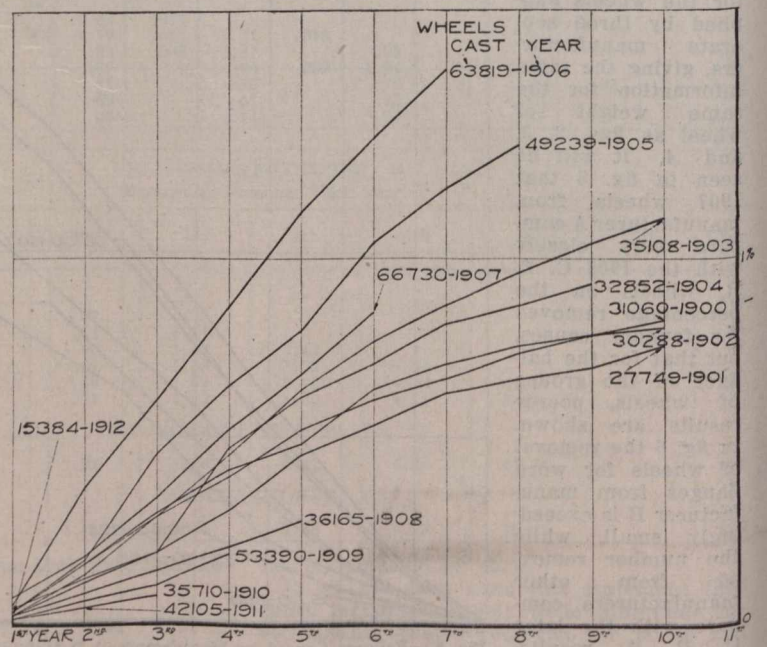


Fig. 13.—C.P.R. Wheels Removed on Account of Broken Flange.

its that the wheels accepted are good. Inspection should of course, detect all ordinary defects, but it can be carried on to properly protect the heat, and this is most important. One thing should be re-

other 40% out of the way by better practice or improved inspection were the important ones. The question of mixtures is a very vexed one. Prior to 1908 charcoal iron was ex-

been employed to the extent of 10 or 15% of the mixture. In spite of the great reputation of charcoal iron, it is a question to what extent it can be better than coke iron after being melted up in a cupola heated by

coke. This statement is not intended to refer to the use of iron with a low sulphur content to prevent the constant increment in sulphur which occurs from remelting with coke, but refers to the value of charcoal iron as against coke irons. Good results have certainly been obtained from the latter if properly handled, but on the other hand if any advantage in strength can be shown for charcoal iron the additional cost is not worth considering. The great question at the present time is that of improving the quality of the chilled wheel. It has only one serious point of weakness, the danger of broken flanges. The records show that the number of broken flanges has been greatly reduced since 1908. If this is correct, the causes are, the reinforced flange, careful manufacture, good inspection and a rather hard wheel. The reinforced flange was introduced in 1906-7 when the 600 lbs. wheel was changed to 645 lbs. and it would appear that this change made a

grey iron beneath it taking less than its share on account of its greater elasticity. It is therefore necessary to maintain a sufficient depth of white iron to resist a force of this nature, which is that brought on the flange by the rail, and it is evident that the white iron is greatly assisted when backed up by a large amount of grey iron, which is the case when the flange is reinforced as in the latter designs of wheels. This is probably the correct explanation of the greater amount of flange breakage with soft wheels, and it is apparently confirmed by the results that have been obtained.

There is good ground for expecting that the use of the reinforced flange and better knowledge of the causes governing the strength of white iron may lead to considerably better results being obtained from the chilled wheel in the future.

On light equipment, with less severe brake service than is usual today, the chilled wheel has given excellent results and is

Book Reviews.

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

AMERICAN RED CROSS ABRIDGED Text Book on First Aid (Railroad Edition).—By Major C. Lynch, U.S.A. 150 pages, 5 by 7 ins., 19 plates. Paper cover. P. Blakiston's Son and Co., Philadelphia, Pa. 50 cents.

GOVERNMENT OWNERSHIP OF RAILWAYS.—By S. O. Dunn, Editor Railway Age Gazette. 400 pages, 5 by 7½ ins. Cloth. D. Appleton & Co., New York. \$1.50 net, \$1.62 post paid.

This is a comprehensive discussion of the desirability of government ownership of railways under different political and economic conditions, and especially of the desirability of government ownership of railways under the political and economic conditions existing in the United States. It

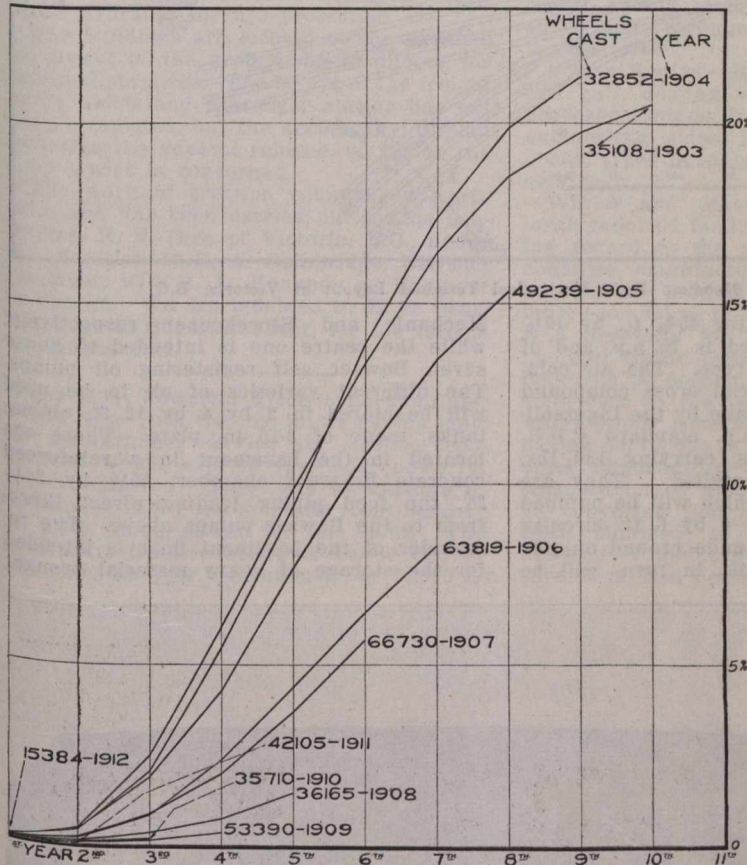


Fig. 11.—C.P.R. Wheels Removed on Account of Worn Flange.

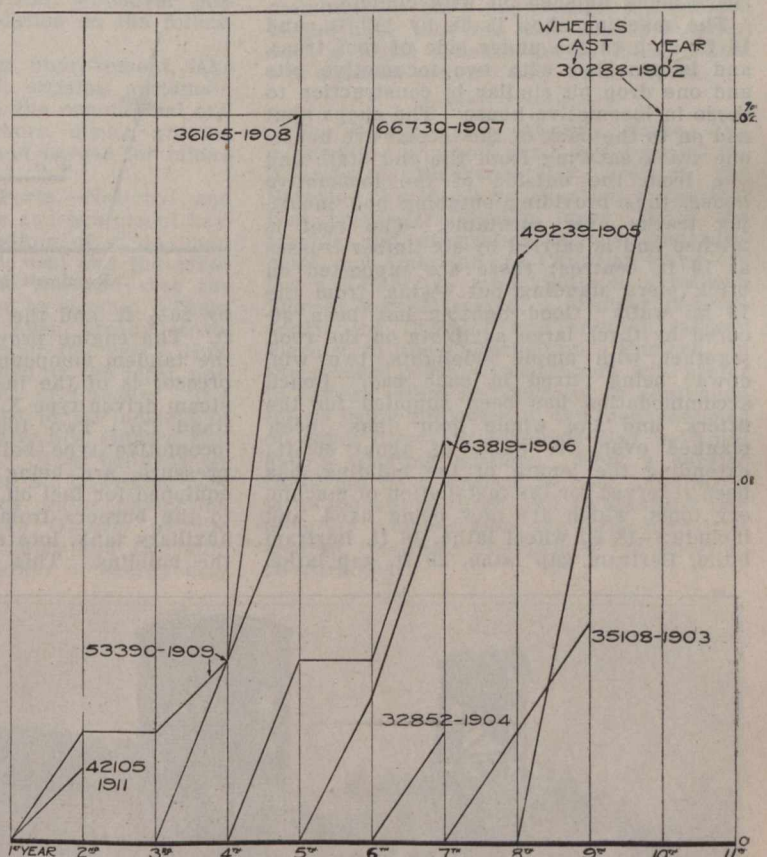


Fig. 14.—C.P.R. Wheels Removed on Account of Broken Wheel.

great improvement.

The C. P. R. practice has during the past few years run to a hard wheel, the rule being to use the M. C. B. limits for depth of chill, applying them to the pure white iron only. This was introduced on account of an investigation made of a number of wheels causing derailments on account of broken flanges, which showed that the majority were soft wheels, having 3-8 in. or less depth of chill. It would certainly appear that a light chill is a cause of weakness, not only in the tread under heavy loads, but in the flanges. This may be explained by the structure being that of a hard rigid surface joined to a softer and less rigid back. Grey iron while often considered as a rigid material has only about 50 to 60% of the rigidity of the white iron, which probably corresponds closely to that of hardened steel. When this compound structure is subjected to any force, placing a tensile strain on the surface, this strain is largely localized on the layer of white iron, the

even now most economical and satisfactory in most respects. Flanges practically never break through the line in which they are restricted in strength, and until they do so, there is every reason to hope that the cast wheel may be able to hold its own, and in time to render the good service it has in the past.

The foregoing paper was read before the Canadian Railway Club in Montreal recently.

Where tube lengths of 12 or 14 ft. were common 14 or 15 years ago, lengths of 20, 22 and even 24 ft. are used in present day practice, with the result that smokebox temperatures have decreased from about 750 to 800 degrees, to 550 to 600 degrees, the only increase of energy required being the slightly greater draft in the smokebox to pull the smoke through the longer tubes.

The maximum rate of combustion per sq. ft. of grate area per hour for bituminous coal of good quality is 120 lbs., and for hard coal, from 55 to 70 lbs.

gives concisely the history of the relations between railways and the state in the leading countries, and outlines the causes which have led to the adoption of government ownership where it now prevails. It then discusses the following points: The relative economy and efficiency of public and private ownership and management. The adequacy, quality and safety of the transportation service rendered by railways under the two policies. The policies followed and the results of ratemaking under public and private management. The financial results to the public of state ownership. The effects of public ownership on the condition of labor. The political effects of government ownership. The concluding chapter summarizes the discussion in the preceding parts of the book and the conclusions reached.

The evaporative value of tubes or flues varies with the difference in length, diameter and spacing.

Esquimalt and Nanaimo Railway Mechanical Terminal Facilities at Victoria, B.C.

The recently completed group of buildings forming the Esquimalt and Nanaimo Ry. terminal plant at Victoria West, B.C., comprises a locomotive house, machine shop, car repair shop, boiler and engine houses, store, etc.

The locomotive house has 10 stalls, each 13 ft. 7 ins. at the front, 26 ft. 5 ins. at the back, and 90 ft. deep. The walls are of 13 in. brickwork on strong concrete foundations, and the roof is of timber construction covered with felt and gravel. The usual locomotive pits are provided, together with one drop pit 7½ ft. wide. The walls of these are of 10 in. concrete, to which is fastened, by means of anchor bolts, the 6 by 12 in. timbers carrying trackage. For a width of 3 ft. all around the pit, 3 in. planking is spiked, the intervening floor space being finished off with cinders.

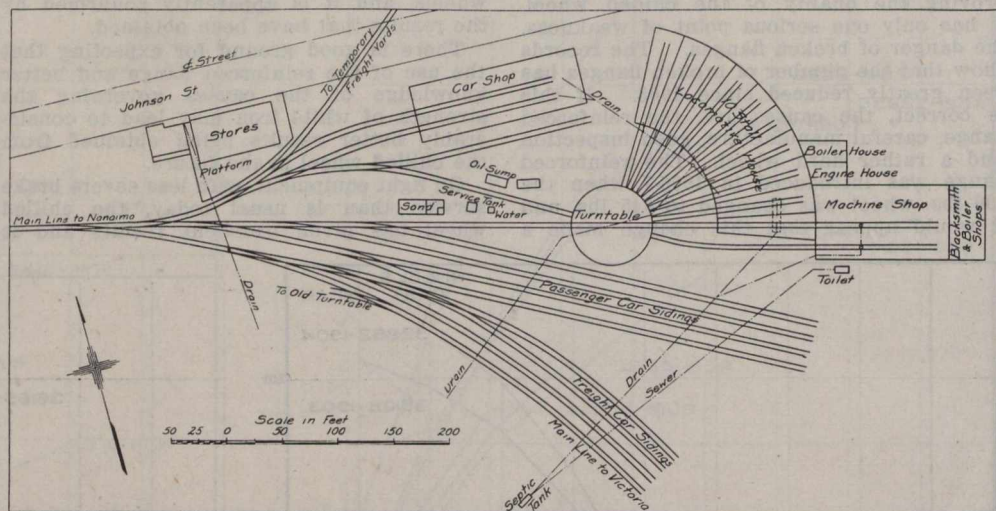
The machine shop is 68 by 112 ft., and 18 ft. high to the under side of roof truss, and is provided with two locomotive pits and one drop pit similar in construction to those in locomotive house. The shops abut end on to the back of the locomotive house, one track entering from the end stall, and one from the outside of the locomotive house, thus providing outgoing and incoming tracks over turntable. The roof is pitched and is carried by six timber trusses at 16 ft. centres; these are supported on brick piers standing out 4½ ins. from the 13 in. walls. Good lighting has been secured by three large skylights on the roof, together with ample sidelights, two windows being fixed in each bay. Bench accommodation has been supplied for the fitters, and the whole floor has been planked over. A width of about 36 ft., extending the length of the building, has been reserved for the installation of machinery tools, which are now being fixed, and include:—18 ft. wheel lathe, 16 ft. Bertram lathe, Bertram gap lathe, 20 ft. gap lathe,

be located the steam hammer, two circular and one oblong forges, together with one set of shears and one set of rolls. This building is 32 by 68 ft.

The engine room and boiler room are located in the angle formed by the two main buildings, the former being 31 ft. 10 in.

the usual features necessary for the economical handling of repair work.

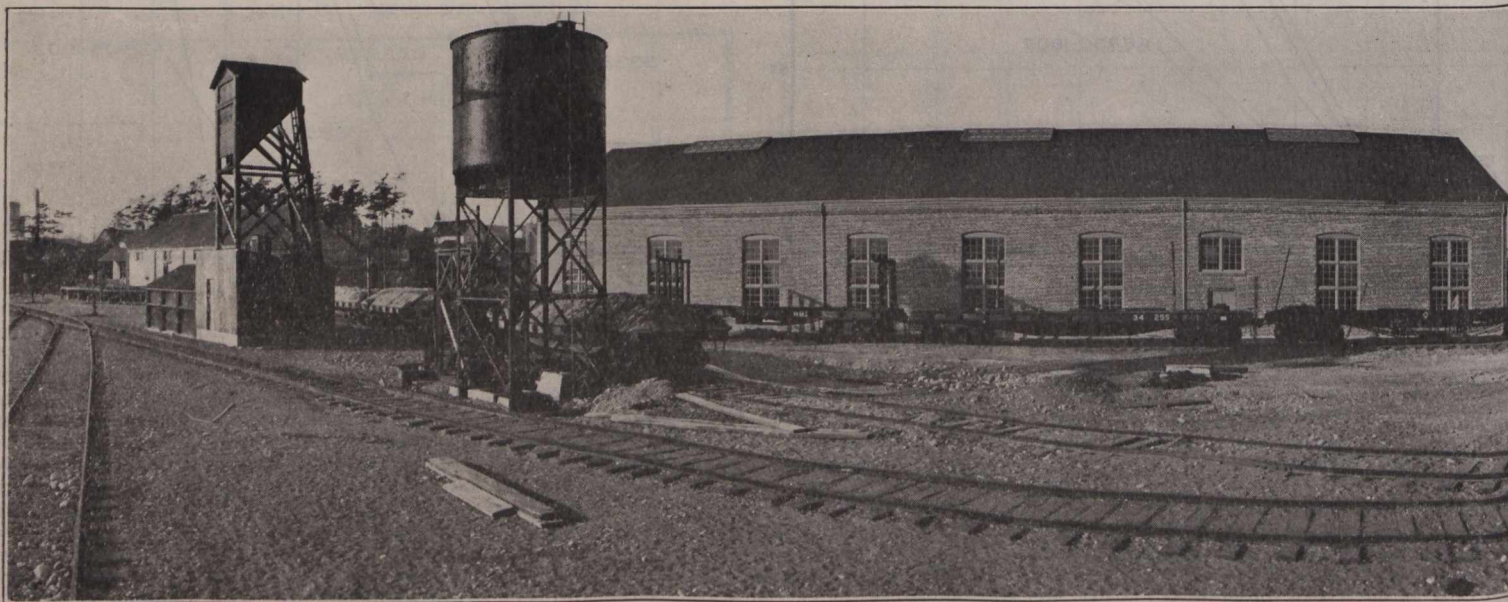
The store is one story and basement, the walls of the former being 13 in. brickwork, and of the latter of 18 in. concrete. On the ground floor a space of 38 by 56 ft. is reserved for the store proper and is equipped with a hand power elevator to serve the basement, and also shelving for the reception of supplies. At the east end of this floor there are three rooms, the outer two being offices for the Master



Esquimalt and Nanaimo Ry.'s Mechanical Terminal Layout at Victoria, B.C.

by 20½ ft. and the latter 45¾ ft. by 19¼ ft. The engine provided is 75 h.p. and of the tandem compound type. The air compressor is of the imperial cross compound steam driven type X, made by the Ingersoll-Rand Co. Two 100 h.p. standard C.P.R. locomotive type boilers, carrying 130 lbs. pressure, are being installed. They are equipped for fuel oil, which will be pumped to the burners from a 4 by 6 ft. circular auxiliary tank, located underground outside the building. This tank, in turn, will be

Mechanic and Storekeeper respectively, while the centre one is intended to house seven Bowser self registering oil pumps. The different varieties of oil to be used will be stored in 2 by 4 by 12 ft. oblong tanks, made of 3-16 in. plate. These are located in the basement in a reinforced concrete fireproof chamber, 15½ by 24½ ft., the feed piping leading direct therefrom to the Bowser pumps above. The remainder of the basement floor is intended for the storage of heavy material brought



Panoramic View Esquimalt and Nanaimo Railway Mechanical Terminal. See opposite page.

8 ft. screwing machine, small Bertram lathe, a large and a small drill, wheel press, planer, and shaper. The main shafting will be bracket fixed to the brick piers, and the counter shafting to the underside of the roof trusses.

The blacksmith and boiler shop is a continuation of the machine shop, partitioned therefrom by a 9 in. brick wall. In it will

supplied by gravity from the service tank located near the turntable.

The car repair shop is 50 by 150 ft., and of 13 in. brickwork. The roof is pitched and covered with corrugated iron, the whole being carried by eight timber trusses at 16¾ ft. centres. Here, as in the other buildings described, car pits of concrete construction are provided, together with

down by the elevator. A platform has been erected round three sides of the building to facilitate the handling of deliveries from the track and street.

Eight feet from the centre of one of the tracks leading across the turntable is the concrete fuel oil storage tank, 22 by 8 by 10 ft. high, which is entirely underground. The walls are 10 ins. thick with a 12 in.

roof, the latter being strongly reinforced with T iron and expanded metal to ensure the safe carrying of trackage above. Near the storage tank, and equidistant between the two tracks crossing the turntable, stands an 8,000 gal. circular steel service tank, supplied by pump from the storage tank, from which the oil proceeds by gravity to the auxiliary tank near the boiler house. Locomotives will also receive their supply of fuel here by means of two sway pipes which radiate from the bottom of the tank, one to each track. Close by is the water standpipe, so that when taking oil, locomotives can also receive their water supply without change of position. A sand plant has been built 20 ft. from the water standpipe along the same track. The erection is of timber construction and of standard C.P.R. design. Generally speaking, the whole plant as above described is of an up to date character, all buildings are lit throughout by electricity, and are also equipped with water hydrants for fire protection.

The buildings are located to the extreme northwest of the ground, being allotted for terminal purposes. The layout of the freight yards, sheds and passenger station has not been completed, but the accompanying plan indicates the general scheme, so far as the shop layout is concerned.

The work of erection commenced April, 1913, and has been carried out by the contractor, E. R. Doe, of Victoria, B.C., under the direction of R. A. Bainbridge, Division Engineer, with A. L. Kennedy as Engineer in Charge. We are indebted to H. E. Beasley, General Superintendent, for the foregoing information.

The Most Powerful Electric Locomotives.

The New York Central Rd. is having built for its terminal service six electric locomotives which will be the most powerful yet constructed. They will be capable of developing 2,000 horse power continuously or 2,600 horse power for one hour. The equivalent tractive effort is 14,000 lbs. at 54 miles an hour continuously, or 20,000 lbs.

Proposal for Appointment of Royal Commission on Transportation.

The Canadian Society of Civil Engineers has submitted the following memorial to the Dominion Government:—

The time is now opportune to appoint a Royal Commission on transportation and allied problems. The early opening of the Panama Canal and the great development in all lines of industry from one end of Canada to the other raise questions demanding the most careful solution.

The report of the Transportation Commission made in 1898 contains a great deal of valuable data, but is now largely obsolete.

Such a Commission should consist of seven members, viz.:—one railway engineer, one hydraulic engineer, one railway manager, a lawyer, a transportation manager familiar with lake and ocean navigation, two eminent business men, one from the east, one from the west, and a secretary. Such report should include and, whenever possible, make recommendation on the following matters:

Water Routes.—River improvement, lake and gulf, dealing with existing systems—proposed systems from the commercial and engineering sides, harbors, docks, graving docks, types of ships and barges for inland service.

Winter and other Ports.—National and local, required facilities and equipment having regard to the handling of grain, merchandise, manufactures, coal and the other heavy bulk products to the end that the most economical method be secured. There is a necessity for an even, steady movement of traffic throughout the year. How may this be accomplished at the least possible cost to the people of Canada? The water power possibilities, as an incident of navigation on the St. Lawrence, Ottawa, and other important rivers. It is believed by competent men that the St. Lawrence may be converted into slack water navigation from Montreal to Lake Ontario by the building of about five dams and five ship several million horse power of energy may

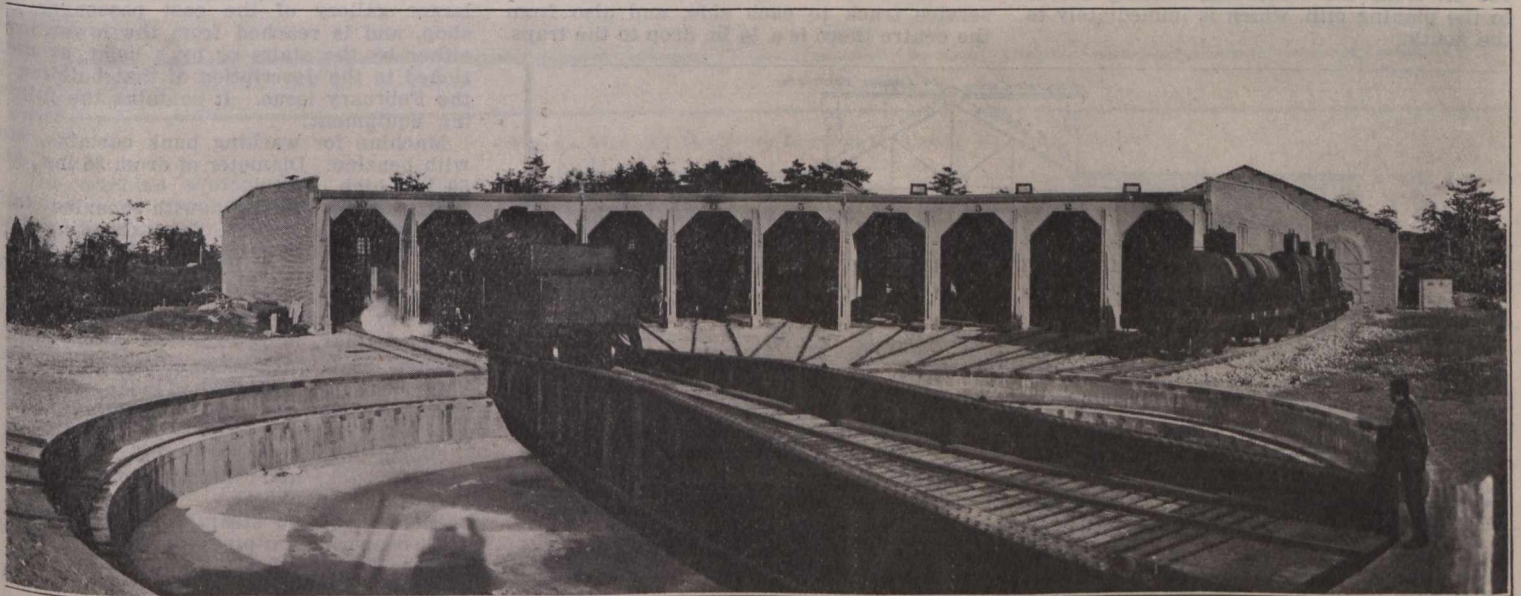
respects.

Railways.—In what respect is it possible to improve, having regard to terminals, receiving and delivering freight in large cities and at other important points? How may transportation be rendered more economical? What should be the policy of the country regarding new railways? What conditions should be made on behalf of the public? A reasonable definition of what earnings and expenses should be. To what extent should regulation extend in order that capital may be secured for the continued requirements of the country and the public be sufficiently protected?

Routes and Outlets.—The Atlantic seaboard. The Pacific seaboard. The Hudson Bay. The Great Lakes.

The Canadian Society of Civil Engineers represents practically every qualified engineer in Canada. It is with a knowledge of the importance of the subject and of how easily great mistakes, causing enormous waste of money, can be made, that your memorialists have approached the subject, in the hope that you may see fit to grant such a Royal Commission to the end that our common country may be benefited.

The Blacksod Bay Atlantic Route.—Discussing the proposed short route across the Atlantic via Blacksod Bay, Ireland, the Shipping World draws attention to the fact that passengers dislike very much the trouble and annoyance of any transshipment, and American and Canadian travellers are not likely to take kindly to a railway journey across Ireland, a steamer passage across the Channel, and another railway journey to their destination. Further, on the reverse journey, passengers will prefer to embark either at Liverpool or Southampton to being subjected to the inconvenience of going direct to Blacksod Bay by train and a coasting steamer. Such a service could not be a success without handling a large amount of cargo, and as Blacksod Bay is so far removed from the large industrial centres, this class of traffic is not likely to be attracted.



Panoramic View Esquimalt and Nanaimo Railway Mechanical Terminal. See opposite page.

at 49 miles an hour at the one hour rating. Each locomotive will haul, if necessary, a 1,200 ton train on level track, continuously, at 60 miles an hour. They are insulated for 1,200 volts to enable them in the future, should it be desired, to operate on this voltage. They have a higher efficiency than any other high speed electric locomotives yet built.

be had at very low cost. Such a possibility suggests a development in manufacturing of incalculable value to the country and would seem worthy of special report. The existing canal system on the St. Lawrence is expensive to maintain and operate. The suggested system would seem to offer an canal locks, and that as an incident thereto, opportunity for large savings in both

Experimental Fireproof Trains.—The Great Western Railway of England has put in service two experimental fireproof trains, each consisting of four cars. The cars are built entirely of steel, and are lighted throughout electrically. Wood has been practically eliminated from these trains. The only wooden construction is the foot-board on the outside.

National Transcontinental Railway Car Shops at Transcona.

The first instalment of this article in the last issue described the freight car shop and the passenger car shops, as well as giving a general description of the whole plant, including the locomotive department. The second instalment follows:

The Passenger Car Paint Shop is 87 by 340 ft., of an exactly similar type of construction to the passenger car shop, with concrete sub walls, surmounted by brick walls, spanned by steel trusses. There are

tors, one over each section.

A 17 ft. wide building, 15 ft. high, adjoining the main building near the centre, and extending the length of three shop sections, contains the auxiliary shop facilities, including foreman's office, lavatory and wash room, and the indirect heating plant. A 12 ft. fan connects with a 2½ ft. square concrete duct across the shop, with branch concrete ducts along each wall, all these ducts being under the floor. In the wall

color bins, putty mixer, grinder, glass rack and pot racks, the latter to the rear of a counter, separated from the east side of the building by an aisle, over which the supplies are served. This counter has a central flap top. A telfer overhead track enters a door on the north side, making a partial circuit of the building and out on the east through a door on that side.

A platform extends along the east and north sides. At the south end on the east side, the platform is at the level of the stores interior, sloping up near the north end to the platform level along the north

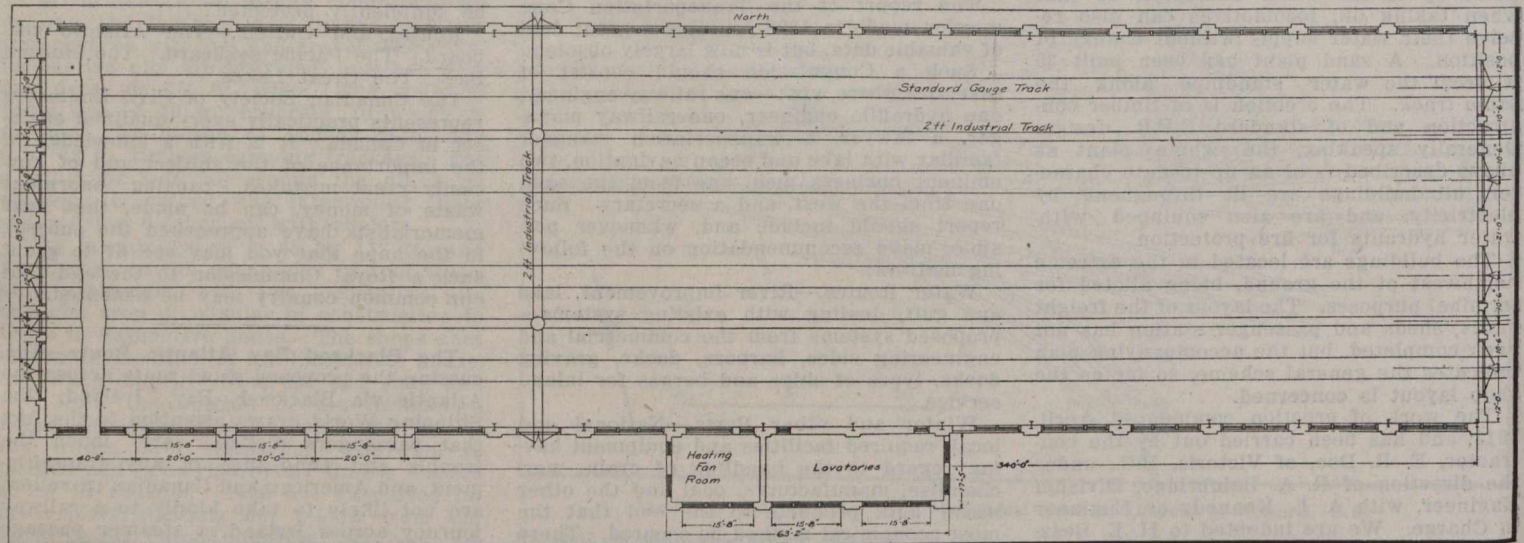


Fig. 6.—Plan of Passenger Car Paint Shop.

four working tracks extending the length of the building, the central ones at 21 ft. centres, and the outer ones 21 ft. centres.

Between each of the outer pairs there is a 2 ft. industrial track. The working tracks have 12¾ ft. doors in each end of the building, with 5 ft. doors for the service tracks. The two service tracks have a cross connection through small turntables, 130 ft. from the west end, leading across to the planing mill, which is immediately to the south.

under each truss there are outlets. The shop is kept thoroughly drained by traps in the floor, which is of 6 in. concrete. These traps are located at 40 ft. centres along the centre line of each of the working tracks, a 3 in. wrought iron down pipe, connecting with a longitudinal pipe of the same size, to cross pipes, each of which carries for a quarter of the shop. The floor from the wall has a 1 in. drop to the traps, and from the service track to each side, and also from the centre there is a ½ in. drop to the traps.

side, which is at 4 ft. above the ground level, with a 3 in. drain slope towards the outside. The platform width on the east side is 5 ft., and on the north 6 ft. The north side platform adjoins the yard track, and on it will be unloaded all the supplies to be brought into the building through the north door over the projecting overhead track.

The Upholstering Shop is situated in the larger gallery of the east passenger car shop, and is reached from the lower level either by the stairs or by a hoist, as mentioned in the description of that building in the February issue. It contains the following equipment:

Machine for washing bunk curtains, etc., with benzine. Diameter of drum 36 ins., and 50 ins. high.

Extracting machine, with benzine tank and fittings complete, for extracting benzine. Rotary drum 30 by 14 ins.

Washing machine for blankets, etc., 50 by 36 ins.

Rotary extracting machine, with soap and water fittings, 30 by 14 ins.

Soap tank with fittings complete with steam heating coil to boil soap water for washing and extracting machine. Drum 3½ ft. by 30 ins.

Steam box, 18 by 11 by 7 ft., with steam coil at back, and sliding doors at front, for drying blankets.

Steam table to steam edges of blankets, with copper steam pipe attached to one side of 9 by 6 ft. table.

Frames to stretch blankets, 9 ft. by 6 ft. 8 ins.

Stretching tables for frames, operated by compressed air.

Feather renovating machine, to renovate and clean feathers in connection with two feather bunks, 8 by 6 ft.

Hair picking machine.

Benzine tank for 500 gals. Bowser equipment.

Electric cutter.

The Planing Mill, 100 by 300 ft., is of the

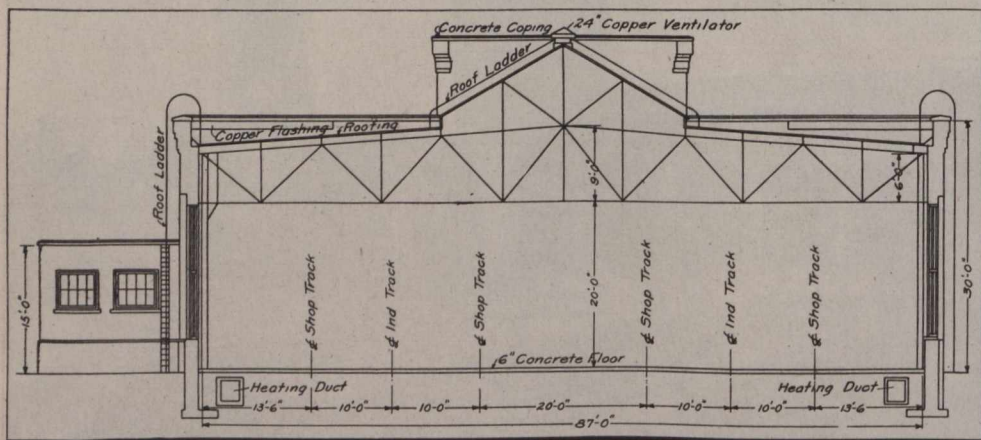


Fig. 7.—Cross Section of Passenger Car Paint Shop.

The shop is divided into 20 ft. sections, cross wise of the shop, by the roof trusses, and in each of these sections there is a large window, providing excellent illumination, in conjunction with the skylights in the monitor roof. The steel roof trusses have a clear 87 ft. span across the shop, and the bottom chord is 20 ft. above the floor. The central depth of the spans is 9 ft., sloping to 6 ft. at the side walls. A monitor, 28 ft. wide, with a depth of 10 ft. above the truss, extends the length of the shop, surmounted by a row of 24 in. copper ventila-

The Paint Storehouse, 40 by 30 ft. is of the standard construction, with concrete lower walls, carrying brick upperwork, and spanned by steel trusses. It is situated to the rear of the passenger car paint shop, to the north of the lumber sheds. Inside, there is a clear height to bottom of truss of 12 ft. The floor of the building is raised above that outside about 2½ ft. by a gravel fill, surfaced with 3 in. planking. Along the west and south sides there is a 3½ ft. wide platform, raised 2 ft., for a tank and oil storage stand. In the centre are the dry

standard construction, with concrete lower walls, surmounted by brick masonry and spanned by steel trusses. It adjoins the passenger car paint shop, to which it is very similar in design, and abuts on the midway, the second building from the north end. The roof structure is carried on through steel trusses spanning the building at 20 ft. centres. The central depth of the span is 10 ft., sloping to 7 ft. at the side walls. A 20 ft. monitor, 8 ft. deep, extends the length of the building, surmounted by a 24 in. copper ventilator over each section. There is a clearance of 20 ft. below the lower chord of the truss and the floor. The latter is composed of 3 in. pine, nailed to 4 by 6 in. sleepers bedded in 6 ins. of bituminous concrete.

Slightly west of the centre of the building, along the south wall, there is a lavatory room, 40 by 15 ft., and 10 ft. high, containing the usual lavatory conveniences, including lockers, etc. On a platform surmounting this room is the heating fan, reached by a ladder at one end. The heating duct from the fan passes down through one end of the lavatory room to a cross tunnel under the building, from which heating ducts branch off under the floor along each wall, with headers midway in each section.

Power table feed mechanism. 40 ft. travelling steel timber table. Roller stands, timber rolls, layout stops and ratchet clamps. Variable speed automatic feed to head with cross travel for timbers 24 by 21 ins. 16 in. gainer head with 2 to 4 ins. expansion. Motor driven.

P6. Automatic band rip saw. 5 in. blade ripping 28 ins. between saw and fence, and 14 ins. under guides. 8 in. power driven feed rolls with 48 by 46 in. table. Feed 20 to 120 ft. per min. Flexible coupling motor driven.

P7. Timber planer and sizer. Planer capacity to 20 by 16 in. timbers. 40 to 100 ft. per min. feed. Floor motor driven.

P8. Double automatic railway cutoff saw. Capacity 34 ins. wide, to cut 14 ins. by 12 ft. long. 36 in. saws. Floor countershaft with flexible coupling motor drive.

P10. Leclair gaining machine. Flexible countershaft, direct motor driven.

P11. Extra range vertical hollow chisel car mortiser. Universal boring attachment, with adjustable chisel ram and stationary timber bed. Capacity up to 18 by 20 ins., with 2½ in. square chisels. Countershaft with flexible couplings, motor driven.

P12. Large car rip saw. Capacity to rip 14 ins. thick with 36 in. saw. 82 by 52 in. iron table. Motor driven.

driven.

P18. Automatic railway cutoff saw. Saws up to 24 ins. Saw projection of 7½ ins. and cutting 22 ins. wide. Power feed to saw with foot control with three speeds of forward and quick return. Motor driven.

P19. Heavy four sided inside or outside moulder. 15 by 6 ins., cylinders to be of crucible steel forgings, to be four sided and to be slotted on each side. Four 9 in. rolls with spring pressure for feed. Motor driven.

P20. Automatic railway cutoff saw. To cut 20 ins. wide by 4 ins. thick, with table 66 by 23 ins. Power feed stroke with foot control adjustable to 20 in. length or less, with three speeds forward and quick return cushioned by air cylinder. Motor driven.

P21. Improved standard rip saw. To rip 16 ins. to inside flange and 22 ins. to outside flange. 22 in. saw to cut 7 ins. thick. Table, 72 by 39 ins., and to have parallel lift of 5 ins. and arranged for use of gang saws or cutter heads on the mandril. 16 in. saw. Motor driven.

P22. Improved standard rip saw. To rip 16 ins. inside flange and 22 ins. to outside flange. Saw to cut 7 ins. thick. 70 by 36 in. iron table, to have parallel lift of 5 ins. by screw and bevel gears, with self locking adjustable ripping fence and arranged for

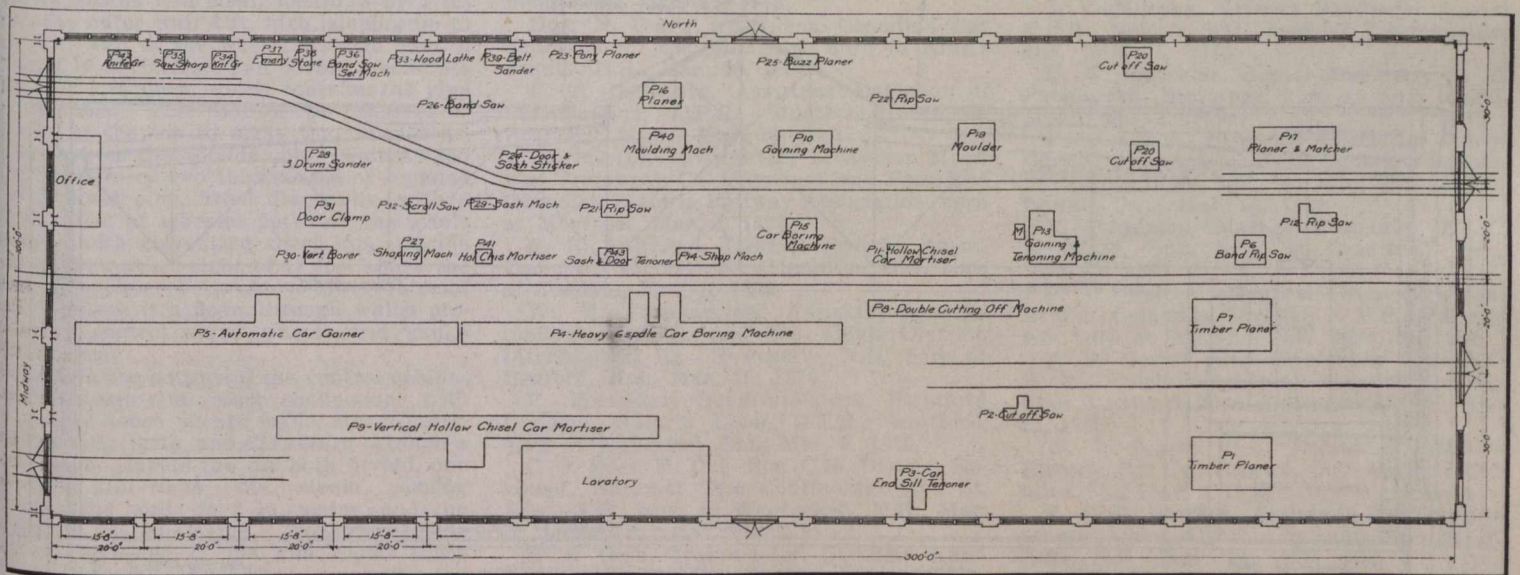


Fig. 8.—Plan and Machinery Location of Planing Mill.

The machine equipment of the building is most complete, and is as follows:

P1. Timber planer. Capacity up to 20 by 16 ins. Feed from 40 to 100 ft. per min. Floor motor driven.

P2. Automatic railway cutoff saw. Table 8 by 2 ft. To cut 12 by 16 ins. 36 in. saw. Floor motor driven.

P3. Vertical automatic car sill end tenoner. Single, double, or triple tenons without reversing timbers. Arranged with variable speed automatic power feed to 13 in. cutter heads with range for working 16 in. square timbers. Three 13 in. heads.

P4. Standard heavy six spindle car boring machine. Two universal and four vertical spindles with hand table feed, combined with extra range vertical hollow chisel car mortiser. Power table feed working to a 40 ft. travelling steel timber table. Boring capacity for 4 in. bits and 14 in. square timbers. Mortiser with adjustable chisel ram, direct geared feed and quick reverse, 18 in. stroke and 16 in. cross adjustment of tool plunger. Mortiser capacity for 3 in. square chisels and 18 by 20 in. timbers to 10 in. deep. Self contained countershaft arranged for motor drive with flexible motor couplings.

P5. Extra heavy automatic car gainer.

P13. Leclair combined gaining and tenoning machine. Heavy universal car tenoner for single, double or triple tenons, with gap frame to work 14 in. high timbers. Gaining attachment. Motor driven.

P14. Two spindle shaping machines. Spindles 26 in. centres. Knives drop below surface. Table 40 by 58 ins. Motor driven.

P15. Medium three spindle car boring machine. Capacity up to 2½ in. diam. and 14 in. deep. 3 fluted timber feed rolls connected to hand wheel, and one wedge screw clamp quick acting spindle carriage adjusting levers. Arranged for 14 in. bits and 12 in. wide timber. Complete set of bits 7-16 to 2 ins. Motor driven.

P16. Cabinet smoothing planer. Capacity from 1-16 to 6 ins. thick, by 30 ins. wide. Spring pressure feed roll control. Feed speeds from 15 to 40 ft. per min. Motor driven.

P17. Double cylinder four sided planer and matcher. 15 ins. wide and 6 in. opening with 3 pairs of 10 in. feed rolls, 6 bit round top and bottom cylinders, high speed steel cutters, 12 bit matcher heads, jointing attachment for all heads, and power driven grinder for top and bottom heads. Profiling attachment with jointer and grinder for same. Feed up to 200 ft. per min. Motor

use on gang saws or cutter heads on the mandril. 16 in. saw. Motor driven.

P23. Pony planer. Single cylinder 24 ins. wide, opening 6 ins., with two pairs of gear driven feed rolls, cylinder fitted with two knives and belt on each end. Motor driven.

P24. Combination door and sash sticker. Boring and grooving attachments. Top, bottom and outside arbors with ploughing and boring attachments on each square head. Knives, grooving saws, boring bits. Motor driven.

P25. Buzz planer. Cylinder 24 ins. wide, slotted on four sides, fitted with two knives. Table faced with steel plates next to cutter head. Cutter head vertical adjustment. Motor driven.

P26. 36 in. special band saw. To take 15 in. stock below doors, and equipped with safety doors. 29 by 33 in. table. Motor driven.

P27. Two spindle shaping machines. 26 in. centres, one piece frame. Knives capable of dropping below surface. Table 40 by 58 ins. Motor driven.

P28. Three drum sander. Drums 61 ins. wide. Paper applied spirally. Brush cylinder on finished work. Power hoist for upper feed roll frame. Change gears for variable

speed control. Reverse gear. Motor driven.

P29. Sash mortising and relishing machine. Routing and wedge cutting attachment. Two hollow chisels and bits, relishing bit and head with knives, tool holders, stops and layout gauges. Routing bit, with blind router, five saws with door relishers, and two with wedge cutters. Motor driven.

P30. Single spindle vertical borer. Universal table and gear driven head, two speeds. Bits up to 2 in. diam. and 12 in. twist. Bits 3-8 to 1½ in. Motor driven.

P31. Heavy door clamp. For doors, sashes or blinds. Up to 4½ ft. wide rails, 9 ft. 4 ins. long. 12 clamp dogs and end clamp bar, foot release lever.

P32. Scroll saw. 36 in. square table, with central 8 in. diam. cast iron plate. The strain to be raised or lowered for thicknesses up to 12 ins. Pump to blow dust away. Motor driven.

P33. 20 in. double end wood lathe. Large face plate for back of headstock. Floor stand and rest for large diameters. Centres and chucks. Belt driven from line shaft.

P34. 30 in. knife grinder. Carriage has automatic feed and stop and water pump. 24 by 1½ in. emery, wet or dry. Belt driven

P42. Automatic knife grinding machine. Automatic travel of slide, screw cross feed variable in taper at will, water attachment with pump.

P43. Sash and door car tenoner. Carriage wide and long, moving on roller bearings. To cut tenons 7½ ins. long at one pass. Motor driven.

All shapers, rip and cross cut saws and buzz planers are equipped with patent safety guards, to minimize danger of operating to the mechanics. Machines P10 and P13 are special gaining machines invented by A. Leclair, millwright in the G.T.R. Montreal car shops. Machines of his design, in use in the different G.T.R. car shops, have been described in these columns recently.

The north portion of the mill contains all the smaller wood working machinery, all the machines being served by a 2 ft. industrial track extending through the building. Entering the building from either end, in line with the industrial track, there is a standard gauge track, over which the timber may be brought into the shop in car lots for machining, and be reloaded for shipment if required. It will be observed

passenger car and freight car shops makes for a rapid handling of the material from the mill to the assembling shops. The material from the stock sheds to the rear of the mill passes through the latter, coming out at the midway end completely machined, with practically no retrograde movements in that shop, thence across the midway to either the passenger car or freight car shops. The wood working machinery used principally on passenger car work is grouped for the most part in the northwest portion of the mill, where it is handy to the passenger car shop. The open space in that portion of the mill is an assembly floor for the fine fittings.

The Lumber Shed is to the rear and in line with the planing mill. It is a purely frame building, 60 by 165 ft., and is spanned by wooden trusses at 15 ft. centres, being also divided into three 20 ft. longitudinal bays by supporting columns. The wall intervening columns are all 8 in. square timbers, extending to a height of 17 ft. above the ground, the lower end encased in concrete and sunk to a depth of 4½ ft. The wall framing consists of 2 by 4 in. studding at 2 ft. centres, with 6 by 1 in. cross brace,

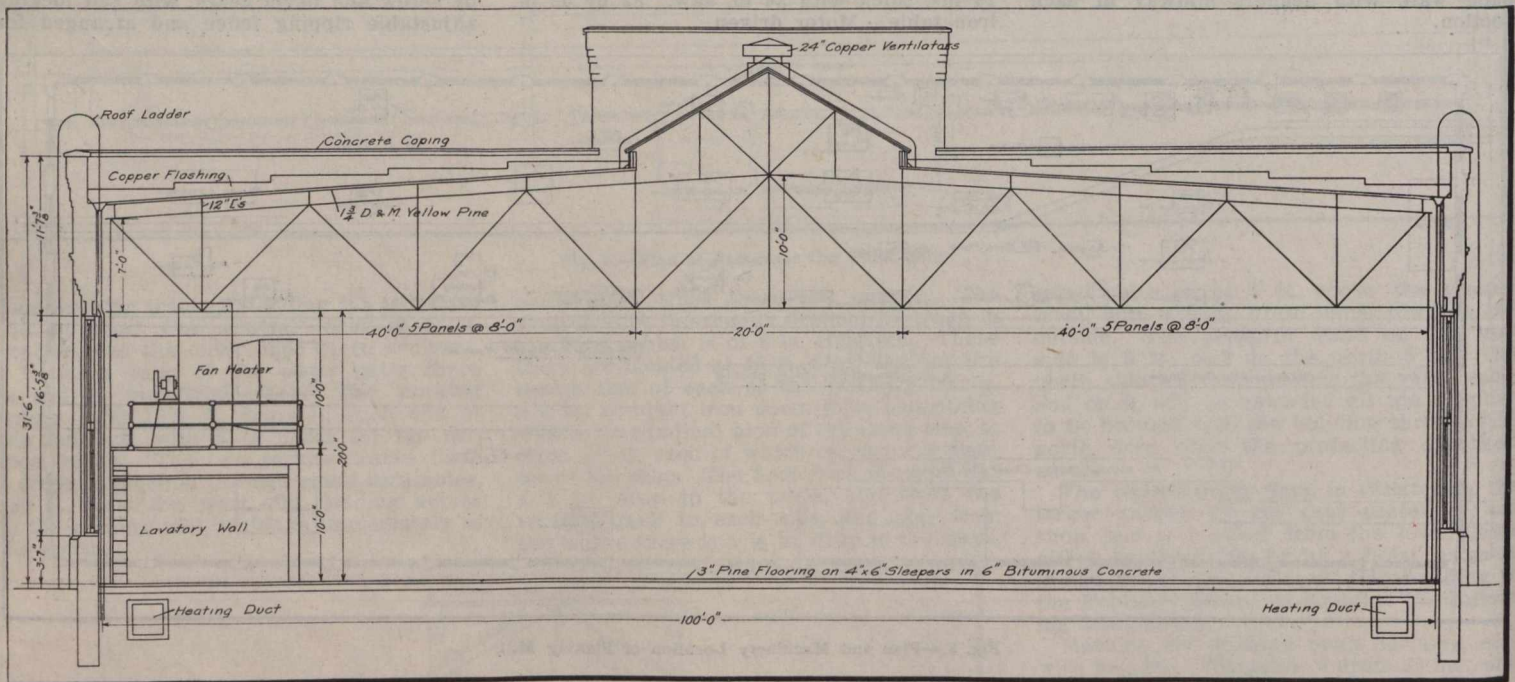


Fig. 9.—Cross Section of Planing Mill.

from line shaft.

P35. Circular saw sharpener. To sharpen cross cut saws from 6 to 44 ins., rip saws 12 to 59 ins. Square or bevel teeth. Belt driven from line shaft.

P36. Band saw filing and setting machine. Sticking attachment. Belt driven from line shaft.

P37. Double emery grinder. Two 12 in. emerys, respectively 1 and ½ in. faces. Belt driven from line shaft.

P38. Grindstone. 60 by 8 ins. Trough. Belt driven from line shaft.

P39. Belt sander. Capacity 5 ft. 2 ins. by 42 ins. by 18 ins. Motor driven.

P40. Four sided extra heavy moulding machine. Frame built up from plain cast iron bed plate. Table working by screw working on ball bearings. Feed consists of an under and two upper driving rolls, and controlled through a friction clutch for starting and stopping. Feeds from 15 to 60 ft. Motor driven.

P41. Hollow chisel mortiser. Compound angular table for making mortises at an angle with the face of the stock. Chisels ¼ to ¾ in. square, 23 in. stroke. For material 5½ by 6 ins. Motor driven.

that the location of the machinery is open in its nature, allowing ample space for manipulating the smaller timber members without interference. The machines are so arranged with regard to each other as to facilitate the sequence of operations.

The heavier and larger members are handled in the south section of the shop, between which and the other section there is an industrial track, running the length of the shop along its centre line. From both ends there are standard gauge tracks entering the building, the west one 50 ft. long, and the east one 100 ft. long, used for the same service as in the former instance. The machinery in this section is so arranged as to give a continuous movement of the members through the shop. The principal parts handled in this section will be the side and end sills. These will enter from the west, passing through the planers, the end sills passing through the tenoner, and side sills through the mortiser. Thence they will pass to the boring and mortising machines, completing the series of operations at the west end, where they can be loaded on cars on the standard gauge track.

The proximity of the planing mill to the

the outside covered with 1 in. sheathing. The roof trusses consist of a lower 6 by 10 in. member, with 4 by 6 in. bracing, and 6 by 8 in. stringers. The roof is covered with 1¾ in. sheathing, covered with prepared roofing. In every other section, there are two 6 by 10 in. skylights in the roof, one in each side.

Through the centre of the shop there extends a standard gauge track for bringing in and taking out the stored lumber. The dimensions of the building are such that most of the lumber may be stored at right angles to this central track, from cars on which it can be unloaded.

The Dry Kiln is contained in a brick and concrete building, 40 by 50 ft., to the southeast of the planing mill, near the lumber shed, in length from east to west. Through the centre there is a concrete separating wall, dividing the kiln into two separate sections. Each section contains two 4 ft. 11 in. tracks, at 9 ft. centres.

The side and dividing walls each contain a 2 in. air space, inside of which there is a 4 in. wall to the kiln interior, with a 9 in. wall to the outside. The dividing wall has this thickness each side of the air space.

Birthdays of Transportation Men in March.

In the ends of the buildings, each half has two double doors opening outwards. The roof slopes from the central dividing wall towards the sides, with a height of 11 ft. 4 ins. at the centre, and 9 ft. at the side walls. The roof consists of 4 ins. of reinforced concrete. This is carried on 12 in. I beams spanning each section, at 10 ft. centres, with two intervening 8 in. I beam stringers in each section. The wall over the end doors is supported on a through 12 in. I beam, spanning the full width of the building.

Each end of the kiln is served by a transfer table, operating in pits 80 ft. long, located 10 ft. beyond the end of the building. These pits are 5 ft. wide and 1 ft. 7½ ins. deep, with a 2 ft. gauge track extending the length of the pits, in the bottom. Lumber can be loaded from the adjoining yard tracks to kiln cars carried on the transfer tables, passing in at one end, and, when dried, out at the other.

The foundations of the building are of concrete, carried down to a safe depth. The floors of the kiln, and the portion of the yard in front of the building ends, and extending to the concrete transfer pits, are of 6 in. concrete, with a ¾ in. cement finish.

The control cabinet for the heating control apparatus is a small leanto, 3 by 2 ft., with the outer wall 2 ft. high, sloping up to the kiln wall at the west end. The control cabinet is of concrete and covers a concrete chamber 2 ft. deep, which contains the pipe connections. The roof of the cabinet is hinged at the top to make the interior accessible from the outside only. This hinged roof consists of two thicknesses of tongued and grooved pine, fitted diagonally, with a 1-8 in. sheet of asbestos between, the whole covered with galvanized sheet iron. Inside the cabinet, at a height of 12 ins. above the ground level, or 3 ft. above the bottom of the pit, there is a floor, through which project the control valve wheels and gauge connections.

Through the bottom of the control cabinet the steam and return connections with the power house pit are made, steam entering in a 4 in. main, and the return through a 3 in. main. Inside the pit both divide, one for each kiln room, the steam passing through the walls in 3 in. mains, and the return in 2½ in. mains. Along the inside wall of that end of the kiln rooms there is a concrete pit, 15 by 18 in., extending the width of each room, the mains from the control cabinet passing along this pit, the steam main on the bottom of the pit, and the return carried on the side wall of the pit. Each room is divided into 7 units of heating pipes, which consist of 2 in. pipes laid on the floor of the room, extending to the full length, the condensation passing out to the return main at the far end, and thence back to the pit. The heating units consist, four of 3 pipes, two of 5 pipes, and one of 10 pipes, making 32 heating units of 2 in. pipe, each about 45 ft. long. Each end header is connected from the steam main by a 2½ in. connection. The control cabinet contains valve wheels for both steam and return for both rooms, and also a recording thermometer for each room mounted on a side wall, and pressure gauges mounted on the floor. On the rear wall there is carried the electrical control apparatus for the interior lighting.

This article will be concluded in our next issue.

With saturated steam, the average maximum horsepower is reached at a piston speed of 700 ft. per min., remaining constant up to 1,000 ft. per sec., then slightly decreasing; with superheated steam, it is reached at 1,000 ft. per min., remaining constant for greater speeds.

Many happy returns of the day to:—
W. G. Annable, General Passenger Agent, C.P.R. Atlantic Steamship Lines, Montreal, born at Ottawa, Mar. 3, 1875.

John Archibald, Locomotive Foreman, C.P.R., Coquitlam, B.C., born at Edinburgh, Scotland, Mar. 13, 1872.

C. H. Bowes, Assistant General Passenger Agent, C.P.R., Vancouver, B.C., born at Bangor, Me., Mar. 22, 1877.

George Bury, Vice President, C.P.R., Winnipeg, born at Montreal, Mar. 6, 1866.

Allan Cameron, Superintendent, Land Branch, Department of Natural Resources, C.P.R., Calgary, Alta., born near Owen Sound, Ont., Mar. 14, 1864.

Frank Clark, Locomotive Foreman, Canadian Northern Ry., Radville, Sask., born at Cowes, Isle of Wight, Eng., Mar. 20, 1884.

F. G. J. Comeau, General Freight Agent, Dominion Atlantic Ry., Halifax, N.S., born at Meteghan River, N.S., Mar. 10, 1859.

W. A. Cooper, Manager, Sleeping, Dining and Parlor Cars and News Service, C.P.R., Montreal, born there, Mar. 22, 1871.

A. E. Cox, General Storekeeper, Canadian Northern Ry., Winnipeg, born at Huddersfield, Eng., Mar. 12, 1863.

Hon. N. Curry, President, Canadian Car and Foundry Co., Montreal, born in King's county, N.S., Mar. 26, 1851.

C. T. Delamere, Assistant Engineer of Construction, C.P.R., Montreal, born at Brainerd, Minn., Mar. 18, 1881.

Patrick Dubee, Secretary-Treasurer, Montreal Tramways Co., Montreal, and President Canadian Electric Railway Association, born at Montreal, Mar. 4, 1876.

G. R. Fairhead, District Freight Agent, Canadian Northern Ry., Hamilton, Ont., born at Toronto, Mar. 6, 1882.

W. T. Fitzmaurice, Assistant Superintendent, Moncton and Ste. Flavie District, Intercolonial Ry., Newcastle, N.B., born at Bedford, N.S., Mar. 19, 1870.

C. Forrester, Superintendent, Stratford Division, Ontario Lines, G.T.R., Stratford, born at Wanstead, Ont., Mar. 5, 1876.

C. O. Foss, M. Can. Soc. C.E., District Engineer, National Transcontinental Ry., St. John, N.B., born at Wentworth, N.H., Mar. 20, 1852.

H. M. Gain, Trainmaster, Districts 6 and 7, Belleville Division, Eastern Lines, G.T.R., Belleville, Ont., born at Lindsay, Ont., Mar. 21, 1879.

R. A. Gamble, Assistant General Yardmaster, C.P.R., Winnipeg, born at Dublin, Ireland, Mar. 1, 1876.

H. W. Gays, General Manager, Ottawa and New York Ry., Ottawa, Ont., born at Brant, Erie Co., N.Y., Mar. 21, 1848.

E. P. Goodwin, Inspecting Engineer, National Transcontinental Ry., Ottawa, Ont., born at Baie Verte, N.B., Mar. 17, 1865.

J. Halstead, Division Freight Agent, C.P.R., Calgary, Alta., born at Bracebridge, Ont., Mar. 2, 1877.

R. M. Hannaford, M. Can. Soc. C. E., Assistant Chief Engineer, Montreal Tramways Co., Montreal, born there, Mar. 22, 1865.

C. A. Hayes, General Traffic Manager, Canadian Government Railways, Moncton, N.B. born at West Springfield, Mass., Mar. 10, 1865.

H. T. Hazen, M. Can. Soc. C.E., Mackenzie, Mann & Co., Toronto, born at Truro, N.S., Mar. 14, 1870.

Joseph Hobson, M. Can. Soc. C.E., Consulting Engineer, G.T.R., Hamilton, Ont., born at Guelph, Ont., Mar. 1834.

J. I. Hobson, Treasurer, Canada Steamship Lines, Ltd., Montreal, born at Guelph, Ont., Mar. 30, 1872.

N. J. Holden, President, The Holden Co., Ltd., Montreal, born at Nobleton, Ont., Mar. 22, 1866.

A. R. Holtby, Master of Bridges and Buildings, Mountain Division, G.T.P.R., Prince Rupert, B.C., born at Rawdon, Que., Mar. 23, 1859.

Frank Lee, M. Can. Soc. C.E., Principal Assistant Engineer, C.P.R., Winnipeg, born at Chicago, Ill., Mar. 7, 1873.

R. W. Long, Division Freight Agent, G. T. R., Hamilton, Ont., born at Appin, Ont., Mar. 20, 1873.

T. W. Lowe, General Boiler Inspector, C.P.R. Western Lines, Winnipeg, born at Montreal, Mar. 30, 1858.

J. M. McKay, Superintendent, District 1, British Columbia Division, C.P.R., Revelstoke, born at Tiverton, Ont., Mar. 13, 1868.

Owen McKay, M. Can. Soc. C.E., Chief Engineer, Essex Terminal Ry., Walkerville, Ont., born in Ross tp., Renfrew co., Ont., Mar. 13, 1848.

Sir Donald D. Mann, Vice President, Mackenzie, Mann & Co., Ltd., and First Vice President Canadian Northern Ry., Toronto, born at Acton, Ont., Mar. 23, 1853.

H. H. Melanson, General Passenger Agent, Canadian Government Railways, Moncton, N.B., born at Scadou, N.B., Mar. 9, 1872.

J. V. Murphy, District Passenger Agent, C.P.R., Nelson, B.C., born at Bowmanville, Ont., Mar. 5, 1885.

C. B. Mutchler, Signal Engineer, G. T. Pacific Ry., Winnipeg, born at Pine Island, Minn., Mar. 8, 1879.

Peter Paton, Assistant Operating Superintendent, Passenger Steamers, Canada Steamship Lines, Ltd., Toronto, born at New Lowell, Ont., Mar. 13, 1869.

R. Patterson, Master Mechanic, G.T.R., Stratford, Ont., born at Brantford, Ont., Mar. 13, 1860.

F. W. Peters, General Superintendent British Columbia Division, C.P.R., Vancouver, born at St. John, N.B., Mar. 25, 1860.

E. H. Sewell, City Passenger Agent, C. P. R., Sherbrooke, Que., born at Quebec, Line, Montreal, born at Kingston, Ont., Mar. 21, 1855.

W. Y. Soper, Vice President, Ottawa Electric Ry. Co., Ottawa, Ont., born at Oldtown, Me., Mar. 9, 1854.

E. F. L. Sturdee, Assistant District Passenger Agent, C.P.R., Toronto, born at St. John, N.B., Mar. 29, 1876.

G. W. Vaux, General Agent, Passenger Department, Union Pacific Rd., Chicago, born at Montreal, Mar. 21, 1866.

A. T. Weldon, General Freight and Passenger Agent, Black Diamond Steamship Line, Montreal, born at Dorchester, N.B., Mar. 6, 1876.

D. O. Wood, General Freight Agent for Ontario, Allan Line Steamship Co., Toronto, born at Kleinburg, Ont., Mar. 16, 1864.

The grate surface required for saturated steam locomotives is the horsepower divided by 30, and for superheated steam locomotives, the horsepower divided by 36.9.

F. Stockdill, Interlocking Inspector, C.P.R., Montreal, in remitting his renewal subscription for Canadian Railway and Marine World, writes: "Please find enclosed subscription for your valuable paper."

An evaporation of 10 lbs. of water per hour per sq. ft. of outside heating surface may be obtained from 2¼ in. tubes 18 ft. long, and 55 lbs. per sq. ft. of firebox heating surface.

It is estimated that about 10% of all motive power is normally out of commission, undergoing repairs. As about 2% of these repairs can be handled with locomotive house facilities, there ought to be main shop accommodation for 8 stalls per 100 locomotives belonging to the line.

Railway Mechanical Methods and Devices.

Locomotive Tire Storage, Grand Trunk Railway Montreal Shops.

The storing of material around shops and yards in a systematic manner, so that it may be readily got at as required, with the least disturbance of other stored material, is one of the many important problems presented around every shop. The storage of the small parts is well looked after by the stores department officials, but it is not possible to always adopt their methods where materials larger than they are in the habit of handling in the usual manner are involved.

Around a locomotive shop, where repairs are handled, locomotive tires come under the list of those parts requiring most frequent renewal. In the G. T. R. Montreal

of the track. The tires are carried down the storage space, and can be dropped directly on the cars at the far end to be run into the shop to the right for machining, or to the left to the circular building shown, for tire mounting. The locomotive truck storage space is shown to the right. It communicates with a service track along the row of crane columns.

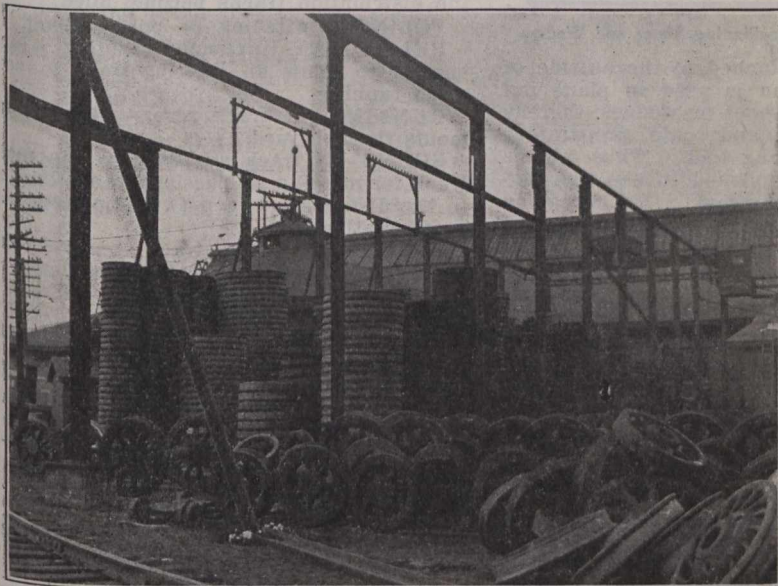
Clamp for Lifting Tires.

The accompanying illustration shows a very convenient form of clamp used in lifting locomotive tires in and out of the boring mill, on the St. Louis and San Francisco Rd. It consists of a heavy forged bar, with a cut out jaw on one end like a heavy

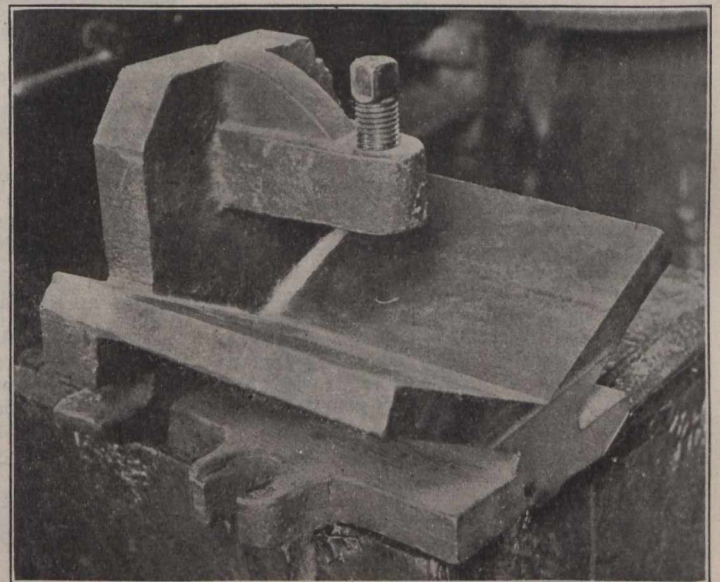
at the C. P. R. Angus shops, Montreal, for lifting axles in and out of the lathe so as to avoid the central driving head. It is said that this clamp makes a quick fastening.

Facing Brasses at Quebec Central Railway Shops.

A very useful jig for facing brasses is in use in the Quebec Central Ry. shops, at Sherbrooke, Que. Brasses, from the very nature of their shape, are more or less awkward to handle in the machine, and especially when held in a vise are they difficult to line up. This jig is extremely simple, consisting of a V shaped casting, with a flat base, to be bolted to the shaper table, and at the back of the V space, there is a



Locomotive Tire Storage, Served by Electric Crane.

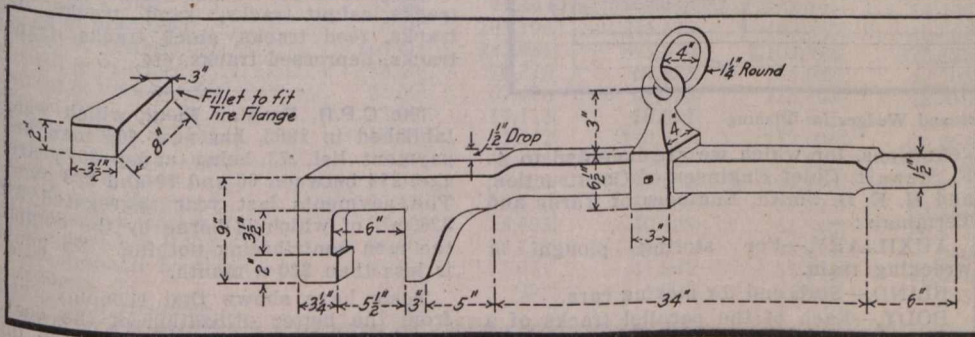


Jig for Facing Brasses.

shops, the problem of storing these tires, using a minimum of space, made necessary by the cramped condition of the shop grounds, has been effectively solved as shown in the accompanying illustration, of the tire storage yard, just outside the main shop door. Instead of standing them on their rims against a supporting wall, which requires a considerable amount of

spanner. The inner face of this cut out is square with the body of the forging, and fits up against the inner surface of the tire to be lifted. The other face of the jaw slips loosely over the tire flange, a taper pin driven in between this face and the flange and tread rigidly securing the whole. A collar fits over the arm of the bar, secured in the desired position by a set screw.

vertical shoulder, with a lug projecting horizontally therefrom, containing a set screw, for clamping the work in place. The base of the jig has an aligning rib planed in its surface, so that all that is required to set up the job, is to set the jig on the table, bolt it down, and then place in the brass, which is secured by the upper set screw. Both sides are open and free to be operated on by the shaper tool. The Q. C. R. shops are in charge of G. M. Robins, Master Mechanic, with E. M. Green, General Foreman Machine Shop.



Clamp for Lifting Tires.

room, vertical piling has been resorted to, all tires of a size being piled in one tier. The storage area is boarded over, presenting a level surface on which to pile, so that a considerable height can be used.

Spanning the tire storage yard, there is a light electric crane, carried on old bridge columns. The crane is operated from a suspended cabin overhanging the outside

The upper face of the collar is forged with a lifting eye. This collar is made adjustable in order that it may be slipped along the bar to centre the lifting ring over the centre of the tire so that the whole tire is balanced. This information is abstracted from the Railway Age Gazette, mechanical edition. The whole principle is very similar to the lifting hook arrangement in use

Tempering Long Taps at Grand Trunk Railway Montreal Locomotive Shops.

In the handling of long taps during the tempering process, it is usually necessary for the blacksmith to have the use of a lathe, in which to place the tap to ascertain whether the heating has caused it to bend slightly, in which case it is customary to bend the tap back to its correct alignment by prying up under the bent section, with the tap still retained between the lathe centres. The objection to this method is that a lathe must be taken out of useful service, which quite frequently involves the idleness of the lathe operator during this period as well.

A special system of handling this work has been evolved in the G.T.R. Montreal locomotive shops, where the care of taps is in charge of R. Pike, Foreman Toolmaker.

A steel tank, 18 ins. diam. by 8 ft. long, is sunk into the ground, with only the upper 2 ft. above the floor level. Across the top of this tank there is a frame carrying a bearing bracket vertically, in which a long brass spindle is carried, this spindle being of such a fit that it may be raised or lowered. On the lower end of this spindle there is attached an offset arm, with an upwardly projecting centre. An adjustable arm of similar design is secured on the upper length of the spindle, but may be adjusted in position by means of a clamp. The centre on this arm projects downwards. It is a sliding fit in the arm, and is held in its lowest position normally by a coiled spring around the lower part of the centre, bearing against a head on the end of the latter.

An oil furnace heats the tap to the requisite temperature, when it is removed, and the tank spindle raised and the tap placed between centres, these latter being first adjusted to the length of the tap to be tempered. Between these centres the tap can be revolved and its truth determined. If out of true, it can be removed for straightening. This is accomplished by the device attached to the cover of the adjacent oil box. A flat loop of bar stock is bolted to the cover of the box and a roller placed in front of the loop. By the combined use of the loop and roller the tap can be bent at any desired place and then replaced between the centres for verification. Once true, the whole supporting vertical spindle is lowered into the tempering bath, with which the tank is filled, where it is kept as long as necessary. This vertical spindle is counter-weighted by a weight, and in consequence moves freely. Any length of tap up to 7 3/4 ft. can be treated. The whole equipment can be placed in the corner of the tool room, out of the way of the general work, and away from the lathes.

end jaws are adjusted in and out by the bolts, which are threaded in the bottom of the jaw. Four sections of the chuck will hold from 8 to 11 shoes. It is said that by the use of this combination, the cost of machining per shoe has been reduced to 4 cents.

The outside angular tools are adjusted to the outside dimensions of the shoe, and the inside tool is made in one piece to the size and shape of the frame fit. A further tool,

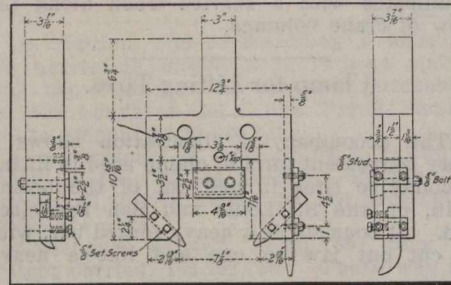


Fig. 2.—Gang Tool for Planing Shoes and Wedges.

3/4 by 1 1/2 in. is attached to the outside of the tool holder and is used to plane out the bottom of the shoes or wedges, thereby removing the sand and scale, preparatory to entering the sizing tool. Thus all operations are accomplished in the one setting, and at one operation. The foregoing is abstracted from the Railway Age Gazette, mechanical edition.

Terms and Definitions for Yard Tracks, Canadian Northern Railway.

Following are the terms used by MacKenzie, Mann and Co.'s engineering department, Toronto, for yard tracks, with their

ity; track passes over a mound so as to rise to a summit.

INCLINE.—An inclined track, or tracks, on a river bank at a protected landing place with adjustable apron and cradle, for connecting to the track on a car float, for transfer of cars.

INDUSTRIAL.—A track serving one or more industries.

IN GOING.—For use of locomotives into roundhouse.

LADDER.—A track connecting successively, the body tracks of a yard.

LEAD.—An extended track connecting either end of a yard with the main track.

LOOP.—For turning trains.

MAIN.—A track extending through yards and between stations, upon which trains are operated by timetable or train order, or the use of which is controlled by block signals.

OUT GOING.—For the use of locomotives from roundhouse.

OVERFLOW.—Intended for use in case the distribution tracks become filled.

POLING.—Switching by pole method.

RELIEF.—An extended siding long enough to allow an inferior train to continue running.

RUNNING.—A track reserved for movements through yard.

SIDING.—A track auxiliary to the main track for meeting, or passing, trains, limited to the distance between two adjoining telegraph stations.

SINGLE.—A main track upon which trains are operated in both directions.

SORTING.—For arranging the cars of a train in station order.

SPUR.—A stub track of indefinite length diverging from the main line.

STORAGE.—Hold for order cars.

STUB.—A track connected with another at one end only.

SWITCHING OR SHUNTING LEAD.—A track connecting with groups of sidings to enable shunting to be carried on without running out on the main line.

TEAM.—A track where freight is transferred direct between cars and wagons.

THREE OR MORE.—Main tracks upon any of which the current of traffic may be in either specified direction.

TRANSFER SLIP.—A protected landing place for car floats with adjustable apron or bridge for connecting the tracks on the land with those on car float.

Y.—A triangular arrangement of tracks used for turning locomotives, cars, or trains.

SPECIAL.—In a typical yard there will be several tracks devoted to special purposes, varying with local conditions. These will include caboose tracks, scale and coaling tracks, ashpit tracks, sand tracks, icing tracks, feed tracks, stock tracks, transfer tracks, depressed tracks, etc.

The C.P.R. Pension Fund, which was established in 1903, has now 605 men on its payment list, 73 being under 60 years of age, 294 between 60 and 70 and 238 over 70. The payments last year aggregated \$169,326, all of which is borne by the company, the men contributing nothing. No pension is less than \$20 a month.

Tests have shown that economy results from the better utilization of the coal in the modern locomotive than in the older types, as the range of temperatures at which the locomotive works, that is, the difference between the temperature of the furnace and of the stack with the long tube locomotive is greater.

In a locomotive boiler, the distance from the water level, measured at the top gauge cock to the outside of the largest course, equals the diameter of the largest course multiplied by 0.15.

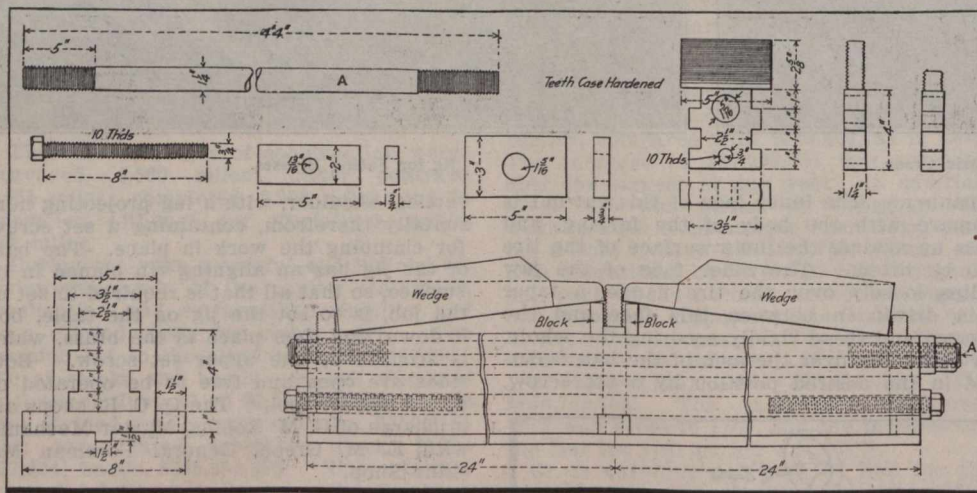


Fig. 1.—Chuck for Holding Shoes and Wedges for Planing

Planing Shoes and Wedges.

The practice of the Central of Georgia Ry. in the planing of shoes and wedges is somewhat similar to that in the C. P. R. and C. N. R. shops at Winnipeg, especially with regard to the use of the gang tool for the planing. The chuck and combination tools employed are shown in figs. 1 and 2, the combination being such that both frame fit and the outside of the flanges may be planed in one operation. The chucks are made in 4 ft. sections, and as many as possible are placed end for end on the planer, and if the latter has two heads, a double row is possible. The tool used is shown in fig. 2. The shoes are clamped by tightening the nut A on the chuck rod, holding them tight enough to take off any cut. The

definitions, for which we are indebted to A. F. Stewart, Chief Engineer of Construction, and H. E. B. Smith, Engineer of Yards and Terminals:—

AUXILIARY.—For storing plough or wrecking train.

BLIND.—Stub end for storing cars.

BODY.—Each of the parallel tracks of a yard upon which cars are switched and stored.

DOUBLE.—Two main tracks upon each of which the current of traffic is in a specified direction, and upon the other in the opposite direction.

FAN TAIL.—Stub end for storing cars.

HOUSE.—A track alongside of, or entering, a freight house, and used for cars receiving or delivering freight at the house.

HUMP YARD.—Switching cars by grav-

21299. Feb. 3.—Authorizing C.P.R. to rebuild bridge 91.5, Toronto Subdivision.
21300. Feb. 2.—Approving revised location of portion of C.P.R. main line, as built from mileage 29.00 to 32.49, White River Subdivision, Ont.
21301. Jan. 27.—Rescinding order 20893, Nov. 25, 1913, and order 17358, Aug. 27, 1912, in so far as it relieves C.P.R. from erecting fences along its right of way between Savona and Pennys, B.C.
21302. Jan. 30.—Authorizing C.P.R. to build siding for Northern Brick Co., Waters Tp., Ont.
21303. Jan. 30.—Authorizing Canada Southern Ry. to connect with Niagara, St. Catharines and Toronto Ry., near Welland, Ont.
- 21304, 21305. Jan. 31.—Extending to May 31, time within which G.T.R. shall complete siding for International Harvester Co., Hamilton, Ont., and amending order 20697, Oct. 30, 1913, in same connection.
- 21306 to 21308. Feb. 2.—Authorizing Ontario Hydro Electric Power Commission to erect transmission line across C.P.R. telegraph wires on West St., Goderich, Ont.
21309. Feb. 2.—Rescinding orders 4406 and 5804, Feb. 27 and Dec. 10, 1908, respectively, and authorizing G.T.R. to terminate lease relating to Hamilton, Waterloo and Guelph Ry. location in Hamilton, G.T.R. to re-take the lands and premises freed from any further recognition of right and privilege created by the lease.
21310. Feb. 4.—Authorizing C.P.R. to build its ballast pit spur at LaFleche at grade across road allowance at mileage 137.07 on its Weyburn-Stirling Branch, Sask.
21311. Feb. 2.—Authorizing C.P.R. to build spur in Medicine Hat, Alta., for Dominion Grocers, Ltd., Moose Jaw, Sask.
21312. Feb. 4.—Authorizing C.P.R. to build its ballast pit spur at Meyronne, Sask., at grade across road allowance at mileage 153.0 on its Weyburn-Stirling Branch.
21313. Feb. 5.—Ordering C.P.R. and G.T.R. to build subway under their double main line at Ste. Anne de Bellevue, Que.
21314. Feb. 4.—Authorizing Canadian Northern Ry. to reduce its daily passenger service each way, excepting Sunday, to a tri-weekly service each way, between Kindersley, Sask., and Hanna, Alta., until June 1.
21315. Feb. 4.—Declaring that land applied for by C.P.R. on French River Indian Reserve, Parry Sound District, Ont., is required for railway purposes, and is land which were it the property of private owner could be taken without consent.
21316. Feb. 5.—Extending to June 30, time within which C.P.R. shall complete branch for J. D. Abbott, Balsam Lake, Ont.
21317. Feb. 5.—Authorizing Canadian Northern Ry. to divert public road in s.e. ¼ Sec. 29, Tp. 25, R. 20, w. 3 m., Sask., and rescinding order 17042, July 16, 1912, in so far as it authorizes crossing of highway between n.e. ¼ Sec. 20 and s.e. ¼ Sec. 29.
21318. Feb. 5.—Authorizing clearances of G.T.R. sidings to Canada Forge Co., Welland, Ont., for 6 months.
21319. Jan. 28.—Authorizing Canadian Northern Ontario Ry. to divert Jane St., at station 1094:32, North Bay, Ont.
21320. Feb. 5.—Relieving C.P.R. from speed limitation of 10 miles an hour over the crossing of King St., Virden, Man.
- 21321, 21322. Feb. 6.—Authorizing Toronto Eastern Ry. and Oshawa Ry. to operate trains and cars, for 6 months, over crossing to carriage factory, and crossing at Simcoe St., Oshawa, Ont.
21323. Feb. 2.—Authorizing C.N. Ontario Ry. to build spur from its Montreal-Port Arthur Line, Stafford Tp., through Pembroke, with two branches in Pembroke, for the Box Factory, Steel Equipment Co., Pembroke Lumber Co., and local freight of the town and surrounding country; and to cross certain streets in Pembroke.
21324. Feb. 7.—Authorizing British Columbia Electric Ry. to operate over crossing of Esquimalt and Nanaimo Ry., near Russell, B.C.
21325. Feb. 10.—Rescinding order 21286, Jan. 29, 1914, and amending order 20899, Nov. 27, 1913, re revised location of Mount Royal Tunnel and Terminal Co.'s line.
- 21326, 21327. Feb. 10.—Suspending, pending investigation by Board, supplements 151 and 152 to G.T.R. Tariff, C.R.C. no. E. 2552, published to take effect Feb. 15 and 16 respectively, and advanced rates published in Supplements 40 and 42 to C.P.R. Tariff, C.R.C. no. E. 2559, applying on building brick from Cooksville and Weston, Ont., to Toronto; and on gravel and building sand from Cooksville to North Toronto, Parkdale and Toronto.
21328. Feb. 10.—Authorizing C.P.R. to build spur for Winnipeg Paint and Glass Co., Kildonan Parish, Man.
21329. Feb. 6.—Suspending, pending determination by the Board, increases in switching rates on sand, gravel and brick as from Feb. 15, notice of which is given in Supplements 19 and 20 to G.T.R. Tariff C.R.C. no. E. 2677.
21330. Feb. 9.—Relieving C.P.R. from speed limitation of 15 miles an hour over portions of Weyburn-Stirling Branch between mileage 0 and 52.2.
21331. Feb. 9.—Authorizing C.P.R. to build spur extension for Ontario Stone Corporation, North Orillia Tp., at Uthoff, Ont.
21332. Feb. 4.—Authorizing C.P.R. to take certain lands in Con. 3, Bathurst Tp., Ont.
21333. Feb. 9.—Authorizing C.N. Ontario Ry. to build across C.P.R., near Hurdman's Bridge, Nepean Tp.
21334. Feb. 10.—Rescinding order 17477, Sept. 12, 1912, re C.P.R. road diversion near Berkley Station, Ont.
21335. Feb. 10.—Authorizing C.P.R. to build across road allowance by a bridge between Lots 22 and 23, Con. A, Hamilton Township, mileage 121.29 from Glen Tay, Ont.
21336. Feb. 10.—Authorizing C.P.R. to change present grade crossing in road allowance between Lots 13 and 14, Con. 3, Trafalgar Tp., Ont., and to build additional track at grade across same.
21337. Jan. 29.—Authorizing C.P.R. to build St. Marys and Western Ontario Ry. at grade along Thames Ave. and across Park and Elgin Sts., St. Marys, Ont.
21338. Feb. 10.—Approving location of C.P.R. station at Parsons, B.C.
21339. Dec. 3.—Authorizing Canadian Northern Ry. to build spur for Dominion Gypsum Co., Winnipeg, Man.
21340. Feb. 11.—Relieving C.P.R. from speed limitation of 15 miles an hour over portion of Swift Current Southeasterly Branch from near Swift Current to Neville, Sask.
21341. Feb. 10.—Authorizing C.P.R. to build its Weyburn-Stirling Branch Line at grade across 22 highways, between mileage 277.78 and 298.07, Sask.
21342. Feb. 11.—Authorizing G.T.R. to rebuild bridge 240, over Bear Creek, near Powassan, Ont.
21343. Feb. 9.—Authorizing Canadian Northern Ry. to build spur for Nicholson and Blain, Edmonton, Alta.
21344. Feb. 11.—Amending order 20857, Nov. 19, 1913, to provide that G.T. Pacific Ry. build forth with a station and platform at Telkwa, B.C., not to be below standard of I.A.B.R.C. station.
21345. Feb. 11.—Authorizing C.P.R. to rebuild bridge 18.71, over Battle River, on its Coronation Northwesterly Branch, Alta.
21346. Feb. 11.—Authorizing G.T.R. to rebuild bridge 234, over McCormick's Creek, mileage 43.30, Montreal Division, Que.
21347. Feb. 10.—Approving Supplement 3 to Express Classification for Canada 3, prescribing regulations for shipping live poultry in coops.
21348. Feb. 12.—Authorizing Canadian Western Ry. to open for traffic its line from Drumheller, mileage 314.7 to 396.4, Alta.
21349. Feb. 11.—Ordering Wabash Rd. to stop its train no. 5 at Corinth, Ont., if flagged, on Tuesday, Thursday and Saturday of each week, for 60 days from date.
21350. Feb. 11.—Ordering protection at crossing of Bennett Ave., Maisonneuve, Que., by C.N. Quebec Ry., and Montreal Terminal Ry., by a pair of gates, to be operated by day and night watchmen.
21351. Feb. 12.—Extending to May 15, time within which spur for Renfrew White Granite Co., Ross Tp., Ont., is to be completed.
21352. Feb. 9.—Ordering C.P.R. to appoint permanent agent at Millet station, Alta.
21353. Feb. 12.—Extending to May 21, time within which switching lead in Toronto, be completed.
21354. Feb. 12.—Approving revised location of portion of C.P.R. Columbia and Western Line at mileage 0.45, Granby Subdivision, B.C.
21355. Feb. 12.—Authorizing G.T. Pacific Ry. to carry traffic on portion of its main line east of Prince Rupert, B.C., between mileage 301 and 337.
21356. Feb. 12.—Approving, temporarily, G.T. Pacific Ry. Standard Freight Mileage Tariff, C.R.C. 21, incorporating and superseding C.R.C. 19, by an extension of mileage, to apply between stations between Prince Rupert and Wordsworth, B.C., inclusive.
21357. Feb. 9.—Authorizing Ontario Hydro-Electric Commission to cross C.P.R. wires and track on Main St., Chesterville, Ont.
- 21358, 21359. Feb. 13, 14.—Approving plan A of G.T.R. bridge 63, at mileage 152.51, from Black Rock, over public road at Golmesville, and authorizing G.T.R. to rebuild bridge 52, at mileage 127.75, from Black Rock, Fullarton Tp., Ont.
21360. Feb. 13.—Authorizing C.P.R. to divert highway in s.e. ¼ of Sec. 26, Tp. 3, R. 29, w. 3 m., Sask.; and to build its Weyburn-Stirling Branch at grade across same between Secs. 25 and 26.
- 21361, 21362. Feb. 14.—Authorizing C.P.R. to divert highway in Secs. 1 and 9, Tp. 23, R. 2, w. 4 m., Alta.; and to build its Bassano Easterly Branch Line across same at mileage 111.3 and 114.7.
21363. Feb. 13.—Authorizing C.N. Quebec Ry. to build siding into sand pit at mileage 16.90, west of Joliette, for E. Dupuis, St. Julienne, and to cross public road to Bissonnette, at Station 66+70.
21364. Feb. 13.—Authorizing C.P.R. to build its Swift Current Northwesterly Branch, at mileage 169.89, at grade across Canadian Northern Ry., Goose Lake Branch, at mileage 210.12.
21365. Feb. 13.—Authorizing McKim Tp., Ont., to build highway crossing over Algoma Eastern Ry., in Lot 11, Con. 4.
21366. Feb. 14.—Authorizing C.P.R. to build siding, for Conger Lehigh Coal Co., Toronto, Ont.
21367. Feb. 17.—Amending order 21172, Jan. 7, re C.P.R. double track, by substituting Brandon, Man., for Broadview, Sask.
21368. Feb. 17.—Authorizing Kettle Valley Ry. to carry traffic over portion of line from Pentiction Wharf, westerly for 17 miles, and northerly and northwesterly from Carmi to mileage 76.5, 30 miles, in B.C.
21369. Feb. 16.—Rescinding order of Railway Committee of Privy Council of Canada, of Sept. 1, 1899.
21370. Feb. 17.—Authorizing C.P.R. to build spur for Hope & Sons, of Canada, Peterboro, Ont., and rescinding order 2132, Jan. 19, in same connection.
21371. Feb. 17.—Ordering Canadian Northern Ry. to rebuild its station at Aberdeen, Sask., to be completed by July 1.
- 21372 to 21374. Feb. 17.—Authorizing C.P.R. to build road diversions as follows: At mileage 88.9, Bassano Easterly Branch; in Secs. 2-22, and 34-21; and to build its Bassano Easterly Branch at grade across north and south road allowances between Secs. 2 and 3, Tp. 22, and Secs. 34 and 35, Tp. 7; in Secs. 20-21-8, w. 4 m., Alta., and to build its Bassano Easterly Branch at grade across same at mileage 66.39.
21375. Feb. 17.—Authorizing C.P.R. to carry McGill University mining students at special rate of \$40 each from Montreal, to Rossland, Phoenix, and Greenwood, B.C., and return, or at \$50 from Montreal to Vancouver, B.C., and return, including side trips to Rossland, Phoenix and Greenwood, and if desired, over lines from Sudbury to Sault Ste. Marie, Ont., and back, at \$2.75; and that any other parties desiring to travel for same purpose to B.C. or any other mining district, be granted equally favorable terms, until further ordered.
21376. Feb. 19.—Authorizing C.P.R. to build bridge 62.8 over Magnetawan River, near Byng Inlet, Ont.
21377. Feb. 18.—Authorizing C.P.R. to use bridges 25.7, Laggan Subdivision, Alta.; 92.3, Boundary Subdivision, B.C., and 176.9, Calgary Subdivision, Alta.
21378. Feb. 18.—Including Montreal Warehousing Co. as party to application of Montreal Board of Trade for order directing G.T.R. to put into effect at its Montreal elevator, same charges and conditions for grain as are in force at its Georgian Bay elevators.
21379. Feb. 19.—Authorizing G.T. Pacific Branch Lines Co. to build road diversion in s.w. ¼ Sec. 24-1-3, w. 2 m., Sask., at mileage 151.5 on its Regina-Boundary Branch.
21380. Feb. 19.—Amending order 21161, Jan. 7, re location of Toronto and Niagara Power Co.'s transmission line in Huron and Wentworth Counties, Ont.
21381. Feb. 19.—Amending order 21139, Dec. 31, 1913, re construction of Canadian Northern Ry. culverts at Obelisk, Sask., by substituting Alta., for Sask.
21382. Dec. 12.—Authorizing Canadian Northern Ry. to build across 9 highways on its Alsask Southeasterly Line, Sask.
21383. Feb. 19.—Approving Kettle Valley Ry. location between mileage 19.7 and 27.2, Hydraulic Summit west to Pentiction, B.C.
21384. Feb. 19.—Approving C.N. Ontario Ry. revised location and land required for yards, in Ferris Tp., Nipissing District, Ont., mileage 337 to 338.15, from Montreal.
21385. Feb. 19.—Authorizing C.P.R. to use bridges over North Saskatchewan River, at Edmonton, Alta.; 33.9, Edmonton Subdivision, Alta.; over Saskatchewan Ave., and over Jasper Ave., Edmonton, Alta.; 49.4 and 88, Red Deer Subdivision, Alta.
21386. Feb. 19.—Authorizing C.P.R. to build spur for Massey-Harris Co., Yorkton, Sask.
- General Order 119. Jan. 31.—Re removing regular station agents from various stations west of Port Arthur. This order is given fully on another page.
- General Order 120. Feb. 3.—Amending special tariffs of charges for detention of refrigerator cars when used for shipments of perishable freight, by eliminating clauses relating to detention at points of loading.

The Canadian Railway Club's Annual Dinner, held in Montreal Jan. 30 was more largely attended than any previous one, over 400 being present. R. W. Burnett, General Master Car Builder C. P. R., and President of the Club, was in the chair, and the other speakers were W. McNab, Principal Assistant Engineer, G. T. R.; F. P. Gutelius, General Manager Canadian Government Railways; Cy Warman, General Advertising Superintendent, G. T. R.; L. R. Johnston, General Superintendent, Angus Shops District, C. P. R.; G. A. Post, President Standard Coupler Co., New York; F. D. Adams, Dean of Faculty of Applied Science, McGill University; M. J. Butler, Vice President Armstrong, Whitworth & Co., of Canada; G. Ham, Headquarters Staff, C. P. R.; W. W. Butler, President the W. W. Butler Co., and Vice President Canadian Car and Foundry Co.

A New Logging Railway in B. C.—The Delta Shingle Mill, Churchill, B. C., has, it is reported, arranged to build a logging railway for hauling timber from the Scott road to its mills. The Surrey County Council has granted permission for the building of the line across certain road allowances.

Canadian Northern Railway Terminals at Port Mann.

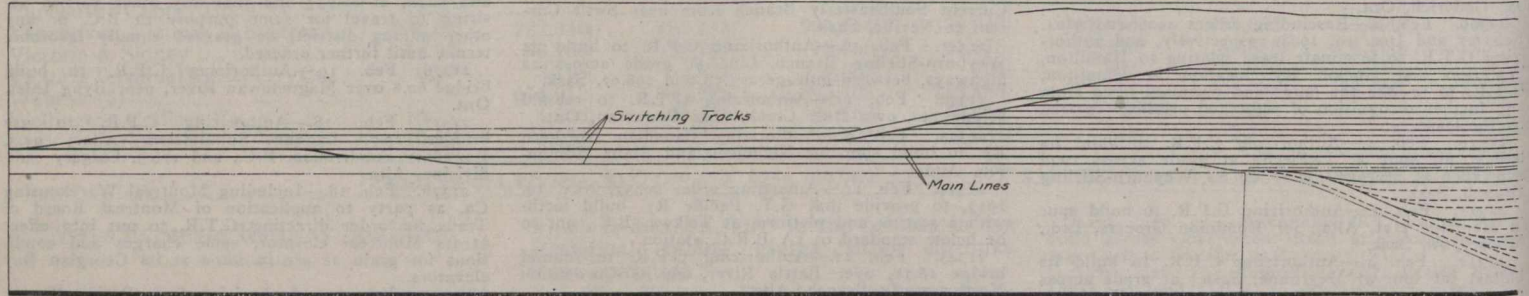
The Canadian Northern Ry. for one of its Pacific Coast terminals of its transcontinental line now nearing completion, has opened up a tract of land on the Fraser River, about 12 miles from Vancouver, where it is constructing extensive terminal facilities. The site has been named Port Mann, after Sir Donald D. Mann, Vice President. As a part of the general scheme, and as a means of financing the work, the property back from the river, along which the railway facilities will be situated, was secured by the railway as a townsite, was subdivided,

tracks, over which the made up trains may be taken from or into the yards. On the north of the east end of the easterly yard, there will be three caboose tracks, between which and the yard, will be a scale track. To the north of this, a large coal storage space has been reserved.

The centre of the projected town will be Bon Accord Square, Centre St. leading directly from the river into it. Stub tracks leading from ladder tracks east and west of this street, will form an extensive system of storage and team tracks; there will

ing of rolling stock repairs on all the company's Pacific Coast lines, has also been planned, only a small portion of which will be completed at present. Provision has been made for the addition of all the buildings required in a complete shop layout, some of which will be built in sections, and extended as required.

The general shop scheme consists of a central midway served by a 60 ft. transfer crane, at right angles to the main line tracks. The locomotive shop will be to the east of the midway, and will ultimately be 150 by 600 ft., with 24 locomotive pits. The initial section now being built, is 250 ft. long, containing 10 pits. This shop will



Canadian Northern Railway Port Mann Terminal Layout (Section 1).

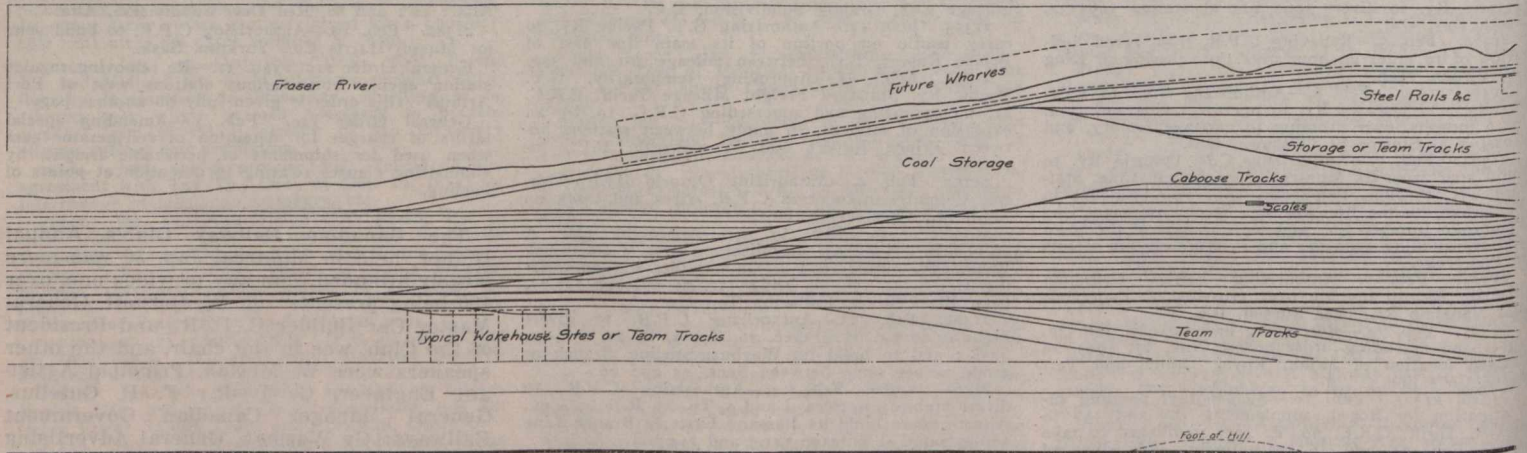
and has been on the market for some time. The town layout is of considerable extent, and it is anticipated that with the extensive railway and shipping facilities which will be provided it will become a point of considerable importance.

The Fraser River is navigable up to this point for large, ocean going vessels, and in consequence, it is expected to become a place of importance for the transshipment of freight for the Orient; a possible traffic in the transshipment of grain, etc., by way of the Panama Canal, is another phase of future development. Considering all these viewpoints, the prospect of the place developing seemed so imminent to the railway management, that a well developed

be 14 of these to the west, and 7 to the east of the street, the latter being the entry thoroughfare to the teamways. Along the south side of the yards, there will be a service track, from which stub team tracks will branch off, terminating at Railway St., 8 tracks to the west and 4 to the east of Centre St. Immediately to the west of Centre St. there will be 4 local freight tracks, with a freight shed, 40 by 200 ft., abutting on the street. Provision has been made for the extension of this shed to double its original size. The southerly two tracks of the team track layout will be spanned by a transfer crane, with a team scale in the roadway nearby.

Ample accommodation is being made for

be served by an 80 ft. transfer table along the east side, extending the full length of the shop. Only the portion corresponding to the part of the shop now being completed, is being built at present. On the east side of the transfer table, there will be a corresponding number of storage tracks, served by the transfer table. The locomotive shop, like all the buildings of the plant, will be of concrete construction, divided into two longitudinal bays by a central row of cast iron columns. It will contain two 10-ton travelling cranes, and a 200 ton electric jack for wheeling locomotives. This building will be the only part of the shop layout to be completed at present, all the other buildings being projected.



Canadian Northern Railway Port Mann Terminal Layout (Section 3).

scheme for extensive facilities has been undertaken, as shown in the accompanying plans.

The yard accommodation will consist of three yards of equal size, each containing 14 body tracks, 2,800 ft. long in the clear, giving a capacity in each of 1,000 cars, or a total capacity of 3,000 cars. These yards are on the north side of the double track main line, along the river bank. To each end of each yard, there will be two ladder tracks, each of these serving 7 tracks. To the intermediate body tracks, there will be cross overs from the main line. From the west, the westerly ladder tracks will be approached by two 1,600 ft. switching

future warehouses on sites 50 by 100 ft., both to the east and to the west of Centre St. The station will adjoin Centre St. At the foot of Centre St., there has been built a 1,000 by 102 ft. wharf, with freight storage shed adjacent. The extension of the wharf to four times its present capacity is contemplated as traffic increases, and the freight storage shed can be increased to three times its present capacity. The water along the frontage is being deepened so that the largest vessels may dock there, and with the double track that has been laid along the rear of the wharf, will make a convenient transshipment arrangement.

A very complete shop layout for the hand-

All the remaining buildings of the plant will be situated to the west of the midway. Abutting the midway will be the pattern shop, 50 ft. square; foundry, 100 by 200 ft.; coal and iron shed, 50 by 200 ft.; blacksmith shop, 100 by 200 ft., and stores, 50 by 150 ft. The latter building will be surrounded by a platform, 75 by 350 ft., for the rough stores. To the rear of the stores will be the scrap bins, with track scales in one of the stores service tracks, and with the oil storage tank nearby. The passenger car shop, 100 by 200 ft., will be directly to the rear of the blacksmith shop. The woodworking department, consisting of the planing mill, 100 by 150 ft.,

and the lumber shed and kiln, will be directly to the rear of the coal and iron shed, with lumber storage space to the rear of the lumber shed. The freight car shop, 100 by 300 ft., will be to the rear of the foundry, and the power house, 50 by 100 ft., to the rear of the pattern shop. All these buildings will be approached from the west from a ladder track, which will leave the service track along the south of the main line tracks near the west end of the main yards. The ladder, in addition to leading into the shop service tracks, will serve a 6 track freight car repair yard, and a 5 track passenger car storage yard, to the rear of their respective shops.

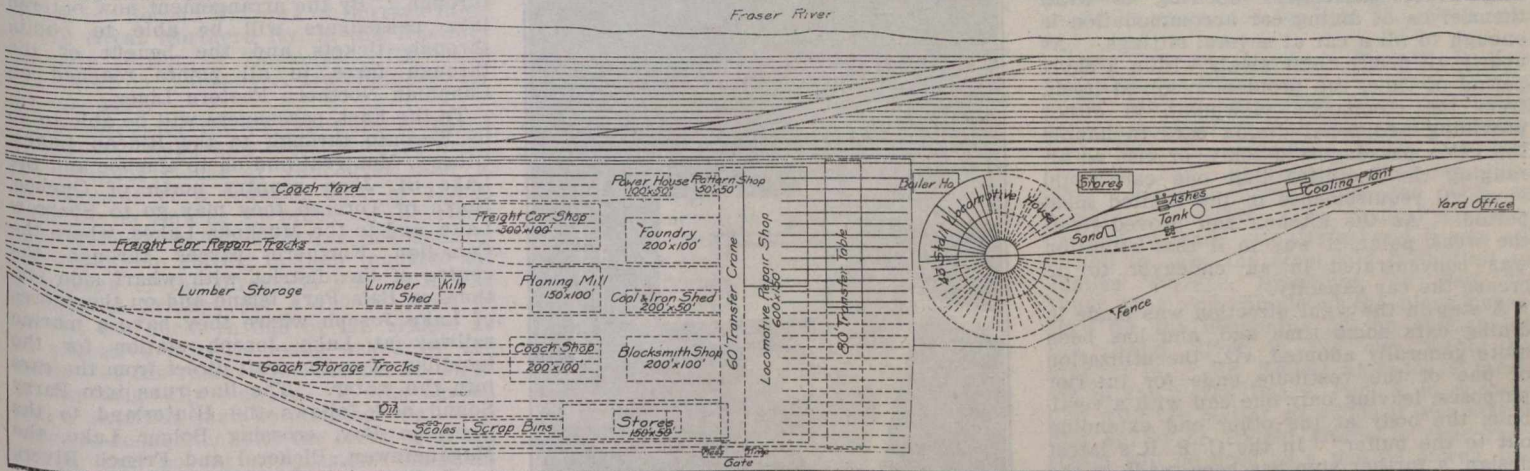
**Canadian Society of Civil Engineers
Annual Meeting.**

The annual meeting was held in Montreal, Jan. 27 to 29. The reports of committees, and which are of interest to railway engineers, were published in Canadian Railway and Marine World for February.

The following officers were elected:—President, M. J. Butler, Montreal; Vice President, R. A. Ross, Montreal; Members of Council, J. M. R. Fairbairn, Montreal; Prof. H. M. Mackay, Montreal; R. McColl, Halifax, N.S.; A. R. Decary, Quebec; R. F. Uniacke, Ottawa; W. A. Bucke, Toronto;

Dominion Government Railway to Hudson Bay.

Replying to a question in the House of Commons, Feb. 2, the Minister of Railways said the length of this railway from Pas to Port Nelson, Man., is 418.5 miles. The whole mileage is under contract, viz.—Pas to Thicket Portage, 185.5 miles; Thicket Portage to Split Lake Jct., 68 miles; Split Lake Jct., to Port Nelson, 165 miles. The state of construction is,—Miles of steel laid, 86; miles surfaced, 56; grading fairly completed with the exception of a few cuts at miles, 110, 121 and 133 and some cross lay-



Canadian Northern Railway Port Mann Terminal Layout (Section 2).

The locomotive house at this point will be to the east of the locomotive shop, and will eventually be a 43 stall unit. Only a 15 stall section is being built now, and with it only half the mechanical yard accommodation. The locomotive house will be approached from the east. Of the mechanical yard arrangements, only the northerly half will be constructed at first, the southerly

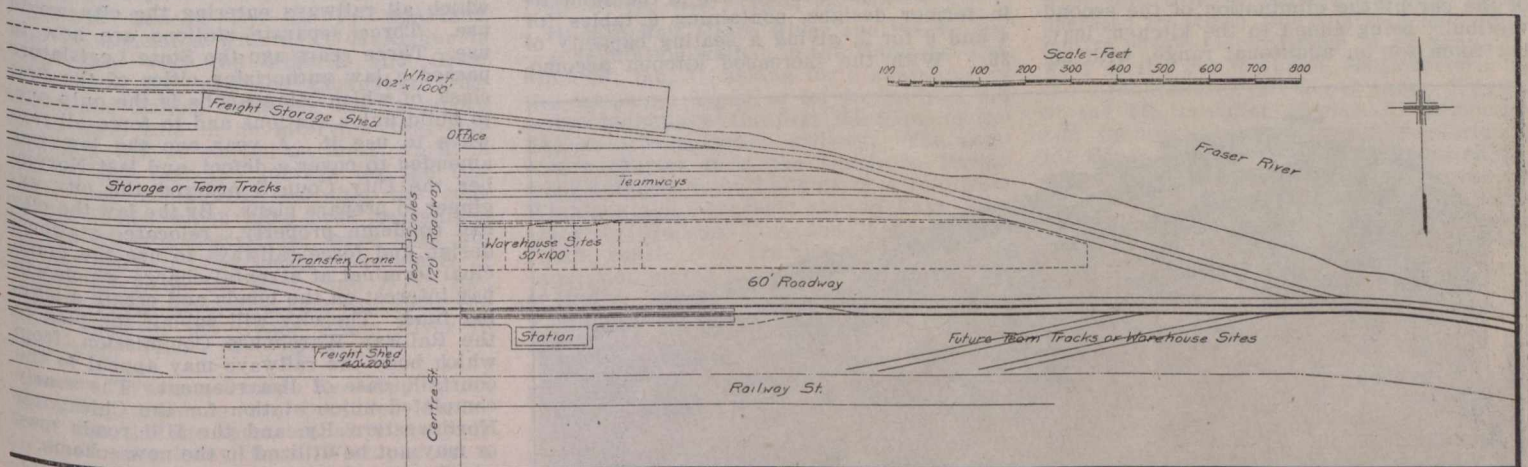
F. Lee, Winnipeg, and G. R. G. Conway, Vancouver.

The society has 2,794 members and assets of \$108,300, including the new premises on Mansfield St., Montreal, valued at \$90,000.

The features outside the business meeting included a luncheon tendered by the Montreal members; a smoking concert and a dinner at the Engineers Club, presided

ing, 137.

In a discussion on the project in the House of Commons, Feb. 11, the Minister of Railways stated that while Port Nelson is not an ideal harbor for the seaboard terminal of the railway, it is superior to Fort Churchill. To reach the latter port it would be necessary to carry the line across 70 miles of "badlands." The misadventures of



Canadian Northern Railway Port Mann Terminal Layout (Section 4).

half awaiting the completion of the locomotive house. Adjoining the locomotive house, there will be a boiler and engine house, and to the east, a stores building.

All the buildings will be of concrete, the same as the buildings of the shop layout, and all of them have been, or are being built by the Imperial Construction Co., Toronto. We are indebted to J. Montgomery of this company for the data on which this article is based.

The Canadian Northern Ex. Co. has opened offices at Solina, Ont, and Neelin, Man., and has closed its office at Polwarth, Sask.

over by the Vice President, H. H. Vaughan, Assistant to the Vice President C.P.R., in the absence of the President, Phelps Johnson. A visit was paid to the St. Lawrence Bridge Co.'s plant at Rockfield, and also to the Canadian Northern Ry.'s Mount Royal tunnel.

Dominion Railway Subsidy Agreement.—The Dominion Government entered into an agreement, Jan. 20, under the act granting aid in the construction of railways, with the Esquimalt and Nanaimo Ry., for lines from McBride Jct., towards Sandwich, B. C., 45 miles; and from Sandwich to Campbell River, B.C., 38 miles.

vessels during the last season of navigation were due to various causes but the loss and damage had not been anything like so serious as was reported. As much progress has been made with the terminal work as could reasonably be expected. It is intended to send in a strong force of men overland, so as to make an early start on the work, and make as much progress as possible during the open season this year. (Feb., pg. 70.)

The Canadian Northern Ex. Co. has opened an office at Hafford, Sask., and has closed its offices at Berton, Ladysmith, Neelin and White Plains, Man., and Chandler and Fairlight, Sask.

New Standard Dining Cars, Canadian Pacific Railway.

A departure in dining car design has been made in the latest ones for this service built by the C. P. R. It has been realized for some time that the principal weak point in dining car service lay in the kitchen, where the cooks, through lack of space, were unable to fill orders as promptly as passengers frequently considered necessary. Before the order could be prepared, in the event of the dining car being well filled, the accumulation of orders unavoidably caused a delay in the preparation of the late order. From the company's standpoint, this involved a direct loss, as on the heavy runs the number of passengers desiring to avail themselves of dining car accommodation is enough to fill a car at several sittings. As nearly all desire their meals within a short period of time, the problem resolved itself, from the company's viewpoint, in either providing additional dining cars to handle the extra passengers quickly, or else so arranging the facilities that one car would meet all requirements in the limited meal period. As the kitchen had proved itself the weak point, it was to it that attention was concentrated in an endeavor to increase the car capacity.

A step in the right direction was made in dining cars some time ago, and has been quite generally adopted, viz., the utilization of one of the vestibule ends for interior purposes, leaving only one end with a vestibule, the body at the other end extending out to the buffer. In the C. P. R.'s latest design, a further step has been made in the elimination of the vestibule at the other end also, as it was realized that the dining car, being always used in conjunction with other cars, required no side vestibule entrance for passengers, and that for the employes, the side provision door would meet all requirements.

In the new cars, the dining room section, and the lockers at the end of the car are left as in the former standard design, the additional space available at the other end of the car by the elimination of the second vestibule, being added to the kitchen, leaving room for an additional range, with ac-

commodation for increased kitchen employes. The increased kitchen accommodation is shown in one of the accompanying illustrations, looking from the car end towards the dining section. The length of the range in the foreground has been increased by the length of the standard vestibule, the car length over buffers being as before. The

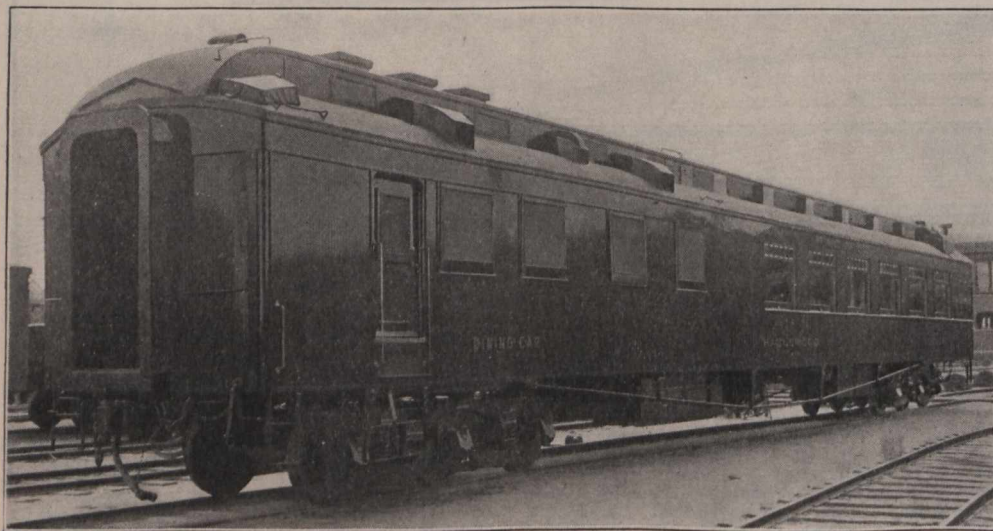
kitchen proper is now 14¼ ft. long, sink section, 6 ft. 5 ins., and pantry 6¾ ft. From the diaphragm end of the kitchen, there is a low door into the passage for an emergency exit for the dining car employes. In place of the usual provision door in the blind vestibule of the usual dining car, there is a side door near the diaphragm end



Enlarged Kitchen of Canadian Pacific Railway Dining Cars.

of the kitchen, as shown in the view of the car exterior, which is very similar, only narrower, to that of a baggage car. It is entered by a metal ladder.

The main part of the car is the same as in former designs, containing 6 tables for 4 and 6 for 2, giving a seating capacity of 36. With the increased kitchen accomo-



Canadian Pacific Railway Dining Car Without Vestibules.

modation, the meal serving capacity has been considerably increased, as the operation of the cars has already proved.

Calendars for 1914 have been received from American Steel Foundries, Chicago, and Taylor and Arnold, Ltd., railway supplies, Montreal.

Interchange of Traffic With Canadian Northern Railway at Toronto.

Announcement was made in Canadian Railway and Marine World for February that there is to be a complete interchange of passenger traffic at Toronto between the Grand Trunk and Canadian Pacific on the one hand, and the Canadian Northern Eastern Lines on the other. For a number of years there have been restrictions in this interchange at Toronto that have prevented passengers coming from points on other lines travelling by Toronto, to a number of points reached by the Canadian Northern Ontario, because tickets could not be issued through. By the arrangement now entered into, passengers will be able to obtain through tickets and the benefit of the through fares to all points reached on Canadian Northern Eastern Lines.

To the East, passengers will be able to go by Toronto through to the Rideau Lakes, Ottawa, Montreal and on to Quebec and the Lake St. John country north of Quebec. North of Toronto they may go to Sparrow Lake, and to the Muskoka Lakes, where the Canadian Northern passes through the centre of the district with wharf side stations on Bala Park Island and on the shores of Lake Joseph where they have a marine railway at Lake Joseph station for the handling of motor craft direct from the cars into the water. The line runs into Parry Sound and follows the Hinterland to the Georgian Bay, crossing Bolger Lake, the Maganetewan, Pickerel and French Rivers to Sudbury. At Capreol the line from Toronto is joined by the one from Montreal now nearing completion; the steel is laid all the way to Port Arthur. At present the line is only being operated to Ruel; but when opened through shortly, it will link the eastern and western lines of the system.

Minneapolis Railway Stations.—Several plans have been prepared for a municipal railway terminal at Minneapolis, Minn., which all railways entering the city would use. Three separate stations are now in use. Three years ago the State Legislature passed a law authorizing cities of the first class, of which Minneapolis is the only one, to build union stations and to force all railways to use it. A year ago the law was amended to cover a defect, and last November the City Council ordered the city engineer to prepare plans. By the law the city can condemn property, relocate stations, design and force railways to use the municipal terminal at a rental charge which will pay interest on the bonds and create a sinking fund. The city will submit the plan to the Railway Warehouse Commission, from which body the railways may appeal to the courts in case of disagreement. The nearly completed union station for the Chicago & Northwestern Ry. and the Hill roads may or may not be utilized in the new scheme.

The Great Railway Tunnels of the World.—The world's greatest tunnels are in Europe. The greatest is the Simplon, which is 12¼ miles long. Two, the St. Gothard and Lotschberg, are over 9 1-3 miles long. The Mont Cenis is a little over 7 miles long. The Arlberg, in Austria, is 6¼ miles long. There are four tunnels between five and six miles long, five between four and five miles long, seven between three and four miles, and 16 tunnels that are over two miles long. The longest tunnel in the United States, the Hoosac, is four and one third miles long. The C.P.R. tunnel at Rogers Pass, B.C., now under construction, will be 5 miles long, and the Canadian Northern Ry. Mount Royal tunnel will be 3 1-3 miles.

Railway Development.

Projected Lines, Surveys, Construction, Betterments, Etc.

Burrard Inlet Tunnel and Bridge Co.—The plans and profile have been officially filed for the projected railway, station 0 to station 130 + 036, on the south shore of Burrard Inlet, Vancouver. We are officially advised that there is no intention at present of going on with the construction of this line, the plans being filed with the intention of making provision for a railway from the south end of the proposed bridge across the Second Narrows of Burrard Inlet, to the Great Northern Ry. in the Hastings townsite section of Vancouver. Cleveland and Cameron, Vancouver, are engineers for the company.

The plans for the bridge were prepared in London, Eng., and were released from the Customs House at Vancouver, Feb. 5, on payment of a reduced duty of \$2,430. They are on view at the offices of Cleveland and Cameron, and contractors are figuring preparatory to putting in their tenders. At a meeting of the directors, Feb. 4, it was decided to arrange for a 100 ft. right of way at the northern end of the bridge, as an excessive price is being asked by the Indians of the reserve for the 200 ft. right of way originally planned. It was agreed that a condition shall be inserted in all contracts in connection with the erection of the bridge, that so far as possible Canadian materials shall be used. (Feb., pg. 69.)

Calgary and Fernie Ry.—The Calgary, Alta., Board of Trade, has been informed by the company's secretary that arrangements have been completed for the financing of the project, and that it is hoped to start construction early in the spring. A resolution was passed endorsing the application now before the Dominion Parliament for an extension of time for construction. (Feb., pg. 69.)

Central Canada Ry.—D. F. McArthur, who is associated with J. D. McArthur in connection with the Alberta and Great Waterways Ry., and the Edmonton, Dunvegan and British Columbia Ry., is reported to have said in an interview that construction will be started on the C. C. R. in the spring; that the surveys for the line have been completed, and that the company's bonds, which have been guaranteed by the Alberta Legislature, have been put on the market. The located line starts at Round Lake, on the E. D. and B. C. Ry., runs to Peace River Crossing and along the north bank of the Upper Peace River to Dunvegan. (Dec., 1913, pg. 573.)

Central Western Canada Ry.—Application has been made to the Dominion Parliament for the incorporation of a company to build a railway from Winnipeg in a generally northwesterly direction via Yorkton, Saskatoon and Battleford, to Edmonton, Alta. The provisional directors are:—S. Johnston, J. J. Dixon, F. C. Tisdell, C. Cronyn, A. Johnston, Toronto. The title of the company, originally Central Canada Ry., was changed, as it conflicted with a company building a line in Alberta, under a provincial act. (Dec., 1913, pg. 753.)

Chicago, Milwaukee and St. Paul Ry.—Chicago, Milwaukee and Puget Sound Ry.—The company's lines have an entry into Sumas, Wash., over the Bellingham Bay and British Columbia Ry. tracks, and it is reported that engineers are locating a route from Sumas to Huntingdon, B.C., in connection with the company's projected entry into Vancouver. The route being located is across the Sumas flats to a connection with

the Canadian Northern Pacific Ry. (Dec., 1913, pg. 573.)

Churchill Southern Ry.—The Manitoba Legislature has incorporated a company with a railway to be operated by steam, electricity or any other motive power, from Fort Churchill, southerly to Kettle Rapids, on the line which the Dominion Government is building from Pas, to Port Nelson, Man., with branch lines to any point in the Province of Manitoba. The company is given authority to develop water powers, and to distribute electric energy for all purposes. The provisional directors are:—W. Beech, W. Chambers, T. Wright, C. Atchison, Winnipeg; W. Georgson, Calgary, Alta.

Edmonton, Dunvegan and British Columbia Ry.—A train service has been put in operation between Edmonton and Smith, heretofore known as Murray Landing, 130 miles. A bi-weekly service in either direction is being given. (Feb., pg. 69.)

Flathead Valley Ry.—The Minister of Railways for British Columbia has granted a certificate under the provisions of subsec. 1, sec. 79 of the B. C. Railway Act, 1911, giving an extension of time for five years from Jan. 7, for building the lines authorized by chap. 52 of the B. C. statutes of 1909. (April, 1909, pg. 247.)

High River, Saskatchewan and Hudson Bay Ry.—The Dominion Parliament is being asked to change the point of starting of this projected railway, from tps. 25 to 29, range 1 west of the 4th meridian, to tps. 17 to 29, range 1, west of the 4th meridian, in Alberta, and to extend the time within which construction may be begun. Ballarby and Mackenzie, High River, Alta., solicitors for applicants. A meeting of shareholders for the purpose of completing the organization of the company was called to be held at High River, Alta. (Feb., pg. 69.)

Hudson Bay, Peace River and Pacific Ry.—A deputation waited on the Manitoba Government, Jan. 31, asking for a guarantee of the company's bonds, or for more direct aid in the building of the first 150 miles of the line as a colonization railway. The company's charter from the Dominion Parliament authorizes the building of a line from Winnipeg along the east side of Lake Winnipeg to Hudson Bay, and thence to the Pacific coast. The Premier replying to the deputation stated that until the navigability of Hudson Bay was assured the Government would not be justified in assuming any responsibility in connection with the construction of the line generally. So far as guaranteeing the bonds for the building of 150 miles of the line as a colonization line, the Government was prepared to give a most careful consideration, as soon as plans, etc., were submitted. (Oct., 1913, pg. 475.)

Kettle Valley Lines.—The Dominion Government has entered into a contract with the company under the act granting aid to certain railways for the building of a line from Merritt to Penticton wharf, 145 miles, and from 25 miles south of Merritt to near Hope Station, B. C., 55 miles. The present condition of construction on these lines was given in detail on pg. 80 of our last issue.

The Minister of Railways has approved of revised location for the section of the line between Hydraulic Summit and Penticton, 58.2 miles, and the Board of Railway Commissioners has approved of location of the line from Coquihalla Summit to Hope, 39.42 miles, on condition that a 14 degree

curve shown at mileage 3.2 be changed to 12 degrees.

The British Columbia Legislature is being asked to authorize the company to build a branch from Otter Summit to Aspen Grove, tapping Copper Mountain.

Construction is being proceeded with on the following sections of the line:—End of track westerly to Penticton, 50 miles; end of track westerly to Coldwater Summit, 65 miles; end of track westerly to Hope, 39 miles. Tracklaying out of Penticton was reported to have reached Narawata, Feb. 1. At Camp Creek, the exact point reached by the steel, a large wooden structure is being erected across the chasm immediately below Spray Falls. It was expected this work would be completed by Feb. 28. (Feb., pg. 80.)

Lake Erie and Northern Ry.—W. P. Kellett, General Manager, in a letter to the press, Jan. 31, explained what was being done in connection with the work in Brantford, Ont., in regard to which the city Council had expressed dissatisfaction. The work was being proceeded with as rapidly as possible. The general contractors had resumed tracklaying and it was expected to have the steel laid from Galt to Jubilee Terrace, Brantford, by Feb. 28. When that was completed the plant necessary for the deepening of the channel of the Grand River in the city would be brought in. Mr. Kellett attended a meeting of the Parks Board, Feb. 5, in connection with the matter, at which it was stated that so far as freight traffic is concerned steam will be used as a motive power, but for passenger traffic, gasoline electric or electric storage battery cars will probably be used. Mr. Kellett stated that freight will be taken to the first yards at the foot of Jarvis and Sterling streets for sorting purposes, and the trains will be made up in a second yard which will be located at Morrell St. (Feb., pg. 69.)

Northwestern Ry. of Canada.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway, to be operated by steam, electricity or any other motive power, starting from tp. 67, range 18, west of the 5th meridian, southwesterly to the Athabaska River, about range 7, west of the 5th meridian, thence to Edmonton and Camrose, continuing southeasterly to the South Saskatchewan River about tp. 29, range 11, west of the 3rd meridian, and on to Lake Johnson, thence easterly to Maryfield, and Virden, Man., thence northerly crossing the Assiniboine River near Penrith, and on easterly to Carberry, Winnipeg, Molson, Fort William and Port Arthur, Ont. Foster, Martin, Mann, Mackinnon and Hackett, Montreal, solicitors for applicants.

Ottawa, Brockville and St. Lawrence Ry.—The Dominion Parliament is being asked to grant an extension of time for the building of the line authorized by chap. 71, of the statutes of 1900. N. Belanger, Ottawa, is secretary. (May, 1912, pg. 239.)

Pacific and Hudson Bay Ry.—The Minister of Railways has approved of route map of this projected railway from Bella Coola to Hutnarko River, B. C., 60 miles. (Jan., pg. 22.)

Pacific Great Eastern Ry.—The total issue of 4½% bonds authorized for the building of this railway is £3,326,354 14s., 1d. The bonds, are guaranteed both as to principal and interest by the Province of British Columbia. Of this amount £1,500,000 had previously been sold, and a further issue of £1,375,000 was put on the market in London, Eng., Jan. 24. The price was £95, and it is reported that the entire issue has been taken up.

It is reported that arrangements are be-

ing made for the laying out of ocean and other terminal facilities at Newport, B.C., on which it is proposed to spend \$2,000,000. The company is negotiating with the Dominion and the British Columbia Governments for securing the foreshore and other rights necessary for the proposed developments. Tracklaying out of Newport is reported to have reached a point 24 miles to the north, and it is expected that the second crossing of the Cheakamus River will be reached at an early date. The grading is reported to be well advanced right through to Lillooet, and it is hoped that track will be laid to that point by the end of the year. (Feb., pg. 70.)

Pacific, Peace River and Athabaska Ry.—The Dominion Parliament has under consideration an application for the incorporation of a company with this title to build a railway from the mouth of the Naas River, on the Pacific coast of British Columbia, easterly and northerly for about 200 miles to the height of land between the Naas and Skeena watersheds, then to the Skeena River, and along that river and the Bear River, crossing the divide to the Driftwood River, on to North Tacla Lake, via Hogem Pass, to the Omineca River, reaching the Peace River; along that river to Vermillion rapids or chutes, Alta., thence to Point Providence, along the Athabasca River to Fort McMurray, along the Clearwater and Pembro Rivers to the height of land; thence to the Buffalo River, and continuing easterly and southerly to Prince Albert, Sask. The provisional directors are: C. F. Law, V. Quinn, Vancouver, B.C.; T. A. Burgess, Ottawa; D. A. Thomas, Cardiff, Wales; V. Lloyd-Owers, London, Eng. (Dec., 113, pg. 575.)

Pacific Trans-Canada and Hudson Bay Ry.—The Dominion Parliament is being asked to extend the time for the building of the railway authorized by chap. 134 of the statutes of 1912. Smith and Johnston, Ottawa, are solicitors for applicants. (May, 1912, pg. 239.)

Peace River Tramway and Navigation Co.—Application is being made to the Dominion Parliament for the incorporation of a company with this title to build a railway with a gauge of 3 ft., to be operated by steam, electricity or other power, from Smith's Landing, on Slave River, easterly to Fort Smith, Alta.; and another from the Vermillion rapids easterly along the north bank of the Peace River, to north of Vermillion Falls. The company may carry on a general navigation business on the Peace, Slave and Mackenzie Rivers. The provisional directors are C. F. Law, W. H. Armstrong, G. Blair, Vancouver, B.C.; T. A. Burgess, L. Cote, Ottawa. (Dec., 1913, pg. 575.)

Prince Edward and Hastings County Ry.—Application is being made to the Dominion Parliament for authority to build an additional line from Brighton to Picton, thence easterly to Kingston, Ont.; and for an extension of time for building the lines previously authorized to be built. Pringle and Guthrie, Ottawa, solicitors for applicants. (June, 1912, pg. 301.)

Reid Newfoundland Ry.—The Fortune Bay branch has been surveyed through to Boat Harbour, and has been completed to Black River, 15 miles of track having been laid from Goobles during 1913. The distance from Black River to Boat Harbour is 64 miles, on which the company will push construction during this year. It is also proposed to push work during this year on the 42 mile branch from Grand Lake to Bonne Bay.

Two branch lines have been completed, viz.: The Trepassey branch, from Waterford Bridge to Trepassey, the last five miles of track being laid during 1913; and the

Heart's Content branch, from Broad Cove to Heart's Content, the last mile of track being laid in 1913. (Feb., pg. 70.)

Saskatoon and Hudson Bay Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the line authorized by chap 137 of the statutes of 1911. C. G. Locke, Saskatoon, Sask., solicitor for applicants. (June, 1912, pg. 302.)

Sudbury, Kewawa and Bell River Ry.—The Dominion Parliament is considering an application for the incorporation of a company with this title, having power to build a railway from Sudbury, Ont., to Kewawa Jct., Que., thence northwesterly to a junction with the National Transcontinental Ry. at the crossing of Bell River. The provisional directors are:—J. Lumsden, A. Ellis, A. E. Hea, Ottawa; P. J. Loughrin, West Toronto; L. O'Connor, Sudbury, Ont.

Timiskaming and Northern Ontario Ry.—Speaking at Cobalt, Ont., recently, J. L. Englehart, Chairman of the T. and N. O. Ry. Commission, is reported to have said that plans for the diversion of the route of the southern part of the line, to eliminate curves, and for the electrification of the line, had been prepared, but the time for carrying them out had not arrived. It would not be many years before both works would have to be done. With regard to the proposal to extend the line from Cochrane to Hudson Bay, there was no reason at present for going on with the work. The time would come when the line would have to be built to James Bay, but the country through which the present line passed would have to be developed first.

The members of the Commission propose, at an early date, to go over the route for a proposed extension of the Elk Lake branch to Gowganda. It is reported that a new route has been found which is estimated to cost \$600,000 instead of \$1,000,000, the estimate for a previously located route. It is reported that if the new route is found satisfactory arrangements will be made for starting construction this year. (Feb., pg. 70.)

The Toronto, Hamilton and Buffalo Ry. will appeal against the decision of the Board of Railway Commissioners as to the question of the relocation of line in Hamilton, which was given in full on pg. 567 of our last issue. The Hamilton City Council has also decided to appeal against the decision, principally on the ground that the Commissioners hold that they cannot order the removal of tracks for more than a mile. (Feb., pg. 70.)

Vancouver Railway and Ocean Terminal Co.—The Dominion Parliament has been asked to incorporate a company with this title to acquire by lease or otherwise land in Vancouver and lay out thereon all necessary buildings for railway and ocean terminals, and in connection therewith to build double track line as follows: From the south side of False Creek, 500 ft. east of Main St., westerly along the south side of False Creek and English Bay, to 2,000 ft. west of Blanca Road, Point Grey. Deacon, Deacon and Wilson, Vancouver, B.C., solicitors for applicants.

Winnipeg.—An act has been passed by the Manitoba Legislature declaring that, as part of the undertaking, the Commissioners of the Greater Winnipeg Water District are authorized to build and operate a railway or tramway from Winnipeg easterly and southerly to the eastern boundary of the province. They may use steam, electricity or any other motive power in its operation.

Tenders are under consideration for the supply of all the tools and materials, except ties, rails and sundry steel, and for the building of grade and laying of track for 85

miles, more or less, of standard gauge railway, and for the building of a telephone line along the right of way. Tenders are also under consideration for the supply of 8,500 tons of 60-lb. new or relaying rails; 400 tons of angle bars, 256 tons of bolts and spikes, and 20 frogs and switch stands for this line. The estimated cost of construction is put at \$480,000; of track material at \$450,000, and of the telephone line at \$22,000, exclusive of poles. The clearing of the right of way will cost \$60,000, and the buildings for the engineers' offices are estimated to cost \$10,000. The contract for the telephone posts has been let to Bentz, Richardson Co., Winnipeg, and the contract for ties to O'Brien, Fowler and McDougall, Ottawa. (Feb., pg. 80.)

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$1,928,800	\$1,414,500	\$514,300	\$19,700
Aug.	1,824,800	1,416,200	408,600	37,800
Sept.	1,994,900	1,470,000	524,900	101,400
Oct.	2,687,100	1,683,000	1,004,100	298,800
Nov.	2,673,300	1,708,500	964,800	87,000
Dec.	2,256,000	1,632,000	624,000	43,000
	\$13,364,900	\$9,324,200	\$4,040,700	\$587,700
Incr.	\$ 1,125,000	\$ 537,300	\$ 587,700

Average mileage under operation during 1913, 4,480, against 4,297 in the previous year. Mileage operated during Dec., 1913, 4,458.

Approximate earnings for January, \$1,570,000, against \$1,513,400 for January, 1913.

Canadian Pacific Railway, Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1912-13, from July 1, 1913:—

	Gross Earnings	Expenses	Net Earnings	Increase or Decrease
July	\$11,993,062.27	\$7,876,269.09	\$4,116,793.18	x\$331,333.72
Aug.	11,434,459.58	7,473,320.64	3,961,138.94	x756,786.42
Sept.	12,157,082.17	7,741,508.48	4,415,573.69	165,274.84
Oct.	14,480,216.73	8,877,358.94	5,602,857.79	541,970.60
Nov.	13,407,015.31	8,518,769.25	4,888,246.06	630,107.02
Dec.	11,814,325.67	7,587,503.96	4,226,821.71	x168,897.80
	\$75,286,162.03	\$48,074,725.36	\$27,211,436.67	\$ 80,284.52
Incr.	\$ 1,759,970.66	\$ 1,679,686.14	\$ 80,284.52

x Decrease.
Approximate earnings for January, \$7,719,000, against \$9,519,000 for January, 1913.

The mileage under operation was increased during January to 11,884.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings of the G.T.R., C.A.R., G.T.W.R., and D.G.H. & M.R., for Jan., and increases, or decreases from the figures for Jan., 1913:

	1914	1913	Increase	Decrease
G.T.R.	\$2,865,527	\$3,097,977	\$232,450
C.A.R.	158,256	176,874	18,618
G.T.W.R.	555,433	590,147	34,714
D.G.H. & M.R.	190,295	183,024	\$4,271
Totals	\$3,769,511	\$4,051,022	\$4,271	\$281,511

Grand Trunk Pacific Railway Earnings.

The approximate earnings of the Prairie Section and Lake Superior Branch for January, were \$368,318, against \$377,844 for Jan., 1913.

Standard Rules on the Intercolonial Ry.

A circular was issued Feb. 10, stating that the standard code of General Tain and Interlocking Rules will be put into effect at midnight, May 30. The rule books are being distributed under the direction of the Superintendent of Stations, Trains and Train Dispatching. Three instructors have been appointed in each of the four districts to explain the rules, and to give instructions therein at different points in their districts, which employes are to attend.

Canadian Pacific Railway Construction, Betterments, Etc.

Ontario Division.—Press reports state that surveys have recently been made which will give the C.P.R. a new line into Kingston, Ont. The route said to have been followed is from Kingston westerly to a junction with the newly completed Campbellford, Lake Ontario and Western Ry. at Brighton, about 72 miles. A charter is being asked from the Dominion Parliament for the Prince Edward and Hastings Ry. to build such a line.

The second tracking of the C.P.R. line west from Toronto, between Islington and Guelph Jct., 29.88 miles, has been finally completed, although trains have been running over it for some time. The authorization to open it for traffic was given by the Board of Railway Commissioners, Jan. 29. Nothing definite had been decided to Feb. 20, regarding the building of a second track further west of Guelph Jct. this year, but it is said that it was contemplated to build a second track as far west as Ayr or Galt, this year. The plans have all been prepared for the second tracking to London. Local press reports in that city state that considerable developments are to be made there, in preparation for the coming of the second track, and for the probable construction of a line to Sarnia, for which the company holds a charter.

The Minister of Railways has approved of route maps of a line from the C.P.R. at Guelph Jct. to Cedar Mills, Ont., 35 miles.

Lake Superior Division.—The Board of Railway Commissioners has approved of revised location plans for a portion of the line as built, mileage 29 to 32.69 old line mileage, and mileage 29 to 32.49 new line mileage, on the White River Subdivision. This is a revision of location, in connection with the second tracking of the line from Sudbury to Port Arthur, which is now in progress.

Saskatchewan Division.—The Dominion Government entered into a contract with the C.P.R., Jan. 8, for the building of a railway bridge over the Saskatchewan River at Outlook, Sask. The bridge has already been built.

Alberta Division.—The extension of the line from Weyburn, Sask., westerly, is now in operation as far as Shaunavon, Alta., 250 miles from Weyburn, the last stretch of 137 miles having been opened for traffic Feb. 1. West of Shaunavon about 75 miles of grading are ready for track laying, and there are only a few miles of grading to be done to complete the line to a junction with the branch running easterly from Stirling. This is one of the lines to be completed this year. On the completion of this line there will be a new line with low gradients between Lethbridge and Weyburn, 435 miles. The line westerly from Suffield has been opened for traffic to Retlaw, Alta. It is 56.7 miles long.

The Minister of Railways has approved route map for a branch line from Caron to a junction with the line from Bassano, Alta., easterly, 152.24 miles.

Alberta Central Ry.—It is reported that the 20 miles of this line from Red Deer, Alta., in the direction of Rocky Mountain House, will not be opened for traffic before July 1. In connection with the extension of this line press reports state that negotiations are in progress with a Canadian Northern Ry. subsidiary, for the joint use of a certain mileage of route.

Kootenay Central Ry.—An agreement has been entered into between the Dominion Government and the company under the act granting aid to certain railways for the building of a line from Golden, via

Windermere and Fort Steele, to the British Columbia Southern Ry. near Jukeson, B.C., 175 miles. Construction has been going on between the two points named for about three years. Details of the work already completed show that track laying has been completed southerly to Edgewater, and northerly to Wasa. The grading on the 72.9 miles between these points is completed. Track will be laid on this grade during the year, and the line opened right through from the Crows Nest Pass line at Colvalli to the Transcontinental line at Golden, B.C., in the fall. The only part of the line now being operated is from Golden southerly to Spillimacheen.

Kaslo and Slocan Ry.—The line known by this title and formerly part of the Great Northern Ry. lines in Canada, has been rebuilt as a part of the Pacific Division of the C.P.R. F. C. Cambie, of the Department of Railways, inspected the reconstruction work, Feb. 5, and it is said that the line will be put in operation early in March. The cost of rebuilding and standardizing the line is said to have been \$300,000, towards which the British Columbia Legislature voted \$100,000.

Rogers Pass Tunnel.—An order in council was signed Feb. 3, authorizing the boring of a tunnel and approaches in Glacier Park near Rogers Pass, between Beaver Mouth and Ross Creek, mileage 74.6 to 88.56, subject to the execution of an agreement calculated to protect park interests.

A full contract has been let by Foley, Welch and Stewart, the general contractors, for the boring of the pioneer tunnel, to McIlwee and Sons, Denver, Colo.

Pacific Division.—The appropriations for the division for the current year cover the laying of 30 miles of steel on spurs and other tracks; the construction of a section of 20 miles of second tracking at Revelstoke; the building of 10 new steel bridges; and the relaying of a number of miles of track with new 85 lb. rails. At Vancouver in addition to the work already in progress, the appropriations provide for filling in behind the seawall along the centre waterfront owned by the company. (Feb., pg. 74.)

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Removal of Regular Station Agents.

General order 119, Jan. 31. Re various complaints received by the Board stating that the Canadian Pacific Railway, Canadian Northern, and Grand Trunk Pacific Railway Companies are removing regular station agents from various specified stations west of Fort William and Port Arthur, such complaints further alleging that such removal on inadequate notice works to the detriment of the applicants and the communities wherein they reside. It is ordered that, whenever a railway company intends to remove a regular station agent, it shall first notify the local municipality or board of trade of its intention to apply to the Board for an order permitting such removal. Such application and notice shall state the grounds on which such removal is sought to be justified, and shall, in each instance, show the gross earnings at the station in question from passenger as well as freight traffic and express business during the previous year. It is further ordered that no regular station agent shall be re-

moved until such removal be first authorized by the Board.

Detention of Refrigerator Cars.

General order 120. Re special tariffs filed by railway companies establishing certain charges for the detention, by shippers and consignees, of refrigerator cars, when loaded with perishable freight, over and above the car service toll prescribed by order 906, Jan. 25, 1906. It is ordered that the special tariff of charges for detention of refrigerator cars when used for shipments of perishable freight, published and filed by railway companies be amended by eliminating the clauses therein relating to detention at the points of loading of the said cars. And it is further ordered that on the publication and filing of tariffs so amended, general order 115, Dec. 19, 1913, and orders 21,127 and 21,128, Dec. 29 and 27, 1913, respectively, be rescinded in so far as they affect the several railway companies filing the said amended tariffs.

Import Rate On Pulp Wood.

21148, Jan. 2. Re application, as amended, of the Howell Co., Toronto, for an order directing a reduction in the import rate on wood pulp from Montreal to Windsor Mills, Que. It is ordered that the G. T. R. Co. be directed to establish, and put into force a rate of 8c. per 100 lbs. on imported wood pulp, in carloads, from Montreal Harbor to Windsor Mills, Que., the said rate to include those terminal charges at the Port of Montreal which are included in the rates of the G. T. R. Co.'s general tariff on import merchandise, as published and filed.

Esquimalt and Nanaimo Ry. Tariff.

21238, Jan. 21. Re application of Esquimalt and Nanaimo Ry. Co., for an order further extending the time within which it may be permitted to file a revised standard freight tariff for approval. It is ordered that the time within which the company was required to file the said tariff of maximum freight tolls for approval be further extended for six months from the date of this order.

Pulpwood Rates Temiscouata Railway.

21269, Jan. 28. Re the Temiscouata Ry. Co.'s Special Commodity Tariff, C. R. C. 217, and Joint Freight Tariff, C. R. C. 221, increasing rates on pulpwood, in carloads, from points on its railway to Riviere du Loup, Que., for local delivery and to points in Canada and the United States, respectively. It is ordered that the effective dates of the said tariffs published to become effective on Jan. 1 and 24, respectively, be postponed until Aug., 1914, and it is further ordered that order 21105, Dec. 22, 1913, be rescinded.

Grand Trunk Tariffs Suspended.

21326, Feb. 10. Re supplements 151 and 153 to the G. T. R. Co.'s Tariff, C. R. C. no. E. 2552. Upon the complaint of the Canadian Manufacturers Association. It is ordered that these supplements published to take effect Feb. 15 and 16, respectively, be suspended, pending investigation by the Board.

Canadian Pacific Railway Tariffs Suspended.

21327, Feb. 10. Re supplements 40 and 42 to C. P. R. Co.'s tariff C. R. C. no. E 2559. Upon the complaint of the Canadian Manufacturers' Association. It is ordered that the advanced rates published in the said supplements applying on building brick from Cooksville and Weston, Ont., to Toronto, and on gravel and building sand from Cooksville, Ont., to North Toronto, Parkdale and Toronto, be, and they are hereby, suspended pending investigation by the Board.

Proposed Increase in Switching Charges.

21329, Feb. 6. Re supplements 19 and 20 to the G. T. R. Co.'s tariff, C. R. C. no E

2677, increasing as from Feb. 15, 1914, switching charges within Toronto terminals. Upon reading the applications of the Canadian Manufacturers' Association, the Toronto Board of Trade, the York Sandstone Brick Co., and the York Sand & Gravel Co., protesting against the proposed increase. It is ordered that they be suspended, pending the hearing and determination of the matter by the Board.

National Transcontinental Railway Construction.

The ninth annual report of the Commissioners of the N. T. R. shows that the expenditure for the year ended Mar. 31, 1913, was \$13,729,461.44, making a total of \$130,247,152.95 since construction was started. The total grading done was 1,739 miles, on which 1,720.36 miles of main line track had been laid, and 384.73 miles of sidings, yard tracks, and second track. Since that date the grading on the line has been completed and track laid on the entire 1,804 miles between Moncton and Winnipeg.

An interim report of the commissioners presented to the House of Commons, Feb. 18, shows that the total expenditure on the line to Dec. 31, 1913, was \$140,562,147, of which \$10,314,944 was expended since Mar. 31, 1913. Track laying had been completed over the entire line, and the bridges were 95.3% completed. At the date of the report trains were being operated on 1,160 miles of the total 1,804 miles between Moncton and Winnipeg, and the report stated that trains could be run on the remaining mileage if there was any immediate necessity therefor.

The line from Moncton to Edmunston, N. B., 230 miles, was put in operation Nov. 20, 1912, and the result of the operation shows a revenue of \$13,557.76, with operating expenses of \$36,146.97, and expenditure on equipment of \$7,009.38, and \$3,006.95 net on stores. The deficit is \$32,605.54, against which is placed \$3,577.37 of uncollected earnings, and \$10,016.33, value of equipment and stores on hand. In addition to this section there is a considerable mileage east and west of Cochrane, Ont., being operated by the contractors, and the section from Winnipeg, east to Superior Jct., is being operated by the G. T. Pacific Ry.

It was reported Feb. 6, that the entire line from Moncton to Winnipeg will be ready for operation by Sept. 1. (Feb., pg. 72.)

Grand Trunk Pacific Railway Construction.

The Commissioners of the National Transcontinental Ry. are asking the Dominion Parliament for an extension of time for the completion of the prairie section of the Western Division of the line,—from Winnipeg to Prince Rupert—which is being built by the Grand Trunk Pacific Ry. The extension asked is for one year from Dec. 1, 1913. A similar extension is being asked for by the G. T. Pacific Ry.

The Board of Railway Commissioners has authorized the opening for traffic of the section of the main line between Fraser River, mileage 1,189 westerly of Winnipeg, and Fort George, B.C., mileage 1,280.5, the speed of trains being limited to six miles an hour at the Fraser River bridge and to 15 miles an hour on the last 35 miles into Fort George. A tri-weekly train service was put in operation Feb. 1, over the section. The line is completed and in operation easterly from Prince Rupert, to mileage 324. This leaves 124 miles of grading and

tracklaying to be completed. The grading on this section is well advanced and it is expected to have tracklaying completed during next summer.

The question of the location of the station at Fort George, B.C., has been finally decided on an appeal to the Governor in Council, judgment being given Feb. 8. The Board of Railway Commissioners after two hearings directed in May, 1913, that the company should build its station within 3,000 ft. of the eastern boundary of Fort George. The company appealed, and it has now been decided that the station must be built as ordered by the Board.

Considerable progress has been made with the wharves, dry dock and other facilities which are being constructed at Prince Rupert for use on the opening of the line right across the continent.

The annual report of the Minister of Railways for Alberta shows that to Dec. 31, 1913, the Province had guaranteed the company's bonds at the rate of \$15,000 a mile for the building of 201.5 miles of line from Tofield to Calgary, and at the rate of \$20,000 a mile for 58 miles from Bickerdike southwesterly. These lines are now practically completed. Guarantees of bonds were voted for some other lines, but up to the end of 1913, the construction of them had not been arranged for.

The arbitrator appointed to fix the value of the R. N. W. M. Police barracks site at Calgary, Alta., which the G. T. P. Ry. had required for terminal purposes, decided on \$210,000. The Dominion Government in reviewing the proceedings increased the price to \$250,000, which the company has agreed to pay. An order in council was signed Jan. 27 granting the site to the company at that figure subject to the company donating a right of way 25 ft. wide on the south and west sides of the property so as to widen 9th Ave. and 6th St. East, and to erecting on the site a station having the same character and accommodation as that to be erected at Regina. (Feb., pg. 72.)

Exclusive Use of Drawing Rooms and Compartments.

Central, New England, Trunk Lines and Southwestern Passenger Association railways recently filed with the Interstate Commerce Commission, U.S.A., tariffs as to the number of tickets required for the exclusive use of drawing rooms and compartments on sleeping cars, to be effective March 1. The Trans-Continental and Western Passenger Associations also adopted similar rules, effective March 15. This has been followed by Canadian railways adopting the following rule, effective March 15:—

"A minimum of two adult first class one way or round trip passage tickets will be required for the exclusive occupancy of a drawing room, and a minimum of one and a half first class one way or round trip passage tickets will be required for the exclusive occupancy of a compartment."

The C. P. R. Hotel at Calgary, now under construction, is to be called the Palliser, Sir Thos. Shaughnessy having chosen that name in honor of the late Captain Palliser, who in 1847 led a government expedition to explore the country between Lake Superior and the Rocky Mountains. Capt. Palliser, with a staff of scientific men, continued his investigations until 1859, and reports of considerable value were published as the result.

W. W. Toby, M. Can. Soc. C. E., read a paper before the Canadian Society of Civil Engineers in Montreal, Feb. 19, on bridge substructures built by the pneumatic method.

Railway Rolling Stock Notes.

The Duluth, Winnipeg and Pacific Ry. has received 100 flat cars from the Mount Vernon Car Co.

The Canadian Northern Ry. has ordered 8 baggage cars, 60 ft. long, and 3 commissary cars, 60 ft. long, from the Preston Car and Coach Co.

The Timiskaming and Northern Ontario Ry. Commission, operating the Nipissing Central Ry., expects to place an order shortly, for two interurban motor cars.

The G.T.R. has received the following additions to rolling stock:—300 box cars from Eastern Car Co.; 864 box cars from Western Steel Car and Foundry Co., and 191 gondola cars, from Pressed Steel Car Co.

The Confederation Construction Co., Thorold, Ont., which has a contract on the construction of the Welland Ship Canal, has received two saddle tank locomotives from Canadian Locomotive Co.

The Canadian Northern Ry., between Jan. 14 and Feb. 14, received the following additions to rolling stock:—75 box cars from Canadian Car and Foundry Co.; 153 box cars from National Steel Car Co.

The C.P.R., between Jan. 1 and Feb. 15, ordered the following additions to rolling stock from its Angus Shops:—142 steel frame box cars, 8 vans, 19 freight refrigerator cars, 1 ballast spreader, and 16 stock cars.

The Intercolonial Ry. has ordered 25 refrigerator passenger cars from its Moncton Shops; 180 box cars, 80,000 lbs. capacity, from Nova Scotia Car Works, and 180 box cars, 80,000 lbs. capacity from Eastern Car Co.

The C.P.R., between Jan. 1 and Feb. 15, received the following additions to rolling stock:—189 steel frame box cars, 2 vans and 5 class D4 locomotives, from its Angus Shops; and 2 class N3 locomotives from Canadian Allis-Chalmers, Ltd.

The Intercolonial Ry. has received 5 colonist cars, 4 first class and baggage cars, and 132 box cars, 60,000 lbs. capacity, from Canadian Car and Foundry Co.; 9 box baggage cars, from its Moncton Shops; 4 consolidation and 3 switching locomotives from Canadian Locomotive Co., and 2 first class cars from Preston Car and Coach Co.

The Reid Newfoundland Co., during 1913, added the following rolling stock to its equipment, all of which was built at its shops at St. John's:—3 ten wheel passenger locomotives, 2 consolidation freight locomotives, 25 box cars, 40,000 capacity; 20 flat cars, 40,000 lbs. capacity; 2 first class cars, 2 second class cars, and 2 mail and baggage cars. Considerable additions will be made during the current year, and will also be built in the company's shops. W. E. Ladley is Superintendent of Motive Power.

The National Steel Car Co. reports having orders in hand for rolling stock, as follows:—593 wooden box cars, 30 tons capacity, for Canadian Northern Ry.; 100 flat cars, 40 tons capacity, 150 hopper cars, 50 tons capacity, and 3 eight wheel cabooses, for Toronto, Hamilton and Buffalo Ry.; 300 underframes for Michigan Central Rd.; 30 logging cars, 30 tons capacity, for St. Lawrence Pulp and Paper Co.; 8 interurban passenger cars and 2 interurban express cars, for Montreal and Southern Counties Ry.; 67 flat cars, 40 tons capacity, and 44 composite box cars, 40 tons capacity, for Pacific Great Eastern Ry.; 10 standard steel underframe baggage cars, and 500 stock cars, for Grand Trunk Ry., and 100 wooden box cars, 30 tons capacity, for J. D. McArthur Co.

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BUSINESS REPRESENTATIVES.

W. H. HEWITT, - 70 Bond Street, Toronto
J. V. KINSMAN, - 70 Bond Street, Toronto
A. FENTON WALKER, 143 Liberty Street, New York, N.Y.
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NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application. ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication.

TORONTO, CANADA, MARCH, 1914.

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Index to Canadian Railway and Marine World for 1913.

At the end of this issue is a very complete index to the contents of the volume for 1913, which, as in former years, will doubtless be fully appreciated by the large number of subscribers who bind Canadian Railway and Marine World for reference purposes.

Even a casual glance over the six pages of closely printed matter will show the tremendous range of subjects covered and the thorough manner in which this paper represents the entire transportation interests of the whole Dominion, steam railway, electric railway and marine, as well as the subsidiary express and telegraph interests and railway and canal contracting work.

Each succeeding year sees an increase in the quantity of matter published, an improvement in its quality, and a rigid adherence to the policy of accuracy which the publishers consider as one of their most valuable assets.

We are thankful to be able to repeat what we said last year in regard to the state of business, which was most satisfactory with us during 1913. The receipts from advertising steadily increased and there was a marked advance in circulation. During the past three years the average increase in circulation each year has been larger than in any previous year in the paper's history, except the year of its establishment, 1898; the number of discontinuances was again very small indeed, and the present condition of the subscription list justifies the statement, after most careful enquiry as to the circulation of other publications, that there is no other transportation paper, published in any country, which has so large a circulation as Canadian Railway and Marine World, in proportion to the population of the country of publication. The evidence in support of this statement is at the disposal of our advertising customers.

Our circulation embraces all classes of transportation officials and reaches over 90% of all the officials who have any buying power, being especially strong among the mechanical, engineering, operating and maintenance of ways officials. Advertisers who use our columns therefore know that they are covering the entire field and that no other advertising is necessary to reach any portion of it.

Our subscription lists are open for inspection by present and prospective advertisers at any time.

Report on Enquiry Into National Transcontinental Railway Construction.

The report of the commissioners appointed to enquire into matters connected with the construction of the N.T.R., G. Lynch Staunton, K.C., of Hamilton, Ont., and F. P. Gutelius, M. Can. Soc. C.E., now General Manager Canadian Government Railways, was submitted in the House of Commons, Feb. 12, but has not yet been printed and distributed. The report is very voluminous and concludes as follows:—

"We find that the N.T.R. Commission, the Grand Trunk Pacific Railway, and those having charge of the construction of the railway, did not consider it desirable or necessary to practise or encourage economy in the construction of this road. We find that, without including the money which was unnecessarily expended in building the railway east of the St. Lawrence River, \$40,000,000 at least was needlessly expended in the building of this road."

S. N. Parent, ex-chairman of the Commission, has issued a reply to the report,

which will doubtless be fully discussed in Parliament, as it already has been in the political press.

The Minister of Railways stated, Feb. 18, that the total cost of the investigation was \$63,388. Of this Mr. Gutelius received \$27,465, and Mr. Lynch Staunton \$24,038. Other official services, expenses and reporting cost \$11,885.

Safety First on Canadian Government Railways.

F. P. Gutelius, General Manager, has issued the following circular: "It has been decided to introduce the safety first movement on the Canadian Government Railways. This movement, now in effect on many important systems, presents a practical plan for the cooperation of officers and employes in the discovery and correction of unsafe conditions and practices which might cause injury. J. E. Long, Safety Engineer, has been engaged to install the necessary organization. His headquarters will be at Moncton, and he will report to the General Manager. In order that all concerned may understand the nature and purpose of this movement and be prepared to work together to the best advantage, Mr. Long will hold safety meetings at important centres, at which he will explain the plan of procedure in detail and also deliver addresses, illustrated by stereopticon views, from original photographs, showing unsafe conditions and practices. Notice of the time and place of these meetings will be given, and we hope that every employe, in every branch of the service, will avail himself of the opportunity to attend. The address and illustrations will be highly interesting and at the same time most practical and instructive. At a later date Mr. Long will organize on all divisions and at principal shops safety committees composed of officers and employes. He will also make inspection of the shops, yards and terminals and confer with, advise and assist officers of the various departments in matters pertaining to safety. The safety movement has for its sole purpose the prevention of injuries, in which everyone should feel a personal interest, and we trust that every officer and employe of this system will give to this movement his hearty support and cooperation."

National Transcontinental Railway Coaling Stations.

A contract has been let by the N.T.R. Commission for 200-ton mechanical coaling plants at Monk, Quebec, Fitzpatrick, Parent, Doucet and O'Brien, to the Roberts and Schaefer Co., Chicago, Ill. A condition of the contract is that all the structural work possible must be fabricated in Canada.

The first standard coaling plants on the N.T.R. were of the inclined dock type, that at Cochrane, Ont., being described in Canadian Railway and Marine World for March, 1913. Since then, the standard has been changed to the mechanical type, the plants just contracted for being of this type, which consists of an elevated concrete box structure, 22 ft. square, supported on 6 columns, the box being divided into two sections. The bottom of the box structure slopes towards the track side, with two coaling tracks, one along that side and the other underneath, with a chute to each. To the rear, there is a pit, over which the coal car is run, coal being elevated from the pit into the concrete hopper above by an elevator system. A corrugated iron sand box is attached to the side of the coal box.

Canadian Northern Railway Construction, Betterments, Etc.

Mount Royal Tunnel and Terminal Ry.—The Board of Railway Commissioners has approved revised location of the tunnel line from St Antoine St. to its main line at Montreal and rescinded order made Nov. 27, 1913.

Preliminary plans for the passenger terminals in Montreal have been prepared. They will be located between Cathcart and Lagachetiere, St. Monique and Mansfield streets, and it is said they will comprise a group of buildings of considerable architectural attractiveness; that the platforms will be 1,200 ft. long, and will be 45 ft. below the upper level at Dorchester St., and 20 ft. above the general level of the city. Press reports, Feb. 13, stated that excavation has been started for the station and terminal buildings, and that the erection of a temporary station will be undertaken as soon as the weather permits. It is expected that passenger trains will be running through the tunnel early in the autumn.

Toronto-Hamilton Line.—A bylaw, submitted to the ratepayers of St. Catharines, Ont., to give a bonus of \$100,000 towards the building of the projected railway from Toronto to the Niagara River, was defeated by a vote of 744 to 324, Jan. 31.

Canadian Northern Ontario Ry.—It has been announced that the branch on the Toronto-Sudbury line from Uthoff into Orillia, will be opened for traffic, Mar. 1.

Montreal-Ottawa-Port Arthur line.—The Board of Railway Commissioners has approved of revised location plans of the line at Grand Lake, in Nipissing District, mileage 126.37 to 129.94 from Ottawa.

We have been officially supplied with the following information with regard to the work done on this line during 1913:—Average force employed for every working day in the year, 6,880 men, and 808 horses; largest force employed in any month, 8,736 men and 1,195 horses; smallest force employed in any month, 3,838 men and 298 horses; outlay in wages, \$720,000, equal to about \$20,000 each working day; yardage moved, about 11,000,000 cubic yards, equal to 366 miles of completed grade, allowing 30,000 cubic yards a mile, or 1.9 miles of grade for each working day. There were 15¼ million feet of timber built in trestles; 4½ million feet in culverts; 43,399 cubic yards of concrete were put in culverts and bridge foundations; and 2,900 tons of steel were put into the superstructures of bridges. Track was connected upon the Sudbury-Port Arthur section of the line, 550 miles, on Dec. 31, 1913, just 29 months after the grading was commenced.

Canadian Northern Ry.—In a recent interview at Winnipeg, Sir Donald Mann, Vice President, is reported to have said, that the company, before undertaking any new construction, would complete its main line and branches now under construction.

Press reports state that contracts will shortly be let for the construction of a number of large steel bridges on western lines, at a total estimated cost of \$4,000,000. These include bridges at Snarling River, Minette, and at Athabaska.

The Manitoba Legislature has passed an act incorporating the Canadian Northern Manitoba Ry. Co. to build the following lines:—From the Oak Point branch of the C.N.R., in tp. 27 or 28, westerly to the eastern shore of Lake Manitoba; from the Oak Point branch near Gypsumville, northerly to the authorized line of the C.N. Ry., between Shevlin and Grandview on the C.N. R., southeasterly to Portage la Prairie; from Portage la Prairie southerly and southeasterly to the C.N.R. between Emerson and Sprague, and such other lines as may

be approved from time to time by the Lieutenant-Governor-in-Council. The provisional directors are:—H. Sutherland, P. C. Andrews, E. Langham, O. G. Clark, K.C., C. W. Jackson, Winnipeg.

Sir William Mackenzie, President, is reported to have stated at Winnipeg, Feb. 12, that construction will be proceeded with at once on the new line from Grand Marais to Victoria Beach, and the line from Deerfield to Lake Manitoba. The Manitoba Legislature has passed an act guaranteeing the company's bonds for \$13,000 a mile for the building of these two lines, 15 and 12.5 miles long, respectively.

Plans have been deposited in the Land Titles office at Moose Jaw, Sask., showing revised location of the Maryfield branch through tps. 5 and 6, ranges 25-29, west of the 2nd meridian. In connection with this line, Sir Donald Mann is reported to have recently said:—"Our present entrance to Moose Jaw is by the Maryfield branch—a round about route. It is likely that we shall come to some arrangement with the G.T. Pacific Ry. in order to secure a more direct entrance, but it will not be yet."

It was understood that the line into Calgary, which, from near Drumheller, Alta., carried traffic coming off the line through from Saskatoon, and the traffic from the line south from Vegreville, would have been opened for traffic Feb. 1. The Board of Railway Commissioners, however, refused to sanction its opening until the temporary bridges east of the city are strengthened. It is expected that operation will be started early in March.

The company has secured, D. B. Hanna, Third Vice President, is reported to have recently said, a site in Calgary for its station, and is going ahead with the preparation of plans for building it.

In connection with the building of a line into Macleod, Alta., press reports, Feb. 9, stated that engineers have been going over the route, on which some grading has been done, between the C.P.R. tracks and the Old Man River, and have been locating a site for the construction of a bridge there.

The proceeds of the bond issue recently placed on the London, Eng., market will be used in the construction of the following lines under agreement between the C.N.R.'s subsidiary, the Canadian Northern Western Ry., and the Alberta government:—From Oliver northeasterly to St. Paul de Metis; from Bruderheim via Vermillion, Wainwright and Medicine Hat to the International boundary, with a branch northeast of Vermillion to the eastern boundary of the province; from Camrose to Alsask; from Calgary northwest to the Brazeau line; from Strathcona southwest via Cochrane to Pincher Creek, and from Athabaska north of Lesser Slave Lake to Peace River Crossing.

The annual report of the Minister of Railways for Alberta for the calendar year 1913, shows that during the year the company built 249 miles of railway in the province. There had been built, or were in process of completion under provincial guarantee the following lines:—

	Guaran-tee per mile.	Mileage Guaranteed.
CANADIAN NORTHERN RAILWAY—		
Strathcona via Camrose and Calgary to Lethbridge	\$15,000	355
Camrose to Vegreville	15,000	45
Crossing of second above line and Little Bow River, south via Macleod to the International boundary	15,000	110
Near Macleod to the Western Boundary	15,000	65
Morinville to Athabasca Landing	15,000	72.3
Mile 175 of the Goose Lake line to Munson	15,000	127.5

CANADIAN NORTHERN WESTERN RY.—		
Onway northwest to Pine River Pass	\$20,000	100
Oliver northeast to St. Paul de Metis	13,000	100
Bruderheim via Vermillion, Wainwright and Medicine Hat to International boundary, with a branch northwest of Vermillion to Eastern Boundary	13,000	30
Calgary northeast to Brazeau line	13,000	100
Camrose to Alsask	13,000	80
Strathcona via Cochrane to Pincher Creek	15,000	20
Blackfalds to Goose Lake line	13,000	118.5
Total		1,323.3

Steel is reported to have been laid on the Brazeau line to about 45 miles west of Rocky Mountain House, and grading is said to be in progress right through to the Brazeau coal fields. The bridge across the Saskatchewan River on this line, it is reported, will be built jointly with the C.P.R., whose Alberta Central Line parallels the C.N.R. line for a considerable distance.

Canadian Northern Pacific Ry.—The British Columbia Legislature passed an act, Feb. 13, affecting the guarantee of bonds of the company. The Premier stated that it had not been found a workable plan to rank the 4½% securities as provided by the act of 1912, with the 4% securities which were provided for under the original act. The amendment now carried provides that the 4½% securities shall be applied only for the construction of the lines specially mentioned in the act of 1912, viz.:—From the 100-Mile post on the Vancouver Island line to Duncans; from Kamloops to Kelowna, in the Okanagan, with a spur line to Lumby; the branch from New Westminster to Steveston; the line from Patricia Bay to Victoria; the line from New Westminster to Vancouver.

It is reported that there are only about five miles of grading south of the Albreda Summit, B.C., on which no work has yet been done, along the whole line. At this point several routes have been laid out, but a definite decision has not been arrived at as to which will be followed. The remaining portions of the grading, on which track had not been laid up to Dec. 31, 1913, is well advanced to completion. It is expected to have the track laid through early in the fall. (Feb., pg. 73.)

A Victoria, B.C., dispatch of Feb. 21, said that the Premier had introduced a bill in miles, principal and interest at 4½% until 1950, the total amount being \$12,360,200 the Legislative Assembly providing that the Province guarantee Canadian Northern Pacific Ry. bonds for \$10,000 a mile for 511. The time for the completion of the line is to be extended to 1916.

Government Grain Elevators.—The Minister of Trade and Commerce in response to a letter from the Member of Parliament for North Grey, stated recently, that the Government has no present intention of building elevators at any point on Georgian Bay; the Government's policy, apart from the elevators already built by it, or through commissioners, at Halifax, St. John, Port Colborne, Fort William, Saskatoon, Moose Jaw, Quebec, Montreal, and the erection of another elevator at Calgary, two transfer elevators, one in British Columbia and the other on Hudson Bay, being to leave such construction to private parties or corporations.

The Intercolonial Ry. and Branch Lines.—Replying to a question in the House of Commons, Feb. 2, the Minister of Railways said: "In view of the action of the Senate last session" in throwing out the bill providing for the purchase, under certain conditions, of branch lines, "it is not considered that the introduction of such legislation during the present session would be of any use."

Mainly About Transportation People.

SIR THOMAS TAIT addressed the Canadian Club in Toronto, Feb. 23, on Australia.

JOHN HANNA, Superintendent of Restaurants, Canada Railway News Co., died in Toronto, Feb. 16, aged 58.

W. H. BRODIE, General Passenger Agent, C.P.R., Vancouver, B.C., has returned from a three weeks vacation in California.

C. R. HOSMER, Director, C. P. R., has been re-elected President of the Ritz-Carlton Hotel, Montreal, for the current year.

R. McBeth, who died at Kildonan, Man., recently, was father of R. J. McBETH, City Freight Agent, Canadian Northern Ry., Winnipeg.

SIR RODOLPHE FORGET, President, Quebec Ry. Light, Heat and Power Co., who was recently under treatment for appendicitis, is convalescing.

E. E. BRYDONE-JACK, Professor of Civil Engineering at the University of Manitoba, has been elected a member of the Institution of Civil Engineers.

D. C. COLEMAN, General Superintendent, Alberta Division, C.P.R., Calgary, has presented a silver cup as a trophy to the Mercantile Hockey League there.

The HON. N. CURRY, President, Canadian Car and Foundry Co., and Mrs. Curry, left Montreal Feb. 8 for Bermuda, expecting to return early in March.

ROBERT PICKFORD, who died at Nice, France, in the early part of February, was a few years ago a member of the shipping firm of Pickford and Black, Halifax, N.S.

T. P. PHELAN, President, Canada Railway News Co., and Mrs. Phelan left Toronto, February 15, for Bermuda, intending to return about the middle of March.

H. S. GREENWOOD, M. Can. Soc. C.E., Assistant Chief Engineer of Construction, Mackenzie, Mann & Co., Toronto, and Mrs. Greenwood, are on a trip to Trinidad.

DANIEL PARKER, of the Chicago, Milwaukee and St. Paul Ry.'s passenger department in Winnipeg, dropped dead there, Jan. 27, aged 60. He was born at St. Andrews, Que.

MRS. D. B. HANNA, wife of the Third Vice President, Canadian Northern Ry., slipped on an icy sidewalk in Toronto, Feb. 6, while going to her automobile, and broke her left wrist.

D. POTTINGER, I. S. O., ex-Assistant Chairman, Canadian Government Railways Managing Board, and Mrs. Pottinger, of Moncton, N. B., have been spending part of the winter in Toronto.

V. J. BORLAND, chief clerk to Chief Engineer, Canadian Northern Pacific Ry., Vancouver, B.C., who was slightly injured recently by being thrown from his horse, has recovered and returned to duty.

J. ALEXANDER HUTCHISON, M. D., who resigned his position as Chief Medical Officer, G. T. R., and G. T. Pacific Ry., recently, has been appointed Senior Surgeon of the Montreal General Hospital.

C. W. HUNTINGTON has resigned as General Superintendent of the Central Rd. of New Jersey, to become Vice President and General Manager of the Minneapolis & St. Louis Rd., at St. Louis, Mo.

MORRIS McDONALD, who was elected President of the Boston and Maine Rd., in July 1913, has resigned to devote his whole time to the Maine Central Rd., of which he is President and General Manager.

F. N. HALL, Superintendent, Moncton and Buctouche Ry., Moncton, N.B., was killed with the three members of a snow plough crew, Feb. 20, when a snow plough

and locomotive broke through a small bridge at Scotch Settlement, near Moncton.

SIR WM. VAN HORNE, who was confined to his house in Montreal for several weeks by inflammatory rheumatism, had sufficiently recovered to be able to attend the C. P. R. directors' meeting early in February.

HON. FRANK COCHRANE, Minister of Railways and Canals, who has not been in good health for some time, sailed from Halifax, Feb. 28 on the Allan s. s. Alsatian for Liverpool, intending to remain in Europe about two months.

A. P. DANE, Secretary-Treasurer, Master Car and Locomotive Painters Association of the United States and Canada, Reading, Mass., celebrated his golden wedding recently, when a presentation was made by the association at a public reception.

W. G. ROSS, Chairman, Montreal Harbor Commission, with Mrs. Ross and family ar-



J. W. Norcross,
Managing Director, Canada Steamship Lines, Ltd.

rived in London, Eng., during February, and later went on to Nice, France. He will inspect a number of the principal harbors in Europe and will probably return to Montreal in May.

A. LEADLEY, Canadian Agent, Delaware, Lackawanna and Western Rd., Toronto, accompanied by his wife, left on Feb. 18 for a two months' trip to California, travelling by way of Chicago, New Orleans, Los Angeles, San Francisco, Vancouver, and thence back to Toronto by one of the Canadian routes.

A. C. STONEGRAVE, who died at St. Albans, Vt., Feb. 7, aged 71, entered Central Vermont Ry. service in 1843 and, for many years he has been Canadian Freight and Passenger Agent at Montreal. The funeral was attended by the chief G.T.R. officials, as well as a number of other transportation officials.

JAMES B. MACPHERSON, who has been appointed Chief of Tariff Bureau, G.T.R. lines east of Detroit and St. Clair Rivers,

with office at Montreal, was born at Montreal, Jan. 31, 1867, and entered G.T.R. service in Apr., 1881, since when he has occupied various positions in the General Freight Department, until Feb. 16, the date of his present appointment.

V. A. HARSHAW, whose appointment as Superintendent, District 1, Atlantic Division, C. P. R., Brownville Jct., Me., was announced in our last issue, entered C. P. R. service Oct. 21, 1884, and was for two years, Superintendent, District 1, Ontario Division, Toronto, and for three years prior to Jan. 5, 1914, Superintendent, District 2, Atlantic Division, Woodstock, N. B.

GEORGE ARTHUR STAPLES, who has been appointed Travelling Freight Agent, C.P.R., Vancouver, B.C., was born at Durham, Ont., Feb. 28, 1882, and entered C.P.R. service, Mar. 1, 1901, since when he has been, to Aug., 1902, clerk, North Bay, Ont.; Aug. to Dec., 1902, agent and operator, Chapleau, Ont.; Dec., 1902, to Mar., 1903, operator, Winnipeg; Mar., 1903, to Aug., 1907, Freight Agent, Cranbrook, B.C.; Nov., 1907, to Aug., 1911, cashier and chief clerk, Nelson, B.C.; Aug., 1911, to Jan. 31, 1914, Travelling Freight Agent, Nelson, B.C.

JAMES PLAYFAIR, of Midland, Ont., who retired recently from the Managing Directorship of the Richelieu & Ontario Navigation Co., was presented in Toronto with a solid silver centre table piece and rose bowl, with the following inscription: "Presented to James Playfair by the officials, staff, captains, and engineers of the Inland Lines, Ltd., and Northern Navigation Co., Ltd., as a token of the high esteem in which he is held by one and all." An old English chime clock was also presented to Mrs. Playfair.

ALBERT WHITEMAN, who has been appointed General Air Brake Inspector, G. T. Pacific Ry., Transcona, Man., was born at Bruce, Ont., in 1884, and entered railway service in 1903, since when he has been, to Mar., 1907, in C.P.R. service on air brakes, Fort William, Ont.; 1907 to Sept., 1908, in charge of air brake work, Canadian Northern Ry., Winnipeg; Sept., 1908, to Oct., 1913, on air brake work, Motive Power and Car Department, G.T.P.R., Edmonton, Alta., and since then he has been attached to the Car Department at Transcona, Man.

F. W. STERLING, who has been appointed District Freight Agent, C.P.R., Nelson, B.C., was born at Thornbury, Ont., Sept. 14, 1881, and entered C.P.R. service in 1895, in the Local Freight office, Vancouver, B.C., where he occupied various positions, from messenger to chief cashier, until 1902; 1902 to 1904, claims clerk, General Freight office, Vancouver, B.C.; 1904 to 1906, chief clerk, General Freight office, Vancouver, B.C.; 1906 to 1909, Contracting Freight Agent, Seattle, Wash.; 1909 to Jan., 1914, Travelling Freight Agent, Vancouver, B.C.

G. G. OMMANNEY, who has been appointed Special Engineer to the President, C.P.R., Montreal, entered C.P.R. service in 1907, making preliminary reports and surveys regarding the development of the company's lake terminal at Port McNicoll, Ont., and subsequently was in charge of construction there until 1911, when he was placed in charge of exploration and reconnaissance work in connection with harbor developments on the Pacific coast. Since 1912 he has occupied the position of Special Engineer, which appointment has now been officially made.

JOHN GORDON, who has been appointed Foreman Electrical Engineer, Car Department, G. T. Pacific Ry., Transcona, Man., was born at Forres, Scotland, Jan., 1884, and after serving an apprenticeship to the electrical and mechanical engineering, served some time in the Electrical Engin-

engineering Department, North Eastern Ry., Newcastle, Eng. He entered C.P.R. service in the Motive Power Department, Winnipeg, Man., Sept., 1909, and from Jan., 1910, has been in G. T. Pacific Ry. service, in the Motive Power Department, at Rivers, Man., and Transcona.

REGINALD EGERTON PERRY, who has been appointed Assistant General Freight Agent, Canadian Government Railways, Moncton, N.B., was born at Drayton, Ont., July 5, 1876, and entered railway service Oct. 2, 1891, since when he has been, to Feb. 28, 1898, clerk in various positions, General Freight Department, C.P.R., Toronto; Mar. 1, 1898, to June 30, 1907, in similar capacity, Intercolonial Ry., Montreal; July 1, 1907, to July 31, 1909, Chief of Tariff Bureau, I.R.C., Montreal; Aug. 1, 1909, to Feb. 1, 1914, Assistant General Freight Agent, I.R.C., Montreal.

WILLIAM NOONAN, who has been appointed Chief Engineer, Canada Steamship Lines, Ltd., Toronto, was born at Westport, Ont., Feb. 17, 1864, and entered steamboat service in 1882, since when he has been, to 1887, tug engineer, Graham, Horne and Co., Fort William, Ont.; 1888 to 1889, second engineer, s.s. Sir S. L. Tilley, St. Catharines, Ont.; 1890 to 1894, chief engineer, s.s. Macassa, Hamilton Steamboat Co., Hamilton, Ont.; 1895 to 1911, chief engineer, Hamilton Steamboat Co., Hamilton, Ont.; 1912 to 1913, chief engineer, s.s. Turbinia, Richelieu and Ontario Navigation Co., Toronto.

LEON GEORGE ROGERS, whose appointment as Assistant Superintendent, District 1, Ontario Division, Havelock, was announced in our last issue, was born at Richford, Vt., June 18, 1874, and entered railway service, July 31, 1893, since when he has been, to Aug. 1, 1898, terminal operator, C.P.R., Newport, Vt.; Aug. 1, 1896, to July 13, 1899, terminal operator, C.P.R., Farnham, Que.; July 13, 1899, to Dec. 1, 1910, dispatcher, C.P.R., Farnham, Que.; during the winter of 1902-03, he was dispatcher at Moose Jaw, Sask., and Calgary, Alta.; Dec. 1, 1910, to Jan. 1, 1914, Chief Dispatcher and Trainmaster, District 1, Eastern Division, Farnham, Que.

A. C. DOUGLAS, whose appointment as Purchasing Agent, C. P. R., Vancouver, B. C., was announced in our last issue, was born at Montreal, Nov. 10, 1881, and entered C. P. R. service, Nov. 1, 1897, and was, to Oct. 31, 1906, junior clerk in General Storekeeper's office, Montreal, and in various positions in the Stores Department, Eastern Lines, and relieving Storekeeper, Eastern Lines; Nov. 1, 1906 to May 31, 1908, senior clerk, General Purchasing Agent's office, Montreal; June 1, 1908 to Mar. 31, 1911, chief clerk, Purchasing Agent's office, Winnipeg; Apr. 7, 1911 to Jan. 31, 1912, chief clerk, Purchasing Agent's office, Vancouver, B. C.; Feb. 1, 1912 to Dec. 31, 1913, Assistant Purchasing Agent, Vancouver, B. C.

ANDREW WILLIAMS, who has been appointed Superintendent, District 2, Atlantic Division C. P. R., Woodstock, N. B., was born at Mono Road, Ont., Feb. 22, 1872, and entered C. P. R. service, Jan. 1889, since when he has been, to 1892, telegrapher; 1892 to 1893, relieving agent; 1893 to 1894, assistant to car distributor and fuel agent, all Atlantic Division; 1895 to 1896, relieving dispatcher, St. John, N.B.; 1896 to 1898, trick dispatcher, St. John, N. B.; 1898 to 1904, Chief Dispatcher, Woodstock, N. B.; 1904 to 1904, rule instructor, Atlantic Division; 1905 to 1909, Trainmaster, Atlantic Division; 1909 to 1911, Assistant Superintendent, Atlantic Division; 1911 to Jan. 5, 1914, Assistant Superintendent, District 1, Lake Superior Division, North Bay and Sudbury, Ont.

MICHAEL MAGIFF, who has been appointed Superintendent Telegraphs and Superintendent Car Service, Central Vermont Ry., St. Albans, Vt., was born at Verplanks Point, N.Y., Mar. 24, 1852, and entered C.V.R. service in May, 1868, since when he has been, to May, 1871, operator at Essex Jct. and Montpelier, Vt.; May, 1871, to Jan., 1874, dispatcher, St. Albans, Vt.; Jan., 1874, to Dec., 1875, chief operator, St. Albans, Vt.; Dec., 1875, to Jan., 1880, Chief Dispatcher, St. Albans, Vt.; Jan. 1, 1880, to Jan., 1890, Superintendent Telegraphs and General Train Dispatcher, St. Albans, Vt.; Jan., 1890, to Jan., 1899, Superintendent Telegraphs and General Car Agent, St. Albans, Vt.; Jan., 1899, to Feb. 1, 1914, Superintendent Telegraphs and Car Accountant, St. Albans, Vt.

W. J. PICKRELL, who was recently appointed Assistant and Superintendent, District 2, Atlantic Division, Aroostook, N.B., was born at London, Ont., Sept. 15, 1880, and entered C.P.R. service Jan. 1899, since when he has been, to July 1, 1901, in West Toronto shops; July 1, 1901, to Nov. 1, 1904,



W. E. Burke,
Assistant Manager, Canada Steamship Lines, Ltd.

Foreman, West Toronto; Nov. 1, 1904, to July 7, 1905, travelling fireman; July 7, 1905, to Aug. 1, 1907, locomotive driver; Aug. 1, 1907, to Apr. 15, 1908, assistant road foreman of locomotives; Apr. 15, 1908, to May 10, 1910, locomotive driver; May 10 to Dec. 16, 1910, rule instructor; Dec. 16, 1910, to Apr. 9, 1912, locomotive driver; Apr. 9 to May 15, 1912, Assistant District Master Mechanic, District 3, Ontario Division; May 15, 1912, to Nov. 1, 1913, District Master Mechanic, District 1, Ontario Division, West Toronto.

ROBERT KELLOCK GEMMEL, who has been appointed Local Freight Agent, Midland Ry. of Manitoba, Winnipeg, was born at Perth, Ont., Mar. 10, 1886, and entered railway service, Feb. 11, 1907, since when he has been, to Dec. 1908, stenographer and clerk, Superintendent's office, Minnesota and International Ry., Brainerd, Minn.; Dec. 1908 to July 1910, stenographer and clerk, Tie and Treating Department, Northern Pacific Ry., Brainerd, Minn., and Paradise, Mont.; July 1910 to Mar. 1911, steno-

grapher and material clerk, Superintendent's office, Northern Pacific Ry., Duluth, Minn.; Mar. 1911 to May 1912, chief clerk, Duluth Union Depot and Transfer Co., Duluth, Minn.; May 1912 to Jan. 31, 1914, Auditor and chief clerk to General Superintendent, Midland Ry. of Manitoba, Winnipeg, Man.

W. E. BURKE, whose appointment as Assistant Manager, Canada Steamship Lines, Montreal, was announced in our last issue, and whose portrait appears in this issue, was born at Belleville, Ont., Sept. 23, 1881, and entered transportation service May 1, 1905, since when he has been, to Dec. 1, 1905, purser on s.s. Picton, Richelieu and Ontario Navigation Co., Montreal and Toronto; Dec. 1, 1905, to Dec. 31, 1906, Soliciting Freight Agent, R. & O. N. Co., Toronto; Dec. 31, 1906, to Dec. 31, 1907, Travelling Freight Agent, same company, Toronto; Dec. 31, 1907, to Apr. 19, 1909, Travelling Freight Agent, Mutual Steamship Co., Toronto; Apr. 10, 1909, to Apr. 1, 1910, General Freight Agent, Merchants Mutual Line, Toronto; Apr. 1, 1910, to Jan. 1, 1914, Traffic Manager, Merchants Mutual Line, Toronto.

R. W. DREW, who has been appointed Division Freight Agent, Saskatchewan Division, C.P.R., Regina, was born at Kingston, Ont., Feb. 17, 1874, and entered railway service May, 1894, since when he has been, to May, 1896, clerk general office, operator and agent at various points, Kingston and Pembroke Ry.; June, 1896, to Sept., 1898, clerk, C.P.R., Arrowhead, B.C.; Sept., 1898, to Apr., 1903, Local Agent, C.P.R., Nelson, B.C.; Apr., 1903, to Apr., 1908, chief clerk, General Freight Agent's office, Nelson, B.C.; Apr. to June, 1908, acting General Freight Agent, Kootenay and Boundary Divisions, C.P.R., Nelson, B.C.; June, 1908, to May 30, 1911, District and Travelling Freight Agent, C.P.R., Saskatoon, Sask.; May 30, 1911, to Jan., 1914, Division Freight Agent, Kootenay and Boundary Divisions, C.P.R., Nelson, B.C.

Capt WILLIAM RICHARDS, for many years President, Charlottetown Steam Navigation Co., Charlottetown, P.E.I., who died in Montreal, Feb. 16, was born at Swansea, Wales, May 15, 1819, and was educated there and in Ireland. His early life was spent at sea, and he commanded a square rigged ship at the age of 23. He went to Prince Edward Island in 1844 and commenced a shipbuilding business at Bideford, in conjunction with the late Hon. Jas. Yeo, whose daughter he married. In the course of that business he launched about 100 vessels, varying from 500 to 1,500 tons, at a time when wooden sailing vessels constituted the greater proportion of the mercantile service of British North America. He was elected to the Legislature in 1870, and was a supporter of Confederation. He paid frequent visits to Great Britain up to 1912. The funeral took place in Prince Edward Island.

W. P. HINTON, who has been appointed Assistant Passenger Traffic Manager, G.T. Pacific Ry., Winnipeg, and whose portrait appears in this issue, was born at Hintonburg, Ont., Aug. 30, 1871, and entered railway service, May, 1887, since when he has been, to Aug., 1891, clerk, freight, passenger and car accounts, and travelling auditor, Canada Atlantic Ry.; Aug., 1891, to Mar., 1898, rate clerk, General Freight and Passenger departments, same road, and accountant, Canada Atlantic Fast Freight Line; Mar., 1898, to June 30, 1901, Assistant General Freight Agent, same road, and Canada Atlantic Transit Co.; June 30, 1901, to Jan. 30, 1903, General Freight Agent, same road; Jan. 30, 1903, to Oct., 1905, General Passenger and Freight Agent, same road; Oct., 1905, to Jan., 1907, General

Agent, Passenger Department, G.T.R., Ottawa; Jan., 1907, to Apr., 1909, Assistant General Passenger and Ticket Agent, same road, Montreal; Apr., 1909, to Feb., 1914, General Passenger Agent, G.T. Pacific Ry., Winnipeg.

L. C. RUSSELL, Travelling Passenger Agent, G.T.R., Chicago, Ill., died there, Feb. 5.

J. A. Timmerman, who died at Kingston, Ont., Feb. 15, aged 64, was a brother of H. P. TIMMERMAN, Industrial Commissioner, C.P.R., Montreal.

GIDEON SWAIN, who was in C.P.R. service for about 30 years, during the latter part of which he was station agent at Winnipeg, died at Montreal, Feb. 4, aged 87.

HON. J. A. REID, Minister of Customs, is acting as Minister of Railways and Canals during the absence in Europe of the Hon. F. Cochrane.

C. E. HORNING, District Passenger Agent, G.T.R., Toronto, was entertained to dinner by a number of friends, Feb. 9, on the 36th anniversary of his entering the company's service.

SIR THOMAS SKINNER, director, C.P.R., London, Eng., has been elected Governor of the Hudson's Bay Co., in place of the late Lord Strathcona; and A. M. NANTON, Chairman of the Advisory Committee in Winnipeg, and formerly Managing Director Alberta Railway and Coal Co., has been elected a director.

J. W. STEWART, of Foley, Welch and Stewart, railway contractors, Vancouver, B.C., is said to have purchased an estate in Sutherlandshire from the Duke of Sutherland for about \$300,000. The matter is now in the Scottish law courts, as, on account of the property being entailed, legal proceedings are necessary before it can be sold.

FREDERICK H. CLENDENNING, who has been appointed Division Freight Agent, British Columbia Coast Steamship Service, and Ocean Steamship Lines, C.P.R., Vancouver, B.C., was born at Montreal, Nov. 9, 1881, and entered C.P.R. service, Aug. 1, 1898, since when he has been, to June 30, 1902, junior clerk, Fourth Vice President's office, register clerk, and stenographer, Montreal; July 1, 1902, to Mar. 31, 1903, stenographer and freight clerk, Commercial Agent's office, New York Central and Hudson River Rd., Montreal; Apr. 1, 1903, to Jan. 31, 1904, stenographer, rate and tracing clerk, General Freight Department, C.P.R., Vancouver, B.C.; Feb. 1, 1904, to June 30, 1905, chief clerk, City Freight office, C.P.R., Victoria, B.C.; July 1, 1905, to Aug. 31, 1908, chief clerk, District Freight Agent, C.P.R., and Esquimalt and Nanaimo Ry., Victoria, B.C.; Sept. 1, 1908, to Aug. 16, 1909, City Freight Agent, C.P.R., and District Freight Agent, Esquimalt and Nanaimo Ry., Victoria, B.C.; Aug. 17, 1909, to Mar. 31, 1911, Assistant General Freight Agent, C.P.R., Vancouver, B.C.; Apr. 1, 1911, to Jan. 31, 1914, District Freight Agent, C.P.R., Vancouver, B.C.

D. C. MACDONALD, whose appointment as Assistant General Claims Agent, C.P.R., Winnipeg, was announced in our last issue, was born at Elmsdale, N. S., Feb. 9, 1874, and entered railway service, Sept. 17, 1890, since when he has been, to Sept. 1891, operator at various points, Intercolonial Ry.; Sept. 1891 to Nov. 1893, assistant agent, I. R. C., Sackville, N. B.; Nov. 1893 to June 1894, clerk in Freight Department, I. R. C., Halifax, N. S.; June to Oct. 1894, freight clerk, I. R. C., St. John, N. B.; Oct. 1894 to June 1896, freight clerk and wharf ticket agent, I. R. C., Halifax, N. S.; Jan. 1896 to Mar. 1897, agent, I. R. C., Dartmouth, N. S.; Mar. 1897 to Apr. 1898, freight clerk, I. R. C., Halifax, N. S.; Apr. to Dec. 1898, City Ticket Agent, I. R. C., Halifax,

N. S.; Dec. 1898 to Oct. 1899, chief clerk, Freight Department, I. R. C., Halifax, N. S.; Dec. 1900 to Nov. 1901, Freight Agent, I. R. C., Sydney, N. S.; Nov. 1901 to July 1905, Freight Agent, I. R. C., Halifax, N. S.; July 1905 to Jan. 1906, clerk, General Freight Department, C. P. R., Winnipeg; Jan. to Dec. 1906, Travelling Freight Agent, C. P. R., Winnipeg; Dec. 1906 to Apr. 1907, chief clerk, General Freight Department, C. P. R., Winnipeg; Apr. 1907 to June 1911, City Freight Agent, C. P. R., Winnipeg; June 1911 to Jan. 1914, Division Freight Agent, C. P. R., Regina, Sask.

GEORGE BAZZARD, who died at Hamilton, Ont., Feb. 13, was born at Westhild Court, Herefordshire, Eng., Jan. 3, 1838, and until his retirement at the end of 1903, had been continuously engaged in railway service in Great Britain and Canada, since 1856. He commenced service with the South Wales Ry., now part of the Midland Ry., at Swansea, Wales, as General Agent, Sept., 1856, transferring in the following year, to the Newport, Abergavenny and Hereford Ry., in a similar capacity, and remained for six years, during which period he had charge of the traffic over the Crumlin viaduct. In 1863 he entered the service of the Monmouthshire Ry. and Canal Co., and subsequently was appointed Joint Agent of the Brecon and Merthyr Ry., Hereford, Hay and Brecon Ry., and Mid Wales Ry., at Brecon, Wales; later he joined the North Staffordshire Ry. at Burslem and Tunstall, Staffs., and came to Canada in 1876. He was appointed agent, Great Western Ry., with office in Yonge St., Toronto, and remained with the G.T.R., when it absorbed the G.W.R., in 1882, subsequently spending four years in Toronto as Freight and Passenger Agent, Chicago, Rock Island and Pacific Ry., and from 1886 he was Freight and Passenger Agent, Delaware, Lackawanna and Western Rd., Toronto, from which position he retired in Dec., 1903.

Grand Trunk Railway Betterments, Construction, Etc.

Lachine, Jacques Carter and Maisonneuve Ry.—An extension of time for the building of this railway in Montreal is being asked for from the Dominion Parliament. The surveys have been completed and the main portion of the route approved of, but certain negotiations are still in progress. There has been a lengthened fight in connection with the acquisition of some of the properties required for the right of way. The Quebec Supreme Court gave judgment in one of these cases, Feb. 5, holding that when the company complied with certain formalities under the expropriation act it acquired right and title to the property sought to be secured. The action was therefore dismissed.

Hamilton, Yards, etc.—It was reported in Hamilton, Ont., Feb. 3, that the G.T.R. had given instructions that certain lands on Ferguson Ave., were to be taken over, at the figures fixed on at a recent arbitration. The owners of the properties objected to the noises arising from the shunting, etc., in the yards, and arbitration proceedings were instituted to fix a value. The price fixed is said to be \$96,378. One of the owners did not object to the noise, and another owner is appealing to the Board of Railway Commissioners against his exclusion.

London, Ont.—We are officially advised that nothing definite has been decided with regard to a projected extension of the line to the Harris farm, London, Ont. Press reports stated that a line of about two miles was to be built at once to the farm, where

a racing track was to be laid out.

Press reports state that H. E. Whittenberger, Superintendent, while in London, Feb. 13, stated that the company will confer shortly with the London St. Ry. on the question of building subways at Richmond, Talbot or Ridout streets, and that tests of the ground will be made in the spring, and later on definite proposals will be made.

The Erie, London and Tillsonburg Ry. Co. was originally chartered in 1906, and the route from Port Burwell to London surveyed. The charter was subsequently acquired by the G.T.R., and extensions of time for construction were obtained in 1908, 1910 and 1912. A further extension is now being asked from the Dominion Parliament.

Owen Sound Station.—Plans which have been approved for the erection of a new station at Owen Sound show a two story building 175 by 40 ft., of pressed brick with slate roof. It is expected that construction will be started in May, and the new station opened within the year. (Jan., pg. 23.)

Great Northern Railway Lines in Canada.

Midland Ry. of Manitoba.—Manitoba Great Northern Ry.—The Winnipeg Board of Works has refused to allow the building of an elevated sidewalk on Ross St., alongside a fruit warehouse in course of erection on the terminals used by these companies in Winnipeg.

New Westminster to Blaine.—Press reports state that arrangements are being made for the building of a second track from New Westminster, B.C., to Blaine, Wash.

Vancouver Terminals.—Construction has been started on the viaducts over the Grandview cutting at Broadway and Victoria drives, Vancouver. The steel work is being erected by the Canadian Northwest Steel Co.

The company's new dock at the foot of Campbell Ave., Vancouver, has been completed, and was put into use, Feb. 5. There are two piers, each 450 by 127 ft., on which are warehouses, each 400 by 100 ft. Between the piers are three sets of tracks, and there is another set, along the water front of each warehouse. There is a driveway from the water front to each warehouse. The dock is constructed on wooden piers, concrete cylinders, with concrete and wood facings, while the buildings are of iron and wood, with a flat roof and skylights. The new dock gives accommodation for three steamers of the largest size, one at each side, and one across the end. (Feb., pg. 74.)

Steam Railway track laid in 1913.—We have received the final revised statement showing the track laid during 1913 on the Kettle Valley Lines under construction in British Columbia. This shows:—Between Midway and Penticton, 37 miles; between Penticton and Merritt, 32 miles; Coldwater Jct., towards Hope, 11 miles; total 80 miles. The estimated mileage last used in our table was 75 miles. This revision adds five miles to the total figures in the table given in our February issue, making a total of 3,218.67 miles of new single track laid in Canada in 1913.

Proposed Electrification of C.P.R. Tunnel through the Selkirks.—G. Bury, Vice President, C.P.R., who was in Montreal, Feb. 20, left on that day for New York, where, it is reported, he was to consult with experts in regard to the electrification of the Rogers Pass tunnel, now under construction.

The C.P.R. Engineering Department held its annual dinner at the Place Viger Hotel, Montreal, Feb. 15.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Board of Railway Commissioners.—**GEORGE SPENCER**, who has recently been acting as Assistant Chief Operating Officer, Winnipeg, has been appointed Chief Operating officer, vice A. J. Nixon, deceased. Office, Ottawa.

Canada Steamship Lins, Ltd.—**J. W. HAZLETT** has been appointed Chief Engineer, Lines East of Kingston. Office, Montreal. **W. NOONAN** has been appointed Chief Engineer, Hamilton, Niagara and Toronto-Prescott Lines. Office, Toronto.

Canadian Government Railways.—**J. E. LONG** has been appointed Safety Engineer, in charge of the Safety First movement, to organize committees and direct meetings in connection therewith. Office, Moncton, N.B.

A. J. GRAY has been appointed Division Freight Agent, St. John, N.B., vice S. G. Tiffin, transferred to Montreal.

R. E. PERRY, heretofore Assistant General Freight Agent, Intercolonial Ry., Montreal, has had his office moved to Moncton, N.B., and has had his jurisdiction extended over the Prince Edward Island Ry.

S. G. TIFFIN, heretofore Division Freight Agent, St. John, N.B., has been appointed Division Freight Agent in charge of territory in Quebec and in Ontario west to Kingston and Sharbot Lake, inclusive. Office, Montreal.

See also Intercolonial Ry.

Canadian Northern Ry.—Press reports from Winnipeg, state that it is reported locally that **R. J. MACKENZIE**, son of the President, will shortly be appointed Second Vice President, with office at Winnipeg.

W. F. BARRY heretofore Commercial Agent, St. Louis, Mo., has been appointed City Freight Agent, Montreal.

H. M. POTTICARY, heretofore Soliciting Freight Agent, Toronto, has been appointed Soliciting Freight Agent, Montreal, vice W. H. Thompson, resigned.

The position of District Freight Agent, Montreal, formerly held by **F. A. SHAW**, whose appointment as Division Freight Agent, Toronto, was announced in our last issue, has been abolished.

R. F. CLARK, heretofore Travelling Agent., Chicago, Ill., has been appointed General Agent at Pittsburgh, Pa., vice A. E. Hodgins, resigned.

F. G. WOOD, heretofore Commercial Agent at Pittsburgh, Pa., has been appointed Commercial Agent at St. Louis, Mo.

Canadian Pacific Ry.—**W. J. PICKRELL**, heretofore District Master Mechanic, District 1, Ontario Division, West Toronto, has been appointed Assistant Superintendent, District 2, Atlantic Division, and the position of Trainmaster for that district, heretofore held by **B. A. Craig**, has been abolished. Office, Aroostook, N.B. This appointment was made Nov. 1, 1913, but owing to an oversight, the circular covering it did not reach this office.

J. H. GUTHRIE has been appointed Roadmaster, Division 5, District 2, Atlantic Division, vice **W. Hacking**. Office, Aroostook Jet., N.B.

J. J. MORGAN, heretofore dispatcher, has been appointed Chief Dispatcher, Farnham, Que., vice **L. G. Rogers**, promoted.

G. G. OMMANNEY, who has, since 1912, been acting as a special engineer for the company, has been appointed Special Engineer to the President, performing such duties as may be assigned to him from time to time. Office, Montreal.

W. E. WOODHOUSE, heretofore Assist-

ant Superintendent of Motive Power, Western Lines, Winnipeg, has been appointed Superintendent of Motive Power, Eastern Lines. Office, Montreal.

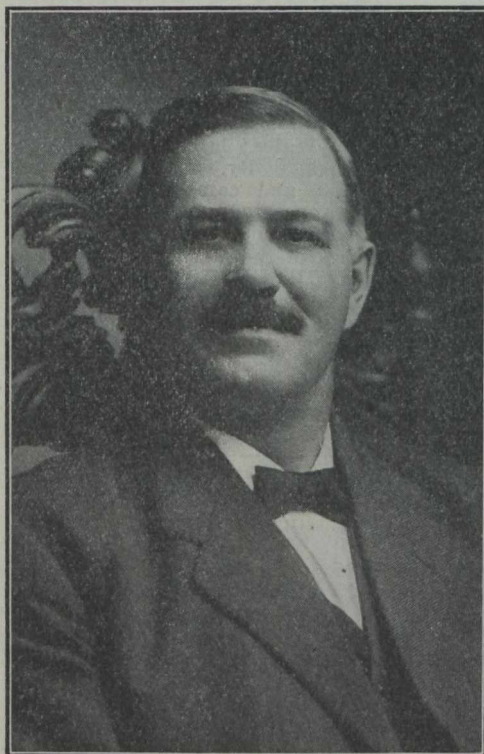
H. OSBORNE, heretofore Assistant Superintendent of Motive Power, Eastern Lines, has been appointed Assistant Mechanical Superintendent, Eastern Lines, and his former position has been abolished. Office, Montreal.

G. McBRIDE has been appointed Night Foreman at North Bay, Ont.

J. A. MOORE has been appointed Car Foreman at White River, Ont., vice **F. Guy**, assigned to other duties.

R. PRESTON, heretofore Master Mechanic, Manitoba Division, Winnipeg, has been appointed Assistant Superintendent of Motive Power, Western Lines, vice **W. E. Woodhouse**, promoted. Office, Winnipeg.

F. R. PENNEFATHER, heretofore District Master Mechanic, Cranbrook, B.C., has been appointed Master Mechanic, Manitoba



V. A. Harshaw, Superintendent, District 1, Atlantic Division, Canadian Pacific Railway.

Division, vice **R. Preston**, promoted. Office, Winnipeg.

W. B. LANIGAN, Assistant Freight Traffic Manager, Western Lines, Winnipeg, has announced that, from Feb. 1, the British Columbia Division will include rail, lake and river lines, Ottertrail to Vancouver, Passburg to Midway, inclusive, and all intervening territory. The western limit of the Alberta Division has been extended to include Field, B.C.

R. W. DREW, heretofore District Freight Agent, Kootenay and Boundary District, Nelson, B.C., has been appointed Division Freight Agent, Saskatchewan Division, vice **D. C. Macdonald**, transferred. Office, Regina.

J. H. INGRAM has been appointed Travelling Freight Agent, Saskatchewan Division. Headquarters, Regina.

J. ROBERTSON, heretofore Assistant Division Engineer, Alberta Division, Calgary, has been appointed Assistant Division Engineer, Saskatchewan Division, vice **H. B. Sims**, transferred. Office, Moose Jaw.

T. LEES, heretofore Assistant Engineer, Vancouver, B.C., has been appointed Assistant Division Engineer, Alberta Division, vice **J. Robertson**, transferred. Office, Calgary.

H. B. WALKEM, M. Can. Soc. C.E., heretofore Assistant Division Engineer, British Columbia Division, Vancouver, has been appointed Resident Engineer, Kootenay and Boundary Division. Office, Nelson, B.C.

F. W. STERLING, heretofore Travelling Freight Agent, Vancouver, B.C., has been appointed District Freight Agent, Kootenay and Boundary District, vice **R. W. Drew**, promoted. Office, Nelson, B.C.

The position of General Roadmaster, District 3, British Columbia Division, Nelson, heretofore held by **A. Larsen**, has been discontinued for the present. The roadmasters on this district, with their territory, are as follows:—Farron to Midway, including Phoenix and Motherlode Branches, **E. B. HALL**, Roadmaster, Grand Forks; Rossland Branch and Boundary from Castlegar to Farron, Assistant Roadmaster, **R. MARIANI**, Smelter; Columbia and Kootenay Branch, Slocan Lake Branch, Nakusp and Slocan Branch, Proctor Branch and Lardo Branch, Roadmaster, **H. BECK**, Slocan City.

H. B. SIMS, heretofore Assistant Division Engineer, Saskatchewan Division, Moose Jaw, has been appointed Assistant Division Engineer, British Columbia Division, vice **H. B. Walkem**, transferred. Office, Vancouver. In our last issue the name was inadvertently given as **C. J. Simms**.

W. J. RENIX, heretofore General Foreman, Sutherland, B.C., has been appointed District Master Mechanic, Cranbrook, B.C., vice **F. R. Pennefather**, promoted.

C. PERRY, heretofore Shop Foreman, Brandon, Man., has been appointed General Foreman, Sutherland, B.C., vice **W. J. Renix**, promoted.

F. H. CLENDENNING, heretofore District Freight Agent, B.C. Coast Service and Trans-Pacific Steamships, Vancouver, B.C., has been appointed Division Freight Agent, in charge of B.C. Coast and Transpacific traffic. Office, Vancouver, B.C.

G. A. STAPLES has been appointed Travelling Freight Agent, British Columbia Division, Vancouver, vice **F. W. Sterling**, promoted.

Capt. BEETHAM, heretofore in command of the company's s.s. Empress of Russia, has been appointed Marine Superintendent, Vancouver, B.C.

Central Vermont Ry.—**S. S. RUSSELL**, heretofore General Superintendent of Transportation, has been appointed Superintendent, Northern Division, vice **J. F. Keefe**. Office, St. Albans, Vt.

J. F. KEEFE, heretofore Superintendent, Northern Division, has been appointed Assistant Superintendent, Northern Division. Office, St. Albans, Vt.

M. MAGIFF, heretofore Superintendent of Telegraphs and Car Accountant, has been appointed Superintendent of Car Service and Telegraphs. In addition to the superintendency of telegraph matters, he will have charge of car service and car accounting. Office, St. Albans, Vt.

S. E. McKENNEY, heretofore Trainmaster, Palmer, Mass., has been appointed Terminal Trainmaster, vice **F. J. McEnany**, promoted. Office, St. Albans, Vt.

F. J. McENANY, heretofore Terminal Trainmaster, St. Albans, Vt., has been appointed General Agent in charge of local freight and customs work. Office, St. Albans, Vt.

The positions of Trainmaster, Southern Division, and of Districts 3 and 4, Northern Division, and of Customs Agent at St. Albans, have been abolished.

MARCUS ALEXE is reported to have been appointed Canadian Freight and Pas-

senger Agent, vice A. C. Stonegrave, deceased. Office, Montreal.

Dr. ALAN DAVIDSON has been appointed Chief Surgeon, vice Dr. Alex. Hutchison, resigned. Office, St. Albans, Vt.

Dr. ARTHUR O. MORTON has been appointed Chief Oculist, vice Dr. G. Carleton Berkeley, resigned. Office, St. Albans, Vt.

Grand Trunk Pacific Ry.—R. W. MOORE, heretofore Foreman at Rivers, Man., has been appointed Car Foreman, Westfort, Ont., vice W. Cash, resigned.

W. P. HINTON, heretofore General Passenger Agent, Winnipeg, has been appointed Assistant Passenger Traffic Manager. Office, Winnipeg.

V. P. CUMBERLAND has been appointed Resident Engineer at Rivers, Man., vice J. N. de Stein, transferred.

H. EVANS, heretofore Assistant Foreman, has been appointed Foreman at Rivers, Man., vice R. W. Moore, transferred.

D. W. HAY, heretofore Locomotive Foreman, Redditt, Ont., has been appointed Locomotive Foreman, Jasper, B.C., vice F. Lozo, transferred.

F. LOZO, heretofore Locomotive Foreman, Jasper, B.C., has been appointed Locomotive Foreman, McBride, B.C., vice A. H. Mahan, transferred.

A. H. MAHAN, heretofore Locomotive Foreman, McBride, B.C., has been appointed Locomotive Foreman, Prince George, B.C.

H. SAUNDERS, heretofore Car Foreman, McBride, B.C., has been appointed Car Foreman, Fort George, B.C.

H. DARLING, heretofore acting Locomotive Foreman, Pacific, B.C., has been appointed Locomotive Foreman, Smithers, B.C.

G. McNEIL has been appointed acting Locomotive Foreman, Pacific, B.C., vice H. Darling, transferred.

A. K. LEIGHS has been appointed Car Foreman, McBride, B.C., vice H. Saunders, transferred.

Grand Trunk Ry.—C. W. JOHNSTON, heretofore chief clerk to Passenger Traffic Manager, has been appointed Assistant to Passenger Traffic Manager. Office, Montreal.

J. B. MACPHERSON, heretofore chief rate clerk, Freight Department, has been appointed Chief of Tariff Bureau for lines east of Detroit and St. Clair Rivers. Office, Montreal. This is a new position.

S. E. DEWEY, heretofore Commercial Agent, Pittsburgh, Pa., has been appointed Commercial Agent, All Rail Lines, operating via the Niagara Frontier, New York. Office, 290 Broadway. This is a new position.

D. M. CRAWFORD has been appointed Commercial Agent, Pittsburgh, Pa., vice S. E. Dewey, transferred to New York.

R. McC. SMITH is reported to have been appointed City Passenger and Ticket Agent, Detroit, Mich., vice C. M. Harwood, retired.

Great Northern Ry.—A press dispatch from New York, Feb. 4, stated that CARL R. GRAY, President, had resigned. The Secretary, in answer to an enquiry, wrote us, Feb. 18, that he was still President.

Intercolonial Ry.—JASPER DAVISON has been appointed Standard Rule Instructor, District 2, St. Flavie, Que., to Moncton, N.B., with headquarters at Campbellton, N.B.

R. G. GAGE, heretofore Signal and Chief Engineer, General Railway Signal Co. of Canada, Lachine, Que., has been appointed Signal and Electrical Engineer, I.R.C. Office, Moncton, N.B.

See Canadian Government Railways.
Midland Ry. of Manitoba.—R. K. GEMMELL, heretofore Auditor and chief clerk to General Superintendent, has been appointed Local Freight Agent, Winnipeg, vice C. H. Booth, resigned to enter private

business. The report that A. Campbell had been appointed to this position, mentioned in our last issue, was incorrect.

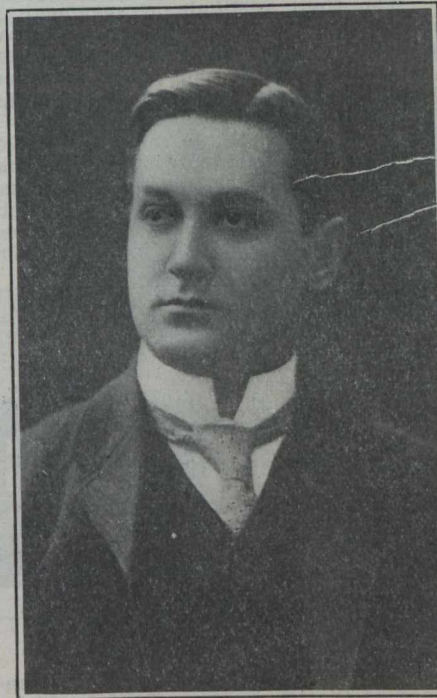
R. G. THACKRAY has been appointed chief clerk and Auditor, vice R. K. Gemmell, appointed Local Freight Agent. Office, Winnipeg.

Pere Marquette Rd.—W. C. ATHERTON, Purchasing Agent, has also been appointed General Storekeeper, vice J. H. Hollub. Office, Detroit, Mich.

Prince Edward Island Ry.—See Canadian Government Railways.

Reid Newfoundland Co.—W. E. LADLEY, Superintendent of Motive Power, has had his jurisdiction extended to cover the superintendence of the company's dry dock at St. John's.

Toronto, Hamilton and Buffalo Ry.—H. T. MALCOLMSON, whose appointment as Superintendent of Car Service, Hamilton, Ont., was announced in our last issue, will continue to have charge of car accounting work, as hitherto, and no appointment will be made to succeed him as Car Accountant.



W. P. Hinton,
Assistant Passenger Traffic Manager, Grand Trunk Pacific Railway.

Railway Finance, Meetings, Etc.

Atlantic, Quebec and Western Ry.—The Joint Trustees for the liquidation of the Charing Cross Bank, London, Eng., in declaring a second dividend of 8d. in the £, state that the principal remaining asset of the bank is the interest on the A. Q. and proximate expenditure, £815,652. Other W. Ry., valued at the amount of the ap-assets in Canada consist of £7,000 of 1st mortgage gold bonds of the Quebec Oriental Ry., and freehold plots with water rights on the Gaspé foreshore. The A. Q. and W. Ry. showed a loss of approximately \$50,000 for the financial year ended June 30, but it was anticipated that the loss would be less during this year. The selling of the line at a satisfactory price at the earliest possible moment was a matter to which the closest attention was being given by the trustees. Since the beginning of the liquidation, the trustees had received £39,215 14s 2d. interest on the bonds of the A. Q. and W. Ry., and interest on these bonds is provided for until 1915 out of cash subsidies in the hands of trustees for the debenture bondholders.

The trustees had provided out of the funds of the estate, £44,665 for the completion and equipment of the line. Further sums for betterment and equipment would probably be required unless an early sale of the line were made.

Canadian Northern Ry.—There was deposited with the Secretary of State at Ottawa, Feb. 4, a trust deed, dated Nov. 19, 1913, made between the C. N. R. Co., MacKenzie, Mann & Co., the British Empire Trust Co., and the National Trust Co., securing an issue of £3,500,000 of 5% land mortgage debentures.

An issue of £1,320,000 of 4½ guaranteed first mortgage debenture stock was placed on the London, Eng., market, Feb. 7, at 93, by Lazard Bros. & Co. The proceeds of the issue are to be used by certain of the company's Alberta lines building under the title of the Canadian Northern Western Ry.

The company is applying to the Dominion Parliament for an act "defining the manner of execution of the company's securities and the denomination of issue," of its stock.

Canadian Pacific Ry.—The first instalment of 32% of the issue of \$25,000,000 of notes, at 80, amounting to \$16,640,000, was due Feb. 2. It was reported that approximately \$35,000,000 was paid in, shareholders taking advantage of the company's offer to pay 6% on prepaid instalment. The balance is due Mar. 2.

Canadian Pacific Ry.—The following dividends have been declared:—On the preference stock, 2% for the half year ended Dec. 31, and on the common stock, 2½%, for the quarter ended Dec. 31, being at the rate of 7% per annum from revenue, and 3% per annum from special income account. The dividends are payable Apr. 1, to shareholders of record on Feb. 28.

Grand Trunk Ry.—The Dominion Parliament is being asked to authorize the doing away of the present system of half yearly meetings in favor of an annual meeting of shareholders to be held in March or April, for the payment of interim dividends, for the issue of additional consolidated debenture stock the interest charge on which at 4% shall not exceed £100,000 a year. The act shall not come into force until it has been approved by a majority of shareholders present personally or by proxy at a meeting specially convened.

Grand Trunk Ry.—The full dividend for the half year ended Dec. 31, 1913, has been declared on the 4% guaranteed stock, and on the first and second preference stock, and 2½% for the year on the third preference stock. After payment of these dividends, \$83,000 is carried forward to the current half year. The gross receipts for the half year were \$23,844,500, and the expenses \$17,800,000; the total net receipts, including income from rentals, etc., being \$6,097,250.

Montreal Elevator Rates.—The Montreal Board of Trade Transportation Bureau and the Montreal Corn Exchange Association have applied to the Board of Railway Commissioners for an order to reduce the rates at the Montreal Warehousing Co.'s elevator at Montreal, to the same scale, on ex-water grain shipped by car, as charged at the G.T.R. elevators on Georgian Bay. As it is claimed that the G.T.R. controls the Montreal Warehousing Co., it has been made a party to the hearing, which is set down for Mar. 10 at Ottawa.

An order has been placed in Oregon for 10,000,000 ft. of creosoted ties for India and it is said further large orders will be placed. Two tank steamships are on the way from Amsterdam with creosote destined for St. Helens, Ore.

Electric Railway Department

Motor and Trailer Cars for Montreal Tramways Company.

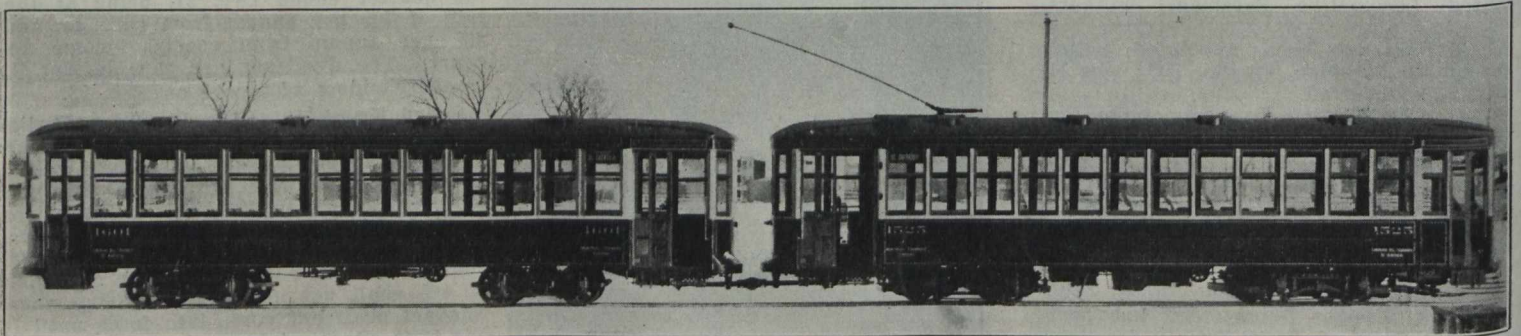
As previously mentioned in these columns, the Montreal Tramways Co., a short time ago, ordered 25 motor cars, and 25 trailers, which have been delivered, and are illustrated herewith. The operating conditions on the Montreal streets have on several occasions been discussed in this paper. On St. Catherine St., the main thoroughfare across the city, there is a heavy traffic at all hours of the day, to serve which, there has up to the present been a 1½ minute headway, with single car operation. In view of the nearly constant volume of traffic handled on the line at all hours, consideration of the problem of how to meet increasing traffic on that thoroughfare counselled the use of trailer cars, as with the conditions as they exist, it would be possible to send out the motor and trailer as a unit in the morning, leaving it in service all day, instead of having to attach and remove the trailer at different periods of the day as is the usual practice. This latter has been one of the principal objections to the use of the trailer system. Another advantage in the use of trailers for this service arises from the fact that the volume of traffic being such as to make practicable the use of trailers, the operating cost per passenger is materially decreased.

the principal changes covering the vestibules and fittings. One of the most apparent changes is the substitution of the monitor for the clerestory roof, which was made in an order delivered about a year ago. The seating capacity of the car, while the same as in the initial design, has been altered. Originally, the cross seats were located in the centre of the car, but as this had a tendency to cramp the standing passengers in the rush hours, to the rear of the cross seats in the longitudinal seat section at the back, leaving the longitudinal seat section at the front practically empty of standing passengers, recent designs have had the cross seats moved forward, with a very short longitudinal seat at the front, the rear one extending half the length of the car. The front vestibule arrangement on the original cars, wherein the motorman was separated from the main part of the platform by a glass and frame partition, was shortly afterwards superseded by a pipe frame and chain arrangement.

The framing of both the motor and trailer cars is identical and corresponds to that of the original design, being composed entirely of plates and structural shapes. Both motor and trailer cars have side sills formed of a depth of 18 in. of ¼ in. plate, rein-

forced the thickness of the wall posts by reinforcing the belt rail and vertical posts by a strip of steel along the recessed sides, where the vertical and horizontal members dovetail each other. A considerably thinner wall construction than normal is thus made possible, with the result that this added room may be given to the central aisle. The corner and side posts are of ash, and the plain arch roof is supported on steel rafters at each post, with wooden carlines between. The side panels are of very thin sheet steel, and extend from the side sill to the belt rail. These are made in small sections, the width of the windows, and may be sprung into place, and secured by small screws, so that they may be readily replaced in the event of a minor accident, without the necessity of shopping. All platforms are enclosed in round end vestibules, sheathed outside below the window sills in sheet steel.

The front platforms have three single drop sashes in front, that in the centre of the motor car front vestibule being adjustable. Aside from the vestibule windows, all windows are of the double sash type, the upper sashes being stationary, with the lower ones arranged to drop into pockets. All the side windows are provided with wire



Motor Trailer Unit, Montreal Tramways Co.

The motor and trailer cars are almost identical in general design, and are of the same type as the last batch of cars recently built for the company. The original of this type was described in considerable detail in Canadian Railway and Marine World for March, 1912. The type of semi steel cars in use in Montreal up to that time had followed conventional lines, corresponding for the most part to the existing practice in all wood construction. As at that time it was expected that a large number of new cars would be added to the equipment, as has since been done in the last two years, a completely new design of car was developed by D. E. Blair, Superintendent of Rolling Stock, in which former practice was largely discarded, and a new car developed, which was not only stronger, but lighter. Another very important factor considered, and which in the design of the car was developed to a high degree, was the making of the car easy of repair in the event of accident. As completed at that time, and described in the article referred to, the car was a considerable advance on the company's previous practice.

Cars subsequently built to the same fundamental design have had changes introduced as the initial design developed points of weakness, or places where they could be improved upon. The design of the body frame of the car has been left unaltered,

forced at the bottom by a heavy 6 in. channel, and at the top by a special 3 by ½ in. bar, the side sill being 32¼ ft. long. The centre stringers consist of 4 in. channels, and the end sills of the motor car and front sill of the trailer are formed of 9 in. channels. In order to reduce the weight, and in consequence of the rear end of the trailer being subject to no extraordinary strain, a 7 in. channel forms the sill at that end. In the construction of the motor car underframe, 12 crossings are employed, six of which are formed of 4 in. channels, while the remainder are light angles. The trailer framing crossings consist of six 4 in. crossings. The platforms of the motor car, and the front platform of the trailer, are on outside knees of 6 in. channels, and centre knees of 4 in. channels, but the rear platform of the trailer, being subjected to a constant weight of seated and standing passengers, is supported on outside knees of 8 in. channels, with 5 in. channels for centre supports.

The side framing of the car body is one of the features of the original design followed out in this latest order. In the earlier cars on the Montreal lines it had been found that the central aisle was rather crowded with the overall body width that could be operated on the streets. This hampered central aisle width was widened in the initial car of this design by reducing

mesh screen guards, and have storm sashes which can be applied in the winter by means of the clips used for the screens. When in place the inner windows are not opened.

All the vestibules are enclosed by doors, the arrangement of these latter being of interest, especially as the use of doors on the rear vestibule of Montreal cars is a new departure, whereby both the rear as well as the front bulkheads are removed. Towards the front end of the front vestibule there is a two leaf folding door, operated from the motorman's position, acting as the main exit from the car. This is panelled with wire glass in the lower panel, in conformity with the latest practice, and with plain glass above. The rear platform of the motor car and the front vestibule of the trailer have two sets of two leaf folding doors, which can be operated independently or in unison by the conductor from his stand on the rear vestibule. The end doors of each pair serve as the entrance doors, and the inner ones, in the motor car, as an auxiliary exit, while in the trailer it is the main exit. The rear end of the trailer has a single two leaf folding door for use only in emergency. All these doors have folding steps, which operate in conjunction with the doors. By this arrangement all the loading, and a good portion of the unloading is attended to at the centre of the

train unit, thereby avoiding the delays when the entrances and exits are a considerable distance apart. All doors are wired in series, the closing of the last door giving the motorman the clear signal.

The motor cars are mounted on Brill 27-GE2 trucks, and the trailers on Brill 67-F trailer trucks. The motor car is equipped with four Westinghouse 101 motors. Westinghouse straight air braking is used. These cars were supplied by the J. G. Brill Co., Philadelphia, Pa.

Ottawa Electric Railway Company's Annual Report.

Following are extracts from the company's annual report of the calendar year 1913, presented at the annual meeting, Feb. 2.

Gross earnings	\$1,041,282.23
Operating expenses and maintenance ..	629,122.14
Net earnings	\$412,160.09
Net earnings, 1912	400,059.07
Increase, 1913	\$12,101.02

The net earnings have been disposed of as follows:—

Four quarterly dividends of 3% and a bonus of 3%	\$281,535.00
Interest on bonds and loans	20,772.18
Mileage payments	13,737.26
Taxes	12,221.81
Placed to credit of contingent account to be applied to reduction of track renewals, car equipment, and other accounts	55,000.00
Transferred to credit of profit and loss ..	28,893.84
	\$412,160.09

Percentage of operating expenses to receipts:— 1899, 57%; 1900, 57%; 1901, 63%; 1902, 60%; 1903, 61 4-5%; 1904, 62%; 1905, 59 2-5%; 1906, 57 4-5%; 1907, 59 4-5%; 1908, 66 2-5%; 1909, 63 1/2%; 1910, 63%; 1911, 57 2-5%; 1912, 57 1-5%; 1913, 60 2-5%.

23,987,883 passengers were carried, compared with 21,815,798 in 1912. The balance at credit of profit and loss account is now \$167,158.67, and of rest account \$200,000.

The new work carried out and completed during the year was as follows:—1,000 h.p. Substation on Centre St; 1,000 h.p. Substation on Nelson St. Extension of tracks to Ottawa South from Wilton Crescent, forming a loop on Sunnyside, Seneca and Glen Ave. Preston St. extension from Somerset St. southerly and re-arrangement of tracks on Broad St. Double tracks on Queen St. from Bank to Elgin St. An additional track on Crichton St. from Beechwood Ave. to Charles St. and a loop by way of John St. The 4,200 h.p. steam turbo generator referred to in last report is expected to be ready for operation early in the spring. A large amount has been spent in improving the tracks and rolling stock as well as other properties, and the company is now in a better position than ever to handle any business that may offer.

The records show an increase in gross receipts from \$71,000 in 1892 to over \$1,000,000 in 1913. Your directors look forward to still greater increases during the remaining years of the franchise.

PROFIT AND LOSS ACCOUNT.

Balance at credit, Dec. 31, 1912	\$138,264.83
Net earnings, 1913	412,160.09
	\$550,424.92
Dividends and bonus	\$281,535.00
Taxes	12,281.81
Mileage payments	13,737.26
Interest on bonds and loans	20,772.18
Contingent account	55,000.00
Balance at credit	167,158.67
	\$550,424.92

The directors for the current year, who were re-elected, are as follows:—President, T. Ahearn; Vice President, W. Y. Soper; Secretary-Treasurer, J. D. Fraser; other directors, T. Workman, R. Quain, T. F. Ahearn, E. N. Soper.

Toronto Railway Company's Annual Report.

Following are extracts from the report of the calendar year 1913, presented at the annual meeting, Feb. 4:—

Gross earnings	\$6,049,018.92
Charges for operating, maintenance, etc. ..	3,123,308.55
Net earnings	\$2,925,710.37

From which net earnings there was deducted \$2,158,472.78, distributed as follows:—

Dividends	\$879,958.00
Bond interest, etc.	188,806.72
	\$1,068,764.72

Payments to City:—

Percentage on earnings	\$939,990.93
Pavement charges	91,466.20
General taxes	58,250.93
..	1,089,708.06
	\$2,158,472.78

The gross passenger earnings were \$5,980,695.88 compared with \$5,367,502.48 for 1912, an increase of \$613,193.40. The various charges against these earnings for operating, maintenance, etc., amounted to \$3,123,308.55 or 52.2% of passenger earnings.

The payments made to the city amounted to \$1,089,708.06, an increase of \$147,659.10

disposed of £100,000 of bonds of the sterling issue held in the treasury. The maintenance of the plant, rolling stock equipment and other properties have received careful attention throughout the year.

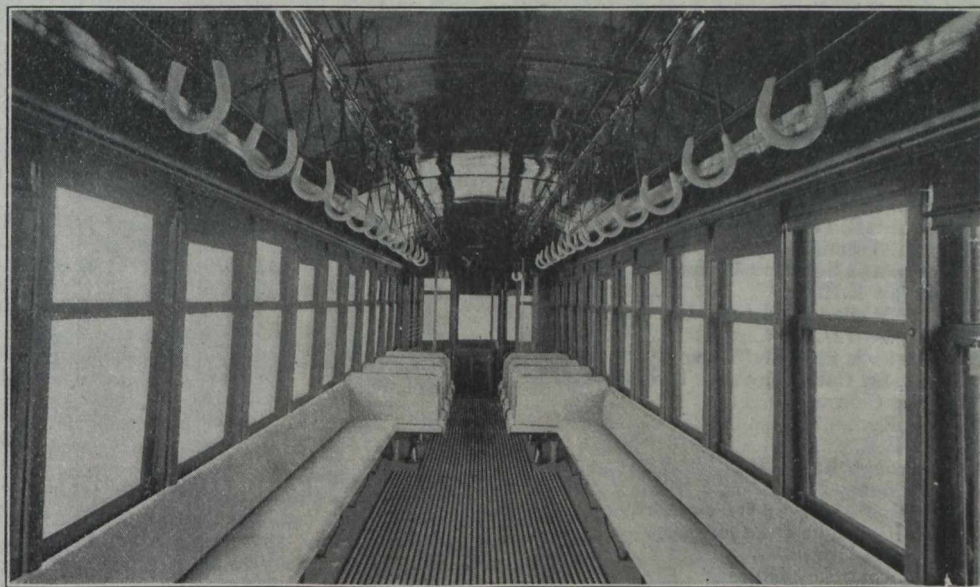
Your directors declared out of the accumulated surplus earnings, four quarterly dividends of 2%.

The Toronto and York Radial Ry. Co. reports very satisfactory increases, the gross earnings amounting to \$584,490.93, compared with \$492,922.86 for the previous year, an increase of 18.5%.

Gross earnings	\$6,049,018.92
Operating, maintenance, etc.	\$3,123,308.55
Interest on bonds, etc. ...	195,806.72
Percentage on earnings ..	939,990.93
Pavements, taxes	156,100.50
	4,415,206.70

PROFIT AND LOSS ACCOUNT.

Balance from 1912	\$3,694,747.00
Surplus earnings	\$1,633,812.22
expenses, interest, taxes, etc.	1,633,812.22
	\$5,328,569.22
Dividends, four of 2% each, on paid up capital	\$ 879,958.00
Balance from 1912	\$3,694,757.00
Surplus carried forward ..	753,854.22
	4,448,611.22
	\$5,328,569.22



Interior of Motor Car, Montreal Tramways Co.

over the previous year.

The third drawing of sterling bonds, under the terms of the mortgage deed dated Sept., 1892, took place June 27, 1913. The company draws annually 5% of the amount of bonds issued, same to be redeemed on August 31 following the date of drawing, and from which date no interest is payable on bonds so drawn. There has been drawn to date a total of \$562,512.55.

The expenditure on capital account throughout the year amounted to \$1,064,857.73. In addition to various extensions and improvements to certain of the shops, car houses, etc., the following buildings were erected: A storage battery building was completed in connection with the Harrison St. sub-station, a sub-station (no. 4) was erected in Queen St. East, opposite Logan Ave., and a paint shop was built on Queen St. East on property running from Queen St. to Eastern Ave. Large expenditure was made in the installation of a storage battery plant in the Harrison St. building, in the construction of additional rolling stock and the purchase of electrical equipment for same, and in the extension of the track and overhead system in different sections of the city. To meet heavy expenditure on capital account your directors

COMPARATIVE STATEMENT.

	1913.	1912.	Increase.
Gross income ..	\$6,049,018.92	\$5,448,050.36	\$600,968.56
Operating, Maintenance Charges, etc. ..	3,123,308.55	2,866,550.12	256,758.43
Net earnings ..	2,925,710.37	2,581,500.24	344,210.13
Passengers carried	151,236,925	135,786,573	15,450,352
Transfers	63,083,118	56,176,985	6,906,133
Percentage of charges, etc. to passenger earnings	52.2	53.4	*1.2
	*Decrease.		

The percentage of charges and to passenger earnings for 11 years has been as follows:—1903, 55.3%; 1904, 58.2%; 1905, 56.8%; 1906, 52.9%; 1907, 53.9%; 1908, 52.9%; 1909, 51.4%; 1910, 51.4%; 1910, 51.6%; 1911, 55.2%; 1912, 53.4%; 1913, 52.2%.

The directors for the current year, who were re-elected, are:—President, Sir W. Mackenzie; Vice-President, F. Nicholls; other directors, Sir Henry M. Pellatt, Sir Rodolphe Forget, W. D. Matthews and Jas. Gunn. The vacancy caused by Hon. G. A. Cox's death has not been filled.

The Guelph Radial Ry. has ordered two double truck, double end city cars from Preston Car and Coach Co.

Electric Railway Statistics for Year Ended June 30, 1913

The following abbreviations are used in the names of railways:—E, electric; E.R., electric railway; E.S.R., electric street railway; S.R., street railway. The minus mark (−) in the column for net income or deficit, shows that there was a deficit in the operation of the line to the extent of the figures given. The numbers following the names of the railways, refer to the notes following the table on this page.

	First Main Track Mileage	Gross earnings from Operation	Miscellaneous Earnings	Operating Expenses	Taxes, Funded Debt, etc.	Net Income or Deficit	Total Car Mileage	Fare Passengers Carried
Berlin and Waterloo S.R.	3.20	\$ 48,547		\$ 34,038	\$ 12,482	\$ 12,026	129,463	958,750
Berlin and Northern Ry.	2.45	8,942		6,692	1,428	821	33,500	206,052
Brantford and Hamilton Ry.	23.00	146,595		102,969	69,892	−26,266	333,047	526,496
British Columbia E.R.	177.44	4,179,881		3,239,441		940,439	12,227,791	71,937,822
Calgary Municipal Ry.	50.00	704,053		502,119	83,904	118,029	2,648,234	16,986,538
Canadian Resources Development Co.	1.75	1,636		3,373		−1,737	29,200	26,721
Cape Breton E.R.	30.52	220,264	\$ 121,529	125,816	103,262	112,714	655,208	4,186,809
Chatham, Wallaceburg and Lake Erie Ry.	38.94	138,950		79,398	39,165	20,386	333,244	416,761
Cornwall E.R.	4.00	36,497		28,374		8,123	219,870	450,571
Edmonton Radial Ry.	30.23	581,162		502,316	140,623	−61,777	1,704,791	13,836,406
Galt, Preston and Hespeler E.R.	17.81	212,659	269	125,772	21,407	65,749	348,189	1,262,825
Grand Valley Ry.	40.36	107,546	154,652	79,996	16,363	11,185	491,388	1,575,692
Guelph Radial Ry.	8.50	38,401		28,839	1,622	7,939	329,000	929,945
Halifax Electric Tramways Co.	11.24	272,445		164,508	43,095	219,493	1,011,723	6,147,000
Hamilton and Dundas E.R.	7.00	66,144		42,854	6,055	17,234	144,150	768,979
Hamilton, Grimsby and Beamsville E.R.	22.00	139,697		119,429	12,141	8,126	384,653	736,511
Hamilton Radial Ry.	25.00	195,735		146,147	50,608	−1,020	580,042	2,373,436
Hamilton S.R.	22.00	603,615		349,159	87,009	167,445	1,901,940	15,595,131
Hull E.R.	14.12	148,386	34,719	115,669	40,936	26,500	818,589	2,300,456
International Transit Co.	4.30	86,760	19,479	45,565	19,860	40,814	295,160	2,053,780
Kingston, Portsmouth and Cataraqui E.R.	8.00	38,578		32,800	5,415	363	199,680	910,456
Levis County Ry.	10.50	78,182	206	63,979	13,280	1,129	390,593	1,622,880
Lethbridge Municipal Ry.	11.00	50,934		51,228	14,782	−15,076	371,149	1,184,392
London S.R.	25.73	322,182	64	217,510	34,261	70,474	1,495,681	8,701,268
London and Lake Erie Ry. and Transportation Co.	29.02	124,490	1	81,591	41,839	1,060	382,869	607,314
Moncton Tramway	2.72	16,912		17,986		−1,073	83,255	406,541
Montreal Park and Island Ry.	29.37						1,348,967	4,909,336
Montreal S.R. (1)	76.67	6,754,227		4,032,664	2,083,231	638,331	16,117,398	159,892,021
Montreal Terminal Ry.	18.22						678,643	1,917,795
Montreal and Southern Counties Ry.	11.40	131,079	130	114,082	1,595	15,531	336,225	1,661,245
Moose Jaw E.R.	7.50	103,654		89,411		14,242	413,359	2,174,745
Niagara, Welland and Lake Erie Ry.	1.74	17,486		10,237	3,164	4,084		377,177
Nelson S.R. (2)	1.25	12,574		13,080	1,897	−2,404	53,664	308,823
Niagara Falls Park and River Ry.	11.91	147,577	6,950	80,238	34,154	40,114	297,983	1,365,661
Niagara, St. Catharines and Toronto Ry.	47.76	475,360		326,905	88,312	60,142	989,470	3,877,008
Nipissing Central Ry.	5.70	73,116	839	43,760		30,195	190,868	901,891
Oshawa Ry.	9.00	108,089	369	85,545	4,368	18,545	83,920	253,203
Ottawa E.R.	23.56	979,962		580,982	40,281	358,698	4,446,414	22,345,111
Peterborough Radial Ry.	6.04	46,709		32,559	8,582	5,566	263,050	1,003,331
Pictou County Ry.	7.90	56,253	34,415	31,480	40,545	18,643	135,662	1,171,470
Port Arthur and Fort William E.R.	25.33	255,196	3,236	162,128	12,351	83,953	1,163,036	5,937,674
Quebec Ry. Light and Power Co.—								
Citadel Division	17.72	425,657		284,058	256	141,343	1,967,554	9,809,674
Montmorency Division	28.60	211,906		152,539		59,366	406,792	1,588,694
Regina Municipal Ry.	13.09	141,912		122,331	52,877	−33,297	591,452	3,219,369
Sandwich, Windsor and Amherstburg Ry.	38.28	250,848	66,811	152,861	35,714	129,083	1,011,072	4,337,304
Sarnia S.R.	8.25	47,995		34,342	4,549	9,108	143,900	727,398
Sherbrooke S.R.	9.00	48,159	78,486	37,192	88,579	874	448,144	1,115,038
St. John Ry. (3)	12.50	191,412	96,030	148,266	51,613	87,561	1,003,454	4,330,339
St. Stephen S.R.	4.00	36,011		27,580	5,673	2,758	183,960	682,380
St. Thomas S.R.	7.00	21,129		29,038		−7,909	295,785	470,609
Surburban Rapid Transit Co.	19.61	42,020	21,162	62,424	26,981	−26,223	304,900	1,115,418
Toronto Ry.	61.72	5,772,854		3,014,774	1,204,388	1,553,690	20,280,225	144,771,901
Toronto Suburban Ry.	9.84	103,613	11,466	52,402	19,451	33,226	312,934	1,967,934
Toronto and York Radial Ry.	72.43	531,478		317,774	142,177	71,526	1,358,089	525,571
Windsor, Essex and Lake Shore Rapid Ry.	36.16	147,896		82,991	57,067	7,837	349,855	470,227
Winnipeg E.R.	89.12	2,376,925	678,087	1,257,916	441,184	1,355,911	7,337,728	57,083,091
Winnipeg, Selkirk and Lake Winnipeg Ry.	22.13	114,912		58,992	23,734	32,185	199,573	476,532
Yarmouth E.R.	3.00	20,908		19,223	2,730	−1,045	63,978	151,694
	1,356.63	\$28,216,110	\$1,318,909	\$17,765,372	\$5,334,905	\$6,612,574	90,819,638	597,863,801
						−177,832		
						\$6,434,742		

Notes to Electric Railway Statistics.

(1) The figures relating to the Montreal Tramways Co. include the Montreal St. Ry., the Montreal Park and Island Ry., and the Montreal Terminal Ry. They are taken from the Montreal Tramways Co.'s last annual report, as that company does not make returns to the Railways Department.

(2 and 3) The Nelson St. Ry. and the St. John Ry. did not make returns and the figures given are those of the previous year.

Berlin and Northern Railway Report.

The statement for 1913, recently submitted to the Berlin, Ont., Light Commissioners, operating the Berlin and Northern Ry. on behalf of the city, shows gross profits after paying debenture interest, etc., of \$9,977.01. From this is deducted \$5,816.77 for depreciation, being 10% on machinery, 5% on rolling stock, and 3% on track. After deducting depreciation there is a net profit

of \$4,160.24. During the year, 1,192,886 passengers were carried, an increase of 21.4%; and the car mileage was 261,328, an increase of about 80%; the operating expenses per car mile were 14.5c., against 22.4c. for the previous year.

The receipts of the street railway department were \$55,236.79, and the total expenses \$45,259.78. The amounts received from cash fares and tickets were \$22,661.01 and \$25,338.70 respectively. V. S. McIntyre is Secretary Treasurer of the Commission.

Electric Railway Projects, Construction, Betterments, Etc.

Alberta Metropolitan Ry.—We are officially advised that this railway, when completed, will be operated by the company, and not, as has been reported, by the Calgary Municipal Ry. No order has been placed for cars, but it is said that individual gasoline electric cars will be used. The Manager is W. J. C. Madden, Calgary, Alta. (Feb., pg. 69.)

Berlin, Waterloo, Wellesley and Lake Huron Ry.—Application is being made to the Dominion Parliament to change the name of the company to the Grand River Ry. H. C. Oswald, Assistant Secretary, C.P.R., Montreal, is Secretary. (See C.P.R. Betterments, etc., July, 1909, pg. 491.)

Cape Breton Electric Co.—Press reports state that plans are in preparation for the extension of the company's line from Sydney to New Waterford, N.S. (Dec., 1913, pg. 592.)

Cedar Rapids Manufacturing and Power Co.—The Minister of Railways has approved of location plans for a transmission line from Cedar Rapids to the transformer station near Cornwall, Ont., 44 miles.

Dominion Power and Transmission Co.—At the annual meeting in Hamilton, Ont., Feb. 16, it was announced that the projected extension from the company's Hamilton and Brantford Ry. from Langford to Galt, Ont., will be built in the near future. (Dec., 1913., pg. 592.)

Edmonton Interurban Ry.—We have been furnished with the following official information:—The first portion of the line from St. Albert to Edmonton, Alta., was put in operation Sept. 30, 1913, there being a gap of about 2 miles in a direct line between the company's southern terminus and the Edmonton Radial Ry's. line, which is owned by the city of Edmonton. Pursuant to an agreement between the city and the E. I. R. Co., the city extended its line one mile north and the E. I. R. Co. extended its line 1½ miles south, and on Dec. 20, 1913, the E. I. R. Co's. car commenced connecting with the city cars, both lines issuing and honoring transfers. The E. I. R. Co's. line from the connecting point at 24th St. and Alberta Ave., to the village of Calder is 1½ miles long, from Calder to the city limits on the north 1 mile, and from the city limits to St. Albert 9½ miles. Five trips a day each way are made between Edmonton and St. Albert by a self propelled gasoline electric car, built in the United States. The company possesses, among other properties, an entire block, situated near the northerly boundary of Edmonton, where are erected a car barn, machine shop, stores, warehouse and an oil warehouse, also a boarding house, pump house, etc., and rails, ties and material are stored there. The directors are: President, G. Barbey, Paris, France; Vice President, J. H. Picard, Edmonton; General Manager, Felix Santallier, Edmonton; other directors, J. H. Gariepy, M. Kimpe, L. Bureau, Edmonton. The greater portion of the stock is owned by the Franco-Canadian Trust Co., of Vancouver, B. C., and Paris, France. (Jan., pg. 38.)

Edmonton Radial Ry.—The Edmonton, Alta., City Council has ordered the preparation of a report specifically dealing with an extension of the street railway system, so as to serve the Riverdale district, north of the Saskatchewan River; and for a continuation of such extension so as to serve Forest Heights, Mount Pleasant, East Edmonton Gardens and other districts, finally connecting up with the line at present terminating between Bonnie Doon and Highland Park addition. It is expected that

construction will be started on the Riverdale extension, at any rate, during this year. (Feb., pg. 87.)

Forest Hill Electric Ry.—Press reports state that construction will be started early in the summer on the first section from the northerly limit of Toronto, along Forest Hill Road to Eglinton Ave., and along that avenue westerly. (Feb., pg. 87.)

Fort William Electric Ry.—The Fort William, Ont., City Council decided, Feb. 10, to take into consideration the application of the Mount McKay and Kakabeka Falls Ry. for running rights over certain portions of the city electric railway. (Feb., pg. 87.)

Galt, Preston and Hespeler St. Ry.—A press report states that new transformer and a new rotary converter are being installed in the power house at Galt, doubling its present capacity. The by-law passed by the town of Preston confirms an agreement granting the company a franchise for 25 years, from Mar. 27, 1913, for a double track electric railway, on certain streets, in the town, and a single track line, on certain other streets, with the right to cross Duke and Lawrence streets with industrial switches. The agreement permits the company to carry freight over certain portions of the line at a speed not exceeding five miles an hour. The company agrees that its cars shall make connection with all trains on the C.P.R. at Galt, and that it shall maintain a passenger station, freight shed and power house in Preston. (Feb., pg. 87.)

Guelph Radial Ry.—Press reports state that it is expected that construction on the extension of one or more of the existing lines will be put in hand during this year. (Feb., pg. 87.)

Kingston, Portsmouth and Cataraqui Electric Ry.—Press reports state that a contract has been let to a U.S. firm for the supply of steel rails to be used in relaying the lines on King and Princess Streets, Kingston, Ont. (Dec., 1913, pg. 593.)

Lacombe and Blindman Valley Electric Ry.—A special meeting of shareholders was called to be held at Lacombe, Alta., Feb. 21, for the purpose of entering into a new contract with the Middle West Construction Co. for the building of the projected line, in substitution for the contracts entered into Nov. 17 and 24, 1913; to authorize the issue of bonds for \$30,000 a mile; of which \$7,000 a mile is to be secured by a first mortgage; and an additional \$7,000 a mile by a second mortgage, and the balance under first or second mortgage as may be expedient; to enter into an agreement with the Alberta Government under the Light Railways Assistance Act, and for other purposes.

Press reports state that eight miles of grading have been completed and that contracts for ties and rails have been let. The section of line under construction extends from Lacombe to Gull Lake, 10 miles, but the contract provides for a further 20 miles from Gull Lake to Rimbey. J. B. McBride, Lacombe, Alta., is Secretary. (Jan., pg. 38.)

Lethbridge Municipal Ry.—Commissioner Reid submitted plans to his colleagues on the Lethbridge, Alta., Municipal Commission recently, for the building of four miles of additional single track on the city electric lines during this year, at an estimated cost of \$60,000. The work will probably be done provided the city can find the money. (June., 1913, pg. 286.)

London and Lake Erie Ry. and Transportation Co.—A conference took place at Aylmer, Ont., recently, between G. B. Woods, Vice President of the company, and representatives of the municipalities, as to

the proposed construction of a line from St. Thomas to Aylmer and Port Burwell. Mr. Woods is reported to have stated that the company is prepared to go on with the work at once, if the municipalities will get together and decide as to the amount of bonds each will guarantee. The company is asking for a bond guarantee of \$20,000 a mile, but the municipalities before coming to a decision desire to know what are the prospects for the building of a line under the Hydro-Electric Commission. (Feb., pg. 87.)

Moncton Tramways, Electricity and Gas Co.—Press reports state that arrangements are being made for the building, during this year, of about six miles of additional track between Moncton, Sunnybrae and Louisville, N.B., (Dec., 1913, pg. 593.)

The Montreal East Boulevard Co. is asking an extension of its powers from the Quebec Legislature. Among the powers obtained in 1910, when the company was incorporated, was the right to build an electric railway along a boulevard which it was to construct in Montreal East. (May, 1910, pg. 399.)

Morrisburg and Ottawa Ry.—At a conference between representatives of the company and of the Town council of Morrisburg, the question of a right of way in the town was discussed. The company was informed that the council could not promise anything until after Oct. 1, on which date the franchise for the building of a line in the town granted to the St. Lawrence and Ottawa Electric Ry. will expire unless active construction work is started meanwhile. (Feb., pg. 88.)

Niagara, Welland and Lake Erie Ry.—Press reports state that the company has completed its financial arrangements and will proceed with the construction of its projected line from Welland to Port Colborne and Fort Erie, Ont., this year. The company has power to build lines to various points throughout the Niagara peninsula. Following are the directors for this year:—President, H. C. Schofield, M.P., Guelph, Ont.; Vice President and Managing Director, C. J. Laughlin, Welland, Ont.; Secretary and Treasurer, H. Rook, Toronto. Other directors:—H. B. Bulles, W. W. Near, Toronto. (Feb., pg. 88.)

Ontario Hydro Electric Power Commission Lines.—Conferences have been held at Berlin, Hamilton, London, Sarnia, Owen Sound and Penetanguishene, Ont., in connection with projects for the building of electric railways under the plans suggested by the O. H. E. P. Commission. At each place resolutions favorable to the general plans and a desire for the building of a line to connect up their particular town with the line, were passed. The Commission has a number of engineers in the field looking over suggested routes. (Feb., pg., 86.)

Ottawa, Rideau Lakes and Kingston Ry.—The Ontario Legislature is being asked for an extension of time for the building of this projected railway from Ottawa to Kingston, Ont. G. L. Dickinson, Ottawa, is Secretary. (Oct., 1912, pg. 521.)

Quebec Extension Rd.—In connection with the proposed extensions of the line now under construction along the St. John River Valley in New Brunswick, we are officially advised that the interests building the line also own the Aroostook Valley Rd., an electric line extending from the C.P.R. at Presque Isle to Washburn, Me. The Quebec Extension Rd., for which the same interests have secured a charter in the State of Maine, will extend westward from Washburn to tp. 12, range 17, at the International Boundary between Maine and Quebec, where connection will first be made with an extension of the Quebec Central Ry.,

projected and under construction northward from St. Sabine, Que. It is ultimately intended to continue the line through Quebec to the Quebec Bridge, where connection will be made with the different transcontinental railways converging there from the west.

At the eastern end of the Q. E. Rd., Washburn, Me., connection will be made over the Aroostook Valley Rd. with the C.P.R. at Presque Isle, Me., and thence over that company's tracks, via Aroostook Jct., to St. John, and to other points in New Brunswick by way of Plaster Rock and the National Transcontinental Ry. Connection will also be made at Portage Lake and Washburn by the Bangor and Aroostook Rd. for points in the State of Maine. It is not likely, owing to the change in the proposed route of the St. J. and Q. Ry. between Centreville and Andover, that direct connection will be made with that line. The proposed line will have a length of 110 miles in the State of Maine, and of 64 miles in Quebec. It will be operated throughout by electricity. The object of the railway is to provide the shortest possible line between Quebec Bridge and the Maritime Provinces.

The surveys have been completed and the location in the U.S. has been approved by the Maine Railroad Commissioners. The gradient will not exceed 1% compensated for curvature, and the maximum curvature will be 10 degrees. The principal bridges will be those across the St. John River, 600 ft.; Alligash River, 600 ft.; and Beaver Brook, 80 ft. It is probable that construction will be started this year. S. B. Wass, Presque Isle, Me., is Chief Engineer, and the Canadian Eastern Construction Co. will have charge of construction. (See St. John and Quebec Ry., Feb., pg. 70.)

Rainy River Radial Ry.—Application is being made to the Dominion Parliament for an extension of time for the building of the lines authorized by chap. 152 of the statutes of 1910. Lewis and Smellie, Ottawa, solicitors for applicants. (Mar., 1910, pg. 233.)

Sarnia, Ont.—A press report states that a number of local men are interested in a scheme to build an electric railway from Sarnia to Wallaceburg, and to operate steamboats, etc. It is said that the proposal is backed by New York capital, and that probably an existing charter covering the territory named, will be acquired.

Saskatoon Municipal Ry.—The Saskatoon, Sask., City Council had under consideration, Feb. 9, the question of laying track under the 19th St. subway, to connect the tracks on 20th St. West with those on 2nd Ave. The estimated cost by the Stone and Webster Co., who laid out the lines for the city, was \$64,350. The City Engineer has submitted a revised estimate for the work at \$79,143. No decision has been reached as to whether the work will be undertaken or not during this year.

The general estimates for this year provide for the expenditure of \$25,000 on some small extensions, improvements of overhead work, and a new rotary converter for the power house. (Feb., pg. 88.)

Sudbury-Copper Cliff Suburban Electric Ry.—The Ontario Legislature is being asked to extend the time for the building of this projected electric railway, and to confirm a bylaw passed by the Sudbury Town Council, Aug. 25, 1913, granting the company a franchise for its proposed line. A. D. Meldrum, Sudbury, Ont., is solicitor for the company. (Dec., 1913, pg. 593.)

Toronto, Barrie and Orillia Ry.—The Barrie, Ont., Town Council has finally approved of the bylaw approving the agreement giving a franchise to the company for a line in the town.

The Ontario Legislature is being asked to authorize the company to increase its bond issue; to give the right to operate cars on

Sundays, and to extend the time for construction. (Feb., pg. 88.)

Valleyfield Waterpower Company, which has been incorporated under the Quebec Companies Act, is applying to the Dominion Parliament for authority to build the following railways, to be operated by electricity:—From Salabery to Valleyfield southwesterly across the counties of Beauharnois and Huntingdon, along Lake St. Frances to the provincial boundary; from the same starting point southwesterly across the counties of Beauharnois, Chateauguay and Huntingdon to the International Boundary, and from the same starting point northeasterly, crossing the St. Lawrence River and across the counties of Soulanges and Vaudreuil to the Lake of Two Mountains. The company may not build its railway along any street or highway without having first obtained the consent of the municipality interested, and in connection with its undertaking may operate steam or other vessels carrying passengers and freight. It may issue bonds for \$30,000 a mile, and other securities in connection with its other objects.

Winnipeg Electric Ry.—Application is being made to the Manitoba Legislature for authority to build a power line through Fort Garry municipality. The municipality asks that it have the joint use of the poles, to offset the use of the streets by the company.

The City Engineer is investigating the cost of a proposed extension of the car line to Brookside Cemetery. (Feb., pg. 88.)

Sale of Grand Valley Railway and Brantford Street Railway.

At a meeting of bondholders of the G. V. R., held in Toronto, Feb. 13, offers for the purchase of the company's property were considered. E. B. Stockdale, the Receiver, presided, and J. A. Worrell, K. C., reported that the Special Committee had received two offers for the property. One was from W. P. Kellett, General Manager of the Lake Erie and Northern Ry., at a total price of \$82,600, and one from the city of Brantford at a total price of \$96,000. The committee recommended the acceptance of the latter offer, and the bondholders decided to accept it and agreed to apply to the courts to ratify the sale, which includes the Brantford St. Ry., and the Grand Valley Ry. from Brantford to Galt, via Paris. The purchaser undertakes to redeem the bonds on the B. S. Ry., held by the Canadian General Electric Co., amounting to \$125,000. When the G. V. Ry. took over the B. S. Ry. it issued \$59,000 of 1st mortgage bonds, and \$1,700,000 of 2nd mortgage bonds. These will now rank for dividend.

The matter came before the court at Toronto, Feb. 19, when it was ordered that the terms of the agreement, with the consent of the parties concerned, be submitted at an early date, when, probably the court's consent will be given to the transfer.

The contract will have to be ratified by the ratepayers of Brantford. It is expected that the city council will at once put the city lines in good shape, and will operate them, as well as the section of the G. V. Ry. as far as Paris, abandoning the line from Paris to Galt, which has been a source of loss ever since it was built.

The adjourned cases brought by the city against the company came before the Court of Appeal, Feb. 16, but under the circumstances were adjourned. If the sale is ratified by Brantford ratepayers and the courts, all the actions will be abandoned with the exception of one by the second mortgage bondholders against the directors of the G. V. Ry.

Sandwich, Windsor and Amherstburg Railway.

The Detroit United Railway's report for the year 1913 contains the following particulars in regard to the Sandwich, Windsor and Amherstburg Ry., which is one of its subsidiaries:—

On Jan. 1, 1913, the mileage was 38,284, and there was added in 1913 1,647 miles.

Passenger statistics:—Revenue passengers, 4,758,504; transfer passengers, 691,490; employe passengers, 13,841; total, 5,463,835. Receipts revenue passenger, .0523; receipts per passenger, .0456.

Mileage statistics:—Car mileage, 1,015,747; earnings, car mile, .2542; expenses, car mile, .1535; net earnings, car mile, .1007.

During the year, \$150,782.10 was spent on extension of lighting plant, building of new track and addition to power plant.

BALANCE SHEET, S.W. & A. RY.

Capital stock	\$ 297,000.00	
Mortgage bonds	600,000.00	
Accrued interest on bonds	4,987.50	
Detroit United Railway	464,359.94	
Vouchers payable	2,712.13	
Injuries and damages reserve	2,406.52	
Insurance reserve	923.30	
Unredeemed tickets	7,627.29	
Profit and loss	18,096.56	
Investment	\$1,255,604.01	
Treasury bonds	170,000.00	
W. & T. Elec. Railway Co. (Stock)	10,000.00	
W. & T. Elec. Railway Co.	18,821.29	
Accounts receivable	813.52	
Stores	1,067.22	
Cash	1,807.11	
		\$1,398,113.15

BALANCE SHEET, WINDSOR & TECUMSEH ELECTRIC RY. CO.

Capital stock	\$100,000.00	
Mortgage bonds	189,000.00	
Sandwich, Windsor & Amherstburg Ry.	18,821.29	
Investment	\$307,821.29	
		\$307,821.29

The earnings and expenses of the Windsor & Tecumseh Electric Ry. are included in the operations of the Sandwich, Windsor & Amherstburg Ry., which latter company owns all of the capital stock of the W. & T.E.R. Co.

Personal Paragraphs.

H. DOUGHTY, Superintendent Regina Municipal Ry., Regina, Sask., is reported to have resigned, the resignation, as accepted by the city council to take effect May 1.

F. R. GLOVER, General Executive Assistant, British Columbia Electric Ry., gave an address on the history of the company to a large audience in the draughting room of the company's offices, Vancouver, Feb. 11.

E. F. SEIXAS, General Manager, Niagara, St. Catharines and Toronto Ry., St. Catharines, Ont., was married at Atlanta, Georgia, Feb. 21, to Miss Dorothy G. Almon, daughter of Rev. H. L. Almon, rector of Merritton, Ont.

J. H. TRIMMINGHAM, who was Assistant to the Chief Engineer of the Electrical Commission of the City of Montreal, was recently appointed Superintendent of Power, Sherbrooke Railway and Power Co., Sherbrooke, Que., succeeding J. B. Woodyatt, who is now engaged with the Southern Canada Power Co., which has been organized by C. J. McCuaig, President of the Sher-

Fare Box Difficulties in Fort William. The Fort William, Ont., Herald, in a report of a recent meeting of the City Council's street railway committee said:—"A report to the effect that the fare boxes on the new pay-as-you-enter cars are unsatisfactory, as the tickets do not get into the lower part of the box and this prevents correct accounting between the two cities, was taken up, and it was stated that a man from the factory was now on the ground fixing them."

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry. and Allied Companies.—Gross earnings for December, \$793,219; operating expenses, maintenance, etc., \$548,535; net income \$244,684, against \$773,741 gross earnings; \$538,901 operating expenses, maintenance, etc.; \$234,840 net income for Dec. 1912. Aggregate gross earnings for six months ended Dec. 31, \$4,553,726; net earnings \$1,221,405, against \$4,250,824 aggregate gross earnings; \$1,251,853 net earnings for same period 1912.

Brandon Municipal Ry.—The Mayor of Brandon, Man., is reported to have stated in a speech Feb. 9, that the city's electric railway system was losing at the rate of about \$100 a day. The council, after a most careful consideration of the whole situation, decided with but one dissenting voice to reduce the operating staff by one half. J. J. Antonisen, Superintendent, has resigned.

Cape Breton Electric Co.—Gross earnings for Dec., \$36,169.26; operating expenses and taxes, \$17,632.45; net earnings, \$18,536.81; interest charges, \$5,176.78; balance, \$13,360.03; bond sinking and improvement funds, \$1,190; balance for reserves, etc., \$12,170.03, against \$34,387.35 gross earnings; \$16,123.65 operating expenses and taxes; \$18,263.70 net earnings; \$4,475 interest charges; \$13,788.70 balance; \$1,206.66 bond sinking and improvement funds; \$12,582.04 balance for reserves, etc., for Dec., 1912. Aggregate gross earnings for 1913, \$380,951.86; net earnings, \$170,998.54; interest charges and bond, sinking and improvement funds, \$72,912.89; net balance for reserves, dividends, etc., \$98,085.65, against \$360,176.84 aggregate gross earnings; \$165,296.10 net earnings, \$68,105 interest charges and bond sinking and improvement funds; \$97,191.10 net balance for reserves, dividends, etc., for 1912.

Dominion Power and Transmission Co.—The report for 1913 shows gross earnings of \$2,737,806, an increase of \$174,435 over the previous year. After the deduction of operating expenses, the net earnings showed an increase of \$77,901 over 1913.

Fort William Electric Ry.—Net receipts for January, \$11,004.25.

Hamilton St. Ry.—The city's financial statement for 1913 shows that the percentage received from the street railway during the year was \$59,290.56.

Port Arthur Electric Ry.—Net earnings for December \$7,418.97, and for January, \$10,129.06. The City Treasurer reported to the Council, Jan. 27, that the total amount of debentures issued on account of the electric railway at Dec. 31, 1913, was \$909,184.

Quebec Ry., Light, Heat & Power Co.—A press report states that the company commenced on Feb. 17 paying the delayed bond interest due Dec. 1, and the time limit for which expired Feb. 28.

St. John Ry., (N. B.) A press report says that F. A. Sayre has sold his shares to F. R. Taylor, and that H. H. McLean, M. P., Vice President of the company, and Mr. Taylor now control a majority of the stock.

St. Thomas Electric Ry.—January statistics:—Passengers, 42,756; cash fares, \$779.24; ticket sales, \$1,054, against 42,600 passengers; \$446.19 for cash fares and \$1,000 for tickets, during Jan. 1913.

Toronto Ry.—Receipts for January, \$501,843.70; percentage due the city, \$75,276.56, against \$472,461.20 receipts, and \$68,432.03 percentage due to city, for Jan. 1913.

Winnipeg Electric Ry.—Gross earnings for December, \$379,863; operating expenses \$211,969; net earnings \$167,894, against \$361,700 gross earnings; \$196,220 operating expenses; \$165,480 net earnings, for Dec.

1912. Aggregate gross earnings for 12 months ended Dec. 31, \$4,078,694; net earnings \$1,826,087, against \$3,765,384 aggregate gross earnings; \$1,761,236 net earnings for same period 1912.

The Ottawa Traction Company, Limited.

A company with this title was incorporated in October, 1913, with the following directorate:—T. Ahearn, President; W. J. Soper, Vice President; J. D. Fraser, Secretary-Treasurer; T. Workman, R. Quain, T. F. Ahearn, E. N. Soper, Travers Lewis and J. H. Smellie. All of these, with the exception of T. Lewis and J. F. Smellie, are directors of the Ottawa Electric Ry., and Messrs. Lewis and Smellie are that company's solicitors. This is a holding company, which will take over the Ottawa Electric Ry. Co's. stock, giving three shares of Ottawa Traction Co's. stock for one share of Ottawa Electric Ry. Co's. stock. The stock of the latter company has changed hands recently at from 265 to 270 a share. It pays a dividend of 12%, which together with a bonus of 3%, has made it practically a 15% stock for the past two years. It is proposed that a dividend of at least 5% per annum will be paid on the Ottawa Traction Co's. shares, and possibly 6%. This rate of dividend naturally will determine the market price of the stock, which from present expectations will be quoted on the exchanges at 90. It will therefore be apparent that the holders of Ottawa Electric Ry. stock will benefit by the exchange into Ottawa Traction Co. stock (although it will not be compulsory to make the exchange)—inasmuch as they will receive a fixed dividend of 5% equivalent to 15% on their former holdings. If, however, the dividend is 6% then their return will be equal to 18% on stock of the Ottawa Electric Ry.

The Street Railway Situation in Toronto.

The negotiations relative to the proposed acquirement of the Toronto Ry. interests in the city, are still dragging their slow length along. The draft agreement which had been prepared by the City Council, was presented to the Board of Control early in February, when exception was taken to a clause dealing with the operation of the Toronto and York Radial Ry. cars over portions of that company's lines within the city boundaries, which it is proposed to take over. The City Council was instructed to eliminate the clause allowing such running rights, but declined to do so, on the ground that the general instructions given him for the preparation of the draft agreement, by the City Council, stipulated the condition that the radial cars should have the privilege of running over such of the T. & Y. R. R. lines as were acquired by the city, and within the city boundaries as at present fixed, or as extended in the future; and any change in the instructions would have to be passed upon by the City Council. After an explanation by the Mayor, who has conducted all the negotiations on the city's behalf, that it was not his intention that such running rights should be granted, the City Council, Feb. 9, decided that the city's negotiators be instructed to incorporate any conditions in the draft agreement which they believe would be in the city's interests, and that counsel in the case consult and agree with the Mayor and Board of Control in relation to the same, full details concerning the matter to be reported to the Council for final ratification.

In connection with a recent application of the City Council to the Ontario Railway and Municipal Board, respecting new routes and the rerouting of cars with a view to relieving

ing congestion of traffic, the Board has appointed C. R. Barnes, of the Public Service Commission, New York, to report upon the system and submit a plan on which the Board may consider the issuing of an order.

London Street Railway Company's Annual Report.

Following are extracts from the report for the calendar year, 1913, presented at the annual meeting in London, Ont., Feb. 4:

	1912.	1913.
EARNINGS:—		
Passengers	\$301,196.62	\$327,075.64
Miscellaneous	5,034.40	4,890.92
Gross earnings	\$306,231.02	\$331,966.56
EXPENSES:		
Maintenance way and structures	\$23,743.37	\$26,539.70
Maintenance equipment ...	28,516.55	30,306.91
Power plant	40,015.09	45,992.83
Car service	86,367.60	99,817.00
General	31,635.58	32,260.15
Total operating expenses	\$210,278.19	\$234,916.59
NET EARNINGS	95,952.83	97,049.97
Interest on bonds	\$28,911.00	\$28,848.00
Interest on overdraft	—	265.79
Total deductions	\$28,911.00	\$29,113.79
NET INCOME	\$67,041.83	\$67,936.18

During the year \$91,439.88 was expended in improvements, extensions, betterments. The extensions agreed upon with the city the previous year were completed within the required time, July 1, by building the Adelaide St. line from Oxford to Central Ave. Commencing with July some of the routes were changed in order to properly operate over the new lines. As was to be expected such changes were objectionable to the citizens of some localities with the result that the City Council required further changes Dec. 1 last. Even these are not wholly satisfactory so that the subject of routes and schedules is still unsettled but will undoubtedly be worked out early in the year. The usual necessary amount of track maintenance was carried on during the open season.

Six new cars of the p.a.y.e. type, with enclosed vestibules, folding doors and steps were received late in the year. These cars have all the latest equipment, and have given great satisfaction. A 500 k. w. Corliss compound engine set which was installed early in the season gave good service for the increased summer's business. Other power house improvements in the way of increased boiler capacity were becoming absolutely necessary so that arrangements were being made to this end when further negotiations were opened by the Hydro-Electric Power Commission for supplying the company with power. As this proposition provided for their furnishing direct current at reasonable rates, the commission installing at their own plant and at their own expense the necessary converting machinery, it was deemed to be the best interests of all to obtain power from this source rather than add to the present power plant and a contract was therefore entered into with the Commission for the company's power requirements until the end of the franchise, with a provision for an extension of the power contract if the company's franchise is extended as provided for in the franchise. With additional transmission lines and other improvements being made by the Commission, it is hoped that continuous service will be given by them; however, for the immediate future the present power house will be kept in condition for emergency purposes and to carry the peak load on heavy days.

As anticipated in last year's report, the Ontario Government in accordance with the statute regarding Sunday car service, de-

clared the city to have a population in excess of 50,000 and a vote of the citizens was taken at the municipal election, Jan. 1, resulting in approximately a three-quarter majority in favor of the Sunday car service. It is expected the city council will take the remaining necessary steps early in the season so that the Sunday service may commence at an early date. Previous to the vote on Sunday cars it was agreed with the city council that only a limited service on Sundays should be required, the rates of fare to be the same as on week days, excepting that the limited or workmen's tickets are not to be accepted.

An issue of \$50,000.00 bonds was authorized during the year to provide for improvements but owing to the unsatisfactory bond market, temporary loans were made instead of disposing of the bonds.

The gross earnings and surplus during the year have been very good and as prospects of general business conditions in this city seem good, it is anticipated that the coming year will continue to show good increase. Your directors are pleased to state that our relations with the public continue to be satisfactory and no litigation of any consequence appears against the company.

PROFIT AND LOSS ACCOUNT.

Surplus, Jan. 1, 1913	\$92,418.14
Net income for year	67,936.18
Adjustment and unclaimed wages	921.51
	<hr/>
	\$161,275.83
Dividends	\$33,360.00
Directors' fees	1,000.00
Interest on loan	1,697.82
Deductions from accounts receivable	14.27
Surplus	125,203.74
	<hr/>
	\$161,275.83

MISCELLANEOUS STATISTICS.—Passengers carried, 9,078,489; car earnings per revenue passenger, 3.64c.; transfers, 1,462,562; total passengers, 10,541,051; car earnings per passenger 3.12c.; car mileage, 1,583,840; gross earnings per car mile 20.96c.; operating expenses per car mile, 14.83c.; net earnings per car mile, 6.13c.; miles of track, 34.97; gross earnings per mile of track, 9,492.89.

The directors for the current year are:—President, H. A. Everett, Cleveland, Ohio; Vice-President, T. H. Smallman; other directors, E. W. Moore, P. W. D. Broderick, H. S. Holt, W. M. Spencer, C. H. Ivey.

The Montreal Tramways Situation.

The report of G. R. MacLeod, Railways and Tramways Engineer for the city, on the question of improved facilities for the transportation of passengers, was submitted to the Board of Control, Feb. 14, endorsed by City Engineer Janin.

The report is a most comprehensive document, but had not yet been made public when this was written. When its preparation was decided upon, the City Council had before it two propositions, one from the Montreal Tramways Co., and the other from the Canadian Autobus Co. Both companies made offers in the direction of the construction of subways, in order to relieve the congestion in the centre of the city. It is said that the report recommends the building of three subways or tube lines, having a total length of eight miles; ten subways under steam railways to replace level crossings, and the laying of a surface line along Vitre St., and sundry alterations on existing lines. The principal subway or tube line would run from Place Viger to Dominion Square, and would probably be the first to be built. The second main line would probably be along Burnside and Ontario streets, and the third would probably run from Craig St. to near the C.P.R. tracks. These

tubes would be built so as to allow for extensions, and for connections being made with existing lines. The estimated cost, including land damages and the necessary equipment, is given at \$30,000,000. The construction of subways under the steam railway tracks is considered independently of the proposition to elevate the G.T.R. tracks from Bonaventure station to St. Henri. It is estimated that if the construction of the various works mentioned is undertaken, it will require about eight years to carry them through. The report does not deal with the question of the Montreal Tramways Co.'s franchise, for the extension of which application has been made.

The report, it is said, favors the operation of autobus lines on Sherbrooke St., and similar streets where, for various reasons, electric railway tracks cannot be laid.

Nothing was done with the report at the meeting of the City Council, Feb. 17, but it is generally understood that the Council will submit a question at the municipal elections in April, asking the ratepayers whether or not they are in favor of granting the company an extension of franchise for 40 years. The answer to this question will influence the settlement of the whole question. The present franchise expires in 1922, so that a new 40 years franchise would really be an extension for 32 years. (Feb., pg. 87.)

Electric Railway Notes.

The London St. Ry. started its Sunday service Feb. 22.

The Electric Railways Construction Co. has been struck off the register of companies entitled to do business in British Columbia.

E. Lauzon, conductor, Montreal Tramways Co., who recently pleaded guilty to charges of theft of tickets from the farebox in his charge, was sentenced to one month in jail.

It is reported that a motor bus service is to be established in Guelph, Ont., early in the spring, covering territory not at present served by the local street railway.

The Niagara, St. Catharines and Toronto Ry. has ordered six interurban cars, three with smoking compartments, and three with baggage compartments, from Preston Car and Coach Co.

The London St. Ry. is reported to be considering the purchase of six additional cars, similar in type to those recently received from the Preston Car and Coach Co., and which were fully described in our January issue.

It is announced that the cars which the British Columbia Electric Ry. is displacing with new ones from the Preston Car and Coach Co. will be sent to the B.C.E.R. shops at New Westminster and rebuilt for general service.

A joint committee of the railway committee of the City Council and of the Board of Trade of Stratford, Ont., is taking up the question of the construction of radial railways under the Ontario Hydro Electric Commission's scheme.

The cars which the British Columbia Electric Ry. is receiving from the Preston Car and Coach Co., 21 of which were delivered between Dec. 12 and Jan. 12, are of the single ended, double truck type, with Westinghouse 101 B 2 equipment, and Westinghouse straight air brakes.

The Moose Jaw Electric Ry., which was originally incorporated under the British Columbia Companies Act, has been struck off the register of companies in that province. This incorporation was simply a preliminary step to the formation of the company under the laws of Saskatchewan, under which the company is now operating.

The Brandon, Man., City Council decided, Feb. 10, to do away with conductors on the municipal electric railway, and to close the rear door on all cars, so that passengers will have to enter and leave by the front. The passengers will put their tickets or cash fare into the farebox, and the entire car will be in charge of the motorman.

The Public Utilities Commission for Nova Scotia issued a decision, Feb. 8, on the application of the motormen and conductors of the Halifax Electric Tramways Co. for certain alterations in the conditions of their employment. The Commission declined to direct that 14 days instruction be given to motormen before they are regularly employed, and to order a 10 hour day with one day for rest in seven, on the ground that it was advisable to include the employees of other electric railways in the province under the one order, and before this could be made the Commissioners desired to hear representatives regarding other companies. The Commissioners also declined to order the equipment of the company's p.a.y.e. cars with air brakes, on the ground that the cars were not large enough to warrant the expenditure. In regard to the only other point brought forward, the Commissioners directed the company, before any new cars are put into service, to report fully as to the equipment of the same. The Commission promised to look into the question of hand brakes used on cars.

Halifax Electric Tramway Co.'s Annual Report.

An increase of \$15,531 in net earnings for 1913 was reported at the annual meeting of the Halifax Electric Tramway Co. in Halifax, N. S., Feb. 9.

Gross earnings were \$605,933, against \$539,953 in 1912. Operating expenses were \$337,008, an increase of \$50,448. Dividends paid amounted to \$112,000. Receipts from passengers totalled \$301,771 against \$250,263 in 1912. Electric light, power and sundry earnings totalled \$242,085, as against \$228,654 in 1912. Percentage of operating expenses to income increased from 54.06 in 1912, to 56.36 in 1913.

The directors were re-elected with the addition of Senator N. Curry, of Montreal, increasing the board to 12. E. A. Robert, Montreal, was elected President, and O. E. Smith, Halifax, Vice President.

Winnipeg Electric Railway Company's Annual Report.

The report presented at the annual meeting in Winnipeg Feb. 11 is given in full on immediately following page 148 of this issue.

The directors were re-elected for the current year as follows: President, Sir Wm. Mackenzie; Vice President, Sir Wm. Whyte; Secretary-Treasurer, F. Morton Morse; other directors, Sir Wm. VanHorne, Sir Donald Mann, D. B. Hanna, A. M. Nanton, Hugh Sutherland, R. J. Mackenzie.

Winnipeg River Power Co.—Following the meeting of shareholders of the Winnipeg Electric Ry., Feb. 11, a meeting of the shareholders of the W. R. P. Co. was held. A preliminary report from a U. S. engineering firm was referred to, in which it was estimated that the Great Bonnet Falls are capable of producing 150,000 h.p. of electrical energy at a very low cost. It was decided to begin explorations and preliminary development work at once. J. G. White and Co., New York, have been engaged to do the necessary work, and it is expected that within two years the first units of the plant will be completed.

Marine Department

Canadian Lake Protective Association's Annual Meeting.

The following report, signed by L. Henderson, President, and F. King, Counsel, was presented at the annual meeting at Ottawa, Feb. 11.

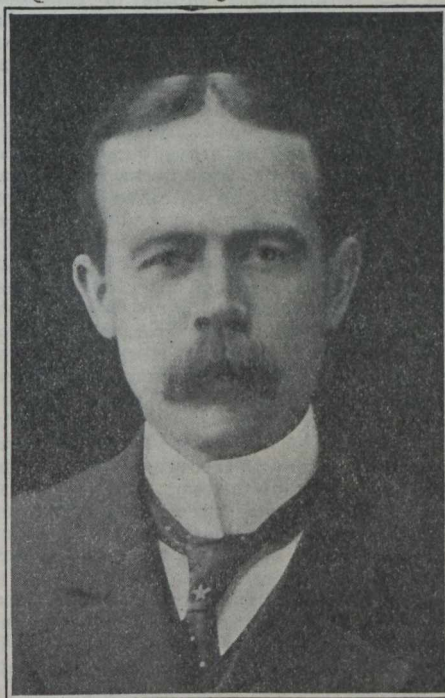
The year just past, while it presents a record marred by the terrible disaster towards its close, shows a distinct step in advance in the work of the Association. Heretofore the Association has been unable to compile any accurate statement of premiums and losses from which to compute the loss ratio and determine any improvement which may have taken place from year to year. The need of accurate records of these figures has been quite apparent from the outset and painstaking attempts were at first made to secure them annually direct from members of the Association, but experience soon proved that this idea of compiling information from voluntary returns sent in by members would never produce statistics that could be relied upon as complete or accurate in any respect.

The scheme which has now been adopted did not propose itself until recently, and time was lost in consideration of a more complex arrangements designed to serve the double purpose of imposing part of the insurance risk on each member of the Association as well as providing a means of recording premiums and losses. Opinions wavered between proposals that the Association should, with legislative sanction, carry part of the insurance of the Canadian fleet of lake freighters, and alternative proposals that a company should be formed by members of the Association to carry a proportion of the risk and provide the desired records. Probably hesitation to embark in any such insurance scheme was fostered by a feeling, concurred in by leading underwriters, that the carriage of even a substantial part of the risk would not afford any greater incentive to owners to navigate their boats with caution than that which is found at present in the embarrassment and minor losses incident to every casualty and repair undertaking. It was just when this was generally agreed and when a full realization of the difficulties of any mutual insurance plan was reached, that Dale & Co., Ltd., of Montreal, suggested a simple plan which would provide the necessary record system and nothing more. In effect it was merely that the company named should write 5% of every risk enrolled in the Association. At the last annual meeting in Ottawa the matter received brief consideration but it was taken up again by your committee and after negotiations extending over a considerable period arrangements were completed with Dale & Co. The contract made with them provides that 5% of the risks on all steel hulls belonging to members of your Association shall be placed with the company named, who shall keep special records of the business and have them available at all times.

Unfortunately the year was so far advanced when the arrangement was completed that certain companies found themselves unable conveniently to place the necessary proportion of their risks, with the result that the plan is not yet in complete working order. Every member is bound, however, to comply with the arrangement this year and 5% of the insurable value of each hull risk will this year be written through the company named, so

that commencing with this season complete records will be available. Every member of the Association is advised of the obligation to comply with the arrangement in accordance with the articles of agreement constituting the Association.

A lengthy correspondence took place early in the year with reference to the rate for 1913. Representations were made by letter and telegram from this Association and by its individual members through their respective brokers. Ultimately a rate substantially reduced below that of 1912 was announced by underwriters, and members of this Association were again accorded the same advantages as members of the Great Lakes Protective Association of the United States. Certain named fleets of the U. S. were accorded a special rate based upon their exceptionally good records, but for all other approved fleets a basis rate of 4% was fixed, applicable on the



L. Henderson,
President, Dominion Marine Association.

Upper Lakes including Lake Erie, with a rate of 5% to Ogdensburg and 6% to Montreal.

A peculiar development arose later in the year with reference to the question of membership in the C. L. P. Association as a qualification for enjoyment of these rates in Canada. On July 31, F. Herrmann & Co. wrote asking whether the brokers for the steamships therein named correctly represented the views of your Association in insisting that the warranty of membership in your Association be removed from the policies. Copies of this letter were forwarded to the owners of the vessels named and by them to the brokers in question. The brokers' views were repudiated by counsel for your Association and the whole question was considered by your committee at its first meeting thereafter. It was then unanimously resolved that policies certainly ought to contain the warranty of membership, and that it was never suggested

or intended by the Association or by your committee or its officers that the warranty should be omitted. Instructions were given to advise underwriters accordingly, repudiating the letter written to them by the brokers mentioned and asking that hereafter the warranty should appear. In accordance with the suggestion made by these underwriters in their reply letters to the same effect have been sent to other underwriters as well.

In connection with casualty reports relating to collisions in the ice at the opening of navigation in 1913 your committee has had occasion to consider the risk attendant upon an early departure of vessels from port while ice is still to be encountered. The conditions last spring were of course considered somewhat exceptional and therefore no action was taken by way of protest against an early opening of navigation; and at the same time inasmuch as the circumstances did not warrant condemnation of any master for having permitted his vessel to join the large fleet in Lake Superior in April, your committee refrained from censuring those whose vessels had encountered difficulties in the fields of ice. Nevertheless it is desirable that the risks of last spring should be avoided and your committee lay the question before you for consideration, suggesting that it receive some attention at the annual meeting. Favorable weather conditions and the hard work of the ice breakers alone prevented serious disasters in the blockade at the foot of Lake Superior. Your committee was in touch with the Marine Department with reference to the opening of the St. Mary's River and Whitefish Bay and held communication with the department by wire until the fleet was released.

Towards the close of the season the question of ice breaking at the close of navigation arose and your committee asked the Marine Department to take steps to keep the St. Mary's River and all upper lake terminal harbors open so long as necessary to permit the last steamer out to make her port of destination. In reply the department intimated that the contract for ice breaking at Port Arthur and Fort William in force during 1912 would remain in force during 1913 up to Dec. 17, but that no arrangement had been made for ice breaking after that date and that weather conditions were such at the time of writing that it scarcely appeared necessary to anticipate any need of ice breaking operations. The Minister also expressed his opinion that your Association should join with the Government in discouraging an extremely late closing of navigation. The letter called attention to the disasters of the autumn as indicating what might be expected when cold weather and heavy gales were encountered simultaneously. Fortunately the weather conditions continued favorable and obviated the necessity for any further action in the matter. The customary extensions of insurance were granted by underwriters and navigation closed in 1913 in due course without any special incident of note.

Any consideration of the casualties of 1913 and of the work of your committee in connection therewith is overshadowed by the calamity which overtook so many staunch craft in November last. In a storm of unusual severity which occurred

on Nov. 8, 9 and 10 a number of vessels of Canada and the U. S. ran ashore and suffered severe damage, and a surprising number, of which four were enrolled in your Association, foundered and left no survivors of their crews. Three of these, the James Carruthers, Regina and Wexford sank in Lake Huron, and the fourth, the Leaffield, went down in Lake Superior. At this date, and in the absence of any information as to the exact causes which led any one of these vessels to succumb to the seas, it is idle to speculate as to the reasons which contributed to their failure to ride out the storm. Official investigations are pending, and information of value may be developed as enquiry proceeds. Your committee can only deplore the regrettable loss of life and property and suggest that the Association may well accept and support any reasonable and well founded recommendations which may be made for safeguards or regulations designed to prevent so far as possible the chance of any repetition of this appalling disaster.

Only one wreck investigation in connection with this storm has been held in Canada up to the date of preparation of this report. This occurred in connection with the stranding of the Turret Chief, and as the finding of the Court in that case has been the subject of special consideration by your committee at the instance of the Marine Department which asked for an opinion upon the recommendations made in the finding, a letter was submitted to the Minister relating to this and to the larger question of the constitution of the court.

Your committee has met from time to time throughout the year at Toronto for the purpose of dealing with casualty reports and other regular business. Special attention has been given to conditions which appeared to contribute unduly to the dangers of navigation. A number of casualties occurred in the Lachine cut of Lake St. Louis, and in the Stone cut in the Welland Canal. The groundings in the Lachine cut have been largely due to inability to keep the Lachine ranges in view, and the addition of a range at the outer end of the channel has appeared desirable. A recommendation which has the approval of the local authorities has now been made for improvement of the lighting system with this end in view and its adoption is expected. As to the Welland Canal some consideration has been given to a proposal for regulations to prevent vessels from meeting in the Stone cut mentioned, or for the placing of booms or floats to prevent the contact of vessels with the walls. Correspondence is pending on this subject. A recommendation has also been renewed for the erection of some protecting device of a similar nature at lock entrances. Representations have also been made regarding the troubles engendered by currents at lock entrances, and casualties at the Canadian lock at Sault Ste. Marie have led to a suggestion for the extension of the pier at the upper entrance. The improvement of the upper entrance of the Morrisburg Canal has again been recommended, as well as the building of a guard lock at the head of the Lachine Canal. Your committee also concurred with a committee of the Dominion Marine Association in reiterating a complaint against the use of flashing lights in the Livingstone channel of the Detroit River and in the West Neebish channel of the St. Mary's River, as neither of these channels require a distinctive class of lights and masters complain of inability to keep a course properly with lights of this flashing character.

The higher water which has prevailed during the past season has rendered the question of the load draught in the various

waters of less importance than in some preceding years. No complaints of overloading were filed with the Association by any of the canal superintendents during 1913. A record has been kept of the recommended draught in the various canals and prompt notice has been sent out of each change which has occurred.

Correspondence has been carried on as heretofore with masters regarding casualties requiring discussion, and in certain cases with parties able to throw light on the circumstances in question. The usual notes of casualties and of your committee's action in each case have been recorded. In the case of one fleet your committee found it necessary to report to the owners a statement that the vessels they owned were said to be running without regard to the Association's rules. An emphatic denial of the statement was made and was accepted by your committee.

Referring particularly to the casualties of the year an analysis of the accidents reported is appended. The outstanding feature is of course the complete loss of four vessels and the two serious strandings in the storm of November last. The claims upon underwriters in respect of these disasters will be heavy and will make the loss ratio for 1913 very high. Apart, however, from the unfortunate effects of this one storm it is noticeable that the remaining casualties do not include any one heavy loss, and their number rather than the total amount of damage done is to be regretted. Of the groundings noted, two or three involved substantial repairs, and these might have been classed as strandings save that they were not due to any stress of weather and the vessels were in all cases quickly released. The collisions exceed any other class of casualty in number, and might be expected to cause a large loss, especially as 14 out of the 34 recorded affected two vessels both belonging to your Association. But the fact is that in the great majority of cases the damage done was very light, 15 of the cases being due to movements of vessels in harbors and many of the others being light contacts of vessels in the canals.

In the case of five of the reported casualties the masters of the vessels were censured by your committee. One of these votes of censure was recorded for running in narrow waters in a fog, one for canalling in a heavy wind and three for going ashore by reason of failure to use the lead and to exercise ordinary caution. In one of these last named the master was dismissed and a wreck investigation applied for, and in another the master was put back as mate on another vessel. In six other cases masters were advised that your committee considered they had made errors of judgment or failed to handle their vessels as they should. Engineers were found at fault and censured in four instances, the vote being recorded in three instances for failure to answer the reverse signal properly. In the fourth case where steam was shut off the reverse gears, the second engineer, who was on watch, as well as the chief who was responsible, were both censured. In two other cases the vote of censure fell upon pilots of the upper St. Lawrence who were navigating the vessels. The action of your committee in regard to every casualty is reported as heretofore in a bulletin which is issued and circulated among all members of your Association and all masters after each meeting.

During the year your committee accepted the application for enrolment of two vessels of U. S. register owned in Canada and also decided to recommend that the privileges of membership in the Association should be extended in the same way whenever Canadian owners apply and the ton-

nage offered proves acceptable. A recommendation is hereby made accordingly.

You are asked to approve particularly the action of your committee in seeking to have all policies require a warranty of membership in your Association as a condition of enjoyment of any special rate, and your committee closes this report with an urgent reminder to every member of the Association that insurance must now be arranged so that 5% of the risk in each vessel shall be placed with Dale & Co. Strict compliance with this requirement is essential.

Analysis of Accidents Reported, 1913.

Foundered	4
Strandings	4
Groundings	26
Collisions	34
Striking docks or gates	11
Striking bridges, docks, piers, harbors and channel banks	16
Stress of weather causing substantial damage ..	1
Lost anchors	2
Total	98

FOUNDERED.

Lake Huron	3
Lake Superior	1
Total	4

STRANDINGS.

Lake Superior	1
Lake Huron	1
Lake Erie	1
Lake Ontario	1
Total	4

GROUNDINGS.

St. Lawrence River	10
Lake Ontario	3
St. Clair River	2
Lake Huron and Georgian Bay	4
St. Mary's River	2
Mission River	3
Sault Canal	1
Port Arthur	1
Total	26

COLLISIONS.

Harbors	15
St. Lawrence Canals	4
Welland Canal	7
Sault Ste. Marie Canal	2
St. Lawrence River	1
Lake Superior	2
St. Mary's River	2
Lake Erie	1
Total	34

STRIKING LOCKS OR GATES.

St. Lawrence Canals	7
Welland Canal	4
Total	11

STRIKING BRIDGES, DOCKS, PIERS AND HARBOR AND CHANNEL BANKS.

Bridges	2
Docks and piers	6
Canal banks and walls	7
St. Lawrence River channel bank	1
Total	16

STRESS OF WEATHER CAUSING SUBSTANTIAL DAMAGE.

Gulf of St. Lawrence	3
LOST ANCHORS.	
Lake Superior	1
Gulf of St. Lawrence	1
Total	2

The report was considered clause by clause and unanimously adopted.

At present membership in the Association is confined to steel built bulk and package freighters. A resolution was adopted that an associate class should be formed for the enrolment of wooden tonnage at a special rate of assessment, which would be fixed by the executive committee. On this understanding the meeting endorsed the action of the executive committee in insisting upon the insertion in all policies of a warranty of membership in the Association.

The following were elected as the executive committee:—L. Henderson, W. E. Burke, Montreal; Capt. S. Crangle, H. W. Cowan, J. T. Mathews, Toronto; Capt. Fraser, H. W. Richardson, Kingston; J. Playfair, Midland. L. Henderson was subsequently re-elected President.

Dominion Marine Association's Annual Meeting.

At the annual meeting in Ottawa, Feb. 10, the executive committee presented a comprehensive report over the signatures of L. Henderson, President, and F. King, Counsel. The report showed that the tonnage enrolled in the Association steadily increases, at least in the way of vessels navigated by steam. Naturally the figures for barge and sailing vessels are slowly becoming less. The total tonnage exceeds that of 1912, and is approximately 180,000 net registered tons of steam and 33,500 of barge and sailing vessels, making a total of 213,500 net registered tons. The report dealt in full detail with the past year's work, including the following subjects:— Pilotage Commission; establishment of Pilotage district, Montreal to Kingston; wireless telegraphy; rules of the road; proposed dam at head of Livingstone channel, Detroit River; Chicago Drainage Canal; the Grain Commission; Lake Shippers Clearance Association; dispatch at loading and unloading ports; shortages in outturns of grain cargoes; trimming of grain cargoes; coasting laws; the disaster of Nov. 8, 9 and 10, 1913; Seamen's Union bill, United States; life saving appliances, rules, sec. 578, Canada Shipping Act; London conference on safety of life at sea; Customs re-ports of entry into Lake Michigan; wages of engineers; ice breaking; patrol service, St. Mary's River, Sault Ste. Marie to Point aux Pins; canals, Sault Ste. Marie, Welland and St. Lawrence; harbor and channel improvements; Niagara River; aids to navigation; legislation; Lake Carriers' Association; Association of Passenger Steamboat Lines of the U.S.

The report was considered clause by clause and unanimously adopted.

The financial statement showed receipts, including balance from previous year, of \$4,596.59, and disbursements \$3,624.42, leaving a balance of \$972.17, against \$1,437.92 at the beginning of the year.

A petition from Midland (Ont.) Council 12, National Association of Marine Engineers of Canada, was read, asking for an advance in pay, but no action was taken, it being considered that the question is one to be dealt with by individual owners.

A petition to the Marine Department from masters of vessels navigating through the Dominion canals, in regard to the failure of bridge tenders to respond promptly to whistle signals blown by vessels requiring the opening of bridges, was endorsed.

A petition to the Minister of Marine from owners and masters of steamboats and launches on the Rideau River and Canal, asking for improvements in the lighting, was endorsed.

A committee on aids to navigation was elected as follows:—Robt. Fraser, Kingston, Chairman; Jno. Donnelly, J. F. Sowards, W. H. Featherstonhaugh, Gilbert Johnston, Frank Hall, H. W. Cowan, H. M. Norris, and Capt. Jno. Ewart.

E. E. Horsey, J. Playfair, S. V. McLeod, and F. Plummer retired from the executive committee by effluxion of time, and H. W. Cowan, C. B. Harris, A. A. Wright, Toronto, and S. V. McLeod, Sault Ste. Marie, were elected to succeed them for a three year term. The other members of the committee whose terms expire in 1915 and 1916 are L. Henderson, Montreal; A. E. Mathews, J. W. Norcross, Toronto; H. W. Richardson, Kingston; G. E. Fair, Collingwood; H. H. Gildersleeve, Sarnia; D. Murphy, Ottawa; F. S. Wiley, Port Arthur.

The executive committee reelected the officers as follows:—President, L. Henderson; 1st Vice President, A. E. Mathews; 2nd Vice President, H. W. Richardson.

On the morning of Feb. 11, a large deputation of members of the Association waited on the Minister of Railways and the Minister of Marine and Fisheries in the former's office, being introduced by W. F. Nickle, M. P., for Kingston. The Association's Counsel, F. King, addressed the Ministers, thanking them for the cordial relations which had existed between their departments and the Association throughout the past year, and expressing the Association's recognition of the great difficulties with which the Ministers had to contend in directing operations over the immense fields which came under their jurisdiction and in trying to satisfy the needs of all parties interested, and assured the ministers of the Association's intention to endeavor to continue to deserve the consideration which it had received in the past. The opportunity was also taken to lay before the Minister of Railways and Canals requests which have been under consideration for some time for the improvement of lock entrances, by the erection of spring piling or floats, to prevent collisions with wing walls, and for a system of signals by whistles or semaphores on the various bridges crossing the canals for the purpose of answering whistle signals from approaching vessels. H. W. Richardson of Kingston, also spoke on behalf of the Association. The deputation was very cordially received and the ministers expressed deep appreciation of the unusual character of the representations made. Very favorable consideration was promised for the two special requests above mentioned.

The Association's annual dinner at the Ottawa Golf Club in the evening was a most enjoyable affair. The speakers were the President, L. Henderson; and Vice Presidents, A. E. Mathews and H. W. Richardson; Hon. J. D. Hazen, Minister of Marine; Col. the Hon. S. Hughes, Minister of Militia; Lt.-Col. Currie, M.P.; Dr. Edwards, M.P.; W. F. Nickle, M.P.; A. Johnston, Deputy Minister of Marine; J. A. McGean, Cleveland, Ohio; A. Pissanault, Detroit, Mich.; F. S. Wylie, Port Arthur; H. W. Cowan, Toronto, and Acton Burrows, Managing Director, Canadian Railway and Marine World.

Farrar Transportation Company's Annual Report.

The Farrar Transportation Co., Ltd., held its annual meeting at Collingwood, Ont., Jan. 27. Following are extracts from the annual report. A dividend of 10% and a bonus of 5% were paid for 1913. The dividends that shareholders have now received aggregate 101%, hence the amount invested by the original shareholders has been returned to them in full. The bonded indebtedness on the s.s. Collingwood has been reduced from \$94,000 to \$81,000, \$13,000 having been paid on the principal maturing 1913, and \$4,375 interest on bond issue. These two items, aggregating \$17,375, were provided for out of earnings and equal approximately 7% on the capital stock. After deducting the amount required to pay 15% dividend on 1913 business, \$37,500, there is approximately enough left on hand to take care of s.s. Collingwood's bond interest and principal for the three succeeding years 1914-15-16, which shows the company is in a strong financial condition. The assets and liabilities account now shows that the assets over liabilities amount to \$163,976.63, which makes the intrinsic value of the stock \$165.55 a share. The s.s. Collingwood went into service April 16, 1913, and was kept steadily engaged until early in December, carrying during that time 23,000 tons of iron ore, 3,000 tons

of pig iron, 31,000 tons of coal and 5,300,000 bush. of grain. The s.s. Meaford started on April 19 and was kept steadily engaged during the entire season, carrying 6,000 cords of pulpwood, 10,000 tons of coal and 1,500,000 bush. of grain.

Assets.	
Two steamships	\$408,409.03
Office furnishings	448.84
Cash in bank	81,768.95
Accounts receivable	5,828.03
	\$496,454.85
Liabilities.	
Detroit Trust Co.	\$ 81,000.00
Accounts payable	1,478.22
Shareholders	250,000.00
Assets over liabilities	163,976.63
	\$496,454.85
Earnings and Expenses.	
Gross earnings	\$166,620.33
Expenses, fuel, wages, insurance, provisions, etc.	95,384.33
General expense	4,955.56
Interest	3,504.07
Net profit	62,778.37
	\$166,620.33

The board was re-elected as follows:— President, T. I. Thomson, Owen Sound, Ont.; Vice President, E. R. Wayland, Fort William, Ont.; Secretary-Treasurer and Managing Director, G. E. Fair, Collingwood, Ont.; other directors, E. Stubbs, Sault Ste. Marie, Ont.; D. D. Lewis, Lorain, Ohio; W. E. Allen, Toronto; M. Snetsinger, Thornbury, Ont.; G. P. Pearsall, Collingwood, Ont.; Jno. Shultis, Port Colborne, Ont.; C. I. De Sola, Montreal; the latter succeeding W. T. Toner, of Collingwood, deceased. It has been decided to move the head office from Collingwood to Toronto in the near future.

Pilotage on the St. Lawrence.

In the recent annual report of the Liverpool, Eng., Underwriters Association, reference was made to pilotage on the St. Lawrence, as follows:—"The committee is glad to be able to state that in consequence of reiterated complaints the whole question of St. Lawrence pilotage has been under investigation by a Royal Commission. It is earnestly hoped that in the interest of the increasing number and size of vessels frequenting the river, the recommendations of the commission for the better organizing and administering of the pilotage will bring about material reduction of the risks of navigation in this important waterway." The attention of the Minister of Marine having been called to this matter, he stated in the House of Commons, Feb. 16, that in so far as the department was competent, all the recommendations submitted by the Royal Commission material to the administration of the service, had been approved and put into force. Certain of the recommendations cannot be put into force without amending the Canada Shipping Act. The necessary amendments will be considered in the bill for the revision and consolidation of that act, which will be submitted to Parliament at an early date.

Largest Marine Diesel Engine.—The recent arrival of the ship Wotan in New York is of interest because she is propelled by a single screw, six cylinder, 2,000 Carels-Diesel marine engine. Other motor ships that have gone to New York were driven by two engines of 6 or 8 cylinders, whose gross capacity was about 2,000 h.p., and in each case they were supplied with injection air by additional engines. The motor of the Wotan is a six cylinder engine, with an injection air compressor on the engine. This is the largest marine Diesel engine in service, and the good record of the ship on her maiden voyage is claimed to be a proof of the reliability of this type of drive.

Large Freight Steamship Building at Port Arthur.

What is claimed to be the largest bulk freight steamship in the world is being built at Port Arthur, Ont., for Canada Steamships Lines, Ltd., and at the end of February was about 60% completed. It is expected that she will be launched at the end of March, and that she will be delivered at the opening of navigation. She will have room for 585,000 bush. of oats, or approximately 20 trains of 30 cars each. She will be 625 ft. long, 59 ft. beam and 32 ft. deep, with a water bottom and side tank 5½ ft., extending from the keel up to the main deck, and from the collision bulkhead back to the engine bulkhead, and divided by a centre keelson, side bulkhead and solid floors into 15 watertight compartments, which may be flooded or pumped out individually, as conditions may require. The construction is on the Isherwood system, consisting of longitudinal frames, with transverse sections of plate and angle, spaced every 12 ft. The cargo hold, extending 436 ft. will be divided into six compartments by five solid steel bulkheads, entrance to which will be gained by 38 steel hatches opening from the spar deck and spaced 12 ft. centres. These hatches will be 9 ft. wide by 41½ ft. long, and will be covered with sectional steel plate folding covers, operating by steel cables from two deck winches and clamped down with a patent hatch fastener, especially designed for this type of cover.

The power plant will consist of one vertical, triple expansion engine, with cylinders 24, 39, 65 by 42 in. stroke, with h.p. cylinder in the centre, and indicated horse power of 2,000 at 85 r.p.m. Steam will be furnished by two Scotch boilers 16 ft. dia. by 11½ ft. long with induced draught working under a pressure of 170 lbs. per square inch. The steering engine will be of the direct acting type, with 9 by 9 in. cylinders, operated with telemotor gear; also steam gear so arranged that the change can be made in a very short time. The electric lighting plant will consist of two 15 k.w. generating sets installed in engine room, with separate circuits fitted for the different parts of the ship, and including electric mast head, stern and side lights so arranged that should any of these lights go out the fact will be instantly noticed in pilot house by pilot lights installed therein, which will become lighted. One of the two 10 by 36 in. whistles will also be electrically controlled. A feature very seldom found in the freighters will be the installation of an ice machine large enough for refrigerator coils and ice tank of two tons capacity.

The spar deck forward will be fitted up for passengers and will be finished in full panel of mahogany, containing four staterooms and bath, opening off of a large reception room which will communicate by stairs to an observation room on the forecastle deck, directly overhead. The captain's quarters will be in the texas and will be finished in quartered oak, and include office, bedroom and bath, with a stairway leading directly overhead into the pilot house. The forward crew's quarters will be located on main deck and will be finished in oak with white pine ceilings, each room containing berth for two people with exception of mate, who will have separate room. These quarters will include bathroom, shower bath and large reading room. The after deck house will contain private dining room for passengers, finished in quartered oak, with white pine ceiling, and dining room for officers and mess room for crew. The chief

engineer's quarters will consist of office and bedroom and bath, and forward of him will be the assistant engineers', oilers', and firemen's rooms in separate quarters on starboard side, and the port side will contain quarters for deck hands, stewards, galley and ice box. The Western Dry Dock and Ship Building Co. are the builders.

Canada Shipping Act Amendments.

With reference to the recent extension of the time for the participation in the coasting trade of Canada, by certain foreign vessels, an amendment to the Canada Shipping Act is before the House of Commons repealing the section defining the meaning of what constitutes a coasting voyage, and substituting a new section as follows:

"(f) 'Coasting voyage' means a voyage between any port or place on the eastern coast of Canada, and any other port or place on such coast, or in Newfoundland, Labrador, or St. Pierre or Miquelon, or any port or place on the eastern coast of the United States of America or Mexico or Central America or in the West Indies, or on the eastern coast of South America not further south than 40 degrees south latitude; and also means a voyage between any port or place on such coast, or on the western coast of the Territory of Alaska, or of the United States of America or of the western coast of Mexico or Central America or South America not further south than 40 degrees south latitude."

The Hon. J. D. Hazen, Minister of Marine, speaking at the Dominion Marine Association's annual dinner at Ottawa, Feb. 11, said:—An important piece of legislation on the subject of merchant shipping will be submitted to Parliament within the next few weeks. As you are aware, the present act is merely a collection of the various acts, with amendments that have been passed during the last 40 years. So many changes and improvements have taken place in that time in shipping matters that it has become necessary, practically, to rewrite the whole act so as to meet the requirements of the present day. The changes in the proposed bill are not of a very radical character. The idea has been rather to provide a code for our merchant shipping that will be worthy of the important place Canada holds in the maritime world. I propose, on the second reading of the bill, to move that it be referred to the special committee on Marine and Fisheries for consideration. This will enable the shipping interests of the Dominion to examine the details of the measure and to be heard in regard to any changes they deem necessary. And I think that I could have no more fitting opportunity than now of asking the hearty co-operation of all those who sit round this table, and whose interests are so deeply identified with this great branch of Canadian industry and enterprise, to make the new Canada Shipping Act a valuable addition to our legislation as well as a real and helpful measure to all branches of the business.

Debenture Issue by Canada Steamship Lines, Limited.

The Canada Steamship Lines, Ltd., offered in England and in Canada, from Feb. 11 to 14, £1,300,000 5% consolidated 1st mortgage debenture stock at 93, repayable Aug. 15, 1943, at 105. The subscriptions are payable 10% on application, 25% on allotment, 25% on Mar. 16, and the balance on Apr. 15. The debenture stock is constituted by a trust deed under which is secured by a conveyance to the trustees, or by special mortgage in their favor, the freehold and leasehold

lands, buildings and steamships, and shares of other companies owned or hereafter to be acquired, and a general charge upon its property, assets and undertaking. The deed provides for an accumulative sinking fund of 1½% per annum, commencing in 1915, to be applied in the purchase of stock at any price less than 105% and accrued interest, or invested in the manner prescribed in the deed. The company reserves the right to redeem the stock on any interest date after Aug. 15, 1923, at 105%, or earlier at the company's option, at 110% on six months notice. Full details of the valuation of the properties and past earnings, etc., have been given in previous issues of Canadian Railway and Marine World. London cablegrams state that about 15% of the stock was subscribed for by the public, the balance being left with the underwriters.

Improvements in Aids to Navigation on the Great Lakes.

The Hon. J. D. Hazen, Minister of Marine, made an important announcement at the Dominion Marine Association's annual dinner at Ottawa, Feb. 11, in regard to works to be carried on this year. He said:—"I am anxious that the very large and rapidly growing shipping interests on the Great Lakes should receive the greatest possible assistance that improved aids to navigation can afford. To this end I directed that the officers of my department who are members of the Lighthouse Board should, during the last season, make an inspection of the several locations represented as requiring additional aids. In addition, I have endeavored to familiarize myself personally with conditions on the lakes. I hope that, as a result of these inspections, the officers and myself have a proper appreciation of what is required, and our aim will be to carry them out. To that end, the following aids will be established during next season:—

"Main Duck Island. First rate light and fog alarm station, \$41,500.

"Battle Island. Fog alarm, \$10,800.

"Port Burwell. Gas lit concrete beacon on breakwater head, \$3,100.

"Slate Islands. Fog alarm and improvement of the light, \$12,300.

"The lights at the following stations are to be improved:—Brebeuf range, \$1,200; Giant's Tomb, \$1,400; Long Point west light, \$1,275; Long Point east light, \$4,900; Loyal Island, \$1,250; Mississagi Island, \$1,275; Nine Mile Point, \$1,000; Nottawasaga Island, \$7,675; Otter Head, \$1,275; Peninsula Harbor, \$1,300; Hope Island, \$1,275; Killarney West, Mohawk Island.

"Bay Point, Sarnia, gas lighted beacon. Brebeuf back range lighthouse to be rebuilt, much higher, in steel.

"Goderich. Improvement of main light and establishment of an electric fog horn at outer breakwater beacon, \$3,050.

"Limekiln Crossing. Pair of permanent range lights to replace three pairs of temporary lights, \$4,000.

"Livingstone Channel. Light at upper entrance, \$40,000.

"Martin Island, south end of Chenal Ecarte. Range of lights, \$300.

"Wingfield basin. Lighting of existing day beacons, \$50."

Imperial Service Medals have been awarded to the following Government employees for long service in connection with navigation:—J. Collins, lock master, Welland Canal; J. J. Gordon, lock master, Rideau Canal; and C. H. Collier, lock master, Welland Canal.

The name of the Government dredge Ontario has been changed to P. W. D. no. 114.

National Transcontinental Railway Car Ferry for St. Lawrence River.

The ice breaking car ferry steamboat, which is under construction at Birkenhead, Eng., for the transportation of N.T.R. trains across the St. Lawrence River pending the completion of the Quebec Bridge, was launched at Birkenhead, Jan. 31, and delivery at Quebec is expected in May or June. A preliminary description was published in Canadian Railway and Marine World for May, 1913, and the following fuller information is now available.

Principal dimensions are:—Length overall, 326 ft.; beam, 55 ft.; with a mean draught of about 15 ft. The propelling machinery will consist of two sets of triple expansion condensing engines, steam being supplied by 8 single ended cylindrical boilers working under natural draught. An ice propeller will be fitted at the forward end, driven by a compound condensing engine. The vessel will be built to Lloyds' special survey and will be arranged for the carriage of passenger and freight trains at all seasons.

The trains will be carried on a tidal deck arranged above the main deck of the vessel, on three lengths of track, the length of each

the tidal deck, a promenade will be arranged all round the vessel, with a bridge platform forward, from which all the operations of steering and manoeuvring will be directed.

The boiler rooms will be arranged in wing compartments amidships, with the coal bunkers and the tidal deck engine room between them. The main propelling engines will be situated abaft the boiler rooms and the engine for the ice propeller will be placed in the hold just abaft the fore peak bulkhead. The vessel will be fitted with electric light throughout and electric gear will be provided for raising and lowering the end gangways and for hauling the cars on or off. Special arrangements will be made for heating the passenger cars during transit. Double windlasses will be fitted, one on each side, with slip drum for mooring. Accommodation will be arranged on flats below the main deck forward on both sides of ship for officers and crew.

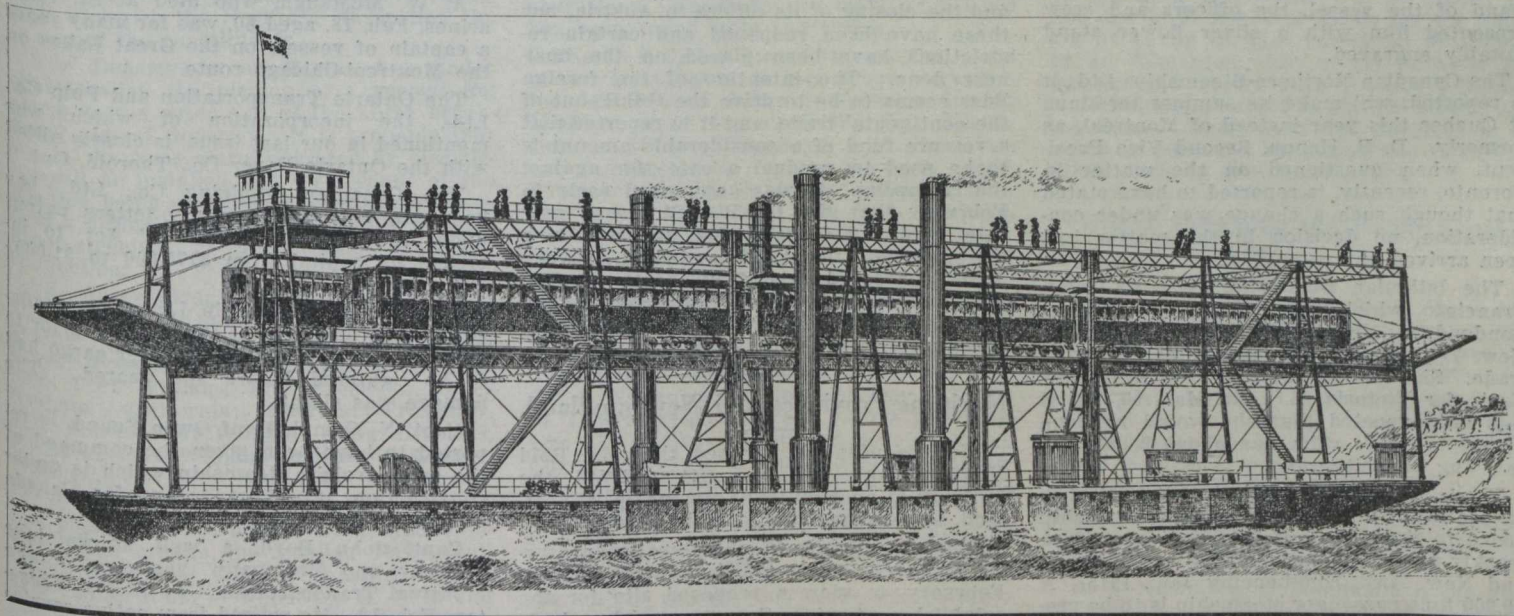
The propelling machinery will consist of two sets of, triple expansion surface condensing engines, the size of cylinders being 23, 35, and 55 dia. by 33 in. stroke. They are designed to run at 120 revolutions a minute; and a special feature of the en-

a loose forged steel sleeve and sliding key arrangement fitted into the box of wheel; the screws will be fitted with heavy gunmetal nuts, screwed with buttress threads, and will be supported from the upper structure of the vessel by ball bearings of special design. A complete installation of auxiliary machinery will be fitted, and the whole made to Lloyds' requirements. It is said that she will be named Leonard, after the Chairman of the N.T.R. Commission.

We are indebted to W. J. Press, Mechanical Engineer, N.T.R. Commission, for the foregoing information.

The Recent Great Lakes Disaster.

The Minister of Marine stated in the House of Commons recently, in connection with the suggested appointment of a commission to investigate the wrecks caused on the Great Lakes in the storm of Nov. 9, 1913, that soon after the disaster steps were taken to ascertain if it was the intention of the United States, whose shipping had sustained greater loss and damage than the Dominion's, to appoint any commission of investigation, and it was learned that



National Transcontinental Railway Car Ferry for St. Lawrence River.

track being about 272 ft., which will accommodate a standard passenger train of 1 locomotive, 3 express and baggage cars, 3 passenger cars, and 3 sleeping cars; or a standard freight train of 18 loaded freight cars. The tidal deck will rest on large gunmetal nuts working up and down on 10 vertical lifting screws on each side, supported on columns, the columns being stayed by lattice buttresses against longitudinal and transverse thrusts. The lifting screws will be hung on ball bearings from the top and will be manipulated by means of worm wheels driven from horizontal shafting which will run the length of the vessel on each side. The horizontal shafting will be worked by bevel gearing from a four cylinder high pressure engine of special design situated below the main deck. The gearing will be arranged to lift the tidal deck fully loaded at a rate of 1 ft. a minute, through a distance of 18 ft., which will enable the ferry to be loaded or unloaded at any state of tide. At each end of the tidal deck an adjustable hinged gangway will be suspended, which will allow for any change of trim or heel of ship due to unequal distribution of weights while taking the cars, etc., on or off the vessel. Above the highest position of carriages on

engines is the shafting, which is made much stronger than usual, to stand the shock it will receive when the propellers strike ice during the winter trips. The propellers themselves will be specially strong for the same reason, being made of nickel steel. The engines will be supplied with steam by eight single ended boilers, under natural draught at a pressure of 165 lbs. per sq. in.

The forward end of the vessel will be fitted with an ice breaking propeller, driven by a set of compound surface condensing engines, the size of cylinders being 15, 32 by 21 in. stroke. This propeller, which will also be of nickel steel, will run idly during the summer. The engine will be of the four cylinder, high pressure type of massive design, driving through double helical spur wheels, a second motion shaft running athwartship; at both ends of this shaft will be arranged a pair of mitre wheels, driving the fore and aft main line shafting, on both port and starboard sides. At equal distances along this shaft will be arranged the worm and wheel gearing for turning the screws, 10 on each side of vessel, that is 20 for the whole ship. The worms will be of forged steel and the wheels of cast iron. The screws will be driven through

there was no such intention. His department believed that any inquiry, to be effective, should be international in character, and in view of this, and of the further fact that it was the announced intention of a member of Parliament to move for the appointment of a parliamentary committee of inquiry, it was decided that the appointment of a commission was not desirable, nor necessary.

The following Canadian vessels which were stranded during the storm have been the subjects of investigation by the Dominion Wreck Commissioner:—Turret Chief, owned by Canadian Lake and Ocean Navigation Co.; Acadian, owned by Canada Interlake Line; results, masters censured.

National Council Marine Engineers of Canada.—The following officers were elected at a meeting in Kingston, Ont., recently:—Grand President, L. B. Cronk, Windsor, Ont.; Grand Vice President, A. F. Hamelin, Montreal; Grand Secretary Treasurer, N. J. Morrison, St. John, N.B.; Grand Conductor, E. Reid, Vancouver; Grand Doorkeeper, A. J. Ross, Halifax, N.S.; Grand Auditors, J. Gillie and A. E. Kennedy, Kingston, Ont.

Atlantic and Pacific Ocean Marine.

The C.P.R. s.s. Tyrolean, which has been withdrawn from the Austrian service, will, it is reported, be placed on a route between St. John, N.B., and Avonmouth, Eng. The first sailing was scheduled for Feb. 28, from St. John.

With reference to the report that Furness, Withy and Co. have ordered four additional steamships for its North Atlantic service, as mentioned in our last issue, we are officially advised that no intimation to this effect has been received at the Montreal office.

The Royal Mail Steam Packet Co.'s s.s. Cobequid, which was wrecked recently in the Bay of Fundy, was insured for £30,000.

The maiden voyage of the Allan Line s.s. Calgarian, has been postponed from Feb. 28 to Mar. 28, when she will sail from Liverpool for Halifax, N. S., returning from the latter port, Apr. 11.

Capt. A. W. Davison, of the C.P.R. s.s. Empress of India, has been promoted to the command of the s.s. Empress of Russia, vice Capt. Beetham, who has been appointed Marine Superintendent at Vancouver, B. C. On Capt. Beetham giving up the command of the vessel, the officers and crew presented him with a silver flower stand suitably engraved.

The Canadian Northern Steamships Ltd., it is reported, will make its summer terminus at Quebec this year instead of Montreal, as formerly. D. B. Hanna, Second Vice President, when questioned on the matter in Toronto, recently, is reported to have stated that though such a change was under consideration, no decision in the matter had been arrived at.

The Isthmian Steamship Co.'s s.s. San Francisco, which was recently launched at Londonderry, Ireland, is to be used for the New York-British Columbia steel carrying trade. She was scheduled to sail from New York, for Victoria, B.C., on Mar. 10, but it was not expected that she would be completed in time. She has about 9,000 tons carrying capacity.

The Bermuda Legislative Council has passed a bill to subsidize Canada Steamship Lines to the extent of \$80,000 a year for a weekly steamship service between Bermuda and New York, commencing Jan., 1915. A 10,000 tons passenger steamship is to be provided, having a speed of 18 knots an hour and capable of developing 21 knots. A second similar vessel is to be provided later on payment of a similar subsidy.

The Reid Donald Steamship Co., Ltd., the incorporation of which was announced in a recent issue, has purchased the s.s. Bellona, formerly owned by the Thomson Line, and which stranded below Quebec towards the end of 1912. She has been thoroughly overhauled and repaired and will be used in the fruit trade between the West Indies and New York ports. C. I. de Sola, T. Muirhead and G. Farrill, Montreal, are interested in the company.

Capt. F. Inch, commander of the Uranium Steamship Co.'s s.s. Volturino, which was burnt at sea, Oct. 11, 1913, when a number of the passengers and crew lost their lives, was presented, Feb. 4, with the freedom of the City of London, Eng. The parchment was enclosed in a silver casket, and accompanied by a gold medal, a gold watch and chain, a purse of gold, and Lloyd's silver medal, and also a diamond and sapphire pendant and silver tea service for Mrs. Inch. The Lord Mayor made the presentation, and stated that the tokens were in recognition of heroism and staunch allegiance to duty.

Press reports state that the Hamburg-American Line will put six steamships on

the Canadian route during the forthcoming season, the first sailing from Hamburg being scheduled for Apr. 14. Third class passengers only will be carried. It is stated that berthing accommodation has been assigned to the company by the Montreal Harbor Commissioners at the Tarte pier. H. F. Dorgeloh is reported to have been appointed Canadian Manager. Since the foregoing statement has appeared, it has been reported that instructions given for remodeling a number of vessels for the sole accommodation of third class traffic have been cancelled.

As an outcome of the discontinuance of the agreement hitherto in force among the member companies of the North Atlantic Conference, by which the European Continental-emigration business was pooled and apportioned to various companies on a percentage basis, there appears to be the possibility of a severe rate war among the companies immediately concerned. It is said that the C.P.R. has played the chief part in the break up of the agreement, owing to the firm stand it took when it commenced its Austrian service and withdrew from the conference. This action was followed by the arrest of its Austrian agent, and the closing of its offices in Austria, but these have been reopened and certain restrictions have been placed on the business done. The intention of the foreign lines seems to be to drive the C.P.R. out of the continental trade, and it is reported that a reserve fund of a considerable amount is to be used to conduct a rate war against that company. It was announced early in February that the C.P.R. had issued new rate cards to its shipping agents, fixing the steerage rates at \$22 eastbound, or westbound, except to and from Vibau, Russia, where the rate is \$24. Press reports of recent date state that the agreement is to be renewed with the C. P. R. as a party.

Maritime Provinces and Newfoundland.

We are officially advised that the Reid Newfoundland Co. has not ordered the building of an additional steamship in Scotland, as reported in the daily press.

Dominion Public Works Department surveyors were sent to Halifax, N. S., early in February, to view a proposed site for the establishment of a Government dry dock, and to report thereon. It is reported that the site which will probably be chosen is situated at Tufts Cove on the Dartmouth side of the harbor, and that a dock of the first class, similar to those to be built at Lauzon, Que., and Esquimalt, B.C., but somewhat larger, has been decided on by the Government.

The Dominion Public Works Department has been dredging the northern entrance to Little Bras d'Or, to obtain a channel 120 ft. wide, 20 ft. deep at low water over the bar at the entrance for about 2,400 ft. long, and a channel 80 ft. wide, 18 ft. deep at low water inside the bar, for a further 2,100 ft. In about the middle of the outside channel the 20 ft. depth at low water is at present available in a width of about 60 ft. only, and a depth of 18 ft. is available in a width of about 80 ft. In the inner channel a depth of not less than 17 ft. at low water is available throughout its entire length.

Province of Quebec Marine.

The Minister of Marine has given notice in the House of Commons of two resolutions providing for loans of \$15,000,000 and \$2,000,000 to the Montreal and Quebec Harbor Commissioners respectively.

By an order of the Superior Court, Larue

and Trudel, Quebec, have been appointed liquidators of the National Navigation Co. Ltd., Quebec, with P. Desforages, Montreal, and A. Gingras and P. Gauvin, Quebec, as inspectors.

The press reports to the effect that Canada Steamship Lines, Ltd., intended taking the s.s. Quebec off the Montreal-Quebec run, are premature. The matter has not been under consideration officially, but it is possible that some change in the route of the vessel may be made by the time navigation reopens.

The Quebec and Lotbiniere Navigation Co. Ltd., the incorporation of which has been mentioned in a previous issue, will, it is stated, operate the steamboats St. Croix and L'Etoile during the forthcoming season between Quebec, Deschaillons, St. Antoine and St. Croix, on a tri-weekly service. The company owns wharf accommodation at Deschaillons, St. Antoine and St. Croix. The President is Capt. F. Boisvert, and the Manager, D. Boisvert, with head office at St. Croix, Que.

Ontario and the Great Lakes.

A. W. McMaugh, who died at St. Catharines, Feb. 18, aged 60, was for many years a captain of vessels on the Great Lakes on the Montreal-Chicago route.

The Ontario Transportation and Pulp Co. Ltd., the incorporation of which was mentioned in our last issue, is closely allied with the Ontario Paper Co., Thorold, Ont.

The Canadian Dredging Co., Ltd., has been granted supplementary letters patent under the Ontario Companies' Act, to increase its capital from \$175,000 to \$1,000,000.

The Canada Steamship Lines s.s. Stadacona, while anchored at Port Huron, prior to unloading, Feb. 3, grounded. Her cargo had to be lightered before she floated. The damage was slight.

Capt. N. Campbell, of Owen Sound, is reported to have been given the command of the large freight steamship which is under construction at Port Arthur for Canada Steamship Lines Ltd.

Capt. John Boyd, a well known lake mariner, and for many years with the Montreal Transportation Co., died at Kingston, Feb. 10. He retired from active service a few years ago.

The Silver Islet Navigation Co., owning the steamboat Forest City, has leased the vessel to J. T. Reid and Co., Fort William, for operation during the summer season to the Silver Islet summer resort.

C. D. George, hertofore Travelling Freight and Passenger Agent, Northern Navigation Co., Montreal, has had his headquarters moved to Sarnia, Ont., where W. R. Burgin, Travelling Freight and Passenger Agent, also has his headquarters.

The Hamilton Board of Control has recommended to the City Council the granting of \$5,000 to the Harbor Commission, in accordance with the commission's promise that should the city make such a grant the harbor would be freed from tolls.

The Public Works Department has recently completed dredging in the channel between the piers, in the turning basin and the coal slip, at Rondeau. The coal slip has been dredged to a depth of 17 ft., and the remainder to 20 ft.

On the New York State Canals during 1913 2,602,035 tons were carried. The tonnage eastbound was 1,980,517, and westbound 621,518. The tonnage per canal was as follows: Erie, 1,788,453; Champlain, 554,892; Oswego, 61,554; Cayuga and Seneca, 149,874; Black River, 47,262.

The Ogdensburg, N.Y., Shipmasters' Association has sent a resolution to Washington, to be laid before Congress, recommending that the St. Lawrence River be deepened between Cape Vincent and Ogdensburg, so as to make it navigable for the largest lake vessels.

The Northern Navigation Co.'s coal chutes at Point Edward, which were destroyed by fire recently, are to be rebuilt so as to be ready for the reopening of navigation. The structure will be about 14 ft. higher than the old one, so that there will be no difficulty in handling the s.s. Noronic, or any other of the larger vessels.

The Prescott and Ogdensburg Ferry Co.'s steamboat City of Belleville was burned to the water's edge at her dock in Prescott, Feb. 17. She was built at St. Catharines, Ont., in 1878, and was screw driven by engine of 50 n.h.p. Her dimensions were, length 89.7 ft., breadth 15.4 ft., depth 7 ft., tonnage 101 gross, 69 register.

We are officially advised that the Northern Navigation Co.'s s.s. Saronic will, in all probability, be transferred from its previous route to the head of the Great Lakes, to the Hamilton-Montreal or Toronto-Montreal route. This latter route is under the direct control of Canada Steamship Lines, Ltd., of which the Northern Navigation Co. is one of the constituents.

The Department of Marine has under consideration the placing of a special fog alarm at the outer end of the north breakwater pier at Goderich. It is probable that a 3 in. diaphone alarm operated by electricity will be installed, but on account of the position being so exposed to attack by surf, it is a difficult matter to get either a wave proof structure, or the necessary electrical connection.

The Rainy River Navigation Co.'s officers and directors for the current year, as elected at the recent annual meeting, are as follows:—President and Manager, G. A. Graham, Fort William; Vice President, D. C. Graham, California; Secretary-Treasurer, J. T. Horne, Fort William; other directors, F. Babe, Fort William, and A. R. Bartlett, Windsor, Ont. A. McKenzie is General Passenger Agent.

A press dispatch, dated Feb. 4, from London, Eng., credits the London Daily Mail with stating that another Canadian steamship combination, in which the G. T. R. and Canadian Northern Ry., are stated to be interested, is being launched. The "news" is somewhat belated, as from the details given, the item refers to Canada Steamship Lines, Ltd., a combination which is already an accomplished fact.

A second lodge of the Ship Masters Association was inaugurated at Port Arthur recently. The association is composed of members holding masters' certificates issued by either Canadian or U. S. authorities, and of associate members who are interested in the business. The officers for the current year are,—President, G. Stitt; Vice Presidents, A. Morrison and J. Friday; Treasurer, A. Fader; Secretary, O. Marin.

The annual meeting of Canada Steamship Lines, Ltd., was held at Montreal, Feb. 11. The business was purely formal to complete the details in connection with the organization, and to elect directors for the current year. The board, as given in a recent issue, were re-elected. Another meeting of shareholders will be called in about a month, when full reports of the earnings of the different constituent companies, for the past year, will be presented.

During the 1913 season the Public Works Department carried out considerable dredging at Port Stanley. At the extreme outer entrance to the channel, eastward and

southward of the outer end of the west breakwater, an area 530 by 300 ft. has been dredged to 22 ft. depth, and a small area immediately south of the east pier, and the channel between the east and west piers, have been dredged to a depth of 20 ft., while the inner harbor has been dredged to 19 ft.

In connection with the projected harbor works at Toronto, the Minister of Public Works, in answer to questions in the House of Commons recently, stated that the contractors, with the approximate unit prices of their respective contracts as awarded by order in council, Sept. 15, 1913, are as follows:—Canadian Stewart Co., \$5,371,372.17; Quinlan and Robertson, \$5,735,567.17; Laurin, Leitch and Co., \$5,998,459.28; Anglo-Canadian Contractors Ltd., \$7,895,121.66.

The Nicholas Transportation Co.'s s.s. I. W. Nicolas, which was wrecked near Alpena, Mich., during the storm on Nov. 9, and which was eventually salvaged and towed to Sarnia, has, after an examination by the underwriters, been condemned as a total wreck. The examination showed damage to over 190 plates, and the estimated cost for necessary repairs is \$90,000, which is additional to the \$50,000 spent in salvaging operations. Cargo to the value of \$70,000 has been saved from the wreck.

The U. S. Lake Survey reports the levels of the Great Lakes, in feet above tidewater, for January, as follows:—Superior 602.38; Michigan and Huron 580.09; Erie 572.06; Ontario 245.60. Compared with the average January levels for the past ten years, Superior was 0.34 ft. above; Michigan and Huron 0.03 ft. above; Erie 0.32 ft. above, and Ontario 0.01 ft. above. It was anticipated that during February, Superior would fall 0.2 ft.; Michigan and Huron would remain stationary; Erie would fall 0.1 ft., and Ontario rise 0.1 ft.

Sir Robert Perks, one of the contractors interested in the proposed Georgian Bay Canal to connect the Georgian Bay with the St. Lawrence at Montreal, read a paper before the Royal Society of Arts, London, Eng., Feb. 3. He is reported to have stated that the traffic would be at least 18,000,000 tons annually, yielding \$9,000,000 net, a return of 4½ per cent. on the capital, to which must be added £1 profit on every h.p. of electric current sold. He estimated the cost of construction to be within \$150,000,000.

The Lakes Disaster Fund, which was created with a view to assisting those who were dependent on the crews who lost their lives in the Great Lakes disaster of Nov. 9, 1913, has been closed and amounts appropriated to those to be benefited. The total of the fund was \$110,834, and the scheme provides that \$77,640 is to be divided amongst 45 persons in monthly instalments over five years; \$2,300 is to be distributed amongst 10 persons immediately, and 10 cases are held for further investigation.

The dredging of the channel through the Telegraph Narrows in the Bay of Quinte, which was recently undertaken by the Public Works Department, has been completed to a depth of 14 ft. below the zero of the Toronto Harbor Master's gauge. The dredged channel is 165 ft. wide, and extends from a quarter of a mile eastward of Telegraph Island, for 2,350 ft. The minimum depth is 13.7 ft. at the west end and on the south side of the channel. The channel is marked by three black spar buoys on the south edge and three red ones on the north edge.

Following on the comments made by witnesses and others, in the recent inquests on the bodies of some of the victims of the

Great Lakes disaster of Nov. 9, as to the lack of facilities at, and exposed condition of, Goderich harbor, representatives of the various councils and municipalities having connection with Goderich, waited upon the Dominion Government recently to urge that something be done to equip Goderich as a harbor of refuge for vessels during a storm, and that the necessary work be carried out as quickly as possible.

The Great Waterways Union of Canada, an organization having for its main object the improvement and full utilization of the Welland Canal route from the Great Lakes to the St. Lawrence, at a meeting in Berlin, Ont., Feb. 13, discussed the proposed international negotiations for the development of a deep waterway from the head of the lakes to the sea, and decided to send a deputation to the Government early in April, to express appreciation for the action taken in regard to the projected Welland Ship Canal, and to urge the necessity of a corresponding increase in the capacity of the St. Lawrence and other canals.

Manitoba, Saskatchewan and Alberta.

Press reports from Prince Albert, Sask., state that a proposition will be placed before the local Board of Trade for the building of an up to date passenger steamboat by an Edmonton firm, to ply between Edmonton and Prince Albert. The intention is to build the vessel in Prince Albert, and the Prince Albert Board of Trade is to be asked to purchase 200 round trip tickets at \$28.50 each, to help the venture.

British Columbia and Pacific Coast Marine.

The British steam yacht Santa Maria has been purchased by Vancouver parties, and was announced to sail from England in February for service on a local route.

Newport, which it is reported has been selected as the Pacific terminal of the Pacific Great Eastern Ry., is to have its name changed to Squamish.

The Minister of Public Works stated in the House of Commons, Feb. 16, that no site had been acquired for the projected dry dock to be built at Esquimalt.

R. H. Nicholson, of Esquimalt, is reported to have been appointed assistant fog alarm engineer, a new position, under the Marine Department, reporting to the chief engineer, W. H. Peters.

The Pacific Steamship Co.'s s.s. Tiverton commenced a regular service between Tacoma, Wash., and Vancouver, B.C., Feb. 14, calling at Seattle, Anacortes, Bellingham, Everett and Victoria.

The Dominion Marine Department is calling for tenders for the construction of a creosoted pile wharf at Victoria, on the Songhees Indian Reserve, where the new departmental depot is to be established.

The G.T. Pacific Coast Steamship Co.'s s.s. Prince George, which has been overhauled and repaired at Esquimalt, was replaced on her route Feb. 1, when the s.s. Prince Rupert was taken out of service for similar overhaul and repair.

The Dominion Government light and buoy steamship Estevan, which has been in continuous service since she arrived on the coast from Collingwood, Ont., last year, is to have a thorough overhauling, as also is the lighthouse tender Quadra.

The Union Steamship Co. is reported to have placed contracts in Great Britain, or Ireland, for the building of two additional steamships for its Pacific coast service, and it is said they will be ready for service

at the end of the year, or early in 1915.

A quantity of structural steel, lumber and machinery has been assembled at Prince Rupert, in preparation for the construction of the Grand Trunk Pacific Dry Dock Co.'s dry dock and ship repair plant there, which, it is stated, will commence immediately.

The Islands Transport and Trading Co., Ltd., has been incorporated under the British Columbia Companies Act, with \$100,000 capital and office at Victoria, to take over the business of the East Coast Transport Co., and to carry on a general trading and transportation business.

The C.P.R. s.s. Princess Mary, on which considerable overhauling and repair work is being done at Esquimalt, is also being lengthened 40 ft., thus making her 240 ft. long. She was built at Paisley, Scotland, in 1910. It is anticipated that she will be ready for service during March.

The master of a schooner, which recently arrived at Vancouver, from Japan, has been fined \$450 and costs for a breach of the immigration regulations, in allowing three of his Japanese crew to land and escape. The steward was fined \$150 for aiding and abetting. It was claimed in the evidence that the three men were not entered in the ship's articles.

The contract for the harbor improvement works at Victoria is reported to have been awarded to Hon. Angus McDonnell, who has been conducting a contracting business on the Pacific coast for some time. He carried out some railway contracts in British Columbia in conjunction with Grant Smith and Co., under the name of Grant Smith and McDonnell.

On instructions from the U. S. Attorney General, charges were laid at Juneau, Alaska, Feb. 5, against a number of steamship companies operating on the Pacific coast, including the C.P.R., and the White Pass and Yukon Route, for alleged violation of the anti-trust law in discriminating against the Humboldt Steamship Co., in connection with business at Skagway.

The first vessel intended for the ocean going trade, to be built on the Fraser or Pitt Rivers, was launched at Coquitlam, Jan. 31. She is a three masted schooner, with auxiliary engines burning oil, and is intended for trade between British Columbia ports and the West Indies by way of the Panama Canal. She is 215 ft. long by 40 ft. beam, and has been named City of Coquitlam.

The British Columbia Minister of Works promised a deputation recently that he would take up the question of providing a suitable ferry steamboat to take the place of the existing one, at the crossing of the Fraser River between Slough and Ladner. The present vessel is inadequate for the service and a larger one with capacity for about 20 teams will probably be built in the near future.

The British Columbia Marine Railway Co.'s plant at Esquimalt has been acquired by A. F. Yarrow and Son, of Scotland, and will, it is announced, be operated under the name of Yarrow Limited. The plant comprises 8 acres of land, marine railway, docks, shipbuilding and repairing plant, etc., and it is stated that considerable extensions are being planned for the near future, in view of the possibility of the construction of naval vessels under the Dominion Government.

The C.P.R. s.s. Princess Sophia, which ran ashore in Blenkinsop Bay, near Port Harvey, at the end of January, on her way down from Alaska ports, is being repaired at Victoria. The work covers the removing and replacing of from 15 to 18 plates on the starboard bow, and the straightening

of a number of frames. It is expected that she will be ready to resume her service early in March. In the meantime her place has been taken by the s.s. Princess Maquinna.

The Vancouver Shipmasters' Association has called the Marine Department's attention to the fact that so called fishing vessels are being used for other than fishing work, such as for towing purposes, and for carrying passengers and cargo. This complaint applies to Vancouver and Prince Rupert, and is attributed to lack of inspectors on the coast. It was pointed out that there is only one inspector of hulls for the province, which is not sufficient for the proper carrying out of the work.

The Union Steamship Co.'s s.s. Vadso struck a rock near Stewart, during a snow storm, Feb. 3, and became a total loss. The vessel was built at Gothenburg, Sweden, in 1881, and was acquired by the Union Steamship Co., when it took over the Boscowitz Steamship Co., about two years ago. She was screw driven by engine of 110 n.h.p. Her dimensions were—length 191.2 ft., breadth 28.7 ft., depth 21.7 ft.; tonnage, 908 gross, 698 register. It is stated that the company has practically decided to replace the Vadso with a larger and more up to date vessel.

The names of the following navigation companies registered in British Columbia have been struck off the companies register:—Burrard Steamship Co., Comet Transportation Co., Horsey Trading and Transportation Co., Malahat Tug Co., Michigan Towing Co., Progressive Steamboat Co., Sechelt Steamship Co., Sidney and Nanaimo Transportation Co., Terminal Steamship Co., Torpedo Freighting and Tug Co., Vancouver Steamship Co., Victoria and Vancouver Stevedoring and Contracting Co., Victoria Dock Co., Canadian Arctic Whaling Co., Fort George Timber and Transportation Co., Imperial Fisheries, Kyax Navigation Co., Pacific Towing and Contracting Co., Vancouver Quesnell Navigation Co.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

24. Jan. 26. Quebec, River St. Lawrence, Lake St. Francis, change in position of gas buoys.
25. Jan. 26. Quebec, River St. Lawrence, Lake St. Francis, McKie Point, light discontinued.
26. Jan. 26. Ontario, Lake Erie, Port Stanley, dredging.
27. Jan. 26. Ontario, Lake Erie, Rondeau, dredging.
28. Jan. 26. Ontario, Lake Huron, Goderich, intended change in character of main light.
29. Jan. 28. Prince Edward Island, northwest coast, North Point, change in character of light.
30. Jan. 28. Quebec, Chaleur Bay, Caspédia Bay, New Richmond, Duthie Point, light discontinued.
31. Jan. 28. Quebec, River St. Lawrence below Quebec, Longue Pointe, conical buoy replaced by gas buoy.
32. Jan. 28. England, south coast, Plymouth Sound, sunken obstruction to be placed.
33. Jan. 29. New Brunswick, Miramichi River, southwest branch, Clousten Bar range lights established.
34. Jan. 29. Nova Scotia, Margaretville, Wedgeport, Barrington, Pearl Island, Country Island, names.
35. Jan. 29. Nova Scotia, d'Escousse, Port Morien, Port Hood Island, Havre, Bouche, names.
36. Jan. 31. Ontario, Bay of Quinte,

Telegraph Narrows, dredging, buoyage.

37. Jan. 31. United States of America, Lake Ontario, east end, Charity Shoal buoy to be moved and changed.

38. Jan. 31. Nova Scotia, Cape Breton Island, Little Bras d'Or, northern entrance, dredging.

39. Feb. 3. Nova Scotia, Bay of Fundy, entrance to Digby Gut, Point Prim, intended change in character of light.

40. Feb. 3. Nova Scotia, Bay of Fundy, Ile Haute, intended change in character of light.

41. Feb. 3. Nova Scotia, south coast, West Ironbound Island, intended change in character of light.

42. Feb. 3. Nova Scotia, Cape Breton Island, south coast, Guion Island, intended change in character of light.

43. Feb. 5. British Columbia, Vancouver Island, southeast coast, Esquimalt harbor entrance, Scroggs rocks, buoy established.

44. Feb. 5. British Columbia, Vancouver Island, southeast coast, Victoria harbor, westward of Shoal Point, buoy to be moved as work of widening harbor progresses.

45. Feb. 5. British Columbia, Strait of Georgia, Ballenas Islands, intended change in character of light.

46. Feb. 5. British Columbia, Malaspina Strait, Thormanby Islands, Tattenham Ledge, change in character of buoy.

47. Feb. 5. British Columbia, Chatham Sound, Port Simpson, off Alexander Point, buoy established.

48. Feb. 9. British Columbia, Queen Charlotte Islands, St. James Island, Cape St. James, lighthouse established.

49. Feb. 10. New Brunswick, south coast, Bay of Fundy, Dipper harbor, McLennan reef, buoy established.

50. Feb. 10. New Brunswick, south coast, Bay of Fundy, Chignecto channel, off Matthews Head, whistling buoy to be established.

51. Feb. 10. New Brunswick, east coast, Northumberland Strait, Richibucto Head, intended change in character of light.

52. Feb. 10. Quebec, River St. Lawrence, Channel patch, position of gas and bell buoy, correction.

53. Feb. 12. New Brunswick, south coast, Bay of Fundy, Barn Island ledge, spindle erected.

54. Feb. 12. New Brunswick, south coast, Bay of Fundy, Letite Passage, east of Parker Island, Splitting Knife ledge, spindle erected.

55. Feb. 12. Quebec, River St. Lawrence, Pointe des Monts, intended change in character of light.

56. Quebec, River St. Lawrence, Three Rivers, dredging.

57. Feb. 14. Nova Scotia, off Blonde Rock, and off Egg Island, submarine bell buoys to be established, off Cape Fourchu, northward of Chebucto Head, and Harbor Shoal, Louisburg harbor, electrically operated submarine fog bells to be replaced by submarine bell buoys.

58. Feb. 14. Quebec, River St. Lawrence, off Little Metis, submarine bell buoy to be established.

59. Feb. 18. Manitoba, Lake Winnipeg, Red River mouth, new channel, range lights established, old range lights discontinued.

60. Feb. 19. Ontario, Georgian Bay, Wau-
baushene, buoys, Matchedash Bay, Wau-
baushene to Fesserton, changes in buoy-
age.

61. Feb. 19. Ontario, Lake Superior, Cloud Bay, dredging, buoys.

62. Feb. 19. British Columbia, off Cape Beale, Gossip shoals and Spanish bank, submarine bell buoys to be established.

63. Feb. 19. British Columbia, Vancouver Island, southeast coast, Victoria harbor entrance, Ogden Point, breakwater under construction, change in position of lights.

Recommendations as to Investigations into Casualties on the Great Lakes.

The following letter was sent to the Minister of Marine recently by L. Henderson, President of the Dominion Marine Association and Canadian Lake Protective Association, and A. E. Mathews and H. W. Richardson, First and Second Vice Presidents respectively, of the Dominion Marine Association:

The executive committees of the Dominion Marine Association and the Canadian Lake Protective Association, at a joint meeting in Toronto on Dec. 20, 1913, gave consideration to the Department's request for an expression of opinion regarding the finding of the Wreck Commissioner in the recent Turret Chief investigation, and at the same time revived a discussion which resulted some time ago in a recommendation for the appointment of a wreck commissioner with exclusive jurisdiction on the Great Lakes and other inland waters.

Dealing first with the larger question the meeting unanimously confirmed the opinion expressed in the previous recommendation to the effect that it is very desirable that the commissioner charged with the duty of investigating inland disasters should have from actual experience an intimate knowledge of the conditions on the Great Lakes, which differ so materially from those affecting ocean navigation, and as the office of commissioner has now been filled by a gentleman whose experience and training relate exclusively to ocean navigation, the committees mentioned unanimously resolved that the interests of all parties demand in all inland investigations at least the appointment of one or more assessors qualified by years of training to deal with questions quite beyond the experience of the court.

On behalf of the two associations named the undersigned accordingly ask that a capable master mariner of standing and having extensive knowledge of lake conditions and practice should sit as assessor in all investigations relating to navigation of the waters with which these associations are concerned. The committees recommend the appointment of Capt. J. B. Foote, of Toronto, as an assessor who should prove thoroughly qualified and acceptable to all parties.

The committees named considered Capt. Batten (who represented the inland point of view in the Turret Chief investigation) in all respects a most estimable man and skilled within the sphere of his activity, but they respectfully point out that his duties have for a long time confined his attention to the navigation of passenger steamers and for many years exclusively in the confined waters of the St. Lawrence between Prescott and Montreal.

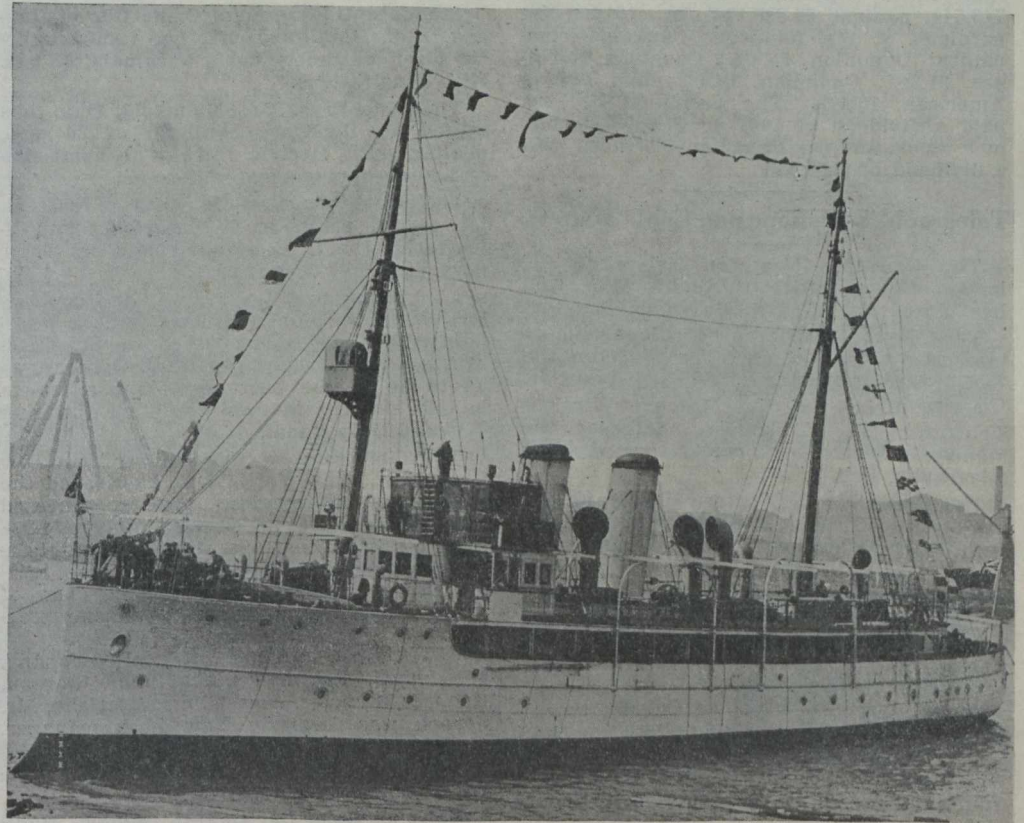
Dealing particularly with the finding of the court in the Turret Chief investigation, the committees desired especially to point out that there does not appear to have been any evidence in support of the conclusion that the failure of the boat to head up into the sea was due to her being short handed in the stokehold. The uncontradicted evidence showed a good head of steam and that the oilers filled the place of the missing firemen satisfactorily. Attention is also called to the fact that one reason oilers are carried is to provide fully for just such contingencies as arose in this case. A vessel is frequently short of firemen, through no fault of the master, and the conditions and exigencies of the trade on the Great Lakes are such that any criticisms of a master for leaving port short handed in the stokehold do not appeal to the committee mentioned as quite justified or fair.

The committees are of the opinion that the storm in question in this case was of a most exceptional character and that as so many vessels were completely lost in it, and the master of the Turret Chief left port with no warning of its coming, a lenient view might well be taken of his conduct in circumstances which must have been extremely trying.

As to the specific recommendations at the conclusion of the finding, the committees concur that modern sounding devices are desirable, but do not approve of the suggestion for "an officially fixed light load line," for various reasons, chief among which are the following, namely, that it is better and safer to trust the discretion of the master of a lake freighter to take water ballast at the proper time, that in still weather the requirement proposed might unnecessarily hamper the movements and speed of the ship, that the prevailing custom of taking on ballast as required after leaving port or discharging ballast on

regards hull and machinery, the accommodation, etc., as well as the propelling equipment, being practically complete. She was in fact almost ready for trial when floated. The keel was laid just early in Jan., 1913, and the ship has been built throughout under the inspection of F. L. Warren, M.I. N.A., M.I. Mech. E., of London.

The principal dimensions are as follows: Length overall, 200 ft.; length between perpendiculars, 185 ft.; breadth moulded, 32 ft.; depth moulded, 16 ft. The draught is limited to 10½ ft. when carrying a load of 175 tons. A ram stem and cruiser stern add to the appearance of the boat, which is a fine looking craft. A double bottom is fitted under the engines and the hold forward, and the hull is stiffened to resist ice, the propeller shafting being also housed in the hull for the whole of its length to prevent damage by ice. Watertight bulkheads divide the various compartments, and the bunkers are watertight also. Sliding watertight doors of the quick closing type are



Dominion Government Customs Cruiser Margaret.

approaching port—while carried out with good judgment—facilitates the progress of the vessel a very great deal, and that masters express an opinion against having water ballast in their ships unnecessarily or in still water. It is in fact claimed to be dangerous to retain water ballast in the hold in still waters, on account of its shifting nature. For these reasons the committees ask that this latter recommendation of the Wreck Commissioner be not adopted.

Launching of the Canadian Customs Cruiser Margaret.

The Canadian Customs cruiser Margaret, for patrol service on the Atlantic coast, was launched at Southampton, Eng., Jan. 14, the naming ceremony being performed by a granddaughter of the late Lord Strathcona, Mrs. J. B. Kitson, wife of Lieut. J. B. Kitson, R.N. The vessel took the water in an unusually advanced condition, both as

fitted to be worked from the upper deck. The bunkers have a capacity of 200 tons, giving a radius of action of nearly 2,000 miles at full speed, and about 4,000 miles at economical speed. The vessel is rigged as a fore and aft schooner, and has an outfit of boats consisting of a 30 ft. motor launch, a 26 ft. lifeboat, a 22 ft. captain's cutter, and a 16 ft. dinghy. For armament she will carry mounted on the forecandle deck two 6 in. quick firing guns of the latest improved type, with telescopic sights. She is fitted in a most up to date manner, carries a wireless telegraphy outfit, is electrically lighted, and has a 24 in. projector searchlight of 25,000 c.p. fitted in the crow's nest on the foremast. A refrigerating plant is installed, and a complete cold store below contains separate rooms for meat, vegetables and other provisions. She is heated by steam throughout.

The propelling machinery consists of two sets of vertical reciprocating engines running at 180 revolutions a minute, and having a combined i.h.p. of 2,000. The i.p.

cylinders exhaust each into a separate condenser, to which the circulating water is delivered by independent centrifugal pumps. A 15 ton evaporator is installed. Steam is supplied by two boilers of the watertube type. She has been built by John I. Thornycroft & Co., Ltd.

Express Companies' Statistics for 1913.

The annual summary of the business of the nine express companies operating in the Dominion, which has been laid before Parliament, shows that the operating mileage for 1913 was 32,557, compared with 30,445 in 1912, and a total capitalization of distinctly Canadian companies of \$4,805,000.

Gross receipts from operation were \$12,827,478, compared with \$10,994,418 in 1912. Express privileges were returned at \$5,708,408. This was the sum paid by express companies to railways and other carriers for the right to carry on business over their lines. Operating expenses were \$5,743,544, against \$4,880,120 in 1912. Net earnings of the following Canadian companies: Dominion, 38.8%; Canadian Northern, 21.3%; Canadian, 18.4%; and British American, 10.4%. The Dominion Ex. Co. paid a dividend of 10% on \$7,000,000 common stock, and the Canadian Northern paid a dividend of \$954,356.

Telegraph, Telephone and Cable Matters.

The Canadian Northern Telegraph Co. has opened an office at Neelin, Man., and has closed its office at Polwarth, Sask.

The Marconi Telegraph Co. has paid an interim dividend of 10% for 1913, on the 750,000 ordinary shares.

A. E. Reoch, of the Marconi Wireless Telegraph Co. of Canada, addressed the Montreal Electrical Society on wireless telegraphy, Feb. 2.

The Great North Western Telegraph Co. has opened offices at Fonthill and Lyn, Ont., and Waterloo station, Que., and has closed its office at Phillipsburg, Que.

The Canadian Northern Telegraph Co. has opened an office at Hafford, Sask., and has closed its offices at Berton, Ladysmith, Neelin, White Plains, Man., and Chandler and Fairlight, Sask.

The reports that W. Marconi's experiments in wireless telephony had reached such a stage that a full equipment was being installed on the Cunard Line's s.s. Aquitania, are officially stated to be incorrect.

The Great North Western Telegraph Co. has recently adopted the use of automatic machines in place of Morse operators for movement of business on the heavy trunk lines. On Jan. 14, a new type of Morkrum tape automatic printer was installed between Montreal and Toronto and has since been handling the volume of business between those points. The machine is operated by means of paper tape, which is prepared by girls working on an electrical perforator, the keyboard of which is similar to that of a typewriter. Instead, however, of a written message, the perforator delivers a strip of paper in which has been punched a number of holes. The tape is fed into the distributor at the sending office and the combination of holes causes levers to be operated, which in turn cause impulses to go over the line. These operate a special typewriter at the receiving point which writes out the message automatically. The machine is worked duplexed and is capable of handling as many as 120 messages in each direction per hour, or over 240 messages per hour on one wire. Better service in every respect is expected from the

new system and it is the intention to extend its use to several other circuits in the near future.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers distinctly to understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

American Locomotive Co., New York, has issued bulletin 1,017 on locomotive ratios, by F. J. Cole, Chief Consulting Engineer.

The Brown Hoisting Machinery Co., Cleveland, Ohio, has issued pamphlet C. 1914, on Brownhoist safety crabs and winches.

Standard Underground Cable Co. of Canada, Ltd., Hamilton, Ont., has issued bulletin 710 C on indoor cable terminals, 32 pgs. with illustrations.

The Ohio Brass Co., Mansfield, Ohio, has issued an illustrated bulletin of 26 pgs., dealing with electric railway transmission and mine haulage materials.

The Hart-Otis Car Co., Ltd., Montreal, has issued pamphlet 17 describing and illustrating the H. O. ratchet hand brake for passenger and freight cars.

E. H. Hopkins & Co., railway and contractors' supplies, Montreal, have built a warehouse and opened an office in St. Catharines, Ont., in charge of C. V. Osborne, so as to be in the best possible position to handle the contractors' trade on the new Welland Ship Canal.

The Locomotive Superheater Co., 30 Church St., New York, N.Y., has issued the following:—"Pyrometers for superheated steam locomotives" a circular, and "Instructions for installing, operating and maintaining pyrometers for superheater locomotives," also a pamphlet, "The use of highly superheated steam in marine practice."

The Orenstein-Arthur Koppel Company, of Koppel, Pa., has made Erich Joseph, General Manager, succeeding A. Reiche. Mr. Joseph was formerly New York manager. Mr. Reiche has severed his connection with the company to take up work with a German locomotive company.

National Steel Car Co.—G. Condon, Montreal representative, National Steel Car Co., Ltd., Hamilton, Ont., returned recently from England, where he arranged for the opening of offices for the company at 2 Norfolk St., Strand, London, with a view to handling export trade.

The Titanium Alloy Manufacturing Co., Niagara Falls, N. Y., has issued Rail Reports, Bulletin 4, Open Hearth, 32 pgs., 8½ by 11 ins., illustrated, among the most important features of which are tables summarizing the chemical and physical results of standard open hearth A. rails and Titanium treated open hearth A. rails.

H. J. Fuller, President, Canadian Fairbanks-Morse Co., Ltd., has been elected Vice President of Fairbanks-Morse Co., which has its headquarters in Chicago, and is now located in New York in charge of the eastern territory. He retains the Presidency of Canadian Fairbanks-Morse Co. and will be in Montreal frequently in connection with its business.

The Chicago Car Heating Company has opened a branch office and factory at 61 Dalhousie St., Montreal, to take care of its rapidly increasing business in the Do-

minion. A. D. Bruce, formerly its Purchasing Agent at Chicago, who is in charge, is a native of Guelph, Ont., and has been connected with the company for the past five years.

A. O. Norton Limited, has been incorporated under the Dominion Companies Act, with an authorized capital of \$250,000 and office at Coaticook, Que., to manufacture jacks. It will take over the Canadian business heretofore carried on under the name of A. O. Norton Incorporated. The officers are the same as in the old company, viz.—A. O. Norton, President; Harry A. Norton, Vice President and Treasurer; J. O. St. Pierre, Manager. There will be no change in the company's personnel or policy. Machinery to replace that destroyed by fire recently is being installed in the new plant and shipments of jacks are being made promptly.

Transportation Conventions in 1914.

March 17-20.—American Railway Engineering Association, Chicago, Ill.

April 21.—American Association of Freight Agents, Houston, Tex.

May —.—American Railway Claim Agents, St. Paul, Minn.

May 18-22.—International Railway Fuel Association, Chicago, Ill.

May 19.—American Association of Demurrage Officers, St. Louis, Mo.

May 20-22.—Freight Claim Association, Galveston, Texas.

May 20-23.—Association of Railway Telegraph Superintendents, New Orleans, La.

May 21-22.—American Association of Railroad Superintendents, St. Louis, Mo.

May 26-29.—Master Boiler Makers' Association, Philadelphia, Pa.

May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.

June 10-12.—Master Car Builders' Association, Atlantic City, N.J.

June 15-17.—American Railway Master Mechanics' Association, Atlantic City, N.J.

June 16.—Train Despatchers' Association of America, Jacksonville, Fla.

June 24.—Association of American Railway Accounting Officers, Minneapolis, Minn.

July.—International Railway General Foremen's Association, Chicago, Ill.

Sept. 8-10.—Roadmasters and Maintenance of Way Association, Chicago, Ill.

Oct. 20-22.—American Railway Bridge and Building Association, Los Angeles, Cal.

Nov. 17-19.—Maintenance of Way and Master Painters' Association of the United States and Canada, Detroit, Mich.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau, J. Reilly (acting), 401 St. Nicholas Building, Montreal.

Canadian Electric Railway Association, Acton Burrows, 70 Bond Street, Toronto.

Canadian Freight Association (Eastern Lines), G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

Canadian Railway Club, J. Powell, St. Lambert, Que. Meetings at Montreal, 2nd Tuesday each month, 8.30 p.m., except June, July and August.

Canadian Society of Civil Engineers, C. H. McLeod, 176 Mansfield St., Montreal.

Canadian Ticket Agents' Association, E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

Dominion Marine Association, Counsel, F. King, Kingston, Ont.

Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal, R. W. H. Smith, 9 Beaver Hall Square, Montreal.

Engineers' Club of Toronto, R. B. Wolsey, 94 King St. West, Toronto.

Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.

International Water Lines Passenger Association, M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.

Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S.

Quebec Transportation Club, J. S. Blanchet, Quebec.

Ship Masters' Association of Canada, Capt. E. Wells, 45 John St., Halifax, N.S.

Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.