



Published by Authority of Hon. W. D. Euler, M.P., Minister of Trade and Commerce

DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
GENERAL STATISTICS BRANCH  
OTTAWA - CANADA.

Issued March 18, 1939.

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BUILDING PERMITS REPORTS FOR FEBRUARY, 1939, WITH COMPARATIVE STATEMENTS  
FOR JANUARY, 1939, AND FEBRUARY, 1938.

The value of the building represented by the permits issued by 58 cities stood at \$1,894,161 in February, 1939; this was an increase of \$187,531 or 11.1 p.c. over the total of \$1,706,630 for the preceding month, but a decrease of \$470,241 or 19.9 p.c. in comparison with February of last year, when the authorized building in these cities was estimated to cost \$2,364,402.

Some 50 cities furnished detailed statistics, showing that they had granted more than 200 permits for dwellings valued at over \$700,000, and more than 800 permits for other buildings, estimated to cost in excess of \$850,000. In January, authority was given for the erection of some 160 dwellings and 900 other buildings, whose value was estimated at approximately \$600,000 and \$1,000,000, respectively.

New Brunswick, Quebec, Ontario, Manitoba and British Columbia reported increases in the value of the building represented by the permits issued as compared with January, 1939; the greatest gain, of \$182,140, or 78.2 p.c., took place in Quebec. In Nova Scotia, Saskatchewan and Alberta there were declines in this comparison, that of \$47,928 or 48.1 p.c. in Nova Scotia being largest; Prince Edward Island reported no building authorizations during February.

1938,

As compared with February, New Brunswick, Quebec and Saskatchewan recorded moderate increases. The remaining provinces showed a falling-off in the value of the building authorized; the most noteworthy decrease in this comparison was that of \$398,652 or 36.5 p.c. in Ontario.

Of the four largest cities, Toronto and Vancouver reported increases in February in the estimated cost of the building work for which permits were taken out as compared with either January, 1939, or February, 1938, while in Montreal and Winnipeg there were gains over the preceding month, but losses as compared with the same month of last year.

Of the other centres, Sydney, Moncton, Quebec, Shawinigan Falls, Sherbrooke, Three Rivers, Brantford, Chatham, Fort William, Niagara Falls, Stratford, St. Thomas, Welland, Riverside, Moose Jaw and Calgary reported improvement over January, 1939, and also as compared with February, 1938.

CUMULATIVE RECORD FOR FIRST TWO MONTHS, 1939.

The following table gives the value of the building authorized by 58 cities during February, and in the first two months of each year since 1920, as well as index numbers for the latter, based upon the total for 1926 as 100. The average index numbers of wholesale prices of building materials in January and February of the same years are also given (1926=100).

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DATE: 10/10/68

TO: DR. J. H. GOLDSTEIN  
FROM: DR. R. M. WAYMIRE

SUBJECT: POLYMERIZATION OF STYRENE

The following data were obtained from the polymerization of styrene in benzene at 50°C. The reaction was initiated by benzoyl peroxide. The concentration of styrene was 0.1 M and the concentration of benzoyl peroxide was 0.001 M. The reaction was stopped at various times and the amount of polymer formed was determined by precipitation with methanol.

The results are shown in the table below. The rate of polymerization increases with time and the amount of polymer formed increases with time. The rate of polymerization is highest at the beginning of the reaction and decreases as the reaction proceeds.

TABLE I  
POLYMERIZATION OF STYRENE IN BENZENE AT 50°C

Time (min)	[Styrene] (M)	[Benzoyl Peroxide] (M)	[Polymer] (M)
0	0.100	0.001	0.000
10	0.095	0.001	0.005
20	0.090	0.001	0.010
30	0.085	0.001	0.015
40	0.080	0.001	0.020
50	0.075	0.001	0.025
60	0.070	0.001	0.030
70	0.065	0.001	0.035
80	0.060	0.001	0.040
90	0.055	0.001	0.045
100	0.050	0.001	0.050

The rate of polymerization is highest at the beginning of the reaction and decreases as the reaction proceeds. This is expected for a reaction that is first order in the initiator and second order in the monomer.

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DISCUSSION

The results show that the rate of polymerization is highest at the beginning of the reaction and decreases as the reaction proceeds. This is expected for a reaction that is first order in the initiator and second order in the monomer. The amount of polymer formed increases with time.

Year	Value of permits issued in February	Value of permits issued in first two months	Indexes of value of permits issued in first two months, (1926=100)	Average indexes of wholesale prices of building materials in first two months, (1926=100)
1939	\$1,894,161	\$3,600,791	30.4	87.3
1938	2,364,402	4,323,583	36.5	91.5
1937	2,138,886	3,860,753	32.6	90.1
1936	1,921,176	3,223,934	27.2	83.9
1935	3,601,637	4,484,515	37.8	81.8
1934	894,102	1,601,914	13.5	82.2
1933	925,894	2,111,856	17.8	75.2
1932	2,845,271	6,056,283	51.1	79.4
1931	6,395,659	14,797,115	124.8	83.8
1930	8,919,078	16,136,475	136.1	96.8
1929	10,465,330	18,882,210	159.2	99.6
1928	10,318,338	18,034,925	152.4	96.4
1927	7,638,176	13,314,713	112.3	97.1
1926	7,139,549	11,859,083	100.0	102.4
1925	5,902,118	11,349,388	95.7	103.2
1924	4,093,800	8,554,379	72.1	112.3
1923	5,679,671	9,819,169	82.8	110.1
1922	4,738,105	8,064,642	68.0	108.3
1921	3,683,359	6,278,923	52.9	140.5
1920	6,156,287	10,173,311	85.8	137.5

The aggregate for the first two months of 1939, was 16.7 p.c. lower than in 1938, and was also lower than in 1937 or 1935; on the other hand, it was higher than in the first two months of 1936, 1934 or 1933. The index numbers of wholesale prices of building materials have recently been lower than in the same period of the preceding year, and in January and February were also lower than in the first two months of 1937, although they were higher than in preceding years since 1930.

The table on page 3 gives the value of the building permits issued by 58 cities in January and February, 1939, and February, 1938. The 35 cities for which statistics are available since 1910 are marked thus "x".

1. 1911  
 2. 1912  
 3. 1913  
 4. 1914  
 5. 1915  
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 16. 1926  
 17. 1927  
 18. 1928  
 19. 1929  
 20. 1930

Year	Value	Description	Value
1911	1.00	...	...
1912	1.00	...	...
1913	1.00	...	...
1914	1.00	...	...
1915	1.00	...	...
1916	1.00	...	...
1917	1.00	...	...
1918	1.00	...	...
1919	1.00	...	...
1920	1.00	...	...
1921	1.00	...	...
1922	1.00	...	...
1923	1.00	...	...
1924	1.00	...	...
1925	1.00	...	...
1926	1.00	...	...
1927	1.00	...	...
1928	1.00	...	...
1929	1.00	...	...
1930	1.00	...	...

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Estimated Value of Construction Work as Indicated by Building Permits Issued by 58 Cities.

Cities	February, 1939	January, 1939	February, 1938
	\$	\$	\$
P.E.I.- Charlottetown	Nil	4,500	3,000
Nova Scotia	51,785	99,713	67,635
x Halifax	43,935	90,995	66,110
New Glasgow	1,350	5,500	225
x Sydney	6,500	3,218	1,300
New Brunswick	24,095	5,065	20,951
Fredericton	Nil	Nil	900
x Moncton	6,450	-	Nil
x Saint John	17,645	5,065	20,051
Quebec	415,015	232,875	404,620
x Montreal - x Maisonneuve	279,180	155,915	295,355
x Quebec	60,300	14,645	43,630
Shawinigan Falls	8,025	3,500	5,200
x Sherbrooke	43,000	36,100	25,000
x Three Rivers	17,975	7,375	13,935
x Westmount	6,535	15,340	21,500
Ontario	692,804	643,760	1,091,456
Belleville	675	2,900	5,900
x Brantford	6,325	1,800	2,200
Chatham	17,800	9,700	8,900
x Fort William	22,275	5,237	3,000
Galt	3,240	18,025	650
x Guelph	2,895	11,255	6,370
x Hamilton	40,050	31,850	505,543
x Kingston	2,300	5,560	10,450
x Kitchener	8,025	5,150	10,380
x London	29,505	35,760	7,865
Niagara Falls	14,350	410	4,382
Oshawa	1,450	25,210	Nil
x Ottawa	40,620	83,990	109,400
Qwen Sound	19,650	22,000	9,190
x Peterborough	4,875	6,110	6,600
x Port Arthur	410	2,610	3,740
x Stratford	4,120	775	100
x St. Catharines	7,550	42,950	4,250
x St. Thomas	12,621	Nil	4,350
Sarnia	2,450	14,750	9,115
Sault Ste. Marie	3,300	2,600	5,250
x Toronto	350,639	213,843	289,940
York & East York Townships	44,800	51,750	45,300
Welland	8,907	Nil	1,250
x Windsor	18,072	45,902	32,731
Riverside	24,800	500	900
Woodstock	1,100	3,123	3,700
Manitoba	42,225	33,512	62,675
x Brandon	Nil	660	Nil
St. Boniface	3,275	5,402	1,175
x Winnipeg	38,950	27,450	61,500
Saskatchewan	29,925	35,698	7,245
x Moose Jaw	22,000	Nil	45
x Regina	6,925	34,048	5,450
x Saskatoon	1,000	1,650	1,750
Alberta	37,197	81,801	52,036
x Calgary	16,087	12,776	14,875
x Edmonton	13,250	47,525	24,660
Lethbridge	7,860	21,500	12,501
Medicine Hat	Nil	Nil	Nil
British Columbia	601,115	569,706	654,784
Kamloops	2,500	855	4,460
Nanaimo	750	3,800	11,073
x New Westminster	65,750	83,890	34,950
Prince Rupert	1,575	1,300	4,075
x Vancouver	455,610	421,235	434,290
North Vancouver	9,460	12,575	8,225
x Victoria	65,470	46,051	157,711
Total - 58 Cities	1,894,161	1,706,630	2,364,402
Total -x 35 Cities	1,716,844	1,496,730	2,219,031

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