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SUMMARY OF CANAL TRAFFIC

MAY, 1940

Sault Ste. Marie Canals - Canadian and United States Locks: Wheat through the locks increased from 32,494,256 bushels in May 1939 to 55,205,889 bushels, the heaviest May movement on record. Iron ore increased from 3,644,754 tons to 7,326,571 tons and upbound soft coal from 173,615 tons to 2,292,349 tons, raising the total traffic to 9,297,320 tons compared with 5,456,242 tons last year.

Welland Ship Canal: Although the movement of grains, except corn, was lighter than in 1939 large increases in coal, petroleum, gasoline, iron and corn more than offset the decreases and the total increased from 1,323,987 tons to 2,051,029 tons.

St. Lawrence Canals: With heavy declines in grain cargoes, woodpulp, pulp and paper, hard coal, and many other commodities, and the only large increase being 182,845 tons of soft coal, the total traffic dropped from 1,189,263 tons in May, 1939 to 1,057,379 tons. The decrease in wheat was 93,781 tons or 3,126,033 bushels and in barley 40,306 tons.

Sault Ste. Marie Canals

	1940		1939		
	Canadian Lock	Canadian & U.S. Locks	Canadian Lock	Canadian & U.S. Locks	
<u>EAST BOUND</u>					
Pulpwood	Cords	4,024	11,526	8,805	23,097
Lumber	M Ft. B.M.	...	1,637	...	1,243
Flour	Barrels	608,520	1,091,600	653,160	1,028,360
Wheat	Bushels	3,681,400	55,205,889	3,560,567	32,494,256
Other Grain	"	979,645	14,270,042	2,082,988	17,109,016
Copper Ore	Short Tons	...	15,433	140	6,849
Iron Ore	" "	...	7,326,571	...	3,644,754
Pig Iron	" "	7,139	51,617	5,075	33,909
Structural Steel	" "	1,113	9,442	2,107	7,731
Stone	" "	1,590	1,590	700	1,550
Other Freight	" "	28,768	51,200	24,577	46,523
Total	" "	239,131	9,585,509	266,226	5,256,321
Passengers	Number	86	108	202	256

WEST BOUND

Coal, soft	Short Tons	8,101	2,292,349	1,952	173,615
Coal, hard	" "	...	14,836	...	30,365
Coke	" "	...	...	...	...
Iron Ore	" "	...	...	...	1,904
Structural Steel	" "	4,280	13,714	4,065	15,225
Salt	" "	3,305	6,757	3,935	10,237
Oil & Gasolene	" "	11,479	168,036	20,089	175,781
Stone	" "	...	73,684	3,136	42,022
Other Freight	" "	42,274	84,941	43,450	84,076
Total	" "	69,439	2,664,754	77,114	542,673
Passengers	Number	80	90	120	286
Total Freight	Short Tons	308,570	12,250,263	343,340	5,798,994
Total Passengers	Number	166	198	322	542
Vessels	Number	396	2,592	385	1,698
Registered Tonnage	Net	521,325	9,297,320	504,255	5,456,242

Price per year fifty cents.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

EXPERIMENTAL PROCEDURE

1. INTRODUCTION

The purpose of this experiment is to determine the rate of reaction between hydrogen peroxide and potassium iodide in the presence of a catalyst. The reaction is exothermic and produces iodine and water.

The reaction is as follows: $2H_2O_2 \rightarrow 2H_2O + O_2$. The rate of reaction is measured by the time taken for a fixed amount of iodine to be produced.

The rate of reaction is affected by the concentration of the reactants and the presence of a catalyst. In this experiment, the concentration of hydrogen peroxide is varied while the concentration of potassium iodide is kept constant.

2. APPARATUS AND REAGENTS

The apparatus used in this experiment consists of a reaction flask, a stop watch, and a burette. The reagents used are hydrogen peroxide, potassium iodide, and sulfuric acid.

Run	[H ₂ O ₂] (M)	[KI] (M)	[H ⁺] (M)	Time (s)
1	0.01	0.01	0.01	120
2	0.02	0.01	0.01	60
3	0.03	0.01	0.01	40
4	0.04	0.01	0.01	30
5	0.05	0.01	0.01	24

Run	Rate (1/time)
1	0.0083
2	0.0167
3	0.0250
4	0.0333
5	0.0417

The results show that the rate of reaction increases as the concentration of hydrogen peroxide increases. This is consistent with the law of mass action.

The order of reaction with respect to hydrogen peroxide is 1. The order of reaction with respect to potassium iodide is 0.

Welland Ship Canal:		May	
		1940	1939
Vessels	No.	1,063	686
Registered Tonnage	Tons	1,858,814	1,078,556
Passengers	No.	...	...
Barley	Tons	44,923	68,042
Corn	"	54,443	18,590
Oats	"	11,530	33,153
Rye	"	...	784
Wheat	"	452,516	502,153
Flour	"	16,207	38,529
Gasolene	"	102,167	68,683
Petroleum & Other Oils	"	212,955	61,447
Sugar	"	21,651	19,285
Pulpwood	"	9,186	15,780
Autos and Parts	"	10,714	12,045
Paper	"	35,516	35,284
Wood Pulp	"	...	38,430
Soft Coal	"	813,087	157,502
Coke	"	28,439	18,842
Iron Ore	"	48,408	53,369
Sand	"	26,218	9,209
All other freight	"	163,069	172,860
Total Freight	"	2,051,029	1,323,987

St. Lawrence Canals:

Vessels	No.	1,234	1,325
Registered Tonnage	Tons	888,563	934,266
Passengers	No.	37	...
Barley	Tons	14,070	54,376
Corn	"	21,448	20,174
Oats	"	2,749	13,777
Rye	"	...	784
Wheat	"	322,755	416,536
Flour	"	9,771	30,301
Gasolene	"	50,896	73,016
Petroleum & Other Oils	"	67,501	54,798
Sugar	"	16,075	20,724
Pulpwood	"	15,180	27,386
Autos and Parts	"	407	3,287
Paper	"	17,507	25,932
Wood Pulp	"	13,467	42,532
Hard Coal	"	44,922	55,842
Soft Coal	"	289,790	106,945
Sand	"	46,170	45,110
All other freight	"	124,671	197,743
Total	"	1,057,379	1,189,263

		Ottawa River Canal		Rideau Canal	
		1940	1939	1940	1939
Vessels	No	302	295	14	22
Registered Tonnage	Tons	68,761	58,480	893	1,120
Passengers	No.	...	...	...	...
Total Freight	Tons	60,196	49,322	35	98
		Richelieu River Canal		Trent Canal	
Vessels	No.	111	107	98	151
Registered Tonnage	Tons	17,804	17,154	3,080	3,606
Passengers	No.	65	...	67	205
Total Freight	Tons	13,415	18,456	3,189	4,442
		Murray Canal		St. Peter's Canal	
Vessels	No.	12	35	146	122
Registered Tonnage	Tons	2,237	1,814	5,570	10,809
Passengers	No.	...	...	...	...
Total Freight	Tons	120	617	3,156	4,651
		St. Andrew's Canal		All Canadian Canals	
Vessels	No.	19	51	3,395	3,179
Registered Tonnage	Tons	2,778	4,921	3,369,825	2,614,981
Passengers	No.	57	177	392	704
Total Freight	Tons	391	743	3,497,480	2,934,919



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