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CHEMICAL AND ALLIED PRODUCTS

THE COMPRESSED GASES INDUSTRY, 1934.

Production from the compressed gases industry in 1934 was valued at $2,803,840 compared with $2,490,215 in 1933 and $2,504,550 in 1932.

Twenty-eight factories were included in this group in 1934, three less than in 1933; 13 were in Ontario, 5 in Quebec, 3 in Manitoba, 2 in Nova Scotia, 2 in Alberta, 2 in British Columbia and 1 in Saskatchewan. These works employed 446 persons to whom $646,981 were paid in salaries and wages in 1934. The 13 plants in Ontario employed 206 workers and made industrial gases worth $1,173,383, while the 5 works in Quebec gave work to 94 persons and made products valued at $712,608. Two concerns went out of business during the year and the 5 plants which they formerly operated were dismantled, but one new concern commenced to manufacture carbon dioxide at Leaside Ontario and one other plant which was idle during 1933 again commenced operations.

The main products were oxygen, carbon dioxide, acetylene and hydrogen. Production of acetylene increased 15.6 per cent in quantity to 37,599,346 cubic feet; carbon dioxide in cylinders dropped 13 per cent to 4,713,997 pounds; oxygen advanced almost 18 per cent to 113,940,515 cubic feet and hydrogen declined 6 per cent to 29,163,244 cubic feet. Solid carbon dioxide (dry ice), aqua ammonia, anhydrous ammonia, nitrogen and nitrous oxide were also made by the firms in this group.

This industry includes only those firms which made industrial gases as their main products. In addition, liquid chlorine and synthetic ammonia were manufactured in the Sandwich plant of Canadian Industries Limited but data pertaining to these departments were not shown separately from the general plant operations and so have been included in the Acids, Alkalies and Salts Industry. Synthetic ammonia (and the hydrogen and the nitrogen for its manufacture) was also made at Trail, B.C., by the Consolidated Mining and Smelting Company of Canada but as all of the output was used in making ammonia fertilizers the statistics relating thereto have been included in the fertilizers industry. Similarly, acetylene was made by Shawinigan Chemicals Limited at Shawinigan Falls for use in their own works in making acetic acid, etc., and nitrogen was produced as an intermediate by the American Cyanamid Company at Niagara Falls for use in the manufacture of calcium cyanamide. Pintsch gas for lighting railway coaches was made at several divisional points but these plants have always been classified to the artificial gas industry and again have been included in that group. Sulphur dioxide was made at Hamilton, Ont., by Canadian Industries Limited, but this output has been included in the report for the general chemical plant at that point. A new plant for the manufacture of hydrogen peroxide at Shawinigan Falls was in course of construction at the end of the year.

Table 1 - PRINCIPAL STATISTICS, 1929-1934

Years	No. of plants	Capital employed	Average Number of employees	Salaries and wages	Cost of materials at works	Selling value of products at works	Value added by manufacturing
		$		$	$	$	$
1929	28	4,995,560	542	770,424	785,377	3,967,416	3,182,039
1930	30	5,020,875	472	737,240	504,975	3,557,486	3,052,511
1931	30	4,597,170	420	654,384	429,048	2,818,306	2,389,258
1932	31	4,326,599	422	617,901	380,795	2,504,550	2,123,755
1933	31	4,024,437	428	613,278	371,204	2,490,215	2,119,011
1934	28	3,734,447	446	646,981	378,111	2,803,840	2,425,729

Table 2 - PRINCIPAL STATISTICS BY PROVINCES, 1933 and 1934.

Years	No. of plants	Capital employed	Average number of employees	Salaries and wages	Cost of materials at works	Selling value of products at works	Value added by manufacturing
1933		$		$	$	$	$
Quebec	7	782,157	105	132,042	94,963	606,019	511,056
Ontario	14	2,478,905	186	291,966	146,202	1,096,144	949,942
Manitoba	3	219,671	43	61,020	33,253	231,554	198,301
Nova Scotia ...	2)						
Saskatchewan ..	1)	543,704	94	128,250	96,786	556,498	459,712
Alberta	2)						
British Columbia	2)						
CANADA	31	4,024,437	428	613,278	371,204	2,490,215	2,119,011
1934							
Quebec	5	721,421	94	126,214	90,801	712,608	621,807
Ontario	13	2,005,196	206	323,517	155,743	1,173,383	1,017,640
Manitoba	3	282,183	46	59,698	34,938	264,086	229,148
Nova Scotia ...	2)						
Saskatchewan ..	1)	725,647	100	137,552	96,629	653,763	557,134
Alberta	2)						
British Columbia	2)						
CANADA	28	3,734,447	446	646,981	378,111	2,803,840	2,425,729

Table 3 - SIZE OF ESTABLISHMENTS, 1934

	No. of plants	Capital employed	Average number of employees	Selling value of products at works
(a) PRODUCTION		$		$
Under $25,000	3	89,886	12	45,167
$25,000 - $50,000	8	1,002,549	66	273,040
$50,001 - $100,000	3	180,176	22	216,165
$100,001 - $212,000	14	2,461,836	346	2,269,468
TOTAL	28	3,734,447	446	2,803,840
(b) EMPLOYEES - Number				
1 or 2	3	164,823	6	93,204
3 - 10	11	704,444	73	777,332
11 - 20	8	1,014,398	126	903,346
21 - 72	6	1,850,782	241	1,029,958
TOTAL	28	3,734,447	446	2,803,840
(c) CAPITAL EMPLOYED				
Under $25,000	5	77,204	25	412,054
$25,000 - $100,000	10	761,742	98	831,052
$100,001 - $200,000	10	1,351,975	193	1,249,861
Over $200,000	3	1,543,526	130	310,873
TOTAL	28	3,734,447	446	2,803,840

Table 4 - CAPITAL EMPLOYED, 1933 and 1934.

Provinces	Present value of lands, buildings, machinery, tools and other equipment	Inventory value of materials on hand, stocks in process, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash, bills and accounts receivable, prepaid, expenses, etc.)	TOTAL CAPITAL EMPLOYED
1933	$	$	$	$	$
Quebec	647,625	8,540	58,992	67,000	782,157
Ontario	686,169	115,819	105,699	1,571,218	2,478,905
Manitoba	161,826	5,671	22,902	29,272	219,671
Other provinces .	404,879	26,659	21,985	90,181	543,704
CANADA	1,900,499	156,689	209,578	1,757,671	4,024,437
1934					
Quebec	597,838	7,121	55,195	61,267	721,421
Ontario	870,863	25,704	105,905	1,002,724	2,005,196
Manitoba	218,469	4,388	20,776	38,550	282,183
Other provinces .	561,730	39,232	26,300	98,385	725,647
CANADA	2,248,900	76,445	208,176	1,200,926	3,734,447

Table 5 - EMPLOYEES, SALARIES AND WAGES, 1933 and 1934.

Provinces	Average number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total Employees			
	Male	Female	Male	Female				
1933						$	$	$
Quebec	37	15	51	2	105	76,793	55,249	132,042
Ontario	76	30	80	...	186	194,607	97,359	291,966
Manitoba	15	4	24	...	43	34,926	26,094	61,020
Other provinces .	31	15	48	...	94	78,472	49,778	128,250
CANADA	159	64	203	2	428	384,798	228,480	613,278
1934								
Quebec	33	8	51	2	94	71,666	54,548	126,214
Ontario	86	33	86	1	206	216,211	107,306	323,517
Manitoba	18	4	24	...	46	34,940	24,758	59,698
Other provinces .	31	16	52	1	100	83,041	54,511	137,552
CANADA	168	61	213	4	446	405,858	241,123	646,981

Table 6 - WAGE-EARNERS, BY MONTHS, 1933 and 1934

Months	1933			1934		
	Male	Female	TOTAL	Male	Female	TOTAL
January	194	2	196	199	3	202
February	189	2	191	202	2	204
March	187	2	189	206	2	208
April	194	2	196	211	3	214
May	200	2	202	215	4	219
June	204	2	206	220	5	225
July	202	2	204	225	5	230
August	214	2	216	230	4	234
September	210	2	212	222	5	227
October	214	2	216	217	4	221
November	204	2	206	211	3	214
December	204	2	206	211	3	214
AVERAGE	203	2	205	213	4	217

Table 7 - FUEL AND ELECTRICITY USED, 1933 and 1934.

Kinds	Unit of measure	1933 Quantity	1933 Cost at works	1934 Quantity	1934 Cost at works
			$		$
Bituminous coal - Canadian ..	short ton	205	1,627	447	3,526
Imported ..	short ton	190	1,020	658	3,630
Anthracite coal	short ton	672	5,450	439	3,621
Coke	short ton	1,890	9,679	1,373	6,411
Gasoline	Imp. gal.	305	79	314	85
Fuel oil	Imp. gal.	11,190	562	8,451	416
Gas - Manufactured	M cu. ft.	542	492	419	346
Natural	M cu. ft.	1,233	452	1,737	587
Other fuel	xx	...	1,485	...	3,670
Electricity purchased	K.W.H.	10,586,797	96,536	10,532,516	94,595
TOTAL	xx	...	117,382	...	116,887

Table 8 - POWER EQUIPMENT, 1933 and 1934.

Kinds	1933 Number of units	1933 Total rated horse power	1934 Number of units	1934 Total rated horse power
Steam engines and steam turbines.....	1	40	1	40
Total Primary	1	40	1	40
Electric motors run by purchased power.	145	5,844	131	5,070
TOTAL	146	5,884	132	5,110
Total Electric Motors	145	5,844	131	5,070
Boilers	5	590	6	615

Table 9 - MATERIALS USED, 1933 and 1934.

Materials	Unit of measure	1933 Quantity	1933 Cost at works	1934 Quantity	1934 Cost at works
			$		$
Acetone	lb.	128,628	21,060	148,517	25,557
Calcium carbide	lb.	6,949,118	223,748	8,123,047	244,721
Coke	ton	1,605	16,584	1,868	19,853
Other materials	xx	...	109,389	...	84,015
Cylinders purchased during the year.	No.	...	423	102	3,965
TOTAL	xx	...	371,204	...	378,111

Table 10 - PRODUCTS MADE, 1933 and 1934.

Products	Unit of measure	1933 Quantity	1933 Selling value at works	1934 Quantity	1934 Selling value at works
			$		$
Acetylene	cu.ft.	32,387,312	759,997	37,599,346	913,482
Carbon dioxide ...	lb.	5,410,993	401,747	4,713,997	414,424
Hydrogen	cu.ft.	31,175,453	171,533	29,163,244	44,920
Oxygen	cu.ft.	93,511,573	848,736	113,940,515	1,119,427
Other products(x).	xx	...	308,202	...	311,587
TOTAL	xx	...	2,490,215	...	2,803,840

(x) Includes aqua and anhydrous ammonia, nitrogen, solid carbon dioxide and nitrous oxide, for which figures cannot be shown separately as each was produced by only one company in this group.

Table 11 - PRODUCTION OF ACETYLENE, CARBON DIOXIDE, AND OXYGEN, 1918 - 1934.

Years	Acetylene	Carbon dioxide x	Oxygen
	Cubic feet	Pounds	Cubic feet
1918	5,484,755	2,742,632	33,880,000
1919	11,684,646	3,571,681	34,768,587
1920	16,121,701	5,582,149	54,618,400
1921	15,663,702	3,567,431	53,612,271
1922	17,631,590	3,263,908	52,448,907
1923	21,729,109	3,355,628	72,637,943
1924	19,229,042	3,428,953	68,331,575
1925	24,384,431	3,650,547	68,685,153
1926	27,814,736	3,896,524	86,989,015
1927	31,195,053	4,706,519	112,757,727
1928	37,342,101	5,533,275	138,688,619
1929	46,009,766	6,818,800	166,066,394
1930	44,181,816	6,632,544	152,419,201
1931	37,048,521	5,437,464	120,326,797
1932	33,744,251	6,057,311	92,828,715
1933	32,387,312	5,410,993	93,511,573
1934	37,599,346	4,713,997	113,940,515

Table 12 - PRODUCTION OF ACETYLENE, CARBON DIOXIDE, AND OXYGEN, BY PROVINCES, 1928 - 1934

	Ontario	Quebec	Other Provinces	CANADA
ACETYLENE -				
1928 cu. ft.	14,032,110	11,203,260	12,106,731	37,342,101
1929 cu. ft.	18,463,129	12,854,099	14,692,538	46,009,766
1930 cu. ft.	18,569,197	11,463,532	14,149,087	44,181,816
1931 cu. ft.	14,680,022	9,483,373	12,885,126	37,048,521
1932 cu. ft.	12,962,120	8,141,640	12,640,491	33,744,251
1933 cu. ft.	12,004,827	7,879,957	12,502,528	32,387,312
1934 cu. ft.	14,680,380	9,209,022	13,709,944	37,599,346
CARBON DIOXIDE[x] -				
1928 lb.	1,277,440	2,677,526	1,578,309	5,533,275
1929 lb.	1,453,180	3,687,948	1,677,672	6,818,800
1930 lb.	1,385,398	3,588,703	1,658,443	6,632,544
1931 lb.	1,538,928	2,668,100	1,230,436	5,437,464
1932 lb.	1,636,732	3,111,813	1,308,766	6,057,311
1933 lb.	1,564,607	2,819,946	1,026,440	5,410,993
1934 lb.	1,257,070	2,367,643	1,089,284	4,713,997
OXYGEN -				
1928 cu. ft.	54,430,578	41,971,320	42,286,721	138,688,619
1929 cu. ft.	66,116,620	50,714,300	49,235,474	166,066,394
1930 cu. ft.	59,045,143	45,737,255	47,636,803	152,419,201
1931 cu. ft.	44,420,908	38,162,619	37,743,270	120,326,797
1932 cu. ft.	32,280,715	28,865,340	31,682,660	92,828,715
1933 cu. ft.	34,991,667	27,093,759	31,426,147	93,511,573
1934 cu. ft.	42,361,291	33,187,429	38,391,795	113,940,515

x Not including solid carbon dioxide ('dry ice')

Table 13 - CONSUMPTION OF CARBON DIOXIDE IN THE MANUFACTURE OF CARBONATED BEVERAGES (SOFT DRINKS), 1928 - 1933.

	Quantity	Cost at works
	pounds	$
1928	1,718,847	177,777
1929	3,950,733	380,699
1930	2,408,694	241,915
1931	2,396,592	217,262
1932	2,020,941	182,098
1933	1,905,884	173,782

Table 14 - IMPORTS INTO CANADA OF CARBON DIOXIDE AND CHLORINE, 1931 - 1934.

		Quantity	Value
			$
1931			
Carbon dioxide or carbonic acid gas		...	211
Chlorine, liquid or chlorine gas	lb.	7,372,657	172,424
1932			
Carbon dioxide or carbonic acid gas		...	501
Chlorine, liquid or chlorine gas	lb.	5,772,827	130,913
1933			
Carbon dioxide or carbonic acid gas		...	91
Chlorine, liquid or chlorine gas	lb.	12,163,840	245,791
1934			
Carbon dioxide or carbonic acid gas		...	...
Chlorine, liquid or chlorine gas	lb.	10,713,725	219,985

Table 15 - EXPORTS FROM THE UNITED STATES TO CANADA OF COMPRESSED AND LIQUIFIED GASES, 1932 and 1933.
(From Foreign Commerce and Navigation of the United States, Calendar Years 1932 and 1933)

		1932		1933	
		Quantity	Value	Quantity	Value
			$		$
Ammonia, anhydrous	lb.	55,844	7,397	108,568	12,038
Chlorine	lb.	5,617,052	114,215	12,396,910	229,938
Other gases	lb.	748,215	103,058	1,102,501	79,952

DIRECTORY(x) OF FIRMS INCLUDED IN THE COMPRESSED GASES INDUSTRY IN CANADA, 1934.

Name	Location of Plants	Products Made
Cheney Chemical Limited	180 Duke St.,Toronto, Ont.	Pure nitrous oxide, oxygen-carbon dioxide mixtures.
L'Air Liquide Society & Canadian Liquid Air Co. Ltd.	H.O.-1111 Beaver Hall Hill, Montreal, P.Q. Plants at Halifax, Montreal, Toronto, London, Winnipeg, Regina, Calgary and Vancouver	Acetylene and oxygen.
Liquid Carbonic Canadian Corporation, Limited	H.O.-500 Dominion Square Bldg., Montreal,P.Q. Plants at Dartmouth, Montreal(2) Toronto, St. Boniface, Edmonton and Vancouver.	Carbon dioxide in cylinders and solid carbon dioxide.
Dominion Oxygen Company, Limited	H.O.-Canada Life Bldg., 340 University Ave.,Toronto, Ont. Plants at Montreal and Toronto.	Oxygen and nitrogen
Dominion Carbonic Company Limited	Cor. Mill and Trinity St., Toronto, Ont.	Carbon dioxide in cylinders and solid carbon dioxide.
Prest-O-Lite Company of Canada, Limited	H.O.-Canada Life Bldg., 340 University Ave.,Toronto, Ont. Plants at Shawinigan Falls, Meritton and St. Boniface.	Acetylene.
Canadian Industries Limited	H.O.-P.O.Box 1260, Montreal, P.Q. Plant at Toronto, Ont.	Aqua ammonia and anhydrous ammonia
Lever Brothers, Limited	Eastern Ave., Toronto, Ont.	Hydrogen and oxygen.
The People's Gas Supply Co. Ltd.	2 Mill St., Ottawa, Ont.	Acetylene.
Proctor & Gamble Co. of Canada, Limited.	Burlington St., Hamilton,Ont.	Hydrogen and oxygen.
Swift Canadian Company, Limited	Keele St. and St.Clair Ave., Toronto, Ont.	Hydrogen.
Wall Chemicals Ltd.	1103 Millwood Rd., Toronto,Ont.	Carbon dioxide.

(x) The above plants are included under the Compressed Gases Industry. In addition to these, Canadian Industries Limited produced synthetic ammonia and liquid chlorine at Sandwich, Ont., and liquid sulphur dioxide at Hamilton, Ont., but, when classified according to the main products, these plants come under the Acids, Alkalies and Salts Industry which is reviewed in a separate bulletin. Synthetic ammonia (and the hydrogen and nitrogen for its manufacture) is also made at Trail, B.C., by the Consolidated Mining and Smelting Company but is used by that company in the manufacture of ammonia fertilizers; acetylene is made by the Shawinigan Chemicals and used in making acetic acid, etc.; and nitrogen is produced as an intermediate in the manufacture of cyanamide by the American Cyanamid Company at Niagara Falls.