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CENSUS OF INDUSTRY
MINING, METALLURGICAL AND CHEMICAL BRANCH
OTTAWA - CANADA

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ANNUAL INDUSTRY BULLETIN

CHEMICALS AND ALLIED PRODUCTS GROUP

THE COMPRESSED GASES INDUSTRY, 1935.

Production from the Compressed Gases Industry in 1935 was valued at $3,077,765 compared with $2,803,840 in 1934 and $2,490,215 in 1933.

Twenty-eight factories were included in this industry in 1935 as follows: 13 in Ontario, 5 in Quebec, 3 in Manitoba, 2 in Nova Scotia, 2 in Alberta, 2 in British Columbia and 1 in Saskatchewan. One new factory, that of Carbo-Ice (Toronto) Limited, at Leaside, Ontario, reported for the first time while the works of the Liquid Carbonic Canadian Corporation Limited at Wabash Avenue, Toronto, was closed down and dismantled. This latter company took over and now operates the factory formerly run by the Dominion Carbonic Company Limited at Mill and Trinity Streets, Toronto.

The average number of employees in these 28 establishments in 1935 was 510 including 271 salaried workers and 239 wage-earners; salaries and wages for the year totalled $741,631. The 13 establishments in Ontario employed 271 workers and made industrial gases worth $1,336,629 while the 5 factories in Quebec gave work to 95 persons and made products valued at $773,495.

The main products were oxygen, acetylene, carbon dioxide and hydrogen and each of these were made in greater quantities than in 1934. Acetylene output increased 6 per cent to 39,922,683 cubic feet; oxygen, 19 per cent to 136,059,706 cubic feet; carbon dioxide, in cylinders, 3 per cent to 4,849,687 pounds, and hydrogen, 38 per cent to 40,134,386 cubic feet.

The Compressed Gases Industry, as reviewed in this report, 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 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 North 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, Ontario, by Canadian Industries Limited, but this output has been included in the report for the general chemical plant at that point.

Table 1 - PRINCIPAL STATISTICS OF THE COMPRESSED GASES INDUSTRY, 1920 - 1935.

Years	No. of plants	Capital employed	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Selling value of products at works
		$		$	$	$	$
1920	25	4,033,677	446	669,120	54,054	363,664	1,993,141
1921	26	4,218,484	318	508,932	35,405	301,839	2,001,898
1922	25	4,351,232	309	479,517	31,057	280,666	1,908,269
1923	23	4,472,896	300	461,764	92,541	488,879	2,165,445
1924	21	4,115,958	292	443,322	89,614	401,951	2,051,448
1925	20	3,420,104	325	481,595	83,309	370,569	2,086,613
1926	24	3,799,733	360	521,824	118,744	435,729	2,422,486
1927	25	4,177,794	404	604,417	133,097	550,795	2,625,698
1928	25	4,226,037	426	652,893	148,765	479,587	3,145,884
1929	28	4,995,560	542	770,424	155,685	785,377	3,967,416
1930	30	5,020,875	472	737,240	153,796	504,975	3,557,486
1931	30	4,597,170	420	654,364	134,433	429,048	2,818,306
1932	31	4,326,599	422	617,901	121,873	380,795	2,504,550
1933	31	4,024,437	428	613,278	117,382	371,204	2,490,215
1934	28	3,734,447	446	646,981	116,887	378,111	2,803,840
1935	28	4,316,244	510	741,631	137,134	433,045	3,077,765

Table 2 - PRINCIPAL STATISTICS, BY PROVINCES, 1934 and 1935.

Years	No. of plants	Capital employed	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Selling value of products at works
		$		$	$	$	$
1 9 3 4							
Quebec	5	721,421	94	126,214	27,024	90,801	712,608
Ontario	13	2,005,196	206	323,517	59,475	155,743	1,173,383
Manitoba	3	282,183	46	59,698	6,297	34,938	264,086
Nova Scotia	2)						
Saskatchewan ...	1)	725,647	100	137,552	24,091	96,629	653,763
Alberta	2)						
British Columbia	2)						
CANADA	28	3,734,447	446	646,981	116,887	378,111	2,803,840
1 9 3 5							
Quebec	5	949,395	95	130,455	27,449	122,135	773,495
Ontario	13	2,357,458	271	406,879	77,541	181,880	1,336,629
Manitoba	3	283,430	45	59,583	7,307	32,064	263,878
Nova Scotia	2)						
Saskatchewan ...	1)	725,961	99	144,714	24,837	96,966	703,763
Alberta	2)						
British Columbia	2)						
CANADA	28	4,316,244	510	741,631	137,134	433,045	3,077,765

Table 3 - SIZE OF ESTABLISHMENTS, 1935.

	Number of plants	Capital employed	Average number of employees	Selling value o products at wor
		$		$
(a) PRODUCTION				
Under $25,000	4	142,696	32	74,537
$25,000 to $50,000	5	611,864	51	183,197
$50,001 to $100,000	6	1,042,975	75	419,557
Over $100,000	13	2,518,709	352	2,400,474
TOTAL	28	4,316,244	510	3,077,765
(b) EMPLOYEES				
1 to 10	11	759,476	64	521,057
11 to 20	8	597,258	113	1,027,275
Over 20	9	2,959,510	333	1,529,433
TOTAL	28	4,316,244	510	3,077,765
(c) CAPITAL EMPLOYED				
Under $25,000	4	69,648	30	433,707
$25,000 to $100,000	12	841,463	140	1,164,271
$100,001 to $200,000	7	917,868	123	758,620
Over $200,000	5	2,487,265	217	721,167
TOTAL	28	4,316,244	510	3,077,765

Table 4 - CAPITAL EMPLOYED, 1934 and 1935.

Provinces	Present value of lands, buildings, machinery, tools and other equipment	Inventory value of materials on hand, stocks in process, fuel, finished products and miscellaneous supplies on hand	Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)	TOTAL CAPITAL EMPLOYED
	$	$	$	$
1934				
Quebec	597,838	62,316	61,267	721,421
Ontario	870,863	131,609	1,002,724	2,005,196
Manitoba	218,469	25,164	38,550	282,183
Other provinces.	561,730	65,532	98,385	725,647
CANADA	2,248,900	284,621	1,200,926	3,734,447
1935				
Quebec	625,762	55,427	268,206	949,395
Ontario	1,148,236	104,632	1,104,590	2,357,458
Manitoba	223,073	20,916	39,441	283,430
Other provinces.	571,383	43,333	111,245	725,961
CANADA	2,568,454	224,308	1,523,482	4,316,244

Table 5 - EMPLOYEES, SALARIES AND WAGES, 1934 and 1935.

Provinces	Average number of employees					Salaries	Wages	TOTAL SALARIES AND WAGES
	On salaries		On wages					
	Male	Female	Male	Female	TOTAL			
						$	$	$
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 5 - EMPLOYEES, SALARIES AND WAGES, 1934 and 1935. (concluded)

Provinces	Average number of employees					Salaries	Wages	TOTAL SALARIES AND WAGES
	On salaries		On wages					
	Male	Female	Male	Female	TOTAL			
						$	$	$
1935								
Quebec	34	7	52	2	95	74,091	56,364	130,455
Ontario	125	35	110	1	271	277,897	128,982	406,879
Manitoba	16	4	24	1	45	33,384	26,199	59,583
Other provinces	35	15	48	1	99	83,162	55,552	144,714
CANADA	210	61	234	5	510	474,534	237,097	741,631

Table 6 - WAGE-EARNERS, BY MONTHS, 1934 and 1935.

Months	1934			1935		
	Male	Female	TOTAL	Male	Female	TOTAL
January	199	3	202	208	2	210
February	202	2	204	213	3	216
March	206	2	208	211	3	214
April	211	3	214	227	4	231
May	215	4	219	238	4	242
June	220	5	225	241	3	244
July	225	5	230	255	6	261
August	230	4	234	248	6	254
September	222	5	227	233	3	236
October	217	4	221	235	3	238
November	211	3	214	231	3	234
December	211	3	214	233	3	236
AVERAGE	213	4	217	234	5	239

Table 7 - FUEL AND ELECTRICITY USED, 1934 and 1935.

Kinds	Unit of measure	1934		1935	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Bituminous coal - Canadian	short ton	447	3,526	606	4,757
Imported	short ton	658	3,630	336	2,213
Anthracite coal	short ton	439	3,621	276	2,163
Coke	short ton	1,373	6,411	4,706	13,954
Gasoline	Imp. gal.	314	85	215	57
Fuel oil	Imp. gal.	8,451	416	9,980	509
Gas - Manufactured	M cu.ft.	419	346	419	329
Natural	M cu.ft.	1,737	587	2,334	775
Other fuel	xx	...	3,670	...	4,111
Electricity purchased	K. W. H.	10,532,516	94,595	54,277,790	108,286
TOTAL	xx	...	116,887	...	137,134

Table 8 - POWER EQUIPMENT, 1935.

Kinds	Ordinarily in use		In reserve or idle	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Steam engines and steam turbines	5	290	1	40
Total Primary	5	290	1	40
Electric motors run by purchased power	154	4,980	..	..
TOTAL	159	5,270	1	40
Boilers	8	732	..	..

Table 9 - MATERIALS USED, 1934 and 1935.

Materials	Unit of measure	1934 Quantity	1934 Cost at works	1935 Quantity	1935 Cost at works
			$		$
Acetone	lb.	148,517	25,557	139,594	24,300
Calcium carbide	ton	4,062	244,721	4,333	260,876
Coke	ton	1,868	19,853	2,810	29,796
Other materials (x)	xx	...	84,015	...	79,645
Cylinders purchased during the year	No.	102	3,965	2,685	38,428
TOTAL	xx	...	378,111	...	433,045

(x) Includes ammonia liquor, ammonium nitrate, potassium carbonate, unpurified brewery gas, lime, soda ash, condensing water, etc.

Table 10 - PRODUCTS MANUFACTURED, 1934 and 1935.

Products	Unit of measure	1934 Quantity	1934 Selling value at works	1935 Quantity	1935 Selling value at works
			$		$
Acetylene	cu.ft.	37,599,346	913,482	39,922,683	975,710
Carbon dioxide in cylinders.	lb.	4,713,997	414,424	4,849,687	429,775
Hydrogen	cu.ft.	29,163,244	44,920	40,134,386	50,402
Oxygen	cu.ft.	113,940,515	1,119,427	136,059,706	1,273,060
Other products (x)	xx	...	311,587	...	348,818
TOTAL	xx	...	2,803,840	...	3,077,765

(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 - 1935.

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	3,582,149	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	4,713,998	113,940,515
1935	39,922,683	4,849,687	136,059,706

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

Table 12 - PRODUCTION OF ACETYLENE, CARBON DIOXIDE, and OXYGEN, BY PROVINCES, 1928-1935.

		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
1935	cu.ft.	16,733,379	10,295,232	12,894,072	39,922,683
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
1935	lb.	1,414,171	2,221,970	1,213,545	4,849,687
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
1935	cu.ft.	54,375,346	37,926,890	43,757,470	136,059,706

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

Table 13 - CONSUMPTION OF CARBON DIOXIDE IN THE MANUFACTURE OF CARBONATED BEVERAGES, (SOFT DRINKS) 1928 - 1934.

Years	Quantity	Cost at works	Years	Quantity	Cost at works
		$			$
1928	1,718,847	177,777	1932	2,020,941	182,098
1929	3,950,733	380,699	1933	1,905,884	173,782
1930	2,408,694	241,915	1934	2,138,025	199,191
1931	2,396,592	217,262			

Table 14 - IMPORTS INTO CANADA OF CARBON DIOXIDE AND CHLORINE, 1933 - 1935.

		Quantity	Value
			$
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 14 - IMPORTS INTO CANADA OF CARBON DIOXIDE AND CHLORINE, 1933 - 1935 (concluded)

		Quantity	Value
			$
1 9 3 5			
Carbon dioxide or carbonic acid gas		...	...
Chlorine, liquid, or chlorine gas	lb.	10,436,566	221,134

Table 15 - EXPORTS FROM THE UNITED STATES TO CANADA OF COMPRESSED AND LIQUIFIED GASES, 1933 and 1934.

(From Foreign Commerce and Navigation of the United States, Calendar Years 1933 and 1934)

		1 9 3 3		1 9 3 4	
		Quantity	Value	Quantity	Value
			$		$
Ammonia, anhydrous	lb.	108,568	12,038	31,418	3,943
Chlorine	lb.	12,396,910	229,938	10,254,283	210,014
Other gases	lb.	1,102,501	79,952	1,392,965	101,180

DIRECTORY(x) OF FIRMS INCLUDED IN THE COMPRESSED GASES INDUSTRY IN CANADA, 1935.

Names of Firms	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.
Prest-O-Lite Company of Canada, Limited	H.O.- Canada Life Bldg., 340 University Ave., Toronto, Ont. Plants at Shawinigan Falls, Merritton 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.

DIRECTORY(x) OF FIRMS INCLUDED IN THE COMPRESSED GASES INDUSTRY IN CANADA, 1935. (concluded)

Names of Firms	Location of Plants	Products Made
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 Street, 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 and acetylene.
Carbo-Ice (Toronto) Limited	3 Laird Drive, Leaside, Ont.	Solid carbon dioxide.

(x) The above plants are included under the Compressed Gases Industry as they make compressed gases as their chief product. In addition to these, Canadian Industries Limited produced synthetic ammonia and liquid chlorine at Sandwich, Ontario, and liquid sulphur dioxide at Hamilton, Ontario, 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 North American Cyanamid Company at Niagara Falls.

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