

DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH
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METALS OF THE PLATINUM GROUP, 1935.

According to finally revised statistics issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa, the production of new platinum, palladium and other metals of the platinum group in Canada during 1935 totalled 190,146 fine ounces valued at \$5,408,667 as compared with the all-time high record of 200,162 fine ounces worth \$6,190,045 in 1934. With the exception of a relatively few ounces of alluvial platinum produced annually in British Columbia, the output of platinum metals in Canada represents recoveries made in the treatment of nickel-copper ores mined in the Sudbury area of Ontario.

The increasing production of the platinum metals in Canada reflects directly the great development programmes conducted during recent years by both of the large nickel-producing companies. Falconbridge Nickel Mines Ltd. reported that the departure in 1935 into the field of isolating and refining their precious metals, each for separate marketing - instead of selling a mixed concentrate - began to yield marketable production in the company's refinery located at Kristiansand, Norway; the quality was found satisfactory, and the marketing took place without difficulty. At Acton, in England, efficiency in the platinum metals refinery of the Mond Nickel Company Limited was well maintained according to the annual report (1935) of the International Nickel Company of Canada Ltd.; this was shown by the low cost of production as well as by the high purity of the metals produced. The precious metals research and development department at Acton continued its investigations into the use of platinum metals and their alloys, the company stated that the markets for the platinum metals were active throughout the year and the price of platinum, about \$34 per ounce at the beginning of the year, fluctuated slightly and rose to about \$38 at the end of the year; the price of palladium remained substantially unchanged at \$24 throughout the year. An upturn in the jewellery market, as well as continued demand from the chemical field, contributed to the demand for these metals. In consequence of better recognition by dentists of the improvements in the quality of dental gold alloys conferred by platinum and palladium, increasing amounts of both these precious metals were required in dental alloys for wrought and cast restoration parts and for dental clasps and other purposes.

A remarkable advance in the price of platinum was experienced during 1936 when on September 18 the London quotation for the metal approximated £13.10s. or \$68.29 per fine ounce in Canadian funds, later declining to \$55.75 by October 3. "Metal and Mineral Markets," New York, commented on the situation in August as follows: "Though the demand for platinum against normal requirements of consumers has increased this year along with the general recovery in business, and prices have strengthened, the recent advance of \$10 per ounce in a single day was not welcomed in platinum circles. The sharp advance on August 18 to \$53 per ounce resulted chiefly from speculative activities. Literature has been distributed to probable buyers informing them that refined platinum is now available in convenient three-ounce bars, properly assayed and stamped by a recognized dealer in the metal as to weight and fineness. The bars, it is stated, may be deposited in a bank and certificates issued against the platinum to facilitate trading. Speculation in platinum by the uninformed, producers fear, will do more harm than good to the industry."

During recent years leaf palladium has been used in the same manner as leaf silver and gold; palladium alloys chiefly white in color, are utilized largely in the manufacture of jewellery; palladium is also employed as dental metal, as contacts in the electrical industry and as a catalyst. The industrial use of platinum is increasing; crucibles made of the metal are employed largely in laboratory work; platinum and platinum-gold and palladium-gold alloys are used for spinnerets in the rayon industry and it is stated that both platinum and rhodium-platinum have proved satisfactory for use in resistance furnaces where temperatures of 2,370 degrees F. or higher are encountered. Improvements in the plating of platinum, rhodium and palladium have been reported and it is suggested that precious clad metals and plated surfaces will soon be made use of in the chemical industry.

According to the United States Bureau of Mines: - "it is estimated that the world's known workable deposits of platinum can supply annually a production of about 400,000 ounces of new platinum and about 70,000 ounces of palladium; Canada can furnish about 125,000 ounces of platinum; Columbia, 50,000 ounces; U. S. S. R. (Russia), 150,000 ounces; Union of South Africa, 50,000 ounces; and the rest of the world, about 25,000 ounces; Canada also can produce about 60,000 ounces of palladium annually and the remainder of the world, about 10,000 ounces."

The Department of Mines, of the Union of South Africa reports that during 1935, in addition to the platinum contained in the osmiridium recovered in the treatment of gold ores, mining for platinum per se was carried on in the Rustenburg district. The estimated content of platinum metals contained in crude platinum and concentrates produced totalled 31,272 fine ounces; 31,338 fine ounces of platinum metals were sold comprising platinum, 24,364 ounces; palladium, 4,957 ounces; iridium, 16 ounces; osmium and osmiridium, 0.43 ounces; ruthenium, 284 ounces; and gold, 1,715 ounces.

PRODUCTION OF PLATINUM GROUP METALS IN CANADA, 1932, 1933, 1934 and 1935.

	P L A T I N U M		PALLADIUM, RHODIUM, IRIDIUM, ETC.	
	Fine ounces	\$	Fine ounces	\$
<u>1 9 3 2</u>				
Ontario	27,284	1,097,021	37,613	901,890
British Columbia...	59	2,372	...	...
TOTAL	27,343	1,099,393	37,613	901,890
<u>1 9 3 3</u>				
Ontario	24,746	856,190	31,009	645,043
British Columbia ...	40	1,400	...	...
TOTAL	24,786	857,590	31,009	645,043
<u>1 9 3 4</u>				
Ontario	116,177	4,488,712	83,932	1,699,282
British Columbia ...	53	2,051	...	...
TOTAL	116,230	4,490,763	83,932	1,699,282
<u>1 9 3 5</u>				
Ontario	105,335	3,444,455	84,772	1,962,937
British Columbia ...	39	1,275	...	...
TOTAL	105,374	3,445,730	84,772	1,962,937

PRODUCTION OF PLATINUM AND PALLADIUM IN CANADA, 1926 - 1935.

Year	P L A T I N U M				PALLADIUM(x)	
	L O D E		P L A C E R		fine oz.	
	fine oz.	\$	fine oz.	\$		\$
1926	9,471	919,349	50	4,258	9,790	626,166
1927	11,217	716,653	11	960	11,247	541,319
1928	10,485	706,090	49	2,819	11,909	511,998
1929	12,491	845,057	28	1,699	12,408	471,614
1930	54,007	1,542,490	17	771	29,959	689,217
1931	44,725	1,595,117	50	1,783	59,513	786,260
1932	27,284	1,097,021	59	2,372	29,727	548,582
1933	24,746	856,190	40	1,400	51,009	645,043
1934	116,177	4,488,712	53	2,051	83,932	1,699,282
1935	105,335	3,444,455	39	1,275	84,772	1,962,937

(x) Includes other platinum metals except platinum in 1933, 1934 and 1935.

PRODUCTION OF PLATINUM GROUP METALS IN CANADA - JANUARY 1 to JUNE 30, 1935 and 1936.

	P L A T I N U M		PALLADIUM, RHODIUM, IRIDIUM, ETC.	
	Fine oz.	\$	Fine oz.	\$
	<u>1 9 3 5</u>			
Ontario	47,555	1,471,520	39,785	909,812
British Columbia	20	619	...	...
	<u>47,575</u>	<u>1,472,139</u>	<u>39,785</u>	<u>909,812</u>
<u>1 9 3 6</u>				
Ontario	62,771	2,008,672	52,685	1,237,338
British Columbia	20	640	...	...
	<u>62,791</u>	<u>2,009,312</u>	<u>52,685</u>	<u>1,237,338</u>

PRICES FOR PLATINUM, 1930 - 1935.

Year	Market	Value per ounce
1930	New York	\$45.358
1931	New York	\$35.665
1932	London	£10.104
1933	London	£ 7.630
1934	London	£ 7.750
1935	London	£ 7.325

The average price of platinum for the first six months of 1936 based on the London Market and converted to Canadian funds was \$32 per fine ounce as compared with \$30.97 for the corresponding period of 1935.

PLATINUM CONSUMED IN CANADIAN JEWELLERY AND SILVERWARE INDUSTRY, 1931 - 1935.

Year	Value	Year	Value
	\$		\$
1931	32,140	1934	38,307
1932	26,928	1935	45,627
1933	35,714		

IMPORTS INTO CANADA AND EXPORTS OF PLATINUM, 1933, 1934 and 1935.

	1933		1934		1935	
	Fine oz.	\$	Fine oz.	\$	Fine oz.	\$
IMPORTS -						
Platinum retorts, pans, etc. ....	...	11,809	...	1,029	...	14,355
Platinum wire, and in bars, strips, etc. (x) .	...	49,136	...	51,530	...	55,878
Platinum crucibles .....	...	11,455	...	11,464	...	7,665
TOTAL .....	...	72,380	...	64,023	...	77,898
EXPORTS -						
Contained in concentrates, etc. (x)	29,228	1,168,565	155,072	5,186,489	(a) 5,055,901	
Platinum, old and scrap.	189	5,439	410	12,202	628	25,617
TOTAL	29,417	1,174,004	155,482	5,198,691	...	5,081,518

(x) Includes any other of the platinum metals.

(a) Not published in 1935.

WORLD'S PRODUCTION OF PLATINUM METALS

(Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries") (Troy ounces)

Producing Country	1932	1933	1934
BRITISH EMPIRE			
Sierra Leone--Crude platinum	551	431	474
Union of South Africa--Crude (Pt metals content)	7,766	...	26,370
Concentrates (Pt metals content)	1,480	2,386	11,372
Osmiridium (crude)	6,523	6,712	5,088
Canada--Crude platinum (Pt content)	59	40	53
Recovered from Ontario nickel-copper matte:			
Platinum	27,284	24,746	116,177
Palladium	29,727)	31,009	83,932
Other metals	7,886)		
New South Wales--Crude platinum	556	113	180
Tasmania--Osmiridium (crude)	785	548	488
New Zealand--Crude platinum .....	...	4	...
Papua (years ended June 30)--Crude platinum.	2	...	89
Osmiridium (crude)	1	29	4
FOREIGN COUNTRIES			
U. S. S. R. (Russia)--Crude platinum (estimated)	100,000	100,000	100,000
Abyssinia (b) --Crude platinum	8,217	6,650	5,612
Belgian Congo--Palladium	2,025	559	3,588
Platinum .....	...	...	1,260
United States (a)--Crude platinum	1,074	1,266	3,720
New platinum metals recovered by refineries from gold and copper ores of domestic origins:			
Platinum	1,694	1,050	1,062
Palladium	1,147	698	1,271
Iridium, osmiridium, etc.	5	9	2
Columbia--Crude platinum	40,478	45,971	54,768
Japan--Crude platinum	266	206	118

(b) Amount registered, which is probably not total production.

NOTE It is estimated by the Department of Mines, Union of South Africa, that the osmiridium

produced in these years contained the following amounts of the metals mentioned below (fine ounces):

	1932	1933	1934
Osmium	1,803	2,602	1,858
Iridium	1,365	2,082	1,708
Ruthenium	655	1,071	713
Platinum	616	876	670
Rhodium	25	30	30

(d) Secondary metals were recovered as follows: (troy ounces) --

	1932	1933	1934
Platinum	21,635	35,073	35,494
Palladium	5,783	4,814	5,606
Iridium	3,726	692	1,328
Others	1,444	783	1,328

DIRECTORY

Canadian Mining and Smelting Companies Producing New Platinum Metals, 1935. (x)

<u>Name</u>	<u>Head Office</u>	<u>Location of Refinery or Deposit</u>
International Nickel Co. of Canada, Ltd.	Copper Cliff, Ont.	Acton, England.
Falconbridge Nickel Mines Ltd.	25 King St. W., Toronto, Ont.	Kristiansand, Norway.

(x) In addition to the companies listed, there are usually individual miners reporting the recovery of small quantities of alluvial platinum from streams in British Columbia.

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