

Mineral Industry Surveys

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PRECIOUS METALS IN JUNE 2001

U.S. mines produced 28,500 kilograms (kg) of gold and 138,000 kg of silver in June 2001. Compared with May 2001, total U.S. production of silver increased by 3% while production in Nevada increased by 17%. Total U.S. gold production was up 3%.

Gold

Domestic.—Normandy Mining Ltd., Australia's largest gold miner, took over ownership of the Ken Snyder gold and silver mine in Nevada. Normandy acquired Ken Snyder from Franco-Nevada Mining Corporation Ltd. in a swap deal. Dynatec Corp., the operator since the mine/mill opened more than two years ago, will remain for an indefinite period of time (Platts Metals Week, 2001b).

Barrick Gold Corp. agreed to merge with Homestake Mining Co. in a share swap that would create the world's second largest gold producer. Based on 2000 results, the combined company reportedly would have had a gold production cash cost of \$156 per troy ounce, which is the lowest cost of any major gold producer (Metal Bulletin, 2001).

International.—Russia will spend at least \$345 million on replenishing precious metals stocks; most of the funds will be spent on gold. The purchases of an estimated 24,000 kg (772,000 ounces) of gold began in July (Platts Metals Week, 2001a).

Silver

Due to depressed silver and lead prices, Hecla Mining Company announced a reduction in operations at its Lucky Friday silver mine in northern Idaho, effective October 2001. Hecla expects silver production to total approximately 109 metric tons (t) in 2001, with a decrease to approximately 37 t in 2002. According to Hecla, had the mine continued normal operations, it would have been expected to produce about 140 t of silver in 2001. The reduced production level will reportedly allow the mine to remain ready to increase output within 2 to 3 months of a decision to resume full production. Placing the mine on care-and-maintenance would have greatly lengthened the amount of time necessary to put the mine back into full production to as much as 18 months.

All currently developed working faces on the Lucky Friday main vein and the Gold Hunter expansion area will continue to be mined. However, there will be no primary development into new areas, and secondary development will be limited to two working faces in the expansion area. Production is expected to average 20,000 metric tons per month (t/mo) through September, dropping to 13,200 t/mo in October and November. Employment during the period will decrease from the current level of 189 to about 42 employees by January 2002 (Hecla Mining Company, 2001).

Researchers at Rice University, Houston, TX, are developing a novel medical application with unique potential in cancer therapy, medical testing, and drug delivery. Metal nanoshells are a type of nanoparticle composed of a silica core coated with an ultra thin conductive layer of gold or silver. By systematically varying the relative core and shell thicknesses, metal nanoshells can be fabricated to absorb or scatter light at any wavelength across much of the visible and infrared range of the electromagnetic spectrum. One application of nanoshells is photothermally modulated drug delivery. Such a drug delivery method could be useful for implantable medicines that require periodic dispensing, such as insulin and blood pressure medicines. Also, the biosensing properties of nanoshells permit them to be used for a broad range of medical tests, such as allergy sensitivity, toxins, and viruses, including HIV (Laser

Focus World, 2001).

Platinum-Group Metals

The price of rhodium, the scarcest and most expensive of the platinum-group metals (PGM), is experiencing another downward trend following a long series cycles since it was first used in automobile catalysts in the 1970s. With demand slowing and supply increasing, the metal's price declined steadily in 2001 after reaching a high of over \$2,200 per troy ounce in February. The low bid was about \$1.570 per ounce during the week of June 11. Lower prices were driven by a combination of weak demand and oversupply. According to Johnson Matthey's Platinum 2001 report, global rhodium supplies increased 53% to 23,800 kg in 2000 from 15,600 in 1999, mainly because of increased supplies from Russia. In 1999, shipments from Russia were affected by restrictions on rhodium and platinum sales introduced under a clause of the 1999 Russian budget. The amendment of this clause in January 2000 paved the way for a sharp increase in rhodium exports from Russia. Much of this metal was shipped to the United States, with U.S. trade statistics revealing imports of 1.380 kg in December 2000. Supplies from South Africa also rose sharply, despite a decline in platinum output in 1999. This was largely due to the sale of rhodium from stocks. Also, increased mining from the rhodium-rich UG2 reef had an impact on South African output; the rhodium content of the UG2 ore is about twice that of the Merensky Reef (Johnson Matthey plc, 2001).

Prices for the more abundant PGM, palladium and platinum, also declined in recent weeks. Historically high prices as well as the economic slowdown affecting the United States, Japan, and much of Europe led to waning consumer demand. On January 11, 2001, platinum traded at \$645 per ounce at the London AM Fix (the highest price since April 1987) before declining during subsequent days as funds and other large speculators sold off their positions. The platinum increase was mainly a reaction to palladium, which traded at a record \$1,100 per ounce on January 11, before falling to \$1,085 at the AM Fix. Except for a few spikes upward, prices of both metals have fallen steadily. The platinum price fell to a low of \$555 per ounce at the London PM Fix on April 2, then rebounded to reach \$622 per ounce on May 29, but has continued to

decline—falling to \$592 per ounce at the PM Fix on June 8. The palladium price declined to \$756 per ounce at the London PM Fix on March 5, climbed to \$805 per ounce on March 19 and has been on a mostly downward path, falling to \$616 per ounce on the June 6 PM Fix, the lowest level in about 12 months. Despite these declines, the price of these metals is still high when compared with historical levels. Three years ago palladium was trading at around \$200 per ounce and platinum was around \$300 per ounce (Platts Metals Week, 2001c).

Anglovaal Mining Ltd. (Avmin) and Impala Platinum Holdings Ltd. have formed a joint venture to develop, manage, and operate a new PGM mine in Mpumalanga Province, South Africa. The new mine will be based on PGM mineralization contained within the Merensky and UG2 reefs on the Dwars River farm, the rights for which the companies have jointly acquired. Dwars River is situated on the eastern limb of the Bushveld Igneous Complex, near Lyndenburg. The new mine is expected to have a run-of-mine output of 1.4 million metric tons per year, producing between 4,500 kg and 5,300 kg of PGM annually over a life of about 20 years. Avmin will manage and conduct the development and operational activities, and an exploration program is expected to begin within the next few months to verify a preliminary resource evaluation of 50 million metric tons of UG2 ore (Mining Journal, 2001).

References Cited

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${\bf TABLE~1}$ MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER IN THE UNITED STATES, BY STATE 1/

(Kilograms)

				Other	
Gold	Alaska	California	Nevada	States 2/	Total
2000:	_				
June	1,190	1,470	21,400	4,710	28,800
July	1,460	1,470	18,900	4,410	26,300
August	1,460	1,400	20,800	4,810	28,500
September	1,510	1,460	22,200	3,900	29,100
October	1,510	1,360	19,000	5,680	27,600
November	1,020	1,170	19,100	5,900	24,700
December	1,440	1,170	23,000	4,450	30,100
January-December p/	15,500	16,400	253,000	55,300	338,000
2001:					
January	1,440	1,370	22,000	4,500	29,300
February	1,440	1,270	19,700	4,320	26,700
March	1,440	1,320	19,700	3,640	26,100
April	1,440	1,180	19,500	4,120 r/	26,300 r/
May	1,440	1,050 r/	20,700 r/	4,440 r/	27,700 r/
June	1,440	1,100	21,400	4,540	28,500
January-June	8,640	7,300	123,000	25,600	165,000
•				Other	
Silver	Arizona	Idaho	Nevada	States 3/	Total
2000:					
June	W	35,200	58,900	73,500	168,000
July	W	34,900	57,400	71,300	164,000
August		34,800	53,200	73,100	161,000
September	W	34,500	60,900	69,700	165,000
October	W	34,500	45,900	56,700	137,000
November		34,500	62,200	66,400	163,000
December		34,500	61,200	73,000	169,000
January-December p/		416,000	752,000	848,000	2,020,000
2001:	_	•	•	•	
January		20,300	41,200	76,500	138,000 r/
February	– W	20,300	42,500	68,000 r/	131,000 r/
March	– W	W	46,000	86,200 r/	132,000 r/
April	– W	W	37,000	106,000 r/	143,000 r/
May	– W	W	50,900 r/	83,600 r/	134,000 r/
June	– "W	W	59,600	78,400	138,000
January-June	W	40,600	277,000	499,000	817,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data, included with "Other States."

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes Arizona, Colorado, Idaho, Montana, New Mexico, South Carolina, South Dakota, Utah, and Washington.

^{3/}Includes Alaska, California, Colorado, Missouri, Montana, New Mexico, New York, South Carolina, South Dakota, Tennessee, Utah, Washington, and States indicated by symbol W.

TABLE 2 SELECTED PRECIOUS METAL PRICES

(Dollars per troy ounce)

	Gold	Silver	Platinum	Palladium
Engelhard Industries:				
2000:	2440040 - 1 - 27	4.50 (7)	44600 (7	127.00 (7
Low/date	264.90 (October 27)	4.59 (December 19)	416.00 (January 6)	437.00 (January 6)
High/date	313.88 (February 7)	5.53 (February 7)	625.00 (December 13 and 28)	985.00 (December 27)
Average	280.10	5.00	549.31	691.84
2001:				
April:				
Low/date	257.04/2	4.30/2	559.00/2	657.00/12
High/date	265.70/27	4.49/20 and 24	630.00/18	755.00/17
Average	261.69	4.40	598.55	704.65
May:				
Low/date	265.05/2	4.32/8	604.00/1	640.00/14
High/date	292.40/21	4.60/24	6.25/21 and 29	685.00/7
Average	273.15	4.44	613.82	663.41
June:				
Low/date	266.50/1	4.32/27	563.00/29	600.00/28
High/date	275.92/27	4.45/1 and 14	598.00/1	647.00/4
Average	271.34	437	582.71	619.67
Year to date:				
Low/date	257.04 (April 2)	4.30 (March 16 and April 2)	559.00 (April 2)	600.00 (June 28)
High/date	292.40 (May 21)	4.87 (January 30)	645.00 (January 10 and 15)	1,100.00 (January 26)
Average	266.66	4.48	602.21	802.87
Handy and Harman:				
2000	278.96	5.00	XX	XX
2001:				
April	260.56	4.39	XX	XX
May	272.07	4.44	XX	XX
June	270.23	4.37	XX	XX
Average year to date	265.58	4.48	XX	XX
London Final: 1/				
2000	279.04	4.95	XX	XX
2001:				
April	260.48	4.37	XX	XX
May	272.35	4.43	XX	XX
June	270.23	4.36	XX	XX
Average year to date	265.57	4.46	XX	XX
VV Not applicable				

XX Not applicable.

1/ Silver price reported as "London Spot/US Equiv."

Source: Platts Metals Week.

TABLE 3 U.S. IMPORTS AND EXPORTS OF GOLD 1/

(Kilograms of gold content, unless otherwise specified)

Period and country	Ores and concentrates 2/	Doré and precipitates	Refined bullion 3/	Ash and residues	Total 4/	Waste and scrap	Metal powder (gross weight)	Gold compounds (gross weight)
Imports for consumption:	concentrates 2/	precipitates	oumon 5/	residues	1011111	(gross weight)	(gross weight)	(gross weight)
2000	- 65	39,000	184,000	60	223,000	29,800	6,720	7,970
2001:	_	37,000	104,000	00	223,000	27,000	0,720	7,570
March	- 3	1,570	17,000	2	18,500	1,920	524	335
April	- 2	1,490	12,200	7	13,700	1,540	462	78
May:	- ========	1,.,,	12,200		15,700	1,010	.02	,,,
Brazil			1,650		1,650	(5/)		54
Canada	- 9		6,930		6,940	123	606	7
Colombia		208	383		591			,
Costa Rica	-	200				171		
Dominican Republic			20		20	439	5	
Honduras	-	501			501			
Japan		301 			J01 		2	303 6/
Mexico	-	285	57		342	99		303 0/
Nicaragua		136		1 6/	137			
Peru		674		1 0/	674	 		
Other		143	258		401	153	4	21 6/
Total	9	1,950	9,300	1	11,300	984	618	385
Year to date	- 15	7,720	69,700	98	77,500	7,980	3,530	1,150
Exports:	- 13	7,720	09,700	90	77,300	7,980	3,330	1,130
2000	745	106,000	440,000		547,000	64,100	1,130	1,390,000
2001:	- 143	100,000	440,000		347,000	04,100	1,130	1,390,000
March	- 4	5,310	61,700		67,000	3,810	328	170,000
April	- 2	10,400	61,800		72,200	5,320	31	18,900
May:	- ==========	10,400	01,000	<u></u>	72,200	3,320	31	16,900
Aruba	-						2	
Belgium						158		
Canada		750	 26		776	2,150		3,630 6/
Germany		/50	26			2,130	2 2	5,630 6/ 54 6/
Israel	- 							
	- 		1		1		 25 (10,000 6/
Mexico	- 		865		865		35 6	
Netherlands	- 						4	12
Peru			418		418			
Switzerland	- 1	9,050	56,100		65,200			
Trinidad and Tobago	_ 7				7	1.050		
United Kingdom		3,110	5,110		8,220	1,050	73	362 6/
Other	(5/)	6	130		135	55		
Total	_ 8	12,900	62,700		75,600	3,690	117	14,100
Year to date	115	38,300	291,000		319,000	21,000	869	403,000

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes gold content of base metal ores, concentrates, and matte imported for refining.

^{3/} Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

^{4/ &}quot;Waste and scrap," "Metal powder," and "Gold compounds" not included in "Total."

^{5/} Less than 1/2 unit.

^{6/} All or part of these data have been referred to the U.S. Census Bureau for verification.

TABLE 4 U.S. IMPORTS FOR CONSUMPTION OF SILVER 1/

(Kilograms of silver content, unless otherwise specified)

						Other			Semimanu-	
			Ores			unwrought	Metal	Silver	factured	Waste
			and	Ash and		silver	powder	nitrate	form 3/4/	and scrap
Period and country	Bullion	Doré	concentrates 2/	residues	Total	(gross weight)				
2000	3,810,000	73,900	1,420	55,800	3,940,000	204,000	235,000	24,200	140,000	1,130,000
2001:	_									
March	276,000	1,020	4,600		282,000	54,000	988	4,320	18,700	185,000
April	217,000		6,940		224,000	3,340	591	8,060	14,500	103,000
May:	_									
Australia				288	288					1,220
Belgium									115	
Brazil									8,640	2
Canada	106,000		2,610	1,330	110,000	893	(5/) 6/		1,030	32,100
Chile		6,480			6,480					
Dominican Republic										484
Finland									107	11
France						(5/) 6			11	
Germany									1,050	22,700
Guatemala										1
Hong Kong									16	7
India									55	
Ireland										157
Israel	19				19					
Italy						81			966	
Jamaica										1
Japan				1	1		85 6/		110	4
Korea, Republic of							84		410	36
Malaysia										66
Mexico	90,600	6,880		828	98,300	8,450 6			160	2,470
Netherlands									11	(5/
Peru	10,200				10,200					
Poland	7,390				7,390					
Singapore										1,460
Switzerland							35			
United Kingdom				633	633				212	150
Zimbabwe	<u> </u>									86
Total	214,000	13,400	2,610	3,080	233,000	9,430	204		12,900	61,000
Year to date	1,190,000	27,300	2,610	15,900	1,240,000	99,500	18,700	25,400	64,000	228,000

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes silver content of base metal ores and concentrates.

^{3/} Containing 99.5% or more by weight of silver.

^{4/} Semimanufactured (including silver plated with gold or platinum) forms of silver.

^{5/} Less than 1/2 unit.

^{6/} All or part of these data have been referred to the U.S. Census Bureau for verification.

TABLE 5 U.S. EXPORTS OF SILVER 1/

(Kilograms of silver content, unless otherwise specified)

					Other			Semimanu-	
			Ores		unwrought	Metal	Silver	factured	Waste
			and		silver	powder	nitrate	form 3/	and scrap
Period and country	Bullion	Doré	concentrates 2/	Total	(gross weight)				
2000	279,000	36,000	65,100	380,000	57,500	424,000	217,000	148,000	1,670,000
2001:	_								
March	22,800	719	4,600	28,100	4,580	36,200	17,800	18,700	185,000
April	76,600	2,760	6,940	86,300	2,500	16,100	15,000	14,500	103,000
May:									
Belgium						70	327	222	20,500
Brazil									4,800
Canada	695			695		1,280	19,700	2,680	83,400
China							·		30,600
Colombia								173	
Costa Rica	-								315
Dominican Republic					289				
Finland	- -					231			
France						423		845	
Germany					2,650	3,820		69	17,500
Hong Kong					43	24 4/		228	46
India	19,100			19,100				(5/)	
Ireland	- ´-				16			69	
Israel	- -							15	
Italy	-				8 4	/		16	31,100
Japan					38	676		7,150	
Korea, Republic of	- -				23	3,190		77	
Mexico	18		24,600	24,700		170	205	865	57
Netherlands	- -				8 4	/		651	
New Zealand	- -							60	
Peru								50	
Saudi Arabia	- -								183
Singapore						64 4/		591	
South Africa	-								253
Spain	- 							1,030	
Switzerland	- 	991		991		24		1	
Taiwan					1,910	612	102	115	
United Kingdom	19,000	516	15 4/	19,500	893	2,380 4/		214	2,270
Total	38,700	1,510	24,700	64,900	5,880	13,000	20,300	15,100	191,000
Year to date	183,000	6,150	65,900	255,000	17,300	110,000	89,300	74,900	705,000

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes silver content of base metal ores and concentrates.

^{3/} Semimanufactured (including silver plated with gold or platinum) forms of silver.

^{4/} All or part of these data have been referred to the U.S. Census Bureau for verification.

^{5/} Less than 1/2 unit.

$\label{thm:table 6} \textbf{U.S. IMPORTS FOR CONSUMPTION OF PLATINUM-GROUP METALS 1/}$

(Kilograms of metal content)

	Platinum		Other		Platinum							
	grain and	Platinum	unwrought	Platinum,	waste and	Platinum	Unwrought	Palladium,		Unwrought	Unwrought	
Period and country	nuggets	sponge	platinum	other	scrap	coins	palladium	other	Iridium 2/	osmium	ruthenium	Rhodium 3/
2000	2,550	68,000	3,870	7,480	12,100	27	154,000	27,900	2,700	133	20,800	18,200
2001:												
March	218	5,670	432	329	343	1	40,000	721	189		446	566
April	272	5,380	94	471	235	14	10,900	1,680	193	5	601	707
May:	-											
Australia				(4/)								
Belgium		408					1,290	350 5/				165 5/
Brazil					45					-		
Canada	6		2	44	12		325					
China			2							-		(4/)
Colombia			13									
Dominican Republic					1							
France			1									62
Germany	27	282	12	156	39		147	84	12		57	40
Hong Kong					(4/)							
Ireland		65										25
Israel			38									
Italy	9	85						97				(4/)
Japan			(4/)				10	59				` <u></u>
Korea, Republic of			15					16				
Mexico					14							
Netherlands				(4/)				(4/)				
Norway		105					269					5
Russia			19				1,040	3,170				301
Singapore							·	3				
South Africa	124	3,840	405		4		1,410	331	52	9	356	311
Switzerland			5	81			94	22				
Taiwan					11		1					
United Kingdom	81	445	1	33	18	(4/)	116		158		32	1,290
Total	247	5,230	514	315	143	(4/)	4,700	4,130	222	9	446	2,190
Year to date	1,360	28,100	1,330	1,860	1,800	23	105,000	8,540	1,850	42	2,500	4,920

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Unwrought and other forms of iridium.

^{3/} Unwrought and other forms of rhodium.

^{4/} Less than 1/2 unit.

^{5/} All or part of these data have been referred to the U.S. Census Bureau for verification.

TABLE 7 U.S. EXPORTS OF PLATINUM GROUP METALS 1/

(Kilograms of metal content, unless otherwise specified)

Period and country	Palladium 2/	Platinum 2/	Platinum waste and scrap	Iridium, osmium and ruthenium 2/3/	Rhodium 2/
2000	57,900	25,000	7,360	1,480	797
2001:		20,000	7,500	1,100	,,,
March	4,100	5,420	1,110	82	473
April	2,260	2,820	2,590	87	91
May:					
Australia	 18	20			1
Austria		6			
Belgium		1	12		
Brazil	1 4/	47			
Canada	531	436	55	83	
Denmark	_ 6	6 4/			
Finland	- 4	2			
France	- 36 4/	6			
Germany		343	492	1 4/	1
Greece	3 4/				
Hong Kong	4	4			1
Ireland	— 97 4/	5			
Italy	30	12			39
Japan		506	54	103	31
Korea, Republic of		11	48		
Kuwait	_ 1	2			
Malaysia	<u> </u>	9 4/			
Mexico	3 4/	17 4/		2	(5/)
Netherlands	_ 2	6		(5/)	
New Zealand	_ 9				
Norway	36	48			2
Philippines	_ 7 4/	8			
Saudi Arabia		2			
Singapore	— 192 4/				
Slovenia	_ 3				
South Africa	5 4/		(5/)		
Spain		1			
Sweden	_ 2	4			
Switzerland		319			
Taiwan					
Thailand	(5/)	1		(5/)	(5/)
Turkey	(5/)			(5/) 4/	
United Arab Emirates	- 3 4/				(5/)
United Kingdom	1,170 4/	241	929	64	5
Total	3,520	2,070	1,590	254	79
Year to date	22,600	14,300	7,410	722	856

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Unwrought and other forms. 3/ Gross weight.

 $^{4/\,}All$ or part of these data have been referred to the U.S. Census Bureau for verification.

^{5/} Less than 1/2 unit.