

Mineral Industry Surveys

For information, contact:

Earle B. Amey, Gold Commodity Specialist Henry E. Hilliard, Silver and Platinum-Group Metals

Commodity Specialist U.S. Geological Survey 989 National Center Reston, VA 20192

Telephone: (703) 648-4969 (Gold), (703) 648-4970 (Silver and PGM)

Fax: (703) 648-7757

E-mail: eamey@usgs.gov and hhilliar@usgs.gov

Mahbood Mahdavi (Data) Telephone: (703) 648-7778 Fax: (703) 648-7975

MINES FaxBack: (703) 648-4999

Internet: http://minerals.usgs.gov/minerals

PRECIOUS METALS IN SEPTEMBER 2001

The amounts of gold and silver produced in U.S. mines were not available for September 2001, but will be published in the October monthly report.

Gold

Domestic.—Newmont Mining Corp. reopened its Deep Post underground gold mine in Nevada, which had been closed by slope movement in the adjacent Betze-Post open pit gold mine. The south wall at the Betze-Post pit was being monitored with a geotechnical program that included measuring ground conditions and establishing a safe perimeter around the disturbed slope. No damage or injury was reported (American Metal Market, 2001c).

The cache of precious metals that had been buried in a vault under the collapsed World Trade Center has been recovered and moved to an undisclosed location (American Metals Market, 2001b).

International.—A two-day national strike took place during the last week of August in South Africa, forcing a number of gold and platinum mines to close shafts. Five to 10 shafts were shut down at a few mines because most of the workforce did not report to work. The National Union of Mineworkers, which represents most mine workers, organized the strike. The overall effect of the strike reportedly was minor (Platts Metals Week, 2001d).

Normandy Mining Ltd. in Australia received a takeover offer from South Africa-based AngloGold Ltd. Normandy represents more than half of Australia's gold output. The AngloGold bid of \$1.7 billion is by far the largest offer for an Australian gold producer, surpassing in value the offer by Homestake Mining Co. for Plutonic Resources five years ago (American Metal Market, 2001a).

Delta Gold Ltd. and Goldfields Ltd., both Australian companies, agreed to merge their operations to create a 34,000 kilogram-per-year gold producer. Under the agreement, Delta's managing director heads the merged company. No name was chosen for the new company (Platts Metals Week, 2001a).

A researcher at the University of Massachusetts discovered that certain microscopic organisms can turn dissolved gold into solid gold. Extremophiles, which live in extreme thermal conditions near hot springs and volcanic vents in the ocean, absorb dissolved gold and excrete the gold as tiny particles. It is estimated that about one million microbes can generate a gram of solid gold. With the microbes, traces of gold can be recovered that would otherwise be lost in ground water (Applied and Environmental Microbiology, 2001).

WMC Resources Ltd. agreed to sell its Agnew and St. Ives gold operations in Western Australia to South Africa-based Gold Fields Ltd. for \$232 million in cash and shares, plus royalties. All employees at the operations were offered positions with Gold Fields (Metal Bulletin, 2001a).

The Bank of England sold 20,000 kilograms (kg) of gold at \$280 per troy ounce on September 12. The auction, which was 4.3 times oversubscribed, was the third in a series of six gold auctions, designed to reduce British gold reserves by 120,000 kg. The over-subscription rate was only marginally higher than that at the July 11th sale (Platts Metals Week, 2001b).

Silver

Hecla Mining Company reported production of about 184,000 kg of silver in the first 9 months of 2001 at an average cash cost of \$3.45 per ounce. Production was down from 2000 due to reduction of operations at the Lucky Friday silver mine in northern Idaho. By the end of 2001, production at Lucky

Friday will reportedly be down to 25% of full production, and the mine is expected to produce only about 31,000 kg of silver in 2002. According to Hecla, production at Lucky Friday is being cut back to conserve cash and preserve the silver resources for a time when silver prices improve. Hecla's perounce silver production costs decreased because of reduced production from the higher cost Lucky Friday Mine, lower cost production from its San Sebastian Mine in Mexico, and increased production from the company's lower cost Greens Creek silver/zinc/gold mine in Alaska. The Greens Creek Mine produced 262,000 kg of silver in the first 9 months of 2001 (77,800 kg for Hecla's account) at an average cash cost of \$2.24 per ounce. Hecla owns a 29.73% interest in the operation, which is managed by Kennecott Greens Creek Mining Company. The increase in production was possible owing to increased throughput at the mill as well as improvement in the average ore grade from 625 grams per ton (g/t) to 700 g/t (Hecla Mining Company, 2001).

Platinum-Group Metals

Platinum-group metal prices fell sharply as U.S. metal markets reduced activity during the Labor Day holiday weekend. The prices of platinum and palladium fell by about \$20 and \$30 per ounce, respectively, on August 31 and were trading at \$446 per ounce (platinum) and \$461 per ounce (palladium) on the NYMEX on September 1. The fall in prices followed speculation among traders that Russia could increase exports in an already over supplied market. Prices began to move upward on September 14, boosted by a surge in the price of gold. Platinum rose to a fix at \$473 per ounce, a gain of \$18 from \$455 per ounce on the PM Fix of September 13. Palladium rose to a fix at \$460 per ounce, up from the September 13 PM Fix of \$450 per ounce (Platts Metals Week, 2001c).

Third quarter production of palladium and platinum at the Stillwater Mine near Nye, MT, increased 26% to 3,830 kg compared with 3,050 kg in the third quarter of 2000. This does

not include 280 kg of palladium and platinum generated from development activities at the nearby East Boulder Mine. Greater production was primarily due to a 28% increase in total tons of ore milled. In the first 9 months of 2001, the Stillwater Mine produced 11,500 kg of palladium and platinum compared with 9,580 kg in the first 9 months of 2000, the result of a 22% increase in total tons of ore milled. The mine reportedly remains on track to reach its production target of 15,600 kg of palladium and platinum in 2001. The Stillwater Mining Company also remains on target to begin commercial production at its East Boulder Mine in 2002 and to reach the company's targeted annualized production rate of approximately 31,100 kg per year during 2003 (Stillwater Mining Company, 2001).

References Cited

- American Metal Market, 2001a, AngloGold's merger offer gets tepid reaction from Normandy: American Metal Market, v. 109, no. 173, September 7, p. 2.
 ——2001b, Gold to go: American Metal Market, v. 109, no. 213, November 1, p. 1.
- ——2001c, Newmont reopens Nevada mine: American Metal Market, v. 109, no. 173, September 7, p. 12.
- Applied and Environmental Microbiology, 2001, Reductive precipitation of gold by dissimilatory Fe(III) reducing bacteria and archaea: Applied and Environmental Microbiology, v. 67, no. 7, July, pp. 3275-3279.
- Hecla Mining Company, 2001, Hecla reports improved nine-month and third quarter results for the period ending September 30, 2001: Coeur d'Alene, ID, Hecla Mining Company news release, November 1, p. 2.
- Metal Bulletin, 2001, Gold Fields pays \$232m for WMC's gold assets: Metal Bulletin, no. 8611, September 27, p. 6.
- Platts Metals Week, 2001a, Delta Gold, Goldfields to merge: Platts Metals Week, v. 72, no. 39, September 24, p. 15.
- ——2001b, Gold again favored by some: Platts Metals Week, v. 72, no. 38, September 17, p. 5.
- ——2001c, Platinum/palladium surge higher: Platts Metals Week, v. 72, no. 38, September 17, p. 6.
- ——2001d, South Africa's national strike hits gold, platinum mines: Platts Metals Week, v. 72, no. 36, September 3, p. 14.
- Stillwater Mining Company, 2001, Stillwater Mining reports third quarter earnings: Columbus, MT, Stillwater Mining Company news release, October 26, p. 2.

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

(Kilograms)

				Other	
Gold	Alaska	California	Nevada	States 2/	Total
2000:					
September	1,510	1,460	21,900	3,780	28,600
October	1,510	1,390	19,000	4,370	26,300
November	1,510	1,180	23,600	3,780	30,100
December	1,440	1,190	25,000	4,520	32,200
January-December p/	16,400	16,800	260,000	51,900	345,000
2001:					
January	1,390	1,370	21,800	4,500	29,000
February	1,280	1,090	19,700	4,320	26,400
March	1,390	1,320	20,500	3,450	26,600
April	1,240	1,180	20,300	4,280	27,000
May	1,290	857	20,700	4,620	27,500
June	1,240	1,270	22,200	4,720	29,400
July	W	1,070	22,700	5,840	29,600
August	1,370	819	20,800	3,790	26,800
September	NA	NA	NA	NA	NA
January-September	NA NA	NA	NA	NA	NA
<u> </u>				Other	
Silver	Arizona	Idaho	Nevada	States 3/	Total
2000:					
September		34,500	60,900	69,700	165,000
October	- W	34,500	45,900	58,000	138,000
November	W	34,500	57,800	66,400	159,000
December	W	34,500	61,200	73,000	169,000
January-December p/		416,000	747,000	848,000	2,020,000
2001:	_				
January		20,300	40,900	76,100	137,000
February	W	20,300	42,400	66,300	129,000
March	W	W	46,000	83,500	129,000
April	W	W	37,000	106,000	143,000
May	W	W	50,900	84,700	136,000
June	– W	W	60,400	92,400	153,000
July	– "W	W	43,700	87,600	131,000
August	_ ``	W	49,300	82,700	132,000
September	– NA	NA	NA	NA	NA
January-September	NA	NA	NA	NA	NA

p/ Preliminary. NA Not available. 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:				
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:				
July:				
Low/date	266.20/6	4.22/19	479.00/31	445.00/30
High/date	276.41/19	4.32/2	564.00/13	602.00/2
Average	268.87	4.26	532.76	526.38
August:				
Low/date	267.50/8	4.16/8 and 13	435.00/15	443.00/7
High/date	278.57/17	4.29/17	486.00/3	486.00/3
Average	273.50	4.21	456.22	458.52
September:				
Low/date	272.41/5	4.18/10	442.00/27	365.00/28
High/date	294.40/17	4.71/19 and 27	495.00/19 and 21	470.00/11,17 ,18
Average	285.36	4.42	462.89	445.94
Year to date:				
Low/date	257.04 (April 2)	4.16 (August 8 and 13)	435.00 (August 15)	443.00 (August 7)
High/date	294.40 (September 17)	4.87 (January 30)	645.00 (January 10 and 15)	1,100.00 (January 26)
Average	269.74	4.42	562.79	694.23
Handy and Harman:				
2000	278.96	5.00	XX	XX
2001:				
July	267.53	4.25	XX	XX
August	272.40	4.21	XX	XX
September	283.78	4.40	XX	XX
Average year to date	268.57	4.41	XX	XX
London Final: 1/				
2000	279.04	4.95	XX	XX
2001:				
July	267.53	4.25	XX	XX
August	272.39	4.20	XX	XX
September	283.42	4.35	XX	XX
Average year to date	268.53	4.40	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 (gross weight)	Metal powder (gross weight)	Gold compounds (gross weight)
Imports for consumption:		p-co-p-times				(8	(8:000 1:8:11)	(8
2000	- 65	39,000	184,000	60	223,000	29,800	6,720	7,970
2001:	-	3,,000	10.,000	00	225,000	2>,000	0,720	7,270
June	- 4	2,030	12,400	12	14,500	1,350	791	121
July	. 1	2,280	13,000	13	15,300	2,500	963	87
August:	= = = = = = = = = = = = = = = = = = = =	, , ,			- 7	,		
Brazil			2,410		2,410	1		37
Canada			12,800		12,800	206	910	
Chile	- 	67	450		517			
Colombia		53	295		348			
Dominican Republic	- 		9		9	1,060	3 5/	
France	- 					149		
Honduras		827			827			
Italy	- 		102		102			
Mexico	- 	130	176	1	307	2,230	6	
Nicaragua	- 	204		1 5/		<i>2,230</i>		
Peru	- 	855			855			
Other	2	71	151		226	156	1	27 5/
Total	2	2,210	16,400	2	18,600	3,800	920	64
Year to date	22	14,200	111,000	125	126,000	15,600	6,200	1,420
Exports:	- <i></i>	11,200	111,000	123	120,000	15,000	0,200	1,120
2000	745	106,000	440,000		547,000	64,100	1,130	1,390,000
2001:	- , 15	100,000	110,000		317,000	01,100	1,150	1,570,000
June	- 61	8,350	52,400		60,800	3,850	725	8,160
July	7	7,380	12,900		20.300	2,560	1.890	35.500
August:	- =	7,500	12,700		20,300	2,300	1,070	33,300
Belgium	- 					186 5	5/	
Canada	-	379	34		413	2,040 5		7,850 5/
Dominican Republic	. <u></u>	319	J- 1		413	2,040 .	,, 3	197 5/
French Polynesia	-						1	177 37
Guatemala			123		123	111		
Ireland	- 		123		123		157	
Japan	. <u></u>	2			2		137	
Mexico	(6/)		1,210		1,210		1,850	115
Peru	- (0/)	28	899		927		1,030	113
South Africa	- 	20			921		3	
Sweden	- 		2		2	119 5		
	- 							
Switzerland Trinidad and Tobago		4,710	1,080		5,800	85	81	
	_ 2		1.520		1.520			
United Arab Emirates	. 	2 (00	1,530		1,530	200		
United Kingdom		2,690	3,100		5,780	298 84		2
Other		(6/)	130		131		5/ 2.100	
Total	2	7,810	8,100		15,900	2,930	2,100	8,200
Year to date	185	61,900	354,000		416,000	30,400	5,580	455,000

⁻⁻ Zero.

 $^{1/\,\}text{Data}$ 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/} All or part of these data have been referred to the U.S. Census Bureau for verification.

^{6/} Less than 1/2 unit.

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:										
June	178,000	27,200		3,150	208,000	37,600	480	60	16,300	150,000
July	264,000	29,300	2,330	2,710	298,000	25,800	488	20	21,800	201,000
August:	-									
Australia				360	360					82
Brazil									9,330	17
Canada	103,000 5/			2,100	105,000	19,900 5			729	25,900
Chile	6,000	17,700			23,700					-
China										804
Colombia	409				409					
Dominican Republic										143
France							300		98	
Germany									433	3,530
Honduras		81			81					
India									65	
Ireland										345
Italy									235	
Japan						10 5	270		213	129
Korea, Republic of							88		642	443
Malaysia										66
Mexico	118,000			860	119,000	15,300				1,950
Peru	15,300				15,300					
Philippines										1,220
Singapore										178
Switzerland						516			8	664
United Kingdom				677	677	104 5			32	20,500
Other									75	138
Total	243,000	17,800		3,990	265,000	35,900	658		11,900	56,200
Year to date	1,870,000	101,000	4,940	<u></u>	1,980,000	199,000	20,300	25,500	114,000	635,000

⁻⁻ 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/} 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)	(gross weight)	(gross weight)	(gross weight)	(gross weight)
2000	279,000	36,000	65,100	380,000	57,500	424,000	217,000	148,000	1,670,000
2001:	_								
June	44,300	740	33,700	78,700	2,190	8,080	8,900	11,400	111,000
July	20,100	1,490	25,400	47,000	12,300	13,200	15,600	21,200	147,000
August:									
Belgium			5 4/	5		52			9,160
Brazil			-					791	6,260
Canada					143	1,410	12,400	5,770	66,500
China			-			1,940		59	13,300
Colombia			-			453			
Costa Rica			-						166
Dominican Republic	- 		-		230				
France			-			250		531	
Germany			-		673	1,620		41 4	7,750
Hong Kong	- 		-			54	15	302	2
Israel	- 		-			19	145	143	
Italy	- 		-					253	463
Japan			-		37	555		2,660 4	5,250
Korea, Republic of			-		13	3,400		840	
Lebanon			-			111			
Mexico			21,000	21,000	67	423	627	16,400 4	
Netherlands			-			56		459	
Saudi Arabia			-						12,700
Singapore			22	22		120		195	
Spain	 -							845	
Sweden			-			684			
Switzerland	502	609		1,110		41		2 4	403
Taiwan			-		2,090	1,910 4	1 / 280	78	
United Kingdom	57,400	561		57,900	91	249	34	140 4	29,700
Venezuela							63		
Other			<u></u>		12	6.4		34	
Total	57,900	1,170	21,000	80,100	3,360	13,300	13,600	29,600	152,000
Year to date	305,000	9,550	146,000	461,000	35,100	145,000	127,000	137,000	1,120,000

⁻⁻ 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.

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

(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:												
June	265	5,770	941	766	191	(4/)	14,800	685	194		694	1,640
July	393	5,940	446	261	252	2	12,300	589	207		496	722
August:												
Australia						6						
Austria												
Belgium		319 5/					1,600					155
Brazil					161							
Canada	15			89	39		150					
Chile					67							
China							55					
Colombia			11				3					
Czech Republic								6				
Finland												
France												
Germany	32	686	101	236	50		253	72	7		36 5	i/ 25
India												
Ireland												
Israel			71									
Italy		27					127	(4/) 5/				3
Japan				10	(4/)		171	433 5/				(4/)
Korea, Republic of					31							
Mexico					15							
Netherlands								2 5/				
Norway		16					283					
Peru				(4/)								
Philippines				`								
Russia		714			10		3,670	32				90
Singapore					40							
South Africa	2	4,480	94		31		2,790	143	70		570	368
Sweden		´					´					
Switzerland			(4/) 5	/ 88		11	672	34				
Taiwan					1		1					
United Kingdom	143	722	40 5	/ 48	20		1,140	12	199 5	5/		416
Total	193	6,960	317	473	464	17	10,900	734	276		605	1,060
Year to date	2,210	46,600	3,030	3,360	2,710	42	119,000	10,400	2,530	42	4,300	8,340

⁻⁻ 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)

			Platinum waste and	Iridium, osmium and	
Period and country	Palladium 2/	Platinum 2/	scrap	ruthenium 2/3/	Rhodium 2/
2000	57,900	25,000	7,360	1,480	797
2001:	_				
June		2,630	607	83	2
July	2,010	3,290	1,400	82	7
August:	_				
Australia	17 4/	7		-	
Austria		1			
Belarus	32				
Belgium	15 4/	6	2		
Brazil		109			
Canada	757	200	55	4	(5/)
China		1	2		
Finland		2			
France	9 4/	24 4/			
Germany	263 4/	353	733		9
Hong Kong		5			(5/)
Iceland					` <u></u>
India			(5/)		
Ireland	10 4/	8			
Israel		1			
Italy	36 4/	1			30
Japan	453	319	42		<u></u>
Korea, Republic of	640 4/	168		1	
Lebanon	(5/)			<u></u>	
Malaysia	1 4/	8			<u></u>
Mexico	_ 2	12 4/			(5/) 4/
Netherlands	- -	19 4/			
New Zealand					
Norway	_				
Philippines	6 4/				
Saudi Arabia	_ 2 "				
Singapore		2			
Slovenia					
Spain		(5/)			
Sweden	- 3 4/	5			
Switzerland	_ 2	186	73		
Taiwan		4	13		
Thailand		3		(5/)	
Turkey	_ 12 1			(3/)	
United Arab Emirates	$-\frac{1}{2}$	 1 4/			
				94	
United Kingdom Total		203 1,650	234	84 89	39
			1,140		
Year to date	29,800	21,900	10,500	977	905

⁻⁻ Zero

 $^{1/\,\}mathrm{Data}$ 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.