SUMMARY & OUTLOOK

PLATINUM

- ***Supplies of platinum will fall by 340,000 oz to 5.06 million oz in 1999, mainly due to a 38 per cent drop in Russian shipments.***
- ***Demand for platinum will rise by 200,000 oz to a new high of 5.59 million oz, leading to a drawdown of market stocks by 530,000 oz.***
- ***Platinum use in autocatalysts will fall by 70,000 oz to 1.75 million oz as substitution by palladium advances in North America.***
- ***Jewellery demand will expand by 320,000 oz to 2.73 million oz with growth in all regions, particularly in China.***
- ***Increased use in process catalysts and computer hard disks will lift industrial demand by 90,000 oz to 1.34 million oz.***
- ***Lower sales of platinum Eagle coins in the USA and large bars in Japan will reduce investment demand by 115,000 oz to 200,000 oz.***
- ***Reacting to market tightness and a sudden rise in the price of gold, the platinum price rose sharply to over $430 in early October.***

Platinum Supply and Demand		JM
'000 oz		
	1998	**1999**
Supply	*5,400*	*5,060*
Demand	*5,390*	*5,590*
Movements in stocks	**10**	**(530)**

Demand for platinum will reach a new record of 5.59 million oz in 1999. Consumption in jewellery fabrication is forecast to grow in all regions, with demand from China soaring by 230,000 oz despite showing some sensitivity to the rising price of platinum in September. Industrial demand has grown again, with increased use of platinum in process catalysts and computer hard disks. In the auto sector there has been further substitution of platinum by palladium in catalysts fitted to gasoline vehicles, but strong sales of diesel cars will help maintain demand in Europe. Sales of platinum investment products are forecast to decline by over one third.

South African supplies will rise by 140,000 oz this year to 3.82 million oz, as output from a number of expansion projects begins to come through. Russian exports have been severely hampered by legislation passed in late December 1998 which contained a provision ('Clause 19') restricting the export of pgm to specially authorised 'State Organs' in Russia. As neither Almaz nor any other Russian organisation precisely fits this description, exports of platinum ceased after the first few months of 1999. Our forecast assumes that exports will be resumed before the end of 1999 and will reach 800,000 oz. Higher supplies from Zimbabwe will be counterbalanced by a decrease from North America. Expected future growth in Zimbabwe has, however, been set back by the closure of the Hartley Platinum mine.

With demand strong, and supplies from Russia limited, we expect a deficit of 530,000 oz in 1999. Part of this will be met from sales by the US Defense Logistics Agency (DLA) of metal that has been accumulated in the US Strategic Stockpile over many years. At the end of 1998 this stock contained 439,887 oz of platinum. The DLA sold 100,065 oz of metal between June and September 1999, and is authorised to sell a further 125,000 oz of platinum in

the period from October 1999 to September 2000.

Despite the lack of exports from Russia, market liquidity was satisfactory for much of the first nine months of the year. However, the price began to move upwards in mid September and was driven up sharply by short covering in all precious metals following the announcement by 15 European central banks on 27 September that they planned to limit their future sales of gold.

For the next six months we expect the price of platinum to trade between $370 and $440. We have assumed that the Russian 'Clause 19' issue will be resolved in time for exports of platinum to recommence before the end of 1999. If this does not happen the Russian supply figure will be less than 800,000 oz and the price could exceed the upper limit of our range.

Supply

The rand income of South African pgm producers has risen significantly in 1999. Although the dollar price of platinum in the first nine months fell by $21 to $359 compared with the same period in 1998, the prices of palladium and rhodium both increased. Overall, the rand value of a representative basket of pgm prices has increased by about 18 per cent this year. With current income rising, and a greater confidence by the mines that platinum demand will continue to grow, the number of expansion projects in South Africa has increased. During 1999, three projects have led to an increase in production, and others are planned to come on-stream over the next few years.

Amplats is leading the way, with output from the new Bafokeng Rasimone Platinum Mine adding to announced expansions at PPRust, Amandelbult and Lebowa, and the company has indicated that further expansion projects will be unveiled before the end of 1999. In September, Amplats also announced an agreement to exchange mineral rights for shares in Northam Platinum, a deal that will extend the life of Northam to more than twenty years.

Platinum Supply JM

'000 oz

	1998	1999
South Africa	*3,680*	*3,820*
Russia	*1,300*	*800*
North America	*285*	*275*
Others	*135*	*165*
Total Supply	**5,400**	**5,060**

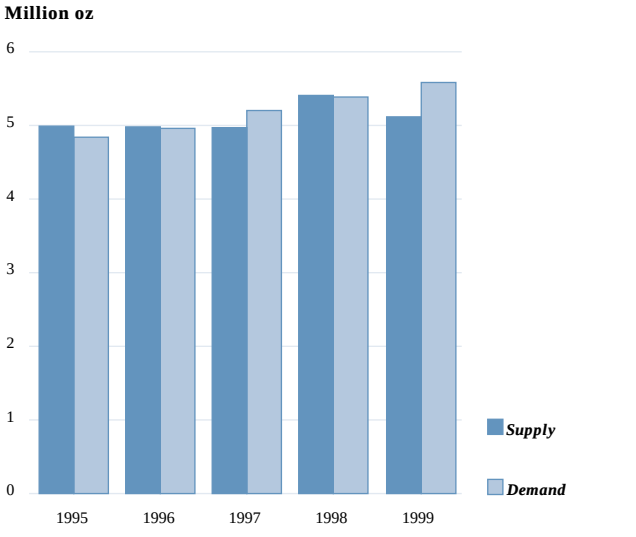
The second largest producer in South Africa, Impala Platinum, is developing a series of decline shafts from its existing underground workings that will enable the company to lift its annual platinum production to 1.1 million oz. Impala is also carrying out feasibility studies on its Crocodile River and Everest South properties and is planning to use spare smelting and refining capacity to take material from a number of independent mining operations on the Bushveld Complex. The first of these is Kroondal Platinum, which delivered the first concentrate from its open pit mine in August 1999.

The Russian supply situation has again been unclear this year, with approval of export quotas and licences severely delayed. Rumours that President Yeltsin had authorised quotas for 20 tonnes of platinum in February proved unfounded. On the contrary, it emerged that a clause contained in a bill concerning the Russian budget, signed by the President on 29 December 1998, had restricted the export of platinum group metals to specially authorised 'State Organs' only, and that none of the bodies presently involved in pgm trade in Russia legally met this specification.

Although a subsequent presidential decree allowed for palladium exports, platinum and other pgm remain trapped by Clause 19 of the Federal Law 'On the top priority measures in the budget and taxation policy'. Efforts are underway to secure an amendment to this law to enable exports to resume but it is not clear if these will be successful before the end of 1999. It is possible therefore that our supply estimate of 800,000 oz will prove to be too high.

Platinum sales from other western mines will rise by 20,000 oz to 440,000 oz in 1999, but this is a smaller increase than had been expected. Output in North America has been affected by

Supply and Demand for Platinum 1995-1999 JM



mining problems at Stillwater Mining in the USA. In June, the closure was announced of the Hartley Platinum mine in Zimbabwe, although metal in process will continue to be recovered for much of 1999.

Demand

Purchases of platinum by the auto industry are forecast to decline for the third successive year, with demand in 1999 expected to be 1.75 million oz, 70,000 oz less than last year. This is despite very high auto sales in the USA and Europe. In both of these regions, manufacturers are increasing catalyst loadings of palladium, at the expense of platinum, to meet tighter controls on hydrocarbon (HC) emissions. Financial incentives for buyers, coupled with marketing strategies by some auto makers, have combined to bring forward the date at which many vehicles meet these lower emission standards.

In Europe, diesel cars have gained market share and now account for 26 per cent of new car sales. Platinum catalysts are fitted to these vehicles to cope with the lean environment of the diesel engine, and this has helped maintain platinum demand in the auto sector. Several auto makers worldwide have increased their research on platinum-based catalysts for gasoline engines, eager perhaps to reduce their dependency on palladium, but it seems unlikely that this will cause a major shift back to platinum in the near future.

Demand for platinum in jewellery has advanced substantially once again and is expected to reach 2.73 million oz this year, up 320,000 oz on 1998. The largest increase has been in China where demand raced ahead during the first eight months of the year. However, as the price of platinum rose during September, purchases by jewellery manufacturers were cut back sharply. It is not yet clear how long it will take for the Chinese jewellery sector to adjust to higher prices. Our forecast allows for much slower demand in the final quarter of the year.

In Japan, total sales of precious metal jewellery have again fallen, being 2 per cent down by number of pieces and 7 per cent down by value in the first seven months of 1999. Despite this, sales of platinum items have risen by 3 per cent and this has led to some rebuilding of stocks in the distribution pipeline. As a result, demand in Japan is expected to rise by 30,000 oz to 1.32 million oz, the first increase for four years.

The Japanese economy has shown clear signs of recovery in 1999, but many members of the public are still concerned about their employment prospects and are unlikely to increase the proportion of their personal disposable income spent on luxuries such as jewellery. Hence, although platinum continues to increase its market share, the jewellery industry in Japan still faces a difficult time for the next year or two.

Platinum demand for jewellery in North America will rise by 20 per cent this year to reach 300,000 oz. Producers of platinum jewellery have been capitalising on the fashion trend for white jewellery and, although platinum consumption is still mainly in the bridal sector, domestic production of platinum neckchains has increased. With some of the larger US jewellery manufacturers having difficulty in keeping pace with growing demand from consumers, an increasing amount of platinum jewellery is being drawn from other countries such as Italy, India and China.

Demand for platinum jewellery is well established in Germany, Italy and Switzerland and has benefited from the general trend for white metal jewellery. There have also been

Platinum Demand by Application

'000 oz

		1998	**1999**
Autocatalyst:	*gross*	*1,820*	*1,750*
	recovery	*(405)*	*(430)*
Jewellery		*2,410*	*2,730*
Industrial		*1,250*	*1,340*
Investment		*315*	*200*
Total Demand		**5,390**	**5,590**

advances in other countries in Europe. For example, in the United Kingdom, hallmarking of platinum jewellery increased by 48 per cent in the first nine months of 1999 compared with the same period last year.

Industrial uses of platinum continue to take more metal, with demand in 1999 forecast to be up by 90,000 oz to 1.34 million oz. The most rapidly growing application is the use of platinum to enhance the memory storage capability of disks in computer hard drives. The market for these disks is expected to grow by 10 per cent this year, and the proportion in which the platinum-based technology is employed will also rise.

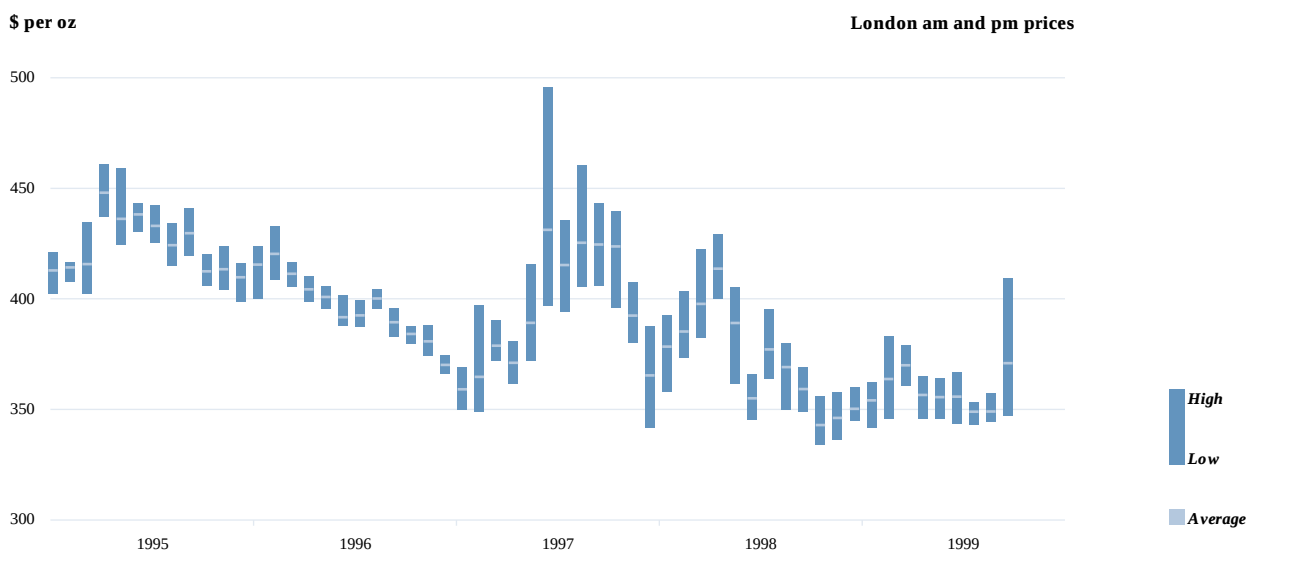
There has been increased demand this year from the chemical industry, particularly for platinum catalysts used in the production of silicones, and for the production of high purity benzene for conversion to nylon. Demand has also grown in the auto sector for non-catalyst applications such as spark plugs and sensors.

Investment demand for platinum is forecast to be down sharply by 115,000 oz in 1999 to 200,000 oz. Sales of US platinum Eagle coins in the first nine months have declined by 41 per cent compared with the same period in 1998. With the coming of the new millennium, some analysts have predicted that investors, concerned about the impact on financial institutions of the potential Y2K computer problem, would decide to switch some of their funds from cash deposits to hard assets, including precious metal investment products. Although there is some evidence of this in the USA, where sales of gold and silver Eagles have been buoyant in the first nine months of the year, platinum has not benefited. With sales of platinum bullion coins weak outside the USA, we predict that worldwide investment in coins

and small bars will fall by 90,000 oz to 120,000 oz in 1999.

Large bar investment in Japan is also expected to be down in 1999, with demand estimated at 80,000 oz. Platinum appears to have lost market share to gold, which fell below the psychologically important level of ¥1,000 per gram in June and was seen as undervalued compared to platinum. Although the platinum price also fell to levels that generated substantial buying of large investment bars in October 1998, no significant purchasing has occurred this year.

Monthly High, Low and Average Prices of Platinum 1995-1999



PALLADIUM

- ***Demand for palladium will rise by 205,000 oz in 1999 to a new high of 8.3 million oz.***
- ***With Russia expected to supply 5 million oz this year, supplies are predicted to fall by 730,000 oz to 7.67 million oz.***
- ***Autocatalyst demand has risen to 4.89 million oz, with sharp increases in the USA and Europe.***
- ***Electronics demand will fall by 11 per cent to 1.84 million oz as substitution of palladium in capacitors accelerates.***
- ***After falling to $295 in late April, the price of palladium settled into a range of $330 to $370 before advancing to over $390 in early October.***

Demand for palladium is expected to increase by just under 3 per cent to 8.3 million oz in 1999. On the other hand, supplies are forecast to fall by 9 per cent to 7.67 million oz. Although there has been no severe shortage of palladium in the market, the change from a surplus in 1998 to a deficit of 630,000 oz this year has driven the price of the metal up: in the first nine months of 1999 it averaged $343 compared to $284 for the same period of last year.

Part of the movement in stocks for 1999 of 630,000 oz has been satisfied by sales from the US Strategic Stockpile. Between June and September, the US Defence Logistics Agency sold 150,089 oz of palladium from the Stockpile, and it is authorised to sell a further 200,000 oz in the fiscal year beginning October 1999. The remaining metal required to satisfy demand has come from market stocks built up in recent years: in the period 1994 to 1998 we estimate that almost 2.3 million oz of palladium went into such stocks. Some of this metal was accumulated by hedge funds that bought palladium at much lower prices than the current level. These funds may have used the opportunity of higher prices to take profits in 1999.

Palladium Supply JM

'000 oz

	1998	1999
South Africa	*1,820*	*1,890*
Russia	*5,800*	*5,000*
North America	*660*	*620*
Others	*120*	*160*
Total Supply	**8,400**	**7,670**

Palladium Supply and Demand JM

'000 oz

	1998	1999
Supply	*8,400*	*7,670*
Demand	*8,095*	*8,300*
Movements in stocks	**305**	**(630)**

With Russia supplying about 60 per cent of the world's demand for palladium, the level of Russian exports is key to determining future prices. In the last two years, there has been a surge of such exports in the last quarter, followed by a cessation of exports early in the succeeding year. The granting of a ten-year quota to Noril'sk Nickel in March 1999 may help avoid this feast and famine situation over the coming year-end and ensure more stable prices. We therefore expect that palladium will trade in the range from $350 to $400 for the next six months.

Supply

Russian sales in 1999 are forecast at 5 million oz, 800,000 oz less than in 1998. In April the Russian government imposed a 5 per cent duty on exports of all precious metals (and many other commodities) and this led to heavy sales of palladium late in the month just before the tax came into effect. As a result, the price fell sharply to the year-to-date low of $295. For the following three months, no further palladium was exported as Almaz ceased sales. When, in July, it became apparent that the government was likely to extend the export tax ruling for at least a further six months, negotiations with prospective buyers began and, in August, exports resumed.

Early in the year, there was speculation about the policy of the Central Bank towards the stock of palladium which it holds. Financial pressures on the Russian authorities remained intense as negotiations for loans from the International Monetary Fund dragged on, and rumours abounded of the use of at least part of the Central Bank's stock of palladium as collateral for loans. Despite this, no firm evidence of such moves appeared and, in July, the Bank and Noril'sk Nickel announced that they had come to an agreement to ensure steady supplies to the market.

In April, the board of Noril'sk Nickel approved a new ten-year plan for the company which will see investment of $3-5 billion in mining, ore concentration, metallurgical processing, and general infrastructure. The main thrust of the plan is to reduce production costs rather than to increase production.

Supplies from western mines are expected to increase by 70,000 oz to 2.67 million oz. South African supplies are forecast to rise by 70,000 oz to 1.89 million oz, principally due to higher sales by Amplats. In North America, supplies from Stillwater Mining have been hit by production problems, although the long-term expansion of this operation is reported still to be on track. The closure of the Hartley Platinum mine in Zimbabwe was announced in June but the refining of ore mined in the first half of the year, supplemented by the processing of a concentrate stockpile, will increase palladium supplies from this source in 1999 and balance the shortfall from Stillwater.

Palladium Demand by Application

'000 oz

	1998	1999
Autocatalyst: gross	*4,390*	*4,890*
recovery	*(175)*	*(200)*
Dental	*1,230*	*1,160*
Electronics	*2,070*	*1,840*
Other	*580*	*610*
Total Demand	**8,095**	**8,300**

Demand

Demand for palladium has risen again, to a new record of 8.3 million oz, although growth has not been as high as in recent years. In the auto industry, where demand has grown by more than 30 per cent in each of the preceding seven years, purchases by auto companies are forecast to rise by 11 per cent this year. There has been further substitution in electronics and dental applications due mainly to the high price of palladium, with demand down by 11 per cent in electronics and 6 per cent in the dental sector.

Autocatalyst demand for palladium has once again grown in response to legislation forcing tighter control on hydrocarbon emissions. The largest increase has been in North America, where the proportion of light-duty vehicles meeting LEV standards is increasing rapidly. Also, in the USA, sales of cars and sports utility vehicles (SUVs) have been particularly strong in 1999. The popular SUVs have large engines and correspondingly large or heavily loaded catalysts and this has added to palladium demand. It also appears that some auto makers have again added to their inventories of metal, both as a response to increasing consumption and as protection against future disruption in Russian supplies.

Electronics companies have made further progress in switching from palladium to base metals in multi-layer ceramic capacitors (MLCC). In 1999, about one third of all MLCC will be manufactured with base metal electrodes, up from a quarter last year. Demand for all electronic applications of palladium is expected to be 1.84 million oz this year, down 230,000 oz on 1998.

Consumption of palladium in dental alloys will fall by 70,000 oz this year to 1.16 million oz, largely as a result of higher metal prices. In contrast, demand for palladium process catalysts and jewellery alloys will both increase marginally.

Monthly High, Low and Average Prices of Palladium 1995-1999