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Anglo American arrives

Anglo American plc made its much-awaited debut on the London Stock Exchange this Monday, simultaneously merging with its Luxembourg-listed offshore associate Minorco SA. The move has brought some sorely-needed positive publicity to the mining sector. AA shares opened at £33.20 each, before settling down to close the first day at £31.88/share.

The run-up to the transformation of Anglo American Corp. of South Africa (AAC) into Anglo American plc (AA) and its move to London has coincided with a general rally in mining shares, particularly among the larger companies, and the price of AAC shares has been further strengthened in recent weeks by the anticipation that there will be strong demand for the new shares from institutional investors, particularly the index-tracking funds, if AA joins the FTSE-100 index next month, as seems almost certain.

AA's move to London is part of a widespread restructuring of the group, including the disposal of non-core businesses, and is expressly designed to allow access to international capital markets to build the core mining business (*MJ*, October 16, 1998, p.293). Speaking to *Mining Journal* last week, the chief executive, Julian Ogilvie Thompson, said that although the recovery in mining shares might make some potential acquisitions more expensive than a few months ago, the strength of AAC's share price in recent weeks (and thus the anticipated value of AA shares) has meant that virtually all of the 25.6% of minority shareholders in Minorco SA have accepted the option of one AA share for every two in Minorco, rather than the option of US$16 in cash for each Minorco share. This will save AA about US$900 million in cash.

Unlike the similar move made by Billiton plc two years ago, AA is not issuing any new shares to the London market, and this has given rise to concerns that the index-tracking funds may find the shares scarce, particularly as a large swathe of AA stock is cross-held by its associate De Beers (35.4%) and by the founding Oppenheimer family (7.2%). On Tuesday, AA's two sponsoring stockbrokers in London, Cazenove & Co. and Warburg Dillon Read, announced the placement of the 12.6 million AA shares held by AA group subsidiaries (about 3% of the total 407.65 million issued) at £31.80/share "with a broad spread of institutions ... in response to (these) concerns". □

Anglo remains committed to primary exploration as others step back (this issue, p.403). (Photograph courtesy of Anglo American plc.)

Somboon signing

Asia Pacific Potash Corp. (APPC) and Norsk Hydro Asia Pte have signed an agreement concerning development of the Somboon potash mine, part of the Udon Thani potash resource in north-east Thailand. In return for its right to acquire a 20% interest, Hydro will provide 20% of the equity requirements for the development, construction and operation of the mine; purchase and market 1.5 Mt/y of potash output at prevailing regional potash prices for the entire life of the mine, estimated to be 25 years; and pay APPC a fee for each tonne of potash produced. The feasibility study for a mine at Somboon envisages annual production of 2 Mt and at current potash prices this would mean that Hydro's annual fee would be approximately US$7 million. Under the APPC-Hydro agreement, project financing with potential lenders, subordinate debt providers and direct equity participants is now being undertaken by a project development team.

The agreement includes a provision for another participant, with whom APPC is currently in negotiations, to be involved in the project on the basis of a 20% equity participation and an allocation of 0.5 Mt/y of potash at prevailing prices. APPC, which is 90%-owned by Vancouver-based Asia Pacific Resources Ltd, will retain a 60% interest in the jv. *Continued on p.394*

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Somboon signing

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The bankable feasibility study for Somboon, which confirmed the technical and economic feasibility of developing a mine (*MJ*, August 21, 1998, p.144), projects total direct and capital costs of US$535 million for a mine and processing facilities, and includes approximately US$46 million for a new deep-sea port and warehousing facility on the Gulf of Thailand. The project is located some 500 km from Bangkok in an area possessing good local infrastructure, including rail links to the coast. It is being granted privileges under the terms of the Thai Investment Promotion Act, to include an eight-year tax holiday followed by five years at 50% of normal corporate tax, and exemption from customs and export duties.

Somboon possesses a recoverable reserve of 120 Mt containing more than 23% K_2O, but is only part of the much larger Udon potash field where there is a total resource of around 1,000 Mt (*MJ*, June 26, 1998, p.485). The Asian region now consumes about 12 Mt/y of potash, a compound growth rate of 12% has been estimated for the period 1990-98, and similar demand growth is projected over the next decade. APPC is hopeful that eventually the rest of the field, in which it retains a 100% interest, will be developed. The joint venture with Hydro relates only to Somboon, although Hydro will have the right to negotiate a participation in the development of the Udon deposit. □

Olympias site pre-approval

Greece's Environment Ministry has granted a site pre-approval permit to TVX Gold Inc.'s subsidiary, TVX Hellas, in respect of the company's Olympias polymetallic gold project in northeastern Greece. The permit is important as it defines the framework for the project, including site locations for the process plant and tailings areas, and process technology. It also allows TVX to conduct all necessary on-site work for completion of the environmental impact study and engineering design for the gold plant.

In order to satisfy project viability considerations and environmental concerns, TVX also advises that, in close co-operation with the Greek Government, it is now adopting a dual technology approach to gold recovery, combining bio-oxidation and pressure oxidation. The original plan was to rely solely on bio-oxidation technology. The dual technologies are being tested in parallel, with the bio-oxidation work being conducted on site at the pilot plant and the pressure oxidation by Lakefield in Canada.

As a consequence of the revised plan, a revised bankable feasibility study led by Kvaerner Metals (Stockton, UK) is being undertaken and is scheduled for completion in the 1999 September quarter. Also, TVX reports that Minproc Ltd of Australia has been engaged to assist in the engineering for the gold plant and that Knight Piésold Ltd (Kent, UK) has been contracted to design the tailings dam and review environmental issues.

Proven and probable reserves at Olympias, as set out in the 1998 feasibility study, amounted to 11.8 Mt averaging 8 g/t Au, for an estimated total of 3 Moz of gold plus 40.7 Moz of by-product silver. The revised feasibility study will be upgraded to take account of an additional 20,000 m of drilling, and this is expected to increase grade and tonnage and hence mine life, currently estimated at 15 years. The new reserve calculations are being audited on site by Behre Dolbear and Co. (New York) and Kvaerner is reviewing the mine plan to take into account the new resource calculations.

Based on the June 1998 feasibility study, Olympias was expected to produce 210,000 oz/y of gold and 2.1 Moz/y of silver over the first five years of operation, plus about 50,000 t/y of zinc concentrates and 35,000 t/y of lead concentrates, with estimated cash operating costs, net of by-product credits, of less than US$100/oz.

Construction costs are estimated at US$225 million before confirmed European Union grants of 35% of eligible capital. TVX says it has received a commitment letter from an international bank which proposes underwriting US$130 million of limited resource debt finance and US$40 million of bridging finance for the project, subject to TVX's transaction with Normandy Mining proceeding (*MJ*, April 30, p.309) and the successful completion of the revised feasibility study. □

LEADING INDICATORS

Share Indices	May 26	Change on week (%)	High-Low (%)	Year's Max/Min
FT Ordinary	3,876	–1.6	80	4,123-2,913
US Dow Jones	10,702	–1.7	91	11,000-7,742
FT Gold Mines	829	–6.9	22	1,278-702
Australian All Mining	596	–6.6	52	666-520
South African Gold	842	–4.8	12	1,311-780
Toronto Met/Min	3,502	–4.2	75	3,811-2,596
Nikkei Dow	16,231	0.6	82	16,947-13,071
Hang Seng	12,409	0.0	83	13,586-6,859
James Capel Indices (100 on 1/1/89 except*)	**May 26**			
Global Base Metal	141	–6.2	80	153-93
Global Diversified Mining	140	–5.4	79	152-94
Global Gold Ex S Africa	65	–6.4	24	93-56
Global Gold	57	–6.3	20	83-51
Global Mining	110	–5.1	74	121-78
Smaller Mining Companies	46	–4.0	41	55-40
†North American Base Metal	186	–6.3	80	202-122
North American Gold	73	–6.4	21	108-64
Latin American Mining*	178	–8.5	65	209-120
Latin American (Ex CVRD)*	128	–3.8	56	158-90
†Other Metals/Minerals	126	–0.8	91	130-91
†Global Coal Mining	184	–2.0	95	188-116
*100 on 1.1.90				
†Rebased by Mining Journal				
Commodity Prices	**May 26**			
Gold (London)	$269.45	–1.2	0	$297-269.45
Copper (LME)	$1,456.50	–3.5	29	$1,696-1,361
Aluminium (U.S. prod.)	61.50c	0.0	50	68-55
Brent Blend (dated)	$15.04	3.7	79	$16.55-9.44

Crown Jewel reset

Crown Resources Corp. and Battle Mountain Gold Co. (BMG) have welcomed a decision by the US Government to overturn a previous ruling which had barred development of the Crown Jewel gold property in Washington State. Houston-based BMG is earning a 54% interest in the project from Crown, a Denver-based junior, by funding development, but in March this year the partners were shocked when, without any forewarning, the US Department of the Interior and the Agriculture Department refused to approve Crown's plan of operations. Their refusal was based on a novel interpretation of US mining law that a project cannot rely on a greater number of mill-site claims than the number of associated lode-mining claims being developed (*MJ*, April 2, p.238).

However, on May 13 a House/Senate Appropriations Conference Committee voted to overturn the decision of the Departments of the Interior and Agriculture that denied the plan of operation and revoked the record of decision for the project, and last Friday (May 21), President Clinton signed the Supplemental Appropriations Act. This includes a provision that "as soon as practicable . . . the Departments of the Interior and Agriculture shall approve the Plan of Operations and reinstate the Record of Decision for the Crown Jewel project".

BMG's chief executive, Ian Bayer, said the company was thankful to those in both houses of Congress "who had the courage to address the injustice represented". He emphasised that the issue was not environmental but legal – an environmental impact statement for the project was completed in 1997, after a five-year study programme, and was finally approved earlier this year. Mr Bayer says that needless time has been lost but adds that BMG is "anxious to get the project back on track". Crown Resources' chief executive, Christopher Herald, has echoed BMG's views and says that the legislation "rectifies an injustice by the Interior that was illegal on its merit and grossly arbitrary and capricious in its application to the Crown Jewel project". Both partners are now looking forward to "prompt action on the Bill".

The total costs to bring Crown Jewel into production are estimated by BMG at US$160 million of which some US$80 million had been spent by the end of 1998. The deposit possesses an estimated 1.6 Moz of gold and an average grade of 6.3 g/t. A minimum 2,700 t/d mining operation over eight years is envisaged, and BMG expects to produce 100,000 oz/y for its own account at an average life-of-mine cash cost of US$165/oz. Start-up had been targeted for the second half of 2001. □

CFTC files against Merrill Lynch

After three years of investigation into the Sumitomo copper scandal, the US regulatory agency, the Commodity Futures Trading Commission (CFTC), has filed a complaint against Global Minerals and Metals and Merrill Lynch & Co. Inc. alleging that between October and December 1995 they worked with Sumitomo Corp. of Japan in a scheme to manipulate the world copper market. The complaint names Global's president, David Campbell, and its chief copper trader, Carl Alm, and alleges that they were aided and abetted by Merrill Lynch & Co. of New York, Merrill Lynch International and London-based Merrill Lynch Pierce Fenner and Smith Ltd.

US regulators began an investigation into Sumitomo's activities on the copper market in 1996 following the disclosure that its former chief copper trader, Yasuo Hamanaka, had lost almost US$3 billion through unauthorised copper trades. Mr Hamanaka was sentenced to imprisonment in March 1998 and in May of that year, Sumitomo paid a US$125 million fine in settlement of the CFTC charges of market manipulation. It also agreed to set up a US$25 million fund to compensate investors.

In its complaint against Global, the agency says that the company acquired and maintained a dominant controlling position in London Metal Exchange warehouse stocks of copper and withheld that copper from the market. The CFTC also alleges that, at the same time, Global purchased long positions in copper and engaged in an "elaborate scheme of deception and false statements, which fostered the manipulation". According to the agency, Merrill Lynch aided in the manipulation by providing "large sums of credit and finance" and "knowingly" advising Global and Sumitomo on how they could best manage their copper positions for the purpose of manipulating the market.

The CFTC's director of enforcement, Geoffrey Aronow, has said that the agency has worked closely with regulators from the UK and Japan during its investigations and he believes that the affair represents "one of the most serious worldwide manipulations of a commodity market encountered in the 25-year history of the Commission". The CFTC is to hold a public hearing to determine if the charges against Global and Merrill are true. Possible sanctions include fines of US$100,000 or triple the monetary gain for each violation, whichever is higher.

Merrill Lynch has described the allegations as groundless and without merit. It denies that it had any knowledge that Sumitomo's conduct was unlawful, and although it acknowledges that its London brokerage helped Sumitomo finance copper stock purchases, it maintains that these transactions "were conducted in a commercially reasonable fashion and were perfectly visible to regulators at the time". A lawyer for Global has dismissed the CFTC complaint as based on "an Alice in Wonderland view of the facts". □

Mount Lyell legacy

LG Industrial Systems of South Korea is in dispute with Glencore International AG of Switzerland and is to seek arbitration as set out by the Rules of Conciliation and Arbitration of the International Chamber of Commerce in Zurich. The dispute concerns the supply of copper concentrates from the Mount Lyell mine in Tasmania under an agreement between Glencore and LG when the former had a stake in Mount Lyell. Under this deal, Glencore had agreed to supply LG with 170,000 t of concentrate (26.9% Cu) from the mine over a five-year period beginning in 1998. However, only 20,000 t has been delivered and Glencore says that it was obliged to terminate the arrangement last year after banks withdrew financial support for Mount Lyell and an administrator was appointed. As is required by Australian law under such circumstances, the administrator terminated the supply contract between Glencore and LG.

Glencore says that, despite strenuous efforts, it has been unable to get the contract reinstated. It acknowledges that copper concentrates are in very tight supply but insists that it has no obligation to provide LG with alternative concentrates: "The contract always said Mt Lyell concentrates . . . We can't give it to them if we don't have it". Still outstanding under the deal are 30,000 t of concentrate deliverable this year and 40,000 t in each of the following three years. The lack of concentrates from Mount Lyell has meant that LG is now having to turn to the spot market at a time when the shortage of concentrates is enabling suppliers to bargain for ever lower treatment and refining charges. These are now less than one third of what they were a year ago.

Mount Lyell was one of Australia's leading copper producers for decades but in recent years it has had a chequered history. RGC Ltd closed the mine in 1994 and handed back the leases to the Tasmanian Government. The operation was then acquired by Gold Mines of Australia (GMA) and in 1996 it reached an agreement with Glencore whereby the latter took a 19% equity interest in GMA, and agreed to purchase the Mt Lyell concentrates and to underwrite a A$21.6 million issue of convertible notes planned for 1997 to be used for expansion and exploration work at Mount Lyell. In the event, Glencore withdrew support for the issue and GMA sought alternative financing, including a A$25 million working capital loan from Citibank. It also shed its gold interests and early in 1998 it was renamed Mount Lyell Mining Co. Low copper prices have taken their toll, however, and late last year Citibank withdrew its support, the administrator was appointed and earlier this year ownership of the mine passed to Sterlite Industries Ltd of India (*MJ*, April 9, p.254). □

Sierra Leone glimmer

Following a ceasefire agreement reached last week aimed at ending the eight-year civil war in Sierra Leone, negotiations began in Togo this Wednesday between representatives of the government of President Ahmad Tejan Kabbah and the rebel Revolutionary United Front. The dialogue in the Togolese capital, Lome, opened before foreign ministers of a seven-nation special Sierra Leone committee of the Economic Community of West African States.

Previously, a comprehensive peace accord signed in November 1996 by President Kabbah and the RUF leader, Foday Sankoh, collapsed within months. President Kabbah was subsequently toppled in a 1997 coup but was restored to power in March this year by a Nigerian-led force. However, rebels then temporarily overran the Sierra Leonean capital, Freetown, in a bloody battle and, since then, the Nigerian Government has signalled its wish to withdraw its soldiers, and international pressure on President Kabbah to negotiate with the rebels has intensified.

The conflict in Sierra Leone has been brutal and has claimed hundreds of thousands of civilian lives. The latest peace negotiations will be tough, not least on the issues of granting amnesty to those who have committed atrocities, and the unpalatable prospect, for the government, of sharing power with those who have refused to accept the democratic process. But the only alternative is continued civil war.

Prior to the civil war, mining had been a dominant feature of Sierra Leone's economy. It boasted the world's largest rutile mine, and was a significant producer of bauxite. Its alluvial diamonds have long been known for their quality and there were plans to begin hardrock mining of the kimberlite but the Kono diamond-mining region has been one of the areas most ravaged by civil war. The country is also regarded as highly prospective for gold and platinum and most of it remains unexplored by modern exploration techniques (*MJ*, March 28, 1997, p.255). □

Exploration

Sardinian exploration "to intensify"

Australia's Gold Mines of Sardinia (GMS) is to increase its exploration efforts at its properties on the Italian island of Sardinia, after results obtained this year exceeded expectations. The company has exclusive rights to explore on the 24,000 km^2 Mediterranean island, and drilling results this year include: 72 m at 8.13 g/t Au and 2.29% Cu; 63 m at 4.46 g/t Au and 1.82% Cu; and 39 m at 11.01 g/t Au and 4.72% Cu, all from the Su Coru prospect; plus 33 m at 3.47 g/t Au and 15 m at 6.3 g/t Au from the S'Arruga prospect.

GMS operates the Furtei gold mine on Sardinia, which first produced gold in late 1997 (*MJ*, September 26, 1997, p.249).

Productora results

General Minerals Corp., (GMC), carrying out a drilling programme at the Productora polymetallic property in Chile, has received assay results from the first eight holes completed, with the following better results:

Hole	Interval (m)	Cu (%)	Au (g/t)	Mo (%)	Co (%)
PR-9	102-130	1.00	0.13	0.026	0.012
PR-11	190-210	0.77	0.34	0.003	0.029
PR-13	200-316	0.41	0.09	0.009	0.011
incl.	200-234	0.48	0.11	0.008	0.013

Mineralisation at Productora occurs as chalcocite and primary chalcopyrite with associated magnetite. Alteration at the property covers 21 km^2, and GMC geologists believe that many similarities to Phelps Dodge's Candelaria copper-gold mine exist. The drilling programme is continuing with follow-up of mineralisation in PR-9 and PR-13, and to test other parts of the alteration system. Teck Corp. is earning a 60% interest in Productora (*MJ*, January 29, p.56).

Barrick-Western Keltic deal

Barrick Gold Corp. has agreed to subscribe for Western Keltic Mines Inc. shares and warrants in return for the option to acquire a 51% interest in any of WKM's five gold properties in the Goodpaster mining district in eastern Alaska. The properties are located south and east of, and contiguous with, the Pogo gold deposit. Once Barrick has subscribed for the units in WKM, it will have the option right to earn a 51% interest in any property by paying WKM C$100,000 per property and spending C$1 million on exploration per property within a three-year period. WKM will be the joint-venture operator until Barrick vests its interest.

The proceeds from the initial share placement will be used to carry out a C$500,000 exploration programme on the five properties, beginning early next month. WKM intends to spend C$1 million from the proceeds of the placement on exploration on the properties over the next two years.

Chinese seafloor exploration

China is moving ahead with plans to explore for mineral deposits on exploration licences granted off the coast of Hawaii, according to *The Journal of Commerce*, a New York-based publication. A United Nations (UN) convention allows any country to prospect for seabed resources and hold a priority in any given seabed area, if it obtains UN approval and cedes half of the prospect area to the UN. The China Association for Research and Development of Oceanic Mineral Resources has reserved about 155,400 km^2 of ocean bed in total, outside the territorial waters of the US. New technology has been designed to access the seafloor, including a remote machine capable of operating at about 5,800 m

Papua New Guinea granted a PNG-based company, Nautilus Minerals Corp., a 5,000 km^2 exploration licence early last year (*MJ*, February 13, 1998, p.123), to examine high-grade massive sulphide mineralisation around hydrothermal vents in the seabed.

Glimmer assays

Exall Resources Ltd is testing extensions to mineralisation at the Glimmer gold mine in Ontario with an underground drilling programme. The company is targeting down-dip continuation of ore zones which produced gold in 1998, with the following better results:

Hole	Intercept (m)	Au (g/t)
11-60	32.0-45.3	12.58
and	196.0-213.5	9.87
14-42	57.0-64.15	14.84

Some holes intercepted multiple mineralised zones within the alteration envelope, according to Exall. The company expects to update its resource estimate as a result of these intercepts. Exall owns 65.53% of the Glimmer mine and is operator of the joint venture. Its partner, with which it is in dispute, is Glimmer Resources (*MJ*, May 14, p.369).

Anketell intercepts

Croesus Mining NL, the manager of the Anketell gold joint venture, has received drilling results from four diamond-drill holes completed on the Magnum prospect, located to the north of Newcrest's Telfer mine in Western Australia. Better results are as follows:

Hole	Interval (m)	Au (g/t)
AKD06	231-234	11.25
and	261-265	11.26
AKD09	464-479	14.07

The other two holes did not intersect significant gold mineralisation. Mineralisation is associated with sub-vertical quartz and sulphide (pyrrhotite) mineralised veins within a gabbro. The programme was designed to investigate the results of a ground electromagnetic geophysical survey, itself a follow-up generated by earlier airborne and down-hole geophysical surveys. The results of the recent drilling programme have convinced the partners to continue, and the new holes are designed to test the extent and continuity of the gold-mineralised structures.

Ownership currently stands at Croesus Mining NL 39.06% and manager; Gindalbie Gold 37.84%; and BHP 23.4% and diluting. Croesus and Gindalbie are earning into the property.

Morocco-Niger exploration accord

Morocco and Niger have signed an accord agreeing that Managem, the mining arm of the ONA Group, can explore for precious metal deposits in Niger. Under the terms of the agreement, if Managem discovers an economically-viable deposit, a joint venture will be established, with the Government of Niger taking up to a 20% interest.

Yamana's "unparalleled" Bacon assays

Yamana Resources reports remarkable drilling results from a programme completed at the end of April at its Bacon silver-gold property in Argentina (*MJ*, March 5, p.157). The holes were completed in a high-density pattern on the 'Silver Pocket', part of the Veta Martha quartz vein system. Yamana has reported silver-equivalent grades, assuming 1 g/t Au = 55 g/t Ag, which it considers are unparalleled in modern times, with better results as follows:

Hole	Interval (m)	Ag-equiv (g/t)
DDH28	10.7-15.7	134,419
incl.	11.6-14.7	184,070
DDH27	9.4-11.3	62,429
RC45	22.5-24.0	59,820
RC69	21.0-23.5	61,069

The exceptionally high-grade values were produced at Yamana's wholly-owned assay laboratory at its Bema operations in Santa Cruz, and were checked using two independent assay labs, which returned results which agreed with Yamana's, within statistically-acceptable limits. Precious metal mineralisation at Bacon is silver-dominated, and typically contains about 8% gold (as a proportion of precious metals). Silver occurs as native silver, acanthite, pyrargyrite and freibergite. Gold occurs mainly within electrum, a silver-gold alloy.

Billiton-Eagle Plains agreement

Billiton plc and Canadian junior Eagle Plains Resources Ltd hope to make a Sullivan-type zinc sedimentary-exhalative (sedex) discovery through a joint venture in the Findlay Creek area 45 km north of Cominco's Sullivan zinc-lead mine in British Columbia. Billiton is to earn the right to option the North Findlay and Hap properties, 100%-owned by Eagle Plains, by making a first-stage investment in the junior. The investment will take the form of a share purchase worth C$450,000. In addition, Eagle Plains will issue share warrants to Billiton. Eagle Plains will use some of the proceeds of Billiton's investment to carry out a 3,000 m diamond-drilling programme on the properties.

The second stage of the deal will allow Billiton to earn a 50% interest in the North Findlay property by spending C$2 million on exploration over four years, and it may earn another 20% by providing Eagle Plains with financing to the start of commercial production from the property.

Cambridge finds gold in the Falklands . . .

Cambridge Mineral Resources plc, a junior exploration company listed on the London Alternative Investment Market, reports that work carried out over the past six months in the Falkland Islands by its wholly-owned subsidiary, South Atlantic Resources Ltd, has recovered visible gold and grains up to 3 mm in size in pan samples collected from several streams and rivers draining nine widely separated locations. The company has an exclusive onshore prospecting licence and thus far it has investigated less than 20% of targeted sites.

Equipment, including a trailer-mounted auger drill rig, a tracked excavator, a trommel screen and a Knelson concentrator, is now being assembled in Australia for shipment to site. The intention is to exhume fossil stream beds beneath the peat cover and process more substantial samples.

. . . accelerates diamond search in Ireland

In Ireland, where Cambridge is prospecting for diamonds, the company reports that an aeromagnetic survey over its prospecting licences in County Donegal has identified several anomalies, and that total ground magnetic surveys have now begun, which will identify possible drill targets to test for the presence of kimberlite and/or lamproite. The airborne survey, carried out by TESLA Exploration Geophysics, was flown at a height of 75 m and with a line spacing of 75 m, and was undertaken to follow up previous mineralogical studies and stream sediment sampling by Cambridge which recovered chromites and ilmenites.

Concurrently with this work, geophysical and geochemical surveying is being carried out over other prospecting areas comprising the Inishowen licence block, and Cambridge has applied for prospecting licences over two further areas to the east.

Tottenham results "significant"

Australia's Straits Resources Ltd has received results of preliminary reverse-circulation drilling at Tottenham copper property in New South Wales, located 120 km south of Girilambone. The drilling was completed at two prospects, Caroline (CLRC) and Orange Plains (MRRC), with the following better results:

Hole	Interval (m)	Cu (%)	Au (g/t)
CLRC001	31-42	1.2	0.5
CLRC004	10-30	2.1	0.4
MRRC002	43-53	1.4	0.5

Mineralisation at Caroline comprises oxide and sulphide, and was intersected over a 300 m strike-length. The mineralisation is open along strike. At Orange Plains, mineralisation was intersected over a 500 m strike length, and again is open along strike, and at depth. The company has tested leachability of the mineralisation, with results varying between 33% and 93%. Straits reports that the Tottenham property contains old copper workings with a combined strike-length of over 7 km, and untested airborne and ground geophysical anomalies.

Straits is farming into the Tottenham property in joint venture with Arimco Mining Pty Ltd (90%), a subsidiary of Australian Resources Ltd (currently under administration (*MJ*, March 19, p.202)), and Monterey Metals Pty Ltd (10%). Straits can earn up to a 60% interest in Tottenham by spending A$750,000.

Development

PASAR expansion? . . .

The Glencore Group, majority partner in the company which won the auction for PASAR, the Philippine copper smelter (*MJ*, May 7, p.329), may increase capacity at the facility. Glencore's 40%-partner in its acquisition vehicle, Copper Smelting Investments Ltd, businessman Carlos Dominguez, says that PASAR would be more competitive if its output were increased to 240,000 t/y from the current 172,000 t/y. Paul Wyler, a Glencore director, says that the new operator will need to become familiar with PASAR. Mr Dominguez says that Glencore will be providing expertise on copper concentrate purchasing programmes and hedging policies, as well as reviewing the operational needs and capital expenditure requirements on the complex.

. . . Glencore's Columbia Falls purchase complete soon

Swiss trading group Glencore International AG expects to complete its purchase of Columbia Falls Aluminum Co. early next month. Columbia Falls operates a 168,000 t/y aluminium smelter in Montana. Terms of the agreement were not disclosed. Glencore views the purchase as "a major long-term investment, and an important complement to its alumina and aluminium trading activities".

Glencore earlier this year bought the Aughinish alumina refinery in Ireland from Alcan Aluminium Ltd (*MJ*, March 5, p.158), and has a 44% interest in the Eurallumina alumina refinery in Sardinia.

Muruntau reconstruction study complete

According to Russia's Interfax news agency, Marubeni Corp. and Mitsubishi Materials, the contractors for the reconstruction project at Uzbekistan's Muruntau gold mine, have completed a feasibility study of the project. The companies won the tender for the project late last year (*MJ*, October 16, 1998, p.298). The mine's operator, now known as Kyzylkumredmetzoloto (formerly Navoi Mining and Metallurgical Plant), anticipates that the cost of the development will amount to US$120 million, and it will take about 18 months to two years.

The project plan calls for inclined conveyors to be installed, capable of moving 40-45 Mt of rock from a depth of 600-650 m. The maximum planned depth of the open pit at Muruntau is reported by Interfax to be 700 m. *World Gold* estimates Muruntau's gold output at 1.8 Moz last year (*MJ*, May 14, p.355), making it the second-largest gold producer in the world.

Samira Hill feasibility success

Etruscan Resources Inc. has received a positive feasibility study of its Samira Hill gold property in Niger from its independent consultants MRDI of the US and Metallurgical Design Management Pty Ltd of South Africa. The study concludes that the deposit can produce 67,000 oz/y of gold, over a 6.3-year mine life. The mine plan envisages two open-pit operations, producing 3,000 t/d from proven and probable reserves estimated at 6.57 Mt at 2.4 g/t Au. Gold would be produced using a CIL plant.

The capital cost is estimated at US$23 million, and the proposed mine would qualify for the five-year tax holiday granted by Niger to new mining operations. Etruscan expects first production from Samira Hill, subject to its securing project financing, in July 2000. The company agreed to acquire the adjacent Saoura property from Ashanti Goldfields Ltd and IAMGOLD Corp. earlier this year (*MJ*, March 19, p.192). The Saoura property contains the Libiri prospect, on which Ashanti and IAMGOLD completed 18,500 m of reverse-circulation and 2,300 m of diamond-drilling, over a 5 km strike-length.

Iran allows foreign mining investment

Iran's Mines and Metals Minister, Eshaq Jahangiri, has been reported by the country's official IRNA news agency as saying that the government has decided to allow foreign investment in the country's mines and metals industry. Iran's customary oil-related income is suffering from low oil prices, so it will host a conference in October to discuss ways of attracting capital from other countries into the mining sector.

International consulting firms working with Iran have recently reported that it is considering modifications to existing legislation to facilitate foreign investment.

Kroondal construction savings

Kroondal Platinum Mines reports that savings on construction costs at the mine being built near Rustenburg in South Africa are projected to bring the project to completion at R34 million less than budgeted. The present costs are 11% less than expected, and the production target is December this year. The operation is scheduled to produce about 200,000 oz/y of PGM, comprising 110,000 oz of platinum, 60,000 of palladium and the rest minor metals.

The Kroondal deposit contains an estimated 24.4 Mt of 5.5 g/t PGM, and is expected to support a 15-year operation.

Kroondal is 45%-owned by Australia's Aquarius Platinum Ltd, and is a close co-operation venture with Impala Platinum Holdings Ltd, which owns 15% of Aquarius. Aquarius is carrying out a feasibility study at its Marikana PGM property in South Africa, and expects to complete it by November this year. The company released a resource estimate earlier this month (*MJ*, May 7, p.335).

Lisheen progresses

Ireland's Ivernia West plc reports that the US$230 million Lisheen zinc mine project is scheduled to begin production in September this year. The mine is expected to have an ore throughput capacity of 1.5 Mt/y, and to produce 340,000 t/y of zinc concentrates over its 14-year life. Lisheen is a 50:50 joint venture between Ivernia West and Minorco, which owns 27% of Ivernia West.

Separately, Ivernia West reports that it has acquired a 20% interest in the Magellan lead property in Western Australia, for A$3 million, and has the right to acquire up to 60% of the project.

Gécamines hurt by refinery fire

The consequences of the devastating fire which damaged critical equipment at the Indeni oil refinery in Zambia last week (*MJ*, May 21, p.383), are quickly making themselves felt at the Democratic Republic of the Congo's state-owned Gécamines mining company. The company is "urgently seeking new supply channels to import oil on credit and to find the foreign currency to service the oil debt". Gécamines relies heavily on diesel oil, refined at Indeni, for its operations. Indeni may be closed for up to eight months, and Zambia intends to supply its own companies before those in adjacent countries.

It remains to be seen whether the DRC can find suppliers willing to give credit to a country in the throes of a civil war.

Rio Chiquito suspended

Operations at Denver-based Laguna Gold Co.'s Rio Chiquito gold mine in Costa Rica have been suspended, and confirmation and exploration drilling has begun to investigate discrepancies between expected and actual gold grade and recovery. The company reports that the crushing plant is complete and loading of heap-leaching pads has begun, with first production expected in June. The suspension of operations renders the production target uncertain pending the outcome of the drilling.

Laguna's president and chief executive, Steve Stine, says that "variances were noted between actual and predicted gold grade and recovery ... The Winters Co. has been retained to review the data and (to) provide the company with recommendations on how to proceed". The report from Winters is expected within the next two months.

Production

Obuasi strike over

Miners protesting at a pay deal reached between unions and management at Ashanti Goldfields Co.'s Obuasi gold mine in Ghana returned to work on May 26, ending a two-week strike (*MJ*, May 21, p.382). Trevor Schultz, Ashanti's chief operating officer, says the mine will not be able to recoup the lost production. The mine is moving away from its surface operations and relying solely on the underground areas, which leaves "very little short-term flexibility", he says.

Peñoles' Torreón refinery sanctioned

Mexico's Federal Attorney for Environmental Protection has declared an environmental emergency at the Torreón metals refinery operated by Industrias Peñoles' subsidiary Met-Mex Peñoles. The emergency was declared after unacceptably high levels of lead were found in local children's blood. Torreón is in the northern state of Coahuila. Although the operating company has removed over 120 t of lead from the environment since the high lead levels were found (*MJ*, May 14, p.355), the authorities are still finding lead in concentrations way above international standards.

The government of Coahuila has ordered the Torreón refinery to reduce daily lead output at its No.9 plant from 500 t to 250 t, shut the No.8 plant completely and stop feeding two blow furnaces. The reductions are designed to reduce gas and dust emissions by 52%.

39 die in Ukraine coal mine blast

A methane explosion at the Zasyadko coal mine in the southern Ukrainian city of Donetsk killed 39 miners on May 24. Miners attribute the deaths to years of decay and underfunding, and have expressed no surprise at another incident. The Government of Ukraine plans to close a total of 80 mines by the end of next year, having shut down 12 over the past three years, with the loss of 375,000 jobs. The situation in Ukrainian coal mines has been deteriorating for a number of years (*MJ*, August 14, 1998, p.123).

Paragsha auction attracts just one bid

The auction of Peru's biggest zinc producer, Paragsha, formerly known as Cerro de Pasco, managed to attract only one bidder, the Peruvian company Volcan Cia Minera SA. US-based Doe Run Co., Canada's Cominco and Swiss-based Glencore International had shown interest in the mine, but declined to submit bids. Paragsha has a US$60 million minimum price, with a commitment to invest a further US$70 million over a five-year period. The government will now investigate Volcan's bid, and is expected to announce its decision by May 28.

Paragsha, operated by Centromin, produced 183,000 t of zinc last year, and has been described as Centromin's 'jewel in the crown'. The mine comprises underground and open-pit mines and two concentrators with a capacity of 7,000 t/d zinc-lead concentrates. Volcan acquired a 95% interest in the Mahr Tunel zinc mine from Centromin in 1997 (*MJ*, October 10, 1997, p.299), for US$124 million, making it one of the world's top zinc producers.

New pay talks begin in South Africa

The negotiations for a new labour deal for South Africa's coal and gold mining industry began on May 25. The current gold price, which dipped below US$270/oz for the first time in 20 years this week, will not smooth the way, as producers will want to keep costs as low as possible. The talks are being held ahead of the expiry, on July 1, of the two-year pay deal agreed in 1997. South Africa's National Union of Mineworkers (NUM), which represents the majority of the 200,000 workers affected by the talks, is demanding a 25% pay increase, together with other benefits (*MJ*, April 23, p.295).

The Chamber of Mines, representing the producers, is expected to offer a counter proposal considerably below the NUM's demand, in light of the falling gold price. Also, whereas the NUM insists that the pay deal cover both the coal and gold mining industries, the Chamber wants to separate the two. The union has said that it will reject any attempt to link the wage agreement to productivity, and the Chamber acknowledges that the issue will be important.

Lebedinsky GOK's first HBI

The Lebedinsky GOK iron ore producer in Russia has produced its first batch of hot briquetted iron (HBI). The HBI plant had been expected to reach full production capacity by the end of February this year (*MJ*, February 26, p.135). Operational adjustment requirements shut the facility down immediately after the first product was made, and the work is expected to take until the end of this month to complete. The plant will then return to operation, and the next scheduled stoppage will be in September.

The first stage of the development is designed to produce up to 1 Mt/y of HBI, with an iron content of 97%. A second 1 Mt/y stage is expected to begin construction when stage one has produced 50,000 t of HBI.

Bihar threat to uranium mines

The Government of the Indian State of Bihar has threatened to close down the federally-run uranium mines in the state, and has sent a strongly-worded statement to the Prime Minister of India, complaining of the potential risk to the public from excessive radiation levels. The concern has been raised by a report recently submitted by a standing committee of the state legislature which investigated the high incidence of radiation sickness around the uranium mines of Jadugoda in the mineral-rich Chotanagpur plateau of southeastern Bihar.

The report, which runs to 80 pages, has blamed Uranium Corp. of India Ltd (UCIL) for various diseases among tribes-people living near to the mines. Jabir Hussain, chairman of the Bihar Legislative Council, says that the mines will have to be closed if the federal government does not meet the cost of relocating the people perceived to be at risk.

Copper smelters cover Highland Valley closure

The indefinite shutdown of Cominco's Highland Valley copper mine earlier this month (*MJ*, May 21, p.383) has had less effect on its former customers than might have been expected. The closure was announced as far back as January this year (*MJ*, January 22, p.33), and so those smelters that took copper concentrates from the mine have had time to arrange for other sources for their feedstock. Japan's Dowa Mining Co. has reported no problems associated with the termination of concentrate supply from Highland Valley. PASAR, the recently-auctioned copper smelter in the Philippines (this issue, p.397), has contracted to buy 565,000 t of concentrates this year, only 40,000 t of which would have come from Highland Valley. Analysts believe that 20,000 t have already been delivered, and the rest can be obtained from other suppliers.

Hirakud smelter expansion uncertain

Indian Aluminium Co. Ltd (Indal) has plans to expand smelting capacity and power generation at its Hirakud operation in eastern India, but Indal's chairman, Chris Bark-Jones, is not sure whether the scheme will gain government approval. The increase of 30,000 t/y to 60,000 t/y aluminium output capacity and power generation to 67.5 MW has been given "encouraging signs", but it could be delayed by political uncertainty.

Indal is also waiting for approval of its plan to expand capacity at its Belgaum alumina refinery in southern Karnataka state to 510,000 t/y from 280,000 t/y, and at the Muri alumina refinery in Madhya Pradesh from 80,000 t/y to 101,000 t/y (*MJ*, April 3, 1998, p.265).

Final NEVARM report submitted

Montreal-based ITEC-Mineral Inc. has submitted its final report to Quebec's Comité de suivi interministériel for the NEVARM project, a process designed to neutralise and stabilise mine tailings. The committee has since corroborated the results presented in the report and has confirmed the intellectual property rights over the process for 18 years.

In addition to submitting the final report to Comité de suivi interministériel, ITEC has signed an agreement with Quebec's Natural Resources Ministry for the pilot-scale testing of its processes. Under the terms of the agreement, 30 t of tailings samples from the Norebec-Manitou tailings site in Val-d'Or will be collected and treated at the Centre de Recherche Minérale using a process plan developed by ITEC.

ITEC believes that its process can effectively neutralise sulphide-bearing mine tailings and also generate revenues by extracting metal residues from them. The process has been under development since 1992 and ITEC feels that the latest developments are a major step forward in promoting its technology as an "efficient and permanent solution to the problem of mine-tailings management."

ITEC Mineral Inc. Tel: (+1 514) 281 8434. Fax: 281 6247.
E-mail: itecmin@msn.com
Web: www.itecmin.com

Birse solution to hydroxide problem

Hyder Ltd, Birse Construction and their client Neath Port Talbot County Borough Council, are aiming to eliminate serious pollution caused by disused coal mine workings at Ynysarwed in south Wales. The pollution is so severe that a 7 km length of the Neath canal is being stained orange by the high levels of iron hydroxides leaching out of colliery waste. The £1 million Birse scheme, which aims to eliminate the pollution of the canal completely, includes full process design, together with all building, mechanical and electrical installations, as well as training the client's operational and maintenance staff.

The treatment process will comprise aeration and the addition of lime to remove the iron followed by settling of the solids produced. The iron solids will be removed using centrifuges and dewatered to a minimum of 30% dry solids.

Studies have indicated that the flow of pollution will naturally decrease over the next ten years, hence the treatment plant has been designed with a limited life after which a natural wetlands reedbed will take over the treatment process.

Birse Construction Ltd, Aultmore, Kingswood Road, Tunbridge Wells, TN2 4XP, UK. Tel: (+44 1892) 540 266. Fax: 541 676.

New breakers from Indeco

Indeco has introduced a new series of pedestal boom-mounted rock breakers for secondary breaking, for applications in mines such as crusher stations. The new series features three sizes of pedestal-boom mounting arrangements that accept breakers in the 230-2,300 kg energy range. They feature 360° swing rotation, horizontal reach of up to 8 m, a large and oversized Rotec bearing with gear drive for longer life, and easily replaceable nylon bushings at all pivot points.

Indeco, 70123 Bari, Viale Lindemann, 10, Italy. Tel: (+39 80) 531 3370. Fax: 537 7976.

IMC consolidates

UK-based International Mining Consultants has consolidated its metals and minerals team at its London office. As a result of the consolidation, the IMC Techpro division, which provides specialist minerals and metallurgical processing services, will combine with IMC's Mackay & Schnellmann division, which provides geological, mining, environmental and process consultancy to the mining industry. This, says IMC, provides the mining industry with a unique one-stop shop.

John Cole-Baker, IMC Ltd, 60 Worship Street, London EC2A 2HD, UK. Tel: (+44 171) 377 0913. Fax: 247 5943. E-mail: imcm+s@imcgroup.co.uk
Web: www.imcgroup.co.uk

New sparger reduces costs

Following the successful completion of a testing programme in mineral and coal applications, Birtley Engineering of Sydney, Australia, has introduced what it claims to be a revolutionary polyurethane sparger design for its Microcel flotation columns. According to Birtley's managing director, Graham Colliss, the testing programme has shown that the new sparger wear life is at least double that of earlier long-life spargers. Mr Colliss says that the new spargers offer other advantages: the increased life-span provides cost savings in replacement parts, labour and maintenance; its lightweight construction means that it needs only one person to install it; the lower friction from polyurethane means that less energy is required for bubble production which reduces energy costs.

The Microcel systems are used to recover coal and mineral fines from material that would otherwise be discarded. At BHP's Peak Downs mine a 16-column Microcel system is recovering 360,000 t/y of washed coking coal and as a result of this success BHP has decided to install an 8-column system at its Saraji coal mine (*MJ*, January 15, p.23).

Graham Colliss, General Manager, Birtley Engineering Pty Ltd. Tel: (+61 2) 9888 4000. Fax: 9888 4040.
E-mail: twc@birtley.com.au
Web: www.birtley.com.au

Nett catalysts fit Caterpillar

Canada's Nett Technologies Inc. has produced a series of catalytic purifiers that will fit all of Caterpillar's diesel-powered mining equipment range. Nett's D-Series of direct fit catalytic purifiers are designed to reduce carbon monoxide and hydrocarbon emissions, and when used in conjunction with low-sulphur diesel can achieve a significant reduction in the emission of particulates. To reduce installation time and cost, the direct-fit purifiers replace a section of the original exhaust system. Nett can provide purifiers for most popular models from stock, and purifiers for other models are pre-designed and can be shipped within 2-3 working days. According to Nett, its purifiers provide mining companies with an effective way to comply with Mine Safety and Health Administration regulations for diesel emissions.

Desmond Gallant, Nett Technologies Inc., Mississauga, Ontario, Canada. Tel: (+1 905) 602 7747. Fax: 602 4545. Web: www.nett.ca

Halco introduces SuperDominator

Halco has produced a new high-pressure, hard-rock hammer based on its Dominator 650HD class hammer. The SuperDominator 650 HD 15 cm hammer is designed for blast-hole drilling in hard rock. According to Halco, the new hammer has been tested at a large hard-rock mining operation in Australia, where it was shown to drill 5% faster than the standard 650 HD, and up to 10% faster than other hammers.

The hammer is designed for dry operation and features heavy-duty outer components and a reversible cylinder for extended service life. Back reamer tungsten inserts are fitted to the hammer back head to assist in retraction from bogged holes.

Janet Kenyon, Halco Drilling International Ltd, PO Box 25, West Lane, Southowram, Halifax HX3 9TW, UK. Tel: (+44 1422) 399 910. Fax: 330 186.

Halco's new SuperDominator hammer.

Tin – the Brazilian phoenix

Brazil's share of world tin production is reducing, its 8% share last year comparing with 10% in 1997. Mine output of tin in concentrates, which had been running at around 20,000 t/y since 1994 after peaking at 55,130 t in 1989, dropped by 23% in 1998 to 14,607 t. Refined output, at 14,574 t, was 21% less than in 1997. However, although Brazil's production of tin fell significantly, domestic consumption climbed substantially, increasing by almost 11%, to 7,247 t. As a result of the strong domestic demand, Brazil's tin exports slumped by 46% to 6,999 t. Imports were 290 t.

The decline in Brazilian tin production may continue for a few more years as the alluvial reserves at the country's two major tin mines, Bom Futuro in Rondônia and Pitinga in Amazonas, become exhausted. The exploitation of these rich alluvial deposits, including the *garimpo* bonanza at Bom Futuro, was responsible for Brazil's spectacular increase in production in the 1980s, and some might think that the exhaustion of these rich alluvials will herald the end of the Brazilian tin-mining sector. This is not the case, however, and some significant changes within the industry over the past year should ensure Brazil's continuing participation as a major producer.

Current production

There are three major tin-producing companies in Brazil – Paranapanema, Cesbra and Best Metais. Paranapanema owns and operates the Pitinga mine in Amazonas and the Mamoré smelter in Sao Paulo State. Cesbra operates a tin-mining complex at Santa Barbara in Rondônia, and has relocated its Volta Redonda smelter in Rio de Janeiro State to Ariquemes in Rondônia. This smelter, ERSA, is a 50:50 joint venture with Best which no longer has any tin-mining operations.

The Bom Futuro workings in Rondônia are managed by Empresa Brasileira de Estanho (Ebesa) a consortium led by Paranapanema (70%), Cesbra (18.5%) and Best Metais (11.5%). Independent miners' co-operatives (*garimpos*) contribute about 80% of production and are allowed to retain about 20% of their output of tin concentrates for sale to independent smelters. The new ERSA smelter in Rondônia relies on concentrates from Santa Barbara, plus the Best and Cesbra shares of the Ebesa production.

At the beginning of 1998 the prospects for Brazil's tin mines were not promising. Paranapanema was working tailings and the remaining alluvial reserves at Pitinga, whilst seeking funding of US$120 million to exploit the primary hardrock deposit. At Santa Barbara, Cesbra had closed down all the alluvial operations, retaining only the Taboquinha hardrock mine. Ebesa has no proven reserves and the number of working co-operatives has been severely reduced; the company's own operation at Bom Futuro is low grade and only kept in operation to maintain a presence that permits it to buy a percentage of the output from the co-operatives.

For the smelters, the high cost of road transport between Pitinga and Mamoré (4,220 km) adds significantly to Paranapanema's final costs, but there is insufficient power available at Pitinga to permit the transfer of the smelter there. For the ERSA smelter, there are obvious benefits from being close to the source of concentrate supply (102 km from Santa Barbara and 95 km from Bom Futuro) but the smelter requires high-capacity utilisation as energy prices are significantly higher than in southern Brazil. ERSA's smelter costs rose last year because of lower production both at Bom Futuro and at Santa Barbara. Throughput could be improved by toll-smelting ores that presently go to small smelters in Minas Gerais State.

Today, the situation for the Brazilian tin industry is looking distinctly brighter. Paranapanema has received authorisation to establish a new hardrock mine at Pitinga and has significantly reduced costs at its Mamoré smelter by an upgrade including the addition of two new electric-arc furnaces and a sintering unit. All three of the tin producers are believed to be looking for new partners. For Cesbra, this should enable additional investment to be secured for the purposes of delineating and exploiting hard-rock deposits and rich alluvials in deep palaeo-valleys. Only Ebesa at Bom Futuro remains in decline and, as with any unexplored deposit, may yet yield surprises.

Meanwhile, the tin price has held firm and the local market is now paying a 12% premium on tin metal purchases to account for local taxes and this provides an incentive for the internal market, hence the large reduction in exports.

Future plans

Paranapanema's primary deposit at Pitinga, Rocha Sã, has proven reserves of 201 Mt containing 0.176% Sn, 0.223% Nb_2O_5, 0.03% Ta_2O_5, 0.03% U_3O_8 and 0.81% ZrO_2. The geological potential is in excess of 1,000 Mt. For a 15-year period, starting in about 2002, an annual tin production of 13,000 t is envisaged, with a waste to ore ratio of 0.31:1. The mine will also produce 13,800 t/y of mixed niobium and tantalum pentoxide concentrates (35% Nb_2O_5 and 3.5% Ta_2O_5), and negotiations are in progress with Industrias Nucleares do Brasil, to treat residual concentrates at Nuclebras' Poços de Caldas plant in Minas Gerais for the production of uranium and rare earths. The existing reserves of weathered primary and alluvial material at Pitinga will permit an annual production of 12,000 t in the three years prior to the commencement of the hardrock operation. The total cost for Rocha Sã is budgeted at US$144.7 million, of which US$112.3 million is for the open pit and plant.

Production from the Ebesa venture is expected to finish within two to three years, at a maximum four years, and although the Bom Futuro area has potential, the con-

Paranapanema's Pitinga operation in Amazonas (Photograph courtesy of 'Brasil Minerals'.)

flicts and environmental damage are such that it is unlikely to be acquired by a mining company.

Although Brascan, the parent company of Cesbra, has long been seeking to sell the latter or find a joint-venture partner, it has maintained a strong commitment. In 1996 it funded the transfer of the Volta Redonda smelter to Rondônia in partnership with Best Metais, and in 1997 it funded (with assistance from the Brazilian Development Bank) the new Taboquinha hardrock mine at the Santa Barbara complex. This is now in full operation and providing a higher mine recovery than anticipated. The Santa Barbara area has further hardrock potential and has proven reserves of rich alluvials in deep palaeo-valleys. These require investment in new mining methods and, together with the hardrock ores, could provide in excess of 2,000 t/y for the next 15 years.

Once the exploitation of these deep palaeo-valleys can be successfully demonstrated, it is likely that similar deposits elsewhere in Rondônia will be targeted. Several were drilled in the 1980s but the mining rights were subsequently abandoned. Today, with improved infrastructure, the availability of hydroelectric power and the presence of the smelter at Ariquimes, the palaeo-valley deposits could provide the long-term future of tin mining in Rondônia.

Despite last year's hefty fall in production, Brazil's contribution to world output remains significant, and in 1998 it ranked as the third largest Western producer in terms of mine production behind Indonesia (52,000 t of tin in concentrate) and Peru (25,700 t) but ahead of Bolivia (14,000 t) and Australia (10,000 t). According to Mining Journal Ltd's *Mining Annual Review*, total Western tin supply last year was approximately 179,600 t. It comprised mine production of 137,600 t, sales from the US stockpile of 12,000 t and net exports from former Eastern bloc countries, principally China, of 30,000 t. (China's total output is reported to have been affected by floods but may, nevertheless, have been of the order of 69,000 t.) Demand in 1998 is estimated at 182,000 t.

Out to grass

In the current climate of depressed prices and supply surpluses for a broad range of commodities, and at a time when resources waiting to be developed are bountiful, there is an indubitable financial logic for the large international mining companies in paring back on exploration spending as a means of reducing costs. For some, it is a short term expedient; for others, however, there appears to have been a sea change. Rio Tinto, the world's biggest mining company, set the tone nearly three years ago when, in the aftermath of the RTZ-CRA merger, it announced its decision to 'rationalise' exploration and substantially reduce its grass-roots activity. It shed more than 300 jobs in the process.

Billiton appears to be adopting similar strategies, and recently announced its intention to close a number of its exploration centres, relinquish those properties that do not fit its commodity business criteria and enter into advanced-stage exploration. As a result, its exploration and development staff will reduce by around 80%. The troubled Australian mining giant, BHP, an erstwhile leader in global exploration, is feeling the effects of a new executive broom. It is to close its San Francisco office by the end of the year, is shedding about 250 staff, mainly geologists, and reducing its exploration budget "significantly".

In contrast to the senior sector's ability to cut back on exploration as a means of reducing costs, junior exploration companies have no such 'flexibility'. Exploration is their *raison d'être*. They rely heavily on equity investors and were under pressure even before the Asian financial crisis broke in mid-1997 (not least because of the loss of investor confidence brought about by the Bre-X Minerals scandal). With equity financing proving increasingly difficult to raise (*MJ*, May 21, p.390), the demise of an increasing number of juniors seems inevitable.

There is no shortage of promising mineral properties available within the hard-pressed junior sector, and current conditions suit the acquisition route for the great majority of senior mining companies and could continue to do so for some time. An increasing number of senior companies, a good example being Teck of Canada, are taking significant equity positions in juniors in return for first rights to their projects. This 'grub staking' offers a lucky few juniors financial security, allowing the majors to continue to 'out source' their exploration activity.

Not all senior companies are convinced of the wisdom of abandoning grass-roots work. Placer Dome of Canada, which recently said that it is cutting its exploration budget this year by around 25%, insists that it is maintaining an "aggressive", albeit more focused exploration programme, but acknowledges that there is considerable internal debate about long-term exploration strategy. It has not ruled out increasing its grass-roots exploration if there are fewer juniors to do this work. This debate has also taken place within Anglo American. The chief executive, Julian Ogilvie Thompson, said recently that the company remains committed to including grass-roots exploration in its budget, because the highest returns are made from discoveries rather than by acquisition, and because a presence on the ground provides valuable intelligence from the key exploration areas.

Overall, however, the prospects for the growing number of unemployed exploration geologists are not good. There could be several lean years ahead in which exploration activity is extremely limited and experienced exploration teams are disbanded. In the short term, there will be a surfeit of exploration geologists but longer term, the prospects of only limited job opportunities will only serve to aggravate the current trend at many universities and mining schools of dwindling numbers of high-quality students keen to make a career in exploration. Those that do study geology will find it harder to gain the practical training that major companies have in the past provided. When the sector revives, as it eventually will, where will the experienced teams of professionals be found to locate the next generation of mineral deposits? It is a question which the industry needs to address.

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Gold breaches $270/oz . . .

The slump in the gold price triggered by the recent UK-Treasury announcement of plans to sell a substantial portion of its gold reserves (*MJ*, May 14, p.354) continues. This week the price broke through the US$270/oz level and was fixed at US$269.50/oz on Wednesday – the lowest fixing since May 24, 1979 when it was fixed at US$263/oz. Intra-day trade has fallen even lower. The decline comes despite positive comments from senior officials in France, Germany and the US indicating that gold has a role in central bank reserves and news on Friday from the World Gold Council that demand in the first quarter of the year has risen by 62% to 788 t, just 2% short of the demand reported for the final quarter of 1998.

Gold's slump was accelerated by comments from Eddie George, the governor of the Bank of England. Speaking to a parliamentary committee, Mr George said that the market's response to the announcement had been overdone and he defended the decision to sell a portion of the UK gold reserves saying that it had been a "perfectly reasonable portfolio decision", and that he felt that currencies could provide as adequate a hedge against inflation as gold. Adding to the gloom was the news that the Swiss Government has now submitted a draft law to parliament that breaks the Swiss franc's link to gold and allows the Swiss National Bank to begin its gold sales. The law is expected to take effect early in 2000.

. . . short position grows

While Mr George's comments and the Swiss news may have given added impetus to gold's slump, there seems to have been a concerted effort, since the UK announcement, to push the gold price lower in the run up to the first gold auction by the bank of England on July 6. In the US the latest Commitments of Traders report from the Commodities Futures Trading Commission shows that speculative short positions on the Comex have risen from less than 5 Moz on May 4 – before the UK announcement – to over 8 Moz. The liquidity provided to the market by central bank lending means that these short positions could be maintained for some time and are unlikely to come under attack from any sustained short-covering rally.

In the short term, analysts expect that the price may fall as low as US$265/oz, with US$250/oz likely in the longer term. Traders say that prospects for a recovery in the price are being hampered by producers selling into rallies.

Zinc justification

Whilst many analysts feel that the recent rally in base metal prices is not supported by fundamentals, zinc seems to be an exception. In its latest weekly report, metals and mining consultant Brook Hunt says that the recent rally in zinc prices has been justified by a steady improvement in the metal's underlying fundamentals. The consultant estimates that at the end of 1998 the market had sufficient supplies for 54 days worth of consumption; this figure is forecast to decline to 46 days by the end of 1999.

Brook Hunt notes that demand for slab zinc rose by only 1.1% in 1998, the low increase reflecting the negative impact of the Asian crisis. The drop in Asian demand was particularly acute in Japan, the west's second largest consumer of zinc. According to the report, zinc demand from the two most important sectors fell significantly in 1998 – Japanese vehicle production fell by 8.4% and housing starts dropped by 13.6% (total construction orders, residential and non-residential, fell in value from ¥1,023 billion to ¥885 billion). The net result of these declines was that Japanese zinc consumption in 1998 fell by 11% to 659,000 t. Brook Hunt sees few signs of improvement in 1999.

However, elsewhere in Asia, although demand from South Korea, Malaysia and Indonesia fell by over 11%, this was partly offset by increases in demand from India and Taiwan and there are some positive signs emerging this year. As a result, Brook Hunt is forecasting that Asian demand will rise by 6.3% in 1999.

Globally, the US continues to be an important factor in maintaining zinc demand. The zinc-intensive sectors of house construction and automobile production have fuelled North American zinc demand, which is forecast to rise by 2% in 1999. Global demand is forecast to rise by 2.2%.

Brook Hunt says that zinc's slow but steady demand growth has helped it avoid the surge in supply that has afflicted copper, aluminium and other base metals. Since 1995, slab zinc production has risen by only 4.6% to 5.72 Mt last year, whereas copper and aluminium refined production has risen by 21% and 13% respectively. This year, and in contrast to copper and aluminium, zinc metal production is forecast to rise by a moderate 2%.

The other critical factor in the zinc market is China. Over the past few years, the shortfall in Western production relative to demand has been met by imports from China and to a lesser extent from the former Soviet Union. It is Chinese exports of zinc that are likely to continue to be the wild card in forecasting the Western zinc market balance and hence the price. Brook Hunt says that last year Chinese exports fell back to 339,000 t from their 527,000 t peak in the previous year. In 1999, they are expected to rise to 377,000 t.

Funds hit prices

With the exception of tin, the metals on the London Metal Exchange all traded lower this week. The fall seems to have been triggered by a technically driven fund sell-off.

The retreat in prices was led by copper, which see-sawed around the important US$1,500/t level towards the end of last week, falling below US$1,470/t at one stage. Sentiment this week has been undermined by further stock increases in LME warehouses. Dealers expressed concern at the rising LME stocks in Hamburg – equivalent to around 16% of total stocks – because they indicate weak demand for the metal in Europe. Further bad news came from Japan where the Japanese Electric Wire and Cable Makers Association said that it expected domestic copper wire and cable shipments to fall to 879,000 t in the current business year, the lowest level in 22 years.

In the face of the fund sell-off aluminium prices have also declined, with the drop being exacerbated by the thin markets. After initially weathering attempts to push the three-month price below US$1,320/t, the market eventually succumbed.

Nickel, while battered, managed to maintain a fairly neutral stance for much of the week, with news of the annual interruption to shipments from Norilsk caused by ice breaking up on the Yenisey River providing a fillip, as did consumer interest, which has helped reduce LME stocks to two month lows. However, selling pressure eventually overcame support and the price fell towards US$5,250/t.

Tin was the only metal that managed to strengthen its position. In the latest LME warrant report a large position in tin now accounts for 40-50% of LME stocks and unreported warrants stand at 19.23% of stocks. According to traders, tin's strength may be the result of further purchases by a large position holder aiming to trigger buy-stops that are thought to be in place above US$5,750/t. From last Friday's close the cash price has risen from US$5,692/t to US$5,744/t and the cash to three-month backwardation has widened to US$4/t.

LME PRICES & STOCKS

Prices (a.m.) Tonne basis	May 27 Buyers	May 27 Sellers	May 20 Buyers	May 20 Sellers
COPPER *Grade A*				
Cash	$1,431	$1,432	$1,488.5	$1,489.5
Three months	$1,463	$1,464	$1,520.5	$1,521
TIN				
Cash	$5,590	$5,600	$5,665	$5,670
Three months	$5,595	$5,600	$5,665	$5,670
LEAD				
Cash	$539.5	$540	$559	$559.5
Three months	$533.5	$534	$556.5	$557
ZINC *Special high grade*				
Cash	$992	$992.5	$1,038.5	$1,039
Three months	$1,011	$1,012	$1,060	$1,060.5
ALUMINIUM *Higher grade*				
Cash	$1,283	$1,283.5	$1,325.5	$1,326
Three months	$1,308	$1,308.5	$1,352	$1,352.5
Alloy				
Cash	$1,195	$1,196	$1,242	$1,246
Three months	$1,213	$1,215	$1,255	$1,260
NICKEL				
Cash	$5,130	$5,135	$5,395	$5,400
Three months	$5,205	$5,210	$5,475	$5,480
SILVER				
Cash*	n/a	n/a	n/a	n/a
Three months	$498	$499	$534	$535

*Trading of cash contracts begins on August 6.

LME warehouse stocks on May 26

	Stocks (t)	Stocks (May 19)
COPPER *Grade A cathodes*	776,100	769,075
TIN	10,310	10,480
LEAD	115,225	110,550
ZINC *SHG*	310,450	313,675
ALUMINIUM *HG*	767,800	771,650
Alloy	60,860	61,120
NICKEL	57,462	57,948

LONDON PRICES

Metals		May 27
Aluminium	(US producer)	61.00-62.00 c/lb d/d
Antimony		$1,230-$1,280/t cif
Arsenic	(Rotterdam 99%)	$0.35-$0.55/lb
Bismuth	Bismuth	$3.30-$3.50/lb cif
Cadmium	(99.99%)	$0.18-$0.23/lb cif
..	(99.95%)	$0.16-$0.20/lb cif
Chrome	(UK 99%)	$9.00-$10.00/lb
Cobalt	(99.8%)	$16.20-$17.20/lb net
..	(99.3%)	$15.70-$16.70/lb net
Germanium		$790-$820/kg
Gold		£168.80 ($268.25)/oz
Indium		$190-$210/kg
Iridium	(J Matthey price)	$415/oz
Magnesium	(Norsk Hydro Euro. prod.)	€2.86/kg*
..	(US Free mkt, 99.8%)	$2,250-$2,700/t*
Manganese metal	(99.7%)	$1,080-$1,140/t
Mercury	(99.99%)	$130-$140/flask
Nickel		$2.33-$2.34/lb
Osmium		$400-$450/oz
Palladium	(J Matthey price)	$344.00/oz
..	(Free market)	$337.00-$342.00/oz
Platinum	(J Matthey price)	$364.00/oz
..	(Free market)	$363.00-$365.00/oz
Rhodium	(J Matthey price)	$920/oz
Ruthenium	(J Matthey price)	$39/oz
Selenium		$1.60-$2.00/lb cif
Silver		$5.10/oz
Tellurium	(UK lump & powder 99.95%)	$5.00-$7.00/lb net
Tin	(Kuala Lumpur)	RM21.19/kg

Ore & Oxides		May 27
Antimony	(60%)	$8.50-$9.00/t unit, cif nom*
Beryl	(10% BeO)	$75-$80/s ton unit BeO cif*
Chrome	(Transvaal, Friable 40%)	$63-$68/t, fob*
..	(Turkish, concs 48%)	$75-$85/t fob*
Columbite	(min. 65% comb. oxides)	$2.80-$3.20/lb cif*
Ilmenite	(54% TiO_2)	A$95-A$110/t fob
Lithium ores	(Petalite 4.2% Li_2O)	$250/t fob*
	(Spodumene>7.25% Li_2O)	$385-$395/t fob*
Manganese ore	(48-50% Mn, max. 0.1% P)	$1.81-$1.90/t unit fob*
Molybdenum oxide	(conc 55-57%)	$2.65-$2.85/lb
Rutile	(Aust. 95-97% TiO_2)	A$675-A$750/t fob (bulk)
Tantalum oxide	(60% cif N. Euro port)	$26-$32/lb
Uranium	(Nuexco unrestricted/restricted U_3O_8)	$8.50/$10.60/lb
Vanadium	(98% V_2O_5)	$1.85-$2.05/lb cif
Wolframite	(65%)	$40-$45/t unit
Zircon sand	(std 66-67% ZrO_2)	A$500-A$600/t fob (bulk)

** Source: Metal Bulletin*

PGM producers invest for growth

Even taking into account the fact that platinum is produced by a relatively small number of producers, it is no mean feat to assemble the chief executives of companies controlling some 80% of the world's production of a single metal. The platinum seminar organised by Deutsche Morgan Grenfell last Thursday, towards the end of London's 'Platinum Week', brought together producers and marketers from South Africa, Russia and the UK, and an audience of fund managers and specialist analysts.

The small number of major producers in the industry means that there is an understandable degree of rivalry, particularly between the South African companies that mine in close proximity to one another on the Bushveld Igneous Complex. However, the heads of all three of the South African major producers, and their Russian counterpart from Norilsk Nickel, share one overriding view: the positive outlook for demand for platinum group metals (PGM) outlined by the first speaker, Mike Steel, marketing director for UK-based Johnson Matthey.

Mr Steel drew attention to several of the key features of Johnson Matthey's comprehensive annual review of the platinum market, released at the start of last week (*MJ*, May 21, p.386). Johnson Matthey's positive outlook for further growth in Chinese jewellery demand was endorsed by Edward Haslam, chief executive of LonPlats, a subsidiary of London-based Lonmin plc. Mr Haslam cited the "massive investment" in high-technology jewellery manufacturing equipment that he had seen on a recent visit to China as evidence that last year's consumption growth of 70% is unlikely to be a flash in the pan.

An area of broad agreement between the South African producers was the importance of maximising the potential of their workforces. The geology of the PGM-bearing reefs of the Bushveld is such that mining is inherently labour-intensive, although complements have been reduced in recent years as efficiencies have been improved. Barry Davison, chief executive of Anglo American Platinum Corp., believes that the key issue facing the industry is the management and motivation of the workforce. Steve Kearney, chief executive of Impala Platinum, illustrated the point by noting that even after a programme of transferring 'best practice' across the company, Impala's best mining teams still outperform the worst by around 100%. Mr Haslam drew attention to the current wage negotiations, and the need to move to a more sophisticated system than the haggling from high/low starting points that has traditionally taken place at regular intervals.

Amplats is firmly the industry leader, with annual production of 1.9 Moz of platinum and plans under way to increase to 2.3 Moz/y (*MJ*, March 27, 1998, p.240). Mr Davison said that the company is also now considering further expansion, of some 350,000 oz/y, all of which could be financed from internal resources if the decision is taken to proceed. He believes that the market is expanding such that there will be sufficient demand for this extra metal when the capacity comes on stream. LonPlats is expanding its production to 700,000 oz/y of platinum by 2001, from 627,000 oz in 1997/98, and according to Mr Haslam, LonPlats' smelter will be capable of handling 800,000 oz/y.

Impala Platinum currently produces about 1.1 Moz/y of platinum, but its smelting and refining operations have the potential capacity, if all possible process improvements are incorporated, to produce around 2 Moz/y (plus other PGM and base metals). The company currently uses 200,000 oz/y (Pt) of this spare capacity to treat secondary material and concentrates from other sources, such as the Mimosa mine in Zimbabwe, and is actively pursuing deals with other smaller mining companies, such as SouthernEra Resources Ltd (*MJ*, April 23, p.302) and Aquarius Platinum Ltd (this issue, p.408). Such companies need Impala to treat their concentrates, as the technical complexities of smelting and refining PGM, and the financial resources required, are such as to preclude any but a major company from this end of the business. Impala is also evaluating several other new projects (*MJ*, March 5, p.166).

The funding of these expansions by the South African producers has been assisted by the boost to cash resources yielded by the recent strength of prices for platinum, and particularly palladium, in contrast to other metals. They have also been strongly assisted by the depreciation of the rand against the US dollar. The largest producer outside South Africa, Norilsk Nickel, has enjoyed a similar pattern, although problems with receiving official approval to export metal have led to problems with realising revenue from production in the past two years. Yuri Kotlyar, first deputy general director of Norilsk Nickel, acknowledged the destabilising effect on the market of the delays to Russian PGM shipments, particularly palladium, but said that his company had suffered more than any.

Mr Kotlyar said that the devaluation of the rouble last August had the immediate effect of reducing Norilsk Nickel's costs in dollar terms, but this has been a relatively short-lived benefit as the resulting inflation has led to higher wage demands. Wages comprise some 40% of mining costs. He said that the main benefit was the sharp reduction in the dollar value of its rouble-denominated debt, and the company has now settled all its international debts.

Mr Kotlyar appeared philosophical regarding the financial and political problems afflicting Russia, and said that Norilsk Nickel is concentrating on investing in its operations with a view to operating at its current output levels for the next 20 years. Norilsk Nickel will rely on its own mineral resources, which can support current output until 2037. Mr Kotlyar said that the company does not need external financing but he does not preclude seeking bank credit facilities if attractive terms are available. Mr Kotlyar maintained the usual Russian secrecy regarding production levels, although he did say that if the estimates presented in Johnson Matthey's review were wildly inaccurate he would have made some comment to that effect.

One area of future investment is likely to be the modernisation of Norilsk Nickel's refining facilities. PGM are currently sent to a facility at Krasnoyarsk, in Siberia (*Mining Annual Review Supplement*, October 9, 1998, p.2). The three options under evaluation are to reconstruct Krasnoyarsk; build a new facility, possibly with assistance from the West; or refine the output at existing facilities outside Russia. A decision is expected in about six months. Mr Kotlyar said Norilsk Nickel is also in the process of establishing a new company to examine the possible recycling of up to 100 t of PGM contained in decommissioned military equipment.

Mr Kotlyar said that following the approval of export quotas there should be no more delays to metal shipments from Norilsk Nickel in the foreseeable future, but he could not speak for disposals from the government-held stockpiles, and he claimed to have no more knowledge of the size of these stocks than the audience. Earlier, Mr Steel had admitted that Johnson Matthey does not know how much metal is left. This is the key factor, as the platinum and, particularly, the palladium markets rely on Russian disposals to meet the gap between demand and mine supply. The one certainty is that these stocks are finite, which strongly supports the producers' various expansion plans. □

Eramet restructuring revised

Eramet, the French-based nickel producer, has set July 21 as the date for the extraordinary general meeting at which shareholders will be asked to vote on its restructuring proposals. The complex restructuring, announced earlier this year (*MJ*, February 19, p.113), retains its three main elements: the transfer of a 30% interest in Eramet's 90%-owned nickel mining subsidiary, Le Nickel-SLN, which has operations in New Caledonia, to a new company representing the indigenous Kanak people of the Pacific island territory; merger of Eramet with the Sima Group, a French-based producer of high-performance steels and nickel alloys; and the effective movement of Eramet to the private sector by reducing the 55% interest held by the French Government to less than 50%.

Under the original plan, the French state-owned holding company, Erap, was to exchange an unspecified number of its Eramet shares for the 30% interest in SLN. However, the latest announcement from Eramet contains important changes to the means by which the overall scheme will be effected, and details of the precise terms of the SLN swap and the resulting ownership of the Eramet group.

First, shareholders in Sima will transfer their collective 81.8% holding to Eramet in return for 8.5 million new shares in the latter. Second, Eramet will transfer the 30% interest in SLN to Erap in exchange for the remaining 18.2% interest in Sima, which Erap has already acquired in return for 1.9 million shares (12%) from its original 55% interest in Eramet.

The rest of the transaction remains unchanged: Erap will pass the 30% in SLN to the new company representing the Kanaks, to be called STCPI, leaving Eramet with 60% of SLN and Nisshin Steel Co. of Japan with its original 10%. Erap will also transfer an 8% interest from its remaining 43% in Eramet to STCPI and the balance to Cogema, the French state-owned nuclear-fuel producer which is building a portfolio of other mining interests. Cogema also now plans to acquire a small shareholding in Eramet, presumed to represent about 2% of the original share capital, from Bureau de Recherches Géologiques et Minières (BRGM), the French state-owned geological survey.

The issue of 8.5 million new Eramet shares to the shareholders in Sima will dilute the interests of other shareholders in Eramet, such that Cogema will hold 24.0% and STCPI 5.3%. The Sima shareholders will collectively hold the new Eramet shares and the shares acquired from Erap, giving them a 43.1% interest in Eramet, very definitely "more than a third" as outlined in the February announcement. Existing minority shareholders in Eramet (excluding BRGM) will together hold 27.6% of the enlarged share capital.

The latest arrangements also include a reciprocal agreement between Cogema and the family holding companies that originally owned Sima, including undertakings to retain interests, respectively, of roughly 30% and at least 35% in Eramet, and pre-emptive rights on each other's Eramet holdings. Eramet's board, if approved by current shareholders, will comprise four nominees representing the original Sima family share-

SHARE PRICES AND EXCHANGE RATES

Company	May 25 Local	Change on week %	Dollar	$ hi-lo
Alcan Aluminium (C$)	44.90	-3.4	30.86	89
Alcoa ($)	56.81	–7.2	56.81	76
Alusuisse (SF)	1820.00	0.8	1213.33	63
Anglo Amer. Corp. (R)	303.00	–1.9	48.64	92
Anglo Amer. Plat (R)	123.00	8.3	19.74	89
Anglovaal Mining (R)	31.00	8.8	4.98	27
Asarco ($)	16.75	–5.0	16.75	34
ASA ($)	16.94	–0.7	16.94	23
Ashanti Goldfields (£)	4.60	–0.4	7.34	27
Ashton (A$)	0.75	1.4	0.50	40
Barrick Gold (C$)	24.65	–5.2	16.94	44
Battle Mt Gold ($)	2.44	–6.9	2.44	0
Broken Hill Pty (A$)	16.24	-6.1	10.72	81
Cleveland-Cliffs ($)	36.38	–1.9	36.38	14
Comalco (A$)	6.04	–8.5	3.99	65
Cominco (C$)	19.90	–10.6	13.68	63
Cyprus-Amax ($)	12.75	–8.5	12.75	46
De Beers Centenary (R)	145.20	-0.5	23.31	89
Delta Gold (A$)	2.10	–5.0	1.39	39
Echo Bay Mines (C$)	2.37	-3.7	1.63	1
English China Clays (£)	2.48	0.4	3.96	86
Falconbridge (C$)	19.60	–3.4	13.47	85
Freeport Mc C&G ($)	14.94	–0.4	14.94	72
Gencor (R)	17.00	7.3	2.73	98
GFSA (R)	10.90	0.9	1.75	n/m
Homestake ($)	7.88	–6.7	7.88	0
Impala (R)	155.26	11.4	24.92	100
Inco (C$)	23.65	–5.2	16.25	75
JCI Gold (R)	4.70	–2.1	0.75	3
Kerr McGee ($)	47.44	5.0	47.44	53
Kidston Gold Mines (A$)	0.42	2.4	0.28	36
Lonmin plc (£)	0.48	–4.0	0.77	84
Metallgesellschaft (€)	17.50	1.2	18.46	47
MIM Holdings (A$)	0.86	–5.5	0.57	74
Newmont Mining ($)	18.06	–7.1	18.06	27
Noranda (C$)	18.05	–5.0	12.41	n/m
Nord Resources ($)	0.38	0.0	0.38	0
North (A$)	2.97	–5.7	1.96	48
Outokumpu (€)	10.40	–3.7	10.97	48
Pasminco (A$)	1.64	–10.4	1.08	69
Phelps Dodge ($)	56.00	–9.1	56.00	58

Company	May 25 Local	Change on week %	Dollar	$ hi-lo
Placer Dome (C$)	16.20	–5.8	11.13	35
Reynolds Metals ($)	55.88	–9.5	55.88	64
Rio Algom (C$)	18.70	–1.1	12.85	53
Rio Tinto Ltd (A$)	23.00	–3.0	15.18	73
Rio Tinto plc (£)	9.64	0.3	15.38	n/a
Teck (C$)	10.55	–13.2	7.25	20
Trelleborg (SK)	76.00	3.4	8.99	23
WMC (A$)	6.04	–7.9	3.99	68

Share prices and exchange rates, as at close of business on Tuesday. 100 in the high/low column indicates that the share is trading at a high in US$ terms, 0 that it is at a low. Figures are based on dollar prices over the past 52 weeks.

Currencies May 25

Value of	£	$(US)
$ (US)	1.60	–
$ (Australian)	2.42	1.52
$ (Canadian)	2.32	1.46
Ringgit (Malaysian) Fixed official rate	6.06	3.80
Franc (Swiss)	2.39	1.50
Krona (Swedish)	13.49	8.46
Yen	195.79	122.76
Rand (SA)	9.94	6.23
€ (Euro)	1.51	0.95
Markka (Finnish) ....€1=Mk5.94573		
Franc (French)............€1=FF6.55957		
Deutschmark ....€1=DM1.95583		

holders, two representing Cogema, two representing STCPI, six independents, and the current chairman and chief executive, Yves Rambaud. Shareholders will also be asked at the July meeting to vote on a resolution giving a double voting right to any shares held by the same shareholder for at least two years on or after January 1, 2002.

Eramet notes that the French authorities have already approved both the transfer of the group to the private sector and the acquisition by the original Sima shareholders of an interest of more than one third in Eramet's shares without having to make the normally required full bid for the balance. Eramet has also received a 'fairness opinion', as required by French stock-exchange regulations, from Détroyat Associés, which concluded that both the SLN transfer and the Sima merger are fair to shareholders in Eramet. □

Black Beauty gives Peabody strong finish

Peabody Group, the world's largest private-sector coal mining group, suffered a sharp fall in profit in the financial year to March 31, 1999, recording net income of US$10.7 million compared with US$160.3 million in the preceding twelve months. The largest single factor was a rise in interest charges to US$180.3 million from US$33.7 million in 1997/98.

Peabody has repaid US$100 million in long-term debt during the past year, but the increase of the group's interest in Black Beauty Coal Co. to 81.7% from 43.3% (*MJ*, April 9, p.271) has resulted in consolidation of that company's account into those of Peabody, with effect from January 1, 1999, including US$154.0 million in debt. Peabody's consolidated long-term debt stood at US$2.47 billion at March 31, compared with US$2.31 billion three months earlier.

The consolidation of Black Beauty also contributed extra revenue in the March quarter, and revenue for the full year to March 31 amounted to US$2.39 billion, 6% more than in 1997/98. This was driven by an 8% increase in Peabody's coal sales, to 160.0 Mt. However, a 13% increase in aggregate operating costs, to US$1.91 billion, resulted in a 31% cut in operating profit, to US$186.1 million.

The effect of the Black Beauty acquisition was most apparent in the results for the final quarter of the financial year, boosting revenue to US$691.5 million in the three months to March 31, 26% more than in the corresponding period in 1997/98, and increasing operating profit by 16% to US$88.0 million. This filtered through to a net profit of US$25.1 million which, together with an improved third-quarter performance, more than compensated for losses in the first half of the financial year.

Apart from the US$150 million spent on the additional Black Beauty interest, Peabody invested US$195.8 million during the financial year. Principal projects included the construction of the Bengalla mine in Australia, which began shipping coal in late April of this year; expansion of a mining complex producing low-sulphur coal in West Virginia; and the continuation of similar programmes at operations in Australia and Wyoming. □

De Beers tightens grip on Venetia

De Beers Consolidated Mines Ltd, the South African diamond mining arm of the De Beers group, has agreed to buy a 21.3% interest in Anglovaal Mining Ltd (Avmin). The acquisition takes the form of a block trade through the market of shares already in circulation, at R35.00/share for a total cost of R645.5 million (a 21% premium to the closing price the day before the deal was announced). De Beers states that it "has no intention currently of increasing this holding." The chairman of De Beers, Nicky Oppenheimer, said this week that Avmin's interest in the Venetia and Finsch diamond mines "makes this an attractive opportunity to focus further on our core diamond business".

Following the restructuring of the Anglovaal group, Avmin holds an 87.5% interest in the Saturn Partnership, which receives half of the pre-tax profits from the Venetia diamond mine, in Northern Province. The balance of the Saturn Partnership is held by ICH Ltd, an independent Johannesburg-listed holding company. Venetia, operated by De Beers Consolidated Mines, produced 4.5 Mct in 1998, from the treatment of 3.3 Mt of ore, equivalent to nearly half of South Africa's output (by weight). The bi-annual royalty from Saturn has been an important source of income for Avmin in recent years (*MJ*, September 4, 1998, p.188). Avmin also holds a 6.7% royalty interest in the Finsch mine, in Northern Cape Province, which produced 2.2 Mct from 4.0 Mt of ore during the same period. Finsch is also operated by De Beers Consolidated.

The De Beers group controls the bulk of the world trade in rough diamonds through its offshore arm, Swiss-based De Beers Centenary AG, which owns the international part of the group's Central Selling Organisation (CSO). One of the key elements in De Beers' business strategy is to try to maximise the proportion of worldwide rough diamond production flowing through the CSO's 'single channel marketing system'. The output of both Venetia and Finsch passes through the CSO.

Comment: There has been a degree of market rumour in recent weeks that Avmin might become subject to a takeover attempt, or some form of restructuring, although a hostile bid is unlikely in the near future. The controlling Menell and Hersov families unwound their complex additional voting rights last year, but retain control through a transitional structure which must be removed by June 2001 at the latest (*MJ*, December 11, 1998, p.479). De Beers has taken the opportunity to acquire a significant interest in Avmin, which means that whatever happens in the future, any party interested in dismantling Avmin would be obliged to reach terms with De Beers. □

Market news

The small South African gold producer **East Rand Proprietary Mines Ltd** (ERPM) issued a warning this week to the effect that the company's future is at risk if its gold production does not improve. ERPM's share price reacted by falling 19%, to R0.65/share. Gold fell to a fresh 20-year low this week (this issue, p.404).

■ The Indonesian nickel and gold producer **PT Aneka Tambang** has postponed its planned listing on the Australian Stock Exchange. The company, whose primary listing is on the Jakarta exchange, had originally planned an Australian listing by the end of last year (*MJ*, December 11, 1998, p.483). The president of Aneka Tambang, Dedi Aditya Sumanagara, said that the company received permission to list in Australia at the end of last week, but has decided that this month is not the appropriate time. The Indonesian Government has a 65% interest in Aneka Tambang, and wants to reduce the size of this shareholding to 51% (*MJ*, August 28, 1998, p.170).

■ The Denver-based gold royalty company **Royal Gold Inc.** has gained a listing on the Toronto Stock Exchange, under the symbol RGL, to join its existing arrangement on the US NASDAQ system.

■ **Krasnoyarsk Aluminium**, which owns the second largest aluminium smelter in Russia, at Krasnoyarsk in Siberia, plans to double its nominal share capital to issue new shares, with the aim of raising the equivalent of US$80 million. Shareholders in Krasnoyarsk Aluminium will be asked to vote on the arrangements at their annual general meeting on June 7. Reuters reports that the shares will be offered to existing shareholders in a closed subscription. The funds will be put towards a US$400-500 million major modernisation programme, the balance of which the management hopes to raise through long-term loans.

■ The Australian-listed platinum explorer **Aquarius Platinum Ltd** is to issue 3.725 million new shares to **Impala Platinum Holdings Ltd**, South Africa's second-largest producer of platinum group metals, to complete a subscription agreement made between the two companies earlier this year (*MJ*, March 26, p.229). Impala will pay A$1.86 million (A$0.50/share), as earlier agreed, but owing to the issue of additional fully-paid Aquarius shares to other shareholders in the intervening period, Impala's shares now represent a 12.8% holding in Aquarius rather than the 15% originally envisaged. Aquarius will use the funds to advance its wholly-owned Marikana exploration project, near Rustenburg on South Africa's Bushveld Igneous Complex. Impala already has an offtake agreement with Aquarius with regard to the Kroondal project, floated separately last year, whereby the concentrates from Kroondal will be treated using spare capacity at Impala's facilities (this issue, pp.398 & 405).

■ **Hargraves Resources NL** has succeeded in its takeover campaign for fellow Australian junior mining company **Diversified Mineral Resources NL** (DMR), having raised the acceptance level for its mixed cash and shares offer to 91.3%. The directors of DMR had originally opposed the takeover, but capitulated earlier this month after the South African gold producer **Durban Roodepoort Deep Ltd** entered the fray as a major shareholder in both companies (*MJ*, May 14, p.369). Hargraves intends to proceed to compulsory acquisition of the outstanding shares in DMR.

■ Two Canadian-based exploration companies have cancelled their planned merger. **Alamos Minerals Ltd** and **BigSky Resources Corp.** announced intentions to merge by a 'plan of arrangement' on the basis of one share in Alamos for every two in BigSky (*MJ*, April 16, p.287). Alamos reports that the cancellation is "a result of concerns raised" by its major shareholders.

■ The Australian copper and tin producer **Murchison United NL** has repaid the loan facility that it secured from CIBC Australia to buy the Renison Bell tin mine in Tasmania (*MJ*, August 28, 1998, p.149). Repayment was made using funds generated by closing out the company's currency hedging positions with respect to the US dollar, which totalled US$89.1 million as of this March, with a marked-to-market value (the amount that would be realised by closing out the contracts) of US$10.0 million (*MJ*, March 26, p.228). According to Murchison's managing director, Paul Atherley, the company is now debt-free.

■ **Sunshine Mining and Refining Co.** of Boise, Idaho, has retained two London-based financial institutions, Barclays Capital and Warrior (part of Standard Bank), to arrange the financing of its Pirquitas silver project in Argentina. Sunshine received a positive feasibility study of the project from its independent consultants last month (*MJ*, April 30, p.312). The chief executive of Sunshine, John Simko, said last week that he expects the project to start production in mid-2001. Average output over the first ten years of mine life, supported by the current reserves, will be 9.2 Moz/y of silver plus by-product tin and zinc. □