

CF. → Blu Star

Montana sapphire revival

Corundum (Al₂O₃) occurs most commonly as a dark, dull non-transparent mineral. In granular form and with iron impurities it resembles a fine-grained iron ore and is known as emery. Less commonly, it may be transparent and have a fine colour and can be cut as the gem, sapphire (or ruby when it is red). Only occasionally found as an original constituent of igneous rocks, sapphires and rubies are mined from river beds as placer deposits, mainly in the Far East.

In the U.S., sapphire of gem quality was discovered in Montana in 1865 but historically most sapphires there have been mined primarily for industrial purposes. Comparatively recently, interest in Montana's gem sapphires has been revived and two companies now have mining projects there.

Gem River Corp. began mining in October last year at its property in the Lower Dry Cottonwood Creek, some 50 km from the town of Butte (MJ, August 18, 1995, p.124). The company has mineral rights over 694 acres (280 ha) of alluvial ground and has outlined proven and probable reserves of some 3.5 Mct. It is operating under Montana's Small Miner Exclusion regulation which requires that no more than 36,500 t of material is removed during any calendar year and that not more than 5 acres of ground is disturbed and unreclaimed at any one time. Initial mining during a brief five-week pre-winter period in 1995 saw recoveries averaging 94 ct/m³, equivalent to 23 ct/m³ of cut stones.

When mined, sapphires, like virtually all coloured gemstones, are subjected to heat treatment in order to improve internal clarity and enhance the stones' natural colour.

Gem River reports that its heat treatment and cutting operations have gone well. The results of the company's first sale will be announced shortly and although original projections were that the cut sapphires would realise an average selling price of \$40/cut carat there is now considerable optimism that the price received will be far higher.

This year, Gem River expects to produce around 1.9 Mct in the six-month mining season which should yield some 465,000 ct of cut sapphire. A similar level of production is anticipated in 1997. Proven and probable reserves are modest but an additional 4.3 Mct have been identified in the possible category and there is confidence that other parts of the property yet to be explored contain additional resources. The actual mining operation is a straightforward earth-moving exercise and to date environmental provisions have been the biggest cost considerations. The operation is fully financed and since receiving a U.K. listing last November Gem River's share price has moved from £1 to £1.70/share.

Listed in Toronto since February 1994 and based in Helena, Montana, a second company, American Gem Corp., aspires to become a leading integrated producer of gem quality sapphires. It has mineral rights covering some 35,000 acres of ground including the historic Gem Mountain district where approximately 2,200 Mct (2 Mlb worth around \$2 million) of industrial grade sapphires are believed to have been recovered from some 1,000 acres of river gravels during the period from 1903 to 1942.

Tests carried out for American Gem by Watts Griffis and McQuat of Toronto have outlined a measured, indicated and inferred resource of 62.9 Mct on three properties including 47.7 Mct at Gem Mountain. At present, operations are being conducted under the Small Miner Exclusion regulation and 15-20 acres of ground is expected to be mined during 1995. However, the company is confident that it is complying with all environmental regulations concerning reclamation and rehabilitation, and American Gem has applied for a full mine permit which it hopes to receive by the end of August.

Mining thus far has been limited and further testing will be needed to verify the average recovery grade of 80 ct/m³. Current production is running at more than 21,000 ct/d, comprising mainly small stones averaging 1 ct in the rough and 0.2 ct to 0.25 ct when cut, and American Gem's chairman and chief executive, Greg Dahl, is hoping that sales will realise around \$50-\$55/ct. Total costs, including mining, processing, rehabilitation, equipment depreciation, heat treatment and cutting, equate to about \$12/ct.

Through its subsidiary, Crystal Research, American Gem has established a

1.8 t/y (9 Mct) capacity heat-treatment facility in Montana, and suitable cutting capacity is being secured in Sri Lanka and the Far East. Confident in the efficacy of its proprietary heat treatment process to create high quality sapphires, American Gem last year signed a contract to purchase rough sapphire from Australian miner, Great Northern Mining Corp. The latter has an estimated sapphire resource in north Queensland of some 400 Mct and the contract allows American Gem to purchase 50% of monthly production at prevailing market prices. The annual share of production is expected to be around 9 Mct during the next two years.

Burmese copper foray for Friedland

Fresh from his recent nickel success in Labrador, mining entrepreneur Robert Friedland has now turned his attentions to Myanmar (Burma) where his Indochina Goldfields Ltd (IGL) company has established a 50/50 joint venture with the Burmese Government to resurrect a large copper resource.

The first stage of the proposed development would involve an investment of some \$US100 million for the recovery of 25-30,000 t/y of copper cathode, starting in 1998. Ultimately, Mr Friedland anticipates a five-fold increase in output, although he is waiting for the political and economic development of the country "to mature" prior to committing funds to any future expansion. IGL has so far spent between \$25 million and \$30 million exploring and drilling the site in the central valley district of Myanmar.

According to Mr Friedland, in an interview with Reuters, the resource was abandoned by Japanese and Yugoslavian interests. The Yugoslavian Government originally financed the construction of a flotation plant to recover a copper concentrate (which was brokered by the Marc Rich group) but the mine eventually fell into disrepair. Ways to convert the mine output to directly produce refined copper, rather than concentrates, are currently being investigated.

Whilst some of the copper output will be consumed domestically, Mr Friedland noted that "great interest" has been shown in the project from potential Asian customers. Most notably, Japan appears likely to become a particularly eager customer, according to Mr Friedland, who anticipates that four of the country's seven copper smelters will close by the end of the decade. Built shortly after the end of the Second World War, these facilities would require excessive amounts of capital to make them environmentally acceptable, Mr Friedland said, and, as such, will be simply closed down.

LEADING INDICATORS

Share Indices	Change on week		High-Low (%)	Year's Max/Min
	May 29	(%)		
F.T. Ordinary	2,807	0.3	87	2,859-2,468
U.S. Dow Jones	5,674	-1.8	92	5,778-4,462
F.T. Gold Mines	2,326	0.8	78	2,521-1,638
Australian All Mining	1,076	2.1	84	1,118-852
South African Gold	2,030	5.1	100	2,030-1,271
Toronto Met/Min	5,392	-0.8	82	5,625-4,304
Nikkei Dow	22,022	0.3	99	22,120-14,618
Hang Seng	11,201	1.1	85	11,595-8,947
James Capel Indices	May 29			
100 on 1,189				
Global Base Metal	156	-1.4	72	164-134
Global Diversified Mining	181	0.8	84	186-150
Global Gold Ex.S Africa	169	0.9	97	171-122
Global Gold	157	1.5	91	161-115
Global Mining	162	0.3	85	167-136
Smaller Mining Companies	127	0.4	91	130-100
North American Base Metal	181	-1.5	81	190-142
North American Gold	191	0.7	100	191-135
Latin American Mining	196	-3.0	32	239-176
Latin American Ex CVRD	159	0.9	55	179-135
Japanese Non-Ferrous Metals	87	0.6	81	91-67
Other Metals/Minerals	175	-0.5	47	189-163
Global Coal Mining	240	-1.1	58	255-219
Commodity Prices	May 29			
Gold London	\$391.35	0.1	95	\$407-380.55
Copper L.M.E.	\$2.546	-0.5	8	\$3.235-2.483
Aluminium U.S. prod.	74.25c	-0.3	4	93-73.50c
Brent Crude dated	\$18.95	-2.9	47	\$22.63-15.61