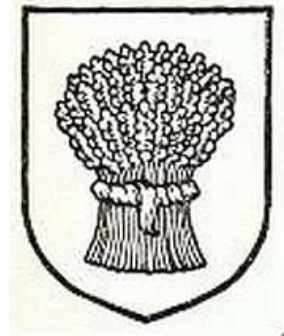


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HALLGARTEN & COMPANY

Portfolio Strategy

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Model Resources Portfolio: Various Worms Turning

Performance Review – February 2023

Model Resources Portfolio

Various Worms Turning

- + **Western economies appear to have stabilised**
- + **Gold has been holding up well (seemingly at the expense of silver)**
- + **Automakers are moving into upstream metals with the realization that they can no longer rely on the “power of prayer” alone to provide them what they need**
- + **China admitting that its growth is going to be lower injects some realism into its statistics for once**
- + **A trickle of M&A is taking place though we need the creation of more mid-tier players through consolidation**
- ✗ **Lithium has continued to correct downwards**
- ✗ **Tin lost its recent upward momentum and headed lower into the mid-\$20s per lb**
- ✗ **Interest rate rises continue and the vast bulk of workers have not had catch-up rises so real incomes have plummeted**
- ✗ **The construction sector around the world is showing weakness in the face of lower property prices**

Argentina – The Worm Turns (Again)

The best part of January and February saw us in Buenos Aires, reestablishing our business presence after a long interregnum. In fact it was the longest we had spent there since 2001. As always Argentina is a case of *la plus ca change, la plus qui reste la meme*. One is told there have been dramatic changes but besides the transport being dramatically improved and certain parts of the city having become gentrified and very hipster, some things remain eternal. A bigger change though is the city's internationalization and a certain feeling that it has either become the “Capital of Latin America” or is on the cusp of becoming so.

It is a truism that the Argentines are Italians who speak Spanish and the politics has a strong quotient of Italian about it. The difference being these days that Argentine governments (at least since 2001/2) have tended to last full term.. for better or worse, while Italy is a constant moving feast.

The politics is still screwy and the economic policies moreso. However, despite the “worst of times, best of times” discourse from the locals, the restaurants are packed and the people with money are living *la vida loca*. Ever was it thus...

Buenos Aires as the New Miami?

Over many decades, Miami has come to be seen as a sort of unofficial capital of Latin America at least to

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the upper middle class and middle classes of South America. It was the Mecca to be worshipped and visited from afar. A place to acquire property, and to stash funds offshore. However the last decade and a half have seen this role weakened as banking rules have tightened up and as the US has increasingly instituted a “educated and middle class need not apply” immigration policy.

Meanwhile, Buenos Aires (which had always attracted Paraguayans, Bolivians and Peruvians for menial occupations) has now become the go-to place for the South American middle classes, not only to visit, but to reside. The number of Venezuelans and Colombians decamping well south of the border is prodigious, while Brazilian and Mexican tourists are massively in evidence. Though still a rather closed box from the financial/banking point of view, the country is definitely open for business with undemanding immigration laws and the ease of setting up small businesses. To this can be added the burgeoning Russian/Ukrainian diaspora, ethnicities scarcely represented before.

All that is needed now is the push from an extended period of financial stability and openness (plus the restoration of many of the air routes that fell victim to the Pandemic) and BA will give Miami even more of a run for its money than it does already.

The Politics

Despite the fact that the country’s president is Alberto Fernandez, he is widely regarded as a creature of his vice president, Cristina Kirchner. The Kirchner grouping has largely ruled the country for twenty years, excepting a small centre-right interregnum mid-last decade. The Kirchnerite political style is not everyone’s cup of tea. However, even the detractors of Cristina Kirchner find it impossible to claim that she, or her various governments, have been anti-mining. Coming as she does from the strong mining province of Santa Cruz, in Patagonia, her approach has been very softly, softly.

The impressive current mining secretary at the Federal level is Fernanda Avila, who was formerly the secretary of mining in Catamarca province. In her international appearances (a contrast to previous stay-at-home secretaries) have left a trail of goodwill and good vibes at mining events around the world, most recently in Riyadh where Argentina had the largest presence of ANY country.

The main bugbears of the mining industry have been the issues of the *reintegros de IVA* (rebates of VAT) and the on-going idiocy of the parallel exchange rates, and exemptions thereto, that create an enormously distortive effect on the flow of funds into capex and the flow of dividends and profits out of the country. At the current time, for instance, the official dollar rate is around 180 to the USD, while the unofficial rate (the Dollar Blue) is around twice that at 370 to the USD. This requires CFOs and financial controllers of foreign miners to perfect their skills as contortionists to effect transfers at the most attractive rates.

Generally though, this situation has not been enough to discourage exploration or development. It is worth noting (and the miners are *sotto voce* on this) that the “cheapness” of Argentina at the unofficial rate is a big attraction. Normal petrol/gasoline is at US\$1 per litre and salaries are basically low at the official rate for domestically employed staff. Rents are low and hotels cheap, as are many basic camp

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supplies (food, cleaning products etc). Methinks, they complaineth too much.....

A specific negative for those operators in the high Andes is the so-called Glacier Law. This has been around for a number of years but has not been quantified or really applied. Moreover, the register of glaciers has not been updated and global warming (or whatever) has resulted in some of the listed glaciers having disappeared/dissolved. Others have shrunk to the size of a few dining tables and become historical oddities. Miners must, however, tread gingerly around this somewhat nebulous subject.

However, one might also look to the wetlands subject where the Iguazu Agreement of protecting wetlands prompted some rather predatory legislation that nearly made it to the law books, but was headed off at the pass by canny lobbying by interested parties in the mining industry and mining provinces. This shows that a proactive, yet subtle, approach from players acting in concert can make mining voices heard.

On the broader front, one might note the Fernandez/Kirchner Administration faces deep dissatisfaction from the public at this point due to the eternally troubled economy, falling living standards and romping inflation. There are primaries due in the middle of this year and then presidential elections in October of 2023. It is felt that the opposition stands a strong chance but, as yet, does not have a candidate. It is also not clear whether Fernandez will be trotted out by the Kirchnerites (or go it alone), but it looks highly unlikely that he will be on the Kirchnerite ticket again.

It should be remembered that aside for some minor positive initiatives from the centre-right regime of Mauricio Macri last decade, that Administration is best recalled for having all the effect of a damp firecracker. Hence it's brief duration and its unfond memory in the minds of the general public and the business community.

Moly – Another Worm That's Turned

In 2011 we wrote "The simplest way to describe the dynamic of Moly in the upcoming years is that, assuming a rather modest 4% growth in demand, an extra 107mn lbs of annual capacity will be needed. Real growth has been romping along at 6-7% in recent years so demand could potentially be higher". Oh, dear, how wrong can one be....

This was the last gasp of Molybdenum.. until now... Indeed, the truism of a "lost decade" became true indeed. Moly joins Uranium in the ranks of massive underperformers since 2010. Now Moly has become the word on everyone's lips making a Lazarus-like revival from the depths of despair.

But what are the dynamics of Moly and how could we have been so wrong?

The product categories that utilize Moly reads like a list of the sectors most closely linked to global economic growth. This is particularly true of specialist construction steels and stainless steel. This relationship is what produced the precipitous price fall in 2008 and then prolonged the agony for Moly. However, the Moly bulls would argue that a significant component of the construction steel demand comes from infrastructure investment (desalinization plants, natgas pipelines, OCTG, marine

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applications like rigs), which is continuing to be a priority despite flaccid global economies. In one particular twist one of the highest ratios (7%) of moly usage in alloys is in steels for nuclear power plants.

Moly alloys, because of their resistance to sulphur, are also prominently used in cracking plants at oil refineries. Increased usage of heavy crudes (with their high-sulphur content) increases demand even more. When oil (and natgas) prices are high then investment demand should be strong particularly in pipelines and well-casings that have a heavy Moly component. Moly is thus linked into high-tech applications of high-nickel stainless, not into run-of-the-mill construction steels, automotive uses and whitegoods that are highly recession-sensitive.

Looking forward, Molybdenum is expected to continue to make strong contributions in global power generation and infrastructure projects as countries begin to prioritize climate change.

It's worth noting that Molybdenum is recycled as a component of catalysts, ferrous scrap, and superalloy scrap. The amount of Molybdenum recycled as part of new and old steel and other scrap may be as much as 30% of the apparent supply of Molybdenum.

The Surge

Standard & Poor's attributed the price rise in recent times to four factors:

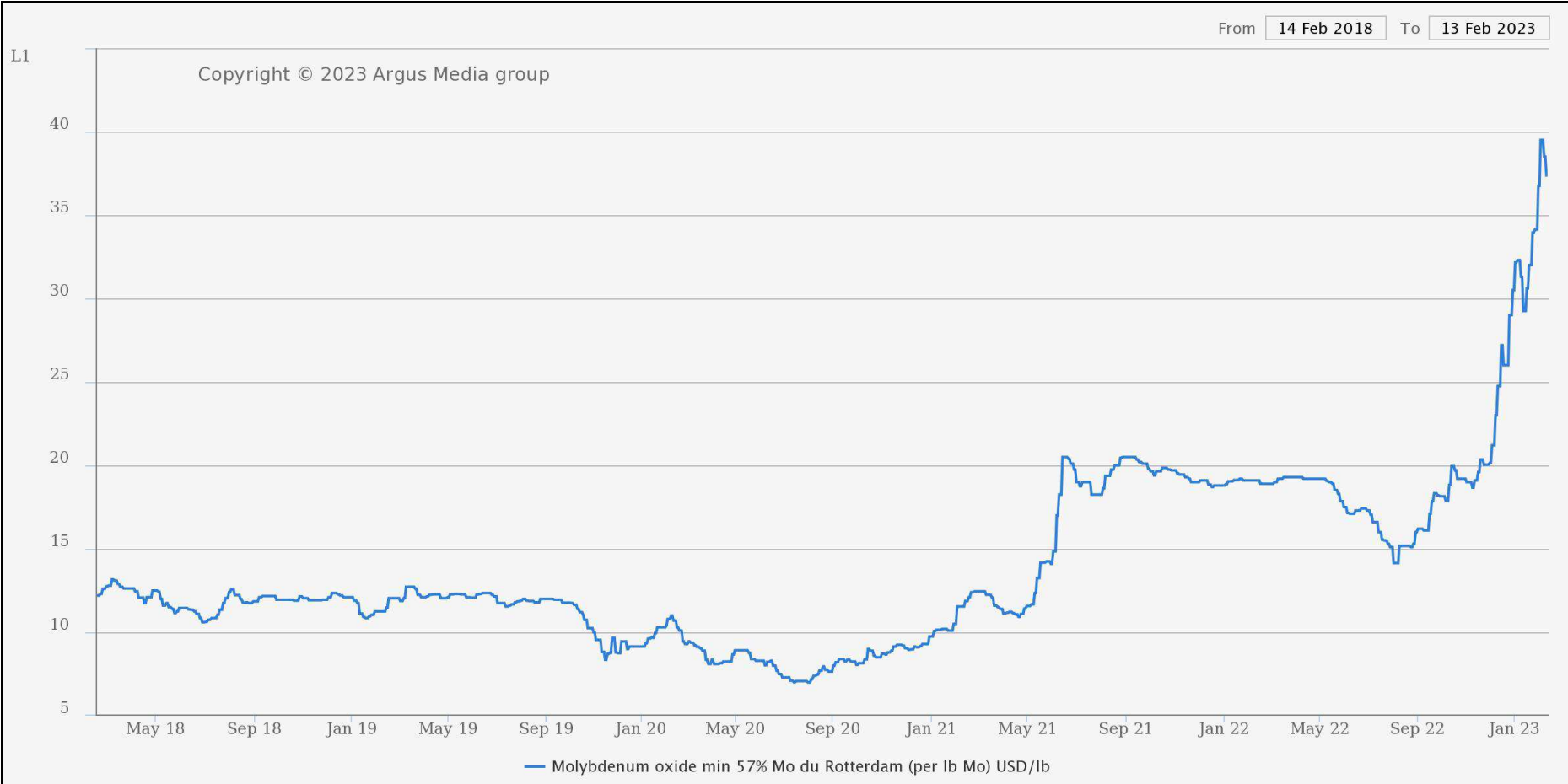
- ✘ Demand volatility - demand for moly-bearing carbon steel from the offshore drilling sector has stayed strong, as offshore drilling activity has remained high due to elevated oil prices
- ✘ Supply deficits – caused by the lack of production pipeline due the failure/disappearance of so many players over the last decade (discussed anon)
- ✘ Disruptions at key mines, principally Las Bambas in Peru, due to popular uprisings, as well as at the Antapaccay mine of Glencore in the same country
- ✘ Production issues in Europe, particularly at the Climax Moly Refinery of Freeport in Rotterdam

Molybdenum producers in China, in the USGS's opinion, continued to face difficulties owing to tightening of environmental regulations making it more difficult to obtain mining permits. Molybdenum prices in China reached decade-high levels as Molybdenum-bearing steel consumption remained high. In Chile, Molybdenum producers continued to struggle with persistently lower ore grades.

Production

According to the USGS, global Molybdenum production in 2022 was essentially unchanged compared with that in 2021.

In descending order of production, China, Chile, the United States, Peru, and Mexico provided 93% of total global production.



Source: Argus Metals

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US-sourced Molybdenum

According to the USGS's annual summary for 2023 (well, really for 2022) the total U.S. mine production of Molybdenum concentrate increased slightly to 42,000 tons of contained Molybdenum in 2022 compared with 41,100 tons in 2021. This is interesting as it shows that the US is in that rare position of being in a top producer category for a metal. Somewhat of a rarity.... In fact the US exports substantially more than it imports.

Molybdenum concentrate production in 2022 at primary Molybdenum mines continued at two U.S. operations in Colorado, accounting for 33% of total U.S. Molybdenum concentrate production. Molybdenum concentrate production from mines where Molybdenum was a byproduct continued at seven U.S. operations (four in Arizona and one each in Montana, Nevada, and Utah), accounting for 67% of total U.S. Molybdenum concentrate production. Three roasting plants converted molybdenite concentrate to molybdic oxide, from which intermediate products, such as Ferro-Molybdenum, metal powder, and various chemicals, were produced.

Moly Players – Thinned Ranks

When price rises like this occur a flood of companies suddenly “find religion” (or rather Moly) hidden in their ignored assay results or darker corners of their NI43-101s. How to capitalize on Moly's rise if the metal is well-buried in a deposit that is unlikely to be developed?

Standard & Poor noted that no significant secondary Molybdenum production from primary Copper mining had come online since Las Bambas in Peru began producing in early 2016. There are no new mines in any advanced state of planning or permitting, let alone under construction.

Equity investors used to be able to leverage fairly well to Moly via US-based Thompson Creek Metals (TSX:TCM), which we covered back in the day. However by the time that Centerra Gold (TSX:CG) acquired Thompson Creek, in October 2016, thru a US\$1.1bn deal, the Moly component had been heavily watered down via TCM having diversified into Mount Milligan, a mine in British Columbia with reserves (at that time) estimated at around 5.7 million ounces of gold and 2.2 billion pounds of copper.

Centerra's Moly unit now consists of two primary Molybdenum mines (which are currently on care and maintenance), the Thompson Creek Mine in Idaho and the Endako Mine in British Columbia. Its Langeloth Metallurgical Facility, located in Pennsylvania, operates as a toll processor and a purchaser of Molybdenum concentrates producing a suite of premium Molybdenum products.

Since that time, other exposure potential to Moly has shriveled. There used to be Creston Moly (a developer in Mexico which we covered until it was taken over by Mercator Minerals in 2011, Mercator going under in 2014), Adanac Moly (of unfond memory) and General Moly (declaring Chapter 11 in 2020) to name but a few. On the larger side there has long been the Climax Mine in Colorado, embedded within Freeport, that used to sometimes threaten to return to production, but became like many others the victim of the extended Moly price doldrums.

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Portfolio Changes

The only change to the Model Resources Portfolio during February was the addition of Aldebaran Resources (ALDE.v) at the very end of the month after our visit to their Altar project in San Juan province, Argentina.

Altaley Morphs Again

In the time we have known this company (still embedded in our Model Resources Portfolio) it has had four different names. Initially Soho, it became Telson, then Altaley (Spanish for “high-grade”) and now bizarrely Luca (reminding us more of Suzanne Vega than a medieval Italian town).

In recent days it was announced that the Board of Directors had recommended a change to Luca Mining Corporation, with its TSX Venture and OTCQX ticker symbol altered to “LUCA”.

More interestingly, the company had entered into a series of debt settlement agreements in respect of CAD\$9.4mn of loan debts owed to various creditors. This results in the issuance of 20,976,263 Shares, at a deemed price of \$0.45 per Share. These shares will be subject to a four month hold period.

Neometals – Grasping at Vanadium

The longest held constituent in our Model Resources Portfolio continues to make news on the Vanadium front. It’s interesting that it largely forsook Lithium and has moved in strongly to the Vanadium space (thus a bet on stationary mass storage). Vanadium is a metal where it has long had links but not done much until recent years and months.

The latest development is the execution of an agreement to formalise Neometals’ 50% ownership in the Vanadium Recovery Project’s incorporated joint venture company, Recycling Industries Scandinavia AB (RISAB). As a result, Neometals has the right to appoint the RISAB chair with a casting vote.

From its side, Neometals is guaranteeing the newly-amended LD-Slag Supply Agreement with steelmaker SSAB. This will provide baseline feedstock to support a 10-year, 300,000tpa operation.

We have previously written on this development [here](#) in 2020.

The other half of RISAB is owned by the unlisted Australian (public) company, Critical Metals Ltd in which Neometals holds 19% of the capital. If we remember correctly Critical was spun out as a demerger to shareholders of Hannan’s Reward, one of which was Neometals. Besides NMT, there are thousands of other private shareholders in Critical making it one of the widest held non-listed companies in Australia. A curious anomaly.

We reiterate our LONG call on Neometals.

Hochschild (LSE:HOC) – What Ails It?

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Hochschild is a stock that has done little wrong but has been brutalized in recent years by the markets. What ails it? Is it silver? Is it Peru? Is it the backwash from the Aclara debacle? Or is it the flaccid earnings?

In H1 2022, Hochschild's output was nothing to be sneezed at with delivered attributable production of 166,708 gold equivalent ounces or 12.0 million silver equivalent ounces (on an attributable basis) with the decrease versus the same period of 2021 resulting from planned lower production at Inmaculada and Pallancata, as well as the impact of stoppages at San Jose in the first quarter.

Gross revenue from continuing operations decreased by 12% to \$354.7 million in H1 2022 (H1 2021: \$404.4 million) due to the lower average realised silver prices, and lower silver and gold production. Output was mainly impacted by lower grades in Pallancata, and lower treated tonnage in San Jose due to Covid-related employee absences and a fire in the crushing area which temporarily affected operations (not to mention that San Jose seems to be massively overstaffed). These issues were partially offset by a higher average realised gold price.

Interestingly Hochschild has a hedging policy for its silver that has paid off well. In February 2021, it hedged four million ounces of 2021 silver production at \$27.10 per ounce and four million ounces of 2022 silver production at \$26.86 per ounce. As of June 2022, two million silver ounces (H1 2021: 1.82 million) were priced at \$26.86 (H1 2021: \$27.10) per ounce, boosting the realised price.



Even the successful launch of Aclara turned around and bit the company on the behind. We were

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initially fans of the potential of this ionic adsorption Rare Earths deposit holder to be disruptive. But so far it has only addled the minds of Hochschild holders. Its government relations have been terrible and its spinning of those relations even worse. We can't blame this on Hochschild, except to the extent that it emplaced the management who have repeatedly fumbled the ball.

In late March of 2022, Aclara reported that as part of the EIA approval process, Aclara had filed three submissions to the Environmental Assessment Authority (SEA). However, the company was unable to satisfy the SEA in relation to two technical aspects in particular, which relate to the protection of local flora and fauna, within the mandated regulatory timetable relating to the EIA process.

Management determined that it was in its best interests and those of the project to take the additional time required to fully understand and resolve the remaining issues and resubmit a revised EIA application and thus withdrew the submissions. The market took this like a dose of castor oil and the stock halved in a couple of days then slip-slided away ever lower and spent most on the last twelve months bouncing along the bottom.

Dire as it is, the Hochschild chart looks nothing as bad as the Aclara one does.



Then the many travails of the silver price (again returned to a weakening track in recent weeks) have not helped nor have the upheavals in Peru, that have only served to compound the misery. In any case, Hochschild is now at a level that bargain hunters should be satisfied even if nobody else is. We are maintaining it as a LONG in the Model Resources Portfolio with a 12-month target price of £1.

Hallgarten & Company - Metals Estimates					
	Unit	End 2022 Estimate	End 2022 Actual	Undershoot/ Overshoot	End 2023 Estimate
Lead	lb	\$0.95	\$1.07	12.6%	\$0.92
	tonne	\$2,094	\$2,358	12.6%	\$2,028
Zinc	lb	\$1.62	\$1.37	-15.4%	\$1.68
	tonne	\$3,570	\$3,019	-15.4%	\$3,703
Copper	lb	\$4.10	\$3.79	-7.6%	\$4.55
	tonne	\$9,036	\$8,353	-7.6%	\$10,028
Gold	oz	\$2,250	\$1,823	-19.0%	\$1,980
Silver	oz	\$31.00	\$24.00	-22.6%	\$25.30
Uranium (spot)	lb	\$42.00	\$42.70	1.7%	\$57.00
Antimony	tonne	\$13,500	\$13,070	-3.2%	\$13,500
Tungsten APT	MTU	\$355	\$335	-5.6%	\$355
Tin	tonne	\$38,750	\$23,687	-38.9%	\$33,750
Cobalt	lb	\$38.00	\$32.79	-13.7%	\$38.00
Vanadium	lb	\$10.50	\$8.70	-17.1%	\$10.50
Nickel	lb	\$9.20	\$13.65	48.4%	\$9.20
	tonne	\$20,277	\$30,085	48.4%	\$20,277
Molybdenum	lb	\$15.30	\$18.61	21.6%	\$23.30

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Parting Shot

Our metals outlook review for 2023 became somewhat collateral damage from our expedition to Argentina. In 2022, the metal we most underestimated was Nickel, the one we estimated most closely was Uranium while the one we overestimated the most was Tin.

That Tin was destined to decline from its heights of 2021 (around \$55k per tonne) was fairly certain but that the fall would be so brutal (then the upturn so sudden) was the hardest part to project.

All in all though the surprising thing is that base metals have been as firm as they have considering sloppy Western economies (not to mention China), rising interest rates and the lack of an end in sight to the Russo/Ukrainian war.

While gold bulls spent all of 2022 whining about how sickly gold was, the price of the yellow metal was sustained at one of its highest averages for a year ever. You can't please some people ever...

Silver as we noted in a recent Monthly had a very good end to 2022 (particularly vis-avis gold) but then has had a miserable start to 2023.

All in all our estimates are up for 2023 from where 2022 ended, but have more than a passing resemblance to what we had forecast for 2022.

Recent & Upcoming

In the last month we published our Special Situations note on Solvay, an update on Cobre, our initiation of Sheffield Resources and our Mine Trip review on San Juan.

In coming weeks, there is scheduled an Initiation on Century Lithium, an update on Alphamin and potentially an initiation on Boron One (the former Erin Ventures).

MODEL RESOURCES PORTFOLIO @ END FEBRUARY							
Security	Ticker	Currency	Price	Change		12-mth Target	
LONG EQUITIES							
				last 12 mths	last mth		
Diversified Large/Mid-Cap	Hochschild	HOC.L	GBP	0.6512	-39%	-2%	£1.00
	Sherritt International	S.to	CAD	0.53	4%	-12%	\$0.95
Uranium	Sprott Physical Uranium	U.UN.to	CAD	16.9	19%	-1%	\$20.00
	GoviEx	GXU.v	CAD	0.22	-33%	-8%	\$0.45
Zinc/Lead Plays	WisdomTree Zinc ETF	ZINC.L	USD	9.7	-12%	-12%	\$14.00
	Altaley Mining	ATLY.v	CAD	0.39	18%	-5%	\$0.70
Silver Explorer	Southern Silver Exploration	SSV.v	CAD	0.16	-43%	-20%	\$0.40
Silver ETF	IShares Silver ETF	SLV	USD	19.22	-8%	-12%	\$24.00
Gold Producer	Soma Gold	SOMA.v	CAD	0.4	11%	-5%	\$0.85
	Asante Gold	ASE.cn	CAD	1.68	-5%	-2%	\$2.40
	Orvana Minerals	ORV.to	CAD	0.18	-50%	0%	\$0.60
Gold/Antimony Developer	Perpetua Resources	PPTA.to	CAD	4.89	8%	3%	\$7.50
Metallurgical Coal	Colonial Coal	CAD.v	CAD	1.48	-31%	29%	\$2.45
Royalties	Elemental Altus Royalties	ELE.v	CAD	1.3	-21%	2%	\$1.52
Copper Explorers	Panoro Minerals	PML.v	CAD	0.11	-39%	-8%	\$0.30
	Phoenix Copper	PXC.L	GBP	0.3531	-33%	-25%	£0.54
	Aldebaran Resources	ALDE.v	CAD	0.92	-9%	-3%	\$1.32
	C3 Metals	CCCM.v	CAD	0.06	-50%	-40%	\$0.20
Tungsten Producer	Almonty Industries	AII.v	CAD	0.74	-17%	-9%	\$0.95
Graphite Developer	Blencowe Resources	BRES.L	GBP	0.0523	16%	-6%	£0.09
Cobalt	Jervois Global	JRV.ax	AUD	0.19	-70%	-30%	\$1.00
Vanadium Developer	Vanadium Resources	VRB.ax	AUD	0.06	-25%	-25%	\$0.22

MODEL RESOURCES PORTFOLIO @ END FEBRUARY							
Security	Ticker	Currency	Price	Change		12-mth Target	
				last 12 mths	last mth		
LONG EQUITIES							
Lithium	Neometals	NMT.ax	AUD	0.82	-43%	-5%	\$1.50
	Lithium Power Intl	LPI.ax	AUD	0.37	-49%	-16%	\$0.80
Cesium/Lithium	Essential Metals	EXX.ax	AUD	0.5	-2%	-7%	\$0.55
Scandium Developer	Scandium International	SCY.to	CAD	0.06	-57%	-14%	\$0.15
Gold Explorer	Cabral Gold	CBR.v	CAD	0.12	-68%	-14%	\$0.60
	Gunpoint Exploration	GUN.v	CAD	0.55	-5%	-8%	\$0.75
	Desert Gold	DAU.v	CAD	0.06	-57%	0%	\$0.32
	MetalsTech	MTC.ax	AUD	0.48	85%	-4%	\$0.68
Rare Earths	Rainbow Rare Earths	RBW.L	GBP	0.1088	-34%	-9%	£0.30
	Neo Performance Materials	NEO.to	CAD	10.33	-45%	-10%	\$24.00
Tin Miners	Alphamin	AFM.v	CAD	0.93	-13%	-6%	\$1.35
	Metals X	MLX.ax	AUD	0.31	-44%	-23%	\$0.38
Mineral Sands	Sheffield Resources	SFX.ax	AUD	0.49	15%	-16%	\$0.72
Helium	Desert Mountain Energy	DME.v	CAD	2.45	-1%	-13%	\$3.70
Oil & Gas	Shell	SHEL.L	EURO	25.585	32%	7%	£24.00
SHORT EQUITIES							
Shorts	NioCorp	NB.to	CAD	1.25	25%	6%	\$0.40
	Golconda Gold (ex-Galane Gold)	GG.v	CAD	0.28	-44%	-28%	\$0.25
	Cleantech Lithium	CTL.L	GBP	0.72	n/a	38%	£0.25
	Texas Mineral Resources	TMRC	USD	1.25	-13%	-12%	\$0.30

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