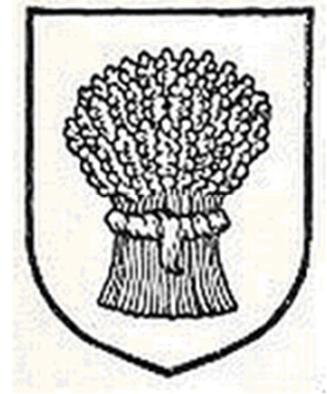


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HALLGARTEN & COMPANY

Think Piece

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March of the Lemmings Overcrowding in the TSX's mining sub-sectors *du jour*

March of the Lemmings

Mass extinction amongst the wannabes

- + A new Golden Age (to mix a metaphor) could be dawning for specialty metals with the spoiler effect of Chinese predatory pricing in retreat while rising demand from new technologies is making them into potentially higher value inputs in higher value products.
- + The markets have swung into adventurous mode being prepared to fund a proliferation of new explorers in the Uranium, Lithium and Rare Earth sub-spaces
- + The Uranium boom of the middle of last decade has at least left some new producers in its wake (though the African ones are now targets for Chinese takeover moves)
- + The Lithium boom created a clear category of winners (i.e. those with near-term production) while the rest are largely surplus to requirements
- + The Rare Earth boom has turned up a handful of companies that have a realistic chance of recapturing for the Western economies a share of global REE production
- ✗ The uranium space has never fully recovered from the beating it took in 2008 and now the latest attempt at a rally has been squashed by the Japanese nuclear emergency.
- ✗ The ranks of uranium juniors still needs thinning as there are just too many for the investor demand or likelihood that funds will be available to sustain even a fraction of them through to production
- ✗ The Lithium space could rapidly move from slight shortage to medium term oversupply making the few leaders in the production race the only ones to “get through the gate” before its game over.
- ✗ In the Rare Earth space there is a need for mass die-off as reputedly over 200 players exist in a space that needs no more than 10-20 realistic prospects

Algal Blooms in the Mining Stock Markets

The purpose of this note is to discuss the phenomenon in recent years of massive over-production of “plays” in sub-sectors of the mining space. This tends to happen when a metal has a spike in price or interest. Another characteristic is that it tends to happen more in metals where the investing public (and professional investors) have less knowledge. Then the most interesting characteristic is that while the London and Australian markets tend to produce a few vehicles to cater to this new investor “need”, the Toronto market invariably goes overboard producing an excess of listed entities in a rather short period of time. We have seen this repeated in recent years in Uranium, Lithium and currently Rare Earths.

While some might see this as a capitalist outpouring and a Darwinian market response at its purest expression, we are more inclined to see it as a waste of scarce resources where the vast bulk of companies crash and burn taking the capital invested with them and not necessarily adding as much to the amelioration of the supply/demand dilemma that caused the rush in the first place.

Doing What Comes Naturally

Lemmings are small rodents, usually found in or near the Arctic, in tundra regions. They achieved more notoriety though for the perception that they launch themselves in large numbers over cliffs in a seemingly herd-like suicidal rush.

Usually we do not quote Wikipedia as a source in our research but in preparing this piece we found particularly *apropos* its article on “Popular Misconceptions” as it pertains to the lemming:

“Lemmings do not engage in mass suicidal dives off cliffs when migrating. They will, however, occasionally unintentionally fall off cliffs when venturing into unknown territory, with no knowledge of the boundaries of the environment. This misconception was popularized by the Disney film White Wilderness, which shot many of the migration scenes (also staged by using multiple shots of different groups of lemmings) on a large, snow-covered turntable in a studio. Photographers later pushed the lemmings off a cliff. The misconception itself is much older, dating back to at least the late nineteenth century”.

We were particularly struck with the accidental suicide “with no knowledge of the boundaries”. Doesn’t this just say it all about so many of the players in novel new metals?

On Herd Instincts

Clearly the market is addressing a need when a certain metal comes into heavy demand and there is not a current producer (or enough thereof) to satisfy the need. However, the response of the different markets is dramatically diverse. A good example of this is the Rare Earth space. The Australian market has around six Rare Earth stories (by our counting) and even one of these (Alkane – ALK.ax) professes to not really be REE but rather Zircon-focused. The London market meanwhile has less than a handful of REE plays. Meanwhile we were recently quoted the “statistic” (by a panelist at a Rare Earth seminar) of 200 TSX- and TSXV-listed vehicles that claimed to be Rare Earth asset holders. The US market only has Molycorp (MCP) and the German market has Tantalus (TAE.F). Why does the Canadian market need 200 explorers in this limited field of manouevre? If we had been asked we would have ventured that there were 40-50 TSX REE names. But 200? Clearly nothing exceeds like excess. Does any market even need 50 companies pursuing a tiny market niche like REE?

Uranium

If 200 Rare Earth companies seems excessive then we have heard the statistic (the veracity we cannot attest to) that there were up to 400 companies scattered around the world's exchanges in 2007-8 that claimed to be uranium explorers/producers. Whatever it was they have since been winnowed drastically and the number is now a mere fraction. Not only had Uranium gone out of fashion with the crash of 2008 but those crushed stocks were now ripe for resuscitation as gold stocks in the first flush of the 2009 rally, but moreover as lithium and then (in droves) Rare Earth stocks. The Rare Earth story was particularly suitable for morphing as many uranium miners had found at least traces of REEs in their previous drilling and could dust these off for consumption as REE stories.

This latter practice caused some schizophrenia when the Uranium price started to rally in late 2010 as

some of the newly-styled REE stories flip-flopped back to being Uranium... only having to ditch the new (old?) garb and fall back into the REE camp after the Japanese nuclear scare took the sheen off Uranium yet again. The stunning lack of commitment to an individual theme really gave the game away of managements in that space. This reduced the stockpicking game to the Bourse equivalent of *Deal or No Deal* where one thinks one knows what is in the prize suitcase but cannot really be sure.....

The Uranium boom though did leave some good in its wake with a new generation of producers, particularly those located in Africa, being the legacy. As always the Uranium space is polarised between juniors and producers with a very small transitional group with the prospect of some production in near-term. We would note that the new breed of producers are directed towards supplying the latest wave of nuclear power plant builders (with China being most prominent) and that the Chinese have shown themselves very partial to acquiring, in particular, the Namibia plays. With national security considerations making it highly unlikely that the Chinese would be permitted to acquire Uranium plays in the US, Canada or Australia, the explorers with properties in these countries are at a severe disadvantage to those with properties in “neutral” territory.

The false dawn of the Uranium rally aside, the fate for most Uranium juniors is sealed. We have totally dropped interest in the sector as we feel that all but a few near-production stories are doomed to wither and die of lack of funding. The problem the survivors face is that struggling out of the “Nuclear Winter” is going to be a tough road and the temptations of switching to being a gold stock or suchlike is going to be more tempting than remaining poor but virtuous and persisting with a Uranium-theme. We would not be surprised to see the number of Uranium juniors (i.e. non-producers) globally shrink to less than 50 over the next two years.

Lithium

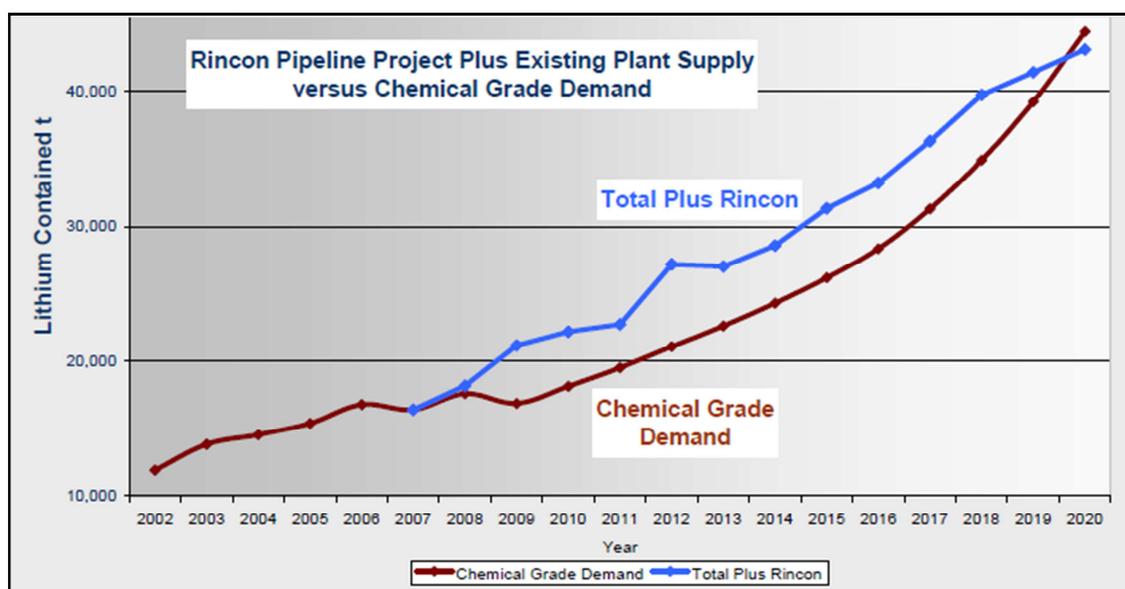
The Lithium sector literally came out of nowhere with the first swallows of the “Lithium Summer” being spotted in 2008 despite the fact that Lithium had already hit quite high levels mid-decade. As usual, the serious work was being done in Australia where the producer Talison Lithium (TLH.to) was being reconstituted out of ruins of Greenbushes Tin and the feisty Admiralty Resources (ADU.ax) had made a really gutsy bet on lithium by developing the Rincon saline lake deposit in Argentina. The crunch of 2008 came along just as word had spread virally to the Canadian market that Lithium was the new wave. A few names started to appear up there, Western Lithium (WLC.to) being a spin-off from Western Uranium (WUC.v). Many of the others were battered shells from the 2008 crash that were quickly dusted off and given a new *raison d’etre*. Canada Lithium (CLQ.to) managed to find itself a past-producing area in Quebec. The rest were all greenfields. Initially the Canadians largely eschewed the LatAm saline phenomenon with Salares Lithium (now merged with Talison) being the only party to pursue the traditional Lithium producing areas of Chile (many fearing the wrath of the cartel that is so ensconced there). Several other lithium plays were created in Argentina via spin-offs from existing gold stories (Orocobre – ORE.ax, TNR Gold – TNR.v and Latin American Minerals – LAT.v). Then a flock of lesser stories who could spot some spodumene in Canada or the Southwest USA joined the fray.

Ironically, while the total number of Lithium names probably never exceeded forty (though we have been proven wrong in the past in underestimating the number on the TSX that pursue these fads) the number that went after lithium in Australia was a mere fraction and yet ALL of the Australian plays are producing or on the way to production while none of the Canadian are in prospect of producing

anything for a substantial amount of time. The Australian contingent is comprised of Galaxy (near-production, Reed Resources (substantially built), Talison Resources (the long-time producer) and Orocobre (shorn of its copper/gold side) which is developing a saline lake in Argentina and has Toyota as its backer. The other Australian play, Admiralty, hit the rocks in 2008 and sold Rincon to a hedge fund (Sentient) where it has been forging ahead towards production under the public radar.

Meanwhile in Canada.. well.. the less said the better.

The problem for laggards in the lithium space is that there very well may not be any demand for their products even if they get their acts together in the long-term. Many of the *salares*-based lithium projects being contemplated in the Argentine *altiplano* have the potential to become meaningful contributors to global lithium supply (or maybe over-supply). Balancing this lithium production increase are markets that are anticipated to grow solidly owing in part to the expanded uptake for lithium batteries utilized in "greenhouse gas friendly" hybrid motor vehicles and other major applications in the glass and ceramics industries.



Source: TRU Group

It is not just us that are Jeremiahs in the industry. The chart above from the industry's leading consultants shows existing demand plus Rincon. Frankly, this chart shows that the Rincon project is enough to cover demand and produce excess supply. In this scenario, ALL other projects are surplus to requirements until 2020. And that is without taking into consideration the still-nascent Lithium recycling efforts being made in Germany.

Even under this Rincon scenario one must suspect that prices will come down because there will be oversupply in the interim. There is certainly not space for all the other wannabes to crowd into an already full lifeboat. Thus we can safely say that Rincon, Galaxy (GXY.ax), Reed (RDR.ax) and probably Orocobre shall join Talison in the ranks of producers. Canada Lithium might just pull off the transition to producer and **all the rest of the lithium plays are destined for the dustbin of history** unless they want

to wait around for 20 years when the supply/demand situation might become stretched again.

Rare Earths

This is the part of the market where the similes pile up... tulips, tech bubble, lemmings, the extinction of the dinosaurs.... as this is where the faddishness has reached its apogee.. and why? We suspect it is because the TSX and its little sister the TSXV are just awash in listed miners. There are so many miners of no consequence and little prospect out there that when a sector falls from favour the mad rush out into another sector is triggered. It was made worse in this case because Rare Earths appeared out of nowhere when there had scarcely been a stock dedicated to this corner of the metallic universe for decades and the level of ignorance was high indeed. The classic example we encountered was when one of the Uranium sector-escapees asked its geological consultants (one of the god's of the Canadian NI 43-101 firmament) to redo its old uranium NI-43101 on its Ontario property. We seemed to be the first to notice that the consultant had counted Thorium as a Rare Earth in calculating the TREO percentage for the deposit. What would we know? After all the TSX does not regard us a QP.

The Rare Earth surge also came as the equities markets were struggling through a phase in which only gold had reclaimed its gleam. Thus in the desperate search for meaning after the near-death experience of 2008 many of the explorers outside the gold space were tempted by the siren song's of a quick sex-change to become a Rare Earth diva.

So what began as a slow groundswell with Lynas (LYC.ax) and Arafura (ARU.ax) in Australia (where the Chinese were already trying to get positioned) and little more in Canada than the veteran Great Western (with its quasi-industrial look) and Avalon Rare Metals (AVL.to - note the bet-hedging on a wider remit in the form of "Metals" rather than "Earths"). Somewhat in their wake was Rare Element Resources (REE) and a handful of microcaps. This situation remained pretty much the same until late 2009 with the soufflé having several times puffed and then partly deflated. By the end of 2009, the largest amount anyone had raised was the \$17mn that Avalon managed during the balmy days of September 2009. Then a freeze set in where REE stocks could not be given away. Great Western (GWG.v) shriveled after being left at the altar by the funkily-named and mysterious Molycorp. The pack was joined by Tasman (TSM.v) and Quest (QRM.v), with Tantalus listing on the German Exchange to satisfy some curiosity over there. At first Tasman struggled to get any attention above its equally diminutive non-REE stable members Tumi and Mawson. Pretty much this remained the field up until the middle of 2010 with market caps creeping up, press coverage stoking the fire and Molycorp looming as an IPO.

Down Under the Chinese suitors looking for a majority stake in Lynas were sent packing by the FIRB and the game was on with resource nationalism being the new mantra. Alkane, the sometime Zircon hunter was added to the contenders, Lynas did a rights issue that swiftly put it at the front of the production pack and Arafura built status as it explained to the world how it could turn its Nolan's Bore Uranium property into a REE producer.

Loparite – closure in the midst of a boom?

Prevailing wisdom has it that this is one of the most propitious moments in history to be a REE miner. This truism however is challenged by the evidence at the sole Russian producer of REE ores. As many will know the only non-Chinese mining of REE at the moment is conducted in India (largely as a by-product

of Thorium extraction), Malaysia (as a by-product of tin mining), Brazil from Monazite sands and Russia. There is no evidence to hand that any of these activities is highly profitable or even profitable at all.

As we noted in our recent [Molycorp note](#) (dealing with the acquisition of the Silmet plant in Estonia) the main input source for the Silmet plant has hitherto been the Revda loparite deposit on Russia's Kola Peninsula. Started in the dark days of late Stalinism in 1950, the mines complex is controlled by Sevredmet Joint Stock Company, which is owned by the Swiss entity, Zimal, which was formerly the largest shareholder in Silmet A/S. The mineral loparite $(\text{Ce, Na, Sr, Ca})(\text{Ti, Nb, Ta, Fe}+3)\text{O}^3$ is the principal ore of the light-group rare-earth elements (LREE) in Russia. This complex had formerly provided 70% of the Soviet Union's Rare Earth needs and 80% of its Niobium supply. The rare-earth resource is known as the Lovozero deposit and consists of the underground mines, Karnasurt (started in 1951) and Umbozero (started in 1984). The complex was little known until the 1980s as it was a classified operation for State security reasons.

Ore is beneficiated to produce a 95% loparite concentrate containing 30% rare-earth oxides before being shipped off to the Urals for further concentration.

The rot set in a while back at this complex with the low REE prices being a key factor in the closure of Umbozero Mine in 1998. It is now flooded.

The Karnasurt mine carries on but the fact that the 3,000 REE tonnes per annum the Silmet plant has only been working at 1,100 tpa shows that there were more reasons for Silmet's owners to sell out to Molycorp than just the good price being offered. If Karnasurt was to close (and stories to this effect have circulated) then Silmet would have been left with no supply of REE concentrates.

All mines come to an end but we wonder whether the demise of the Lovozero mines sends other signals to REE wannabes. Lovozero had the advantage of a quantified deposit... existing infrastructure and its insertion in a guaranteed supply chain. And yet it has not proven to be viable...

Reasons Why

Just as it is easier to enumerate the survivors of the Titanic than those who perished, in the case of the REE sub-space it is simpler to divine who is less likely to end up in the recycling pile.

The reasons why so many companies will be surplus to requirements are:

- ✦ there are insufficient end users for all of them to make matches with miners if indeed one subscribed to the idea that each REE wannabe is going to need a partner to move forward or have meaning
 - to put this in perspective, Silmet confessed to having only 15 clients for its REE output thus there will be lots of wallflowers left at the dance
- ✦ with budgets in the hundreds of millions of dollars and many REE end-users (particularly in the magnet space) being small, the prospect of an end-user being the solution to capital-poor REE producer wannabes is not good
- ✦ end-users of size are showing their own doubts on the seriousness of the "juniors" with Toyota walking away from its JV with Great Western on Benjamin River and opting for a recycling effort

in Vietnam instead, Santoku selling out to Molycorp and Showa Denko giving in and putting its plant in China

- ✦ it is telling that Neomaterials has not married any of the REE players. Does this signal a lack of faith by a savvy industry major in the ability (or willingness) of explorers to get to production?

In light of this we would sustain that the likely survivors of the REE space make up an even smaller proportion of the whole than survivors of the Titanic did. We would venture that the companies likely to make it in the space are:

- ✦ Lynas (by virtue of being a first mover)
- ✦ Molycorp (by virtue of vertical integration and being a first mover)
- ✦ Great Western (by virtue of vertical integration and being a first mover)
- ✦ UCore (by being acquired)
- ✦ Northern Minerals (NTU.ax - by having potentially large Xenotime – thus Yttrium – resources)

There are a few names that also might cling to the lifeboats. These are:

- ✦ Frontier Rare Earths (FRO.to - due to having sealed a partnership with the Chinese)
- ✦ Arafura Resources (due to having a major Chinese shareholder)
- ✦ Stans Energy (HRE.v - due to having a past-producing asset of size in Kyrgyzstan)

As for the rest, send flowers or a donation to a charity of your choice.

On Market Darwinism

Theory would have it that markets distribute funds efficiently to deserving ventures. We have found this hard to believe having seen so many unworthy companies over the years be showered with the markets' largesse. Thus efficiency doesn't have much to do with the creation of so many surplus investment options in mining sub-spaces but it certainly does play a role in the eventual brutal thinning out process. It could be said that Uranium's loss was Rare Earth's gain. As the former seemed irredeemably doomed to walk in the Valley of Darkness post-2008, up came the REE story to provide a means to recycle all those unwanted shells (and even rebrand some old U properties as REE stories due to some historic traces of REE presence).

Thus as night follows day the vast horde of REE hopefuls will in turn be scythed down by economic reality and recycled into some new corporate entity in a sexy sub-space yet to be smiled upon by the Gods of the Markets.

Triggers

False constructs are always a good place to look when trying to work out where any particular bubble might be burst. Casting the mind back to the uranium boom of 2007-2008 there was the \$120 per lb spot price for U3O8 which was substantially higher than the long term contract price of between \$80-\$90 at the time and the assumption across the space that hedge fund hoarding was the reason for the price mismatch. Not surprisingly, this false construct lost its wheels when the financial crunch of 2008 sent funds looking for ways to raise money (though the holdings were virtually *unliquidatable* in that

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environment) and the spot price plunged downwards by two thirds. The stocks followed and the uranium boom came to an end.

The Lithium space was not a false construct. There is a cartel and it has not bothered to ramp up production (and does not seem able to... though it might take spoiling actions) with the result that a shortage of sorts exists and prices are rather high thus enabling the entry of new producers. The issue is how many more producers and how much new swing production. Thus Lithium awaits a rather more placid ending to its run (if that ending hasn't already happened with no-one being the wiser). The shift of focus to producers and near-producers has eclipsed the also-rans and the onset of production shall leave wannabes finding it harder to persuade bankers and investors to lay out substantial sums to companies that will essentially be excess to market requirements. With the major consultants to the business pointing out the almost inevitable swing to a market in balance or temporary over-supply (for nearly a decade going forward), it will be very hard for pre-feasibility studies to overlook this reality. **Thus financing, or lack thereof, is more likely to be a trigger for a fading away of the second-tier names in this space. In any case Lithium is well past the phase at which we would term it a bubble.**

The Rare Earth space has had several major retreats so far in its brief existence. In these setbacks, stock prices have fallen by 30-40% quite often. None of these retreats has been triggered by bad news (i.e. Chinese loosening quotas or prices declining) but rather prompted by nervousness from the investors in the sub-space. This means that a truly lemming-like moment is not unthinkable. Rare Earths is just about the only bubble (excepting Vancouver house prices... a maybe not-unrelated factor) around these days. Investors, post-2008, are particularly vigilant for signs of bubbles and thus a lot of those in the REE space are playing a game of chicken thinking that either, their top pick is not the one that will go down with the rest, or that they will be nimble enough to get out when the downfall begins. The question that also merits asking is whether the space will be lucky for a third time on a "correction" or whether the next decline will leave most of the space at permanently lower levels as interest moves on to either the next new thing or more mainstream mining opportunities.

The trigger for the end of the REE boom could be anything and thus maybe unrelated to Rare Earths. However as the 800 lb gorilla in the REE space, China, should be looked to as a potential spoiler. **The most obvious action would be for the Chinese to respond to the West's WTO complaints and suddenly dump a large amount of its stockpiled Lanthanum and Cerium onto the market.** This could easily send prices of these two elements back below \$10 per kg and severely compromise earnings models at Lynas and Molycorp while making the "in situ values per kg" of the wannabes look sad indeed despite whatever claims to being HREE-weighted they might have. We have yet to see any Rare Earth deposit that has a higher percentage of Gadolinium than Lanthanum or Cerium.

The end of the Rare Earth boom is somewhat inevitable as there must be some winnowing process eventually. That there is demand for 200 or 100 or even 50 of the current flock of prospects is dubious indeed. While it is still possible that some of the wannabes may come up with something novel (e.g. Northern Minerals with its Xenotime deposit), the vast bulk of explorers in this space are like rug-pushing merchants in some Middle-eastern bazaar trying to squeeze some interest out of an investor community that is finite and has already spent as many *dinars* as the sector deserves to have directed its way.

Conclusion

Running out of new sub-sectors to leap upon may mean that this is truly the high-tide of faddishness at the TSX. What else is left that one can storm into with such gusto and hyperinflate so rapidly? Vanadium? Boron? Tin? Not that any of these elements don't deserve some enthusiasm being thrown their way, but the watchword should be "Everything in Moderation". Who would have thought the a sub-space like Rare Earths with total annual sales of \$2.5bn and not a single Western producer could spawn an army of 200 wannabes with a combined market cap that is a multiple of the value of the global REE sales? One is almost tempted to argue that any sub-space can do the same if such a thin story can be stretched so far. It is however true that a REE resurgence is needed, particularly in the West, just not on this scale.

Thus we have a true danger that this over-abundance of names might be a case of "killing the goose that laid the golden egg". There is no need for more than ten REE explorers/producers. Just as there is no need for more than around ten Lithium explorers/ producers. The uranium space does not require more than 20-30 players also. While uranium has had its bust (and false dawn) and largely faded into secondary interest, the REE space has yet to have its day of reckoning. The Lithium players, if anything, have been spared a rout by the Rare Earths phenomenon gradually siphoning away interest and thus letting the Lithium sub-space "down gently".

Rare Earths though may not have such a soft landing. Already the pack is dividing into a morass of low market capitalisation names (below \$20mn) who will face the inevitable *Soylent Green* treatment and come out regurgitated as some other sort of mining company. Then there are the bigger players with large market caps and cash piles (and some residual financing ability still) of whom at least half will nevertheless not make the cut because they are neither serious about production (or even have properties viable for development) nor fall to the predations of Molycorp (which we don't feel is interested in either mediocre or "challenged" properties). They see themselves as takeover targets but cannot properly enunciate who it is that might take them over. This includes several of the very largest market cap names out there.

When it comes down to it, these larger caps are knitting, unravelling and reknitting their projects (via endless drilling, surface-sampling and metallurgical testing) to fill in time waiting for the right "gentleman caller". In the meantime a company like Lynas, whose Mt Weld property two years back was essentially as developed as these other pretenders to being industry majors, has shot ahead and built its mine and nearly finished its processing plant. Those that can: do, those that can't: instead have their bloated IR departments send investors every news article about Rare Earths that crosses the wires to try and disguise their lack of any real progress. Hands up all those fund managers who are tired of seeing the same old news article about Chinese export quotas from five different corporate sources!

It would appear that the mining promotional "art" has reached its apogee with Rare Earths, after practicing on Lithium and Uranium. After the apogee comes the slide. We doubt that any third rank metal will ever be able to engender such unbridled mania again. The numbers of promoters piling into the space has exceeded all previous efforts and goes to show that excessive amounts of money have been sloshing around in the post-2008 liquidity pump (QE2 et al.) with an inefficient distribution of funds to quantity (of players) over quality (of properties).

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Markets are supposed to efficiently distribute capital, and maybe over the long-term they do, but here we have three good examples of much capital being expended and literally vaporised in pursuit of these causes. Then the likely survivors end up with only a small proportion of the whole capital expended, the rest having disappeared into the ether or GS&A, endless promotional drilling and vainglorious IR efforts. This cannot be called efficient markets by any definition we know. A properly functioning market would more likely be giving the thumbs down both price and financing wise to these stories as they surfaced. Moreover, less sycophantic analysis and promotion might mean that we not only eliminate small-fry with no chance (or merit) of success (preferably strangling them pre-listing), but also some of the larger plays that similarly lack merit but instead sail on regardless with momentum in their sails and bigness on their side.

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