

April 1, 2022

Greetings Dear DREGS' Members,

This is your Annual DREGS' President's Letter as prescribed by our bylaws. 2021 was a challenging year because of COVID related disruptions that affected all aspects of our personal and professional lives. DREGS' meetings and field trips were disrupted as well, but happily we are returning to normal as the pandemic transforms into an epidemic.

In spite of these disruptions, DREGS' managed to continue in-person meetings at the Colorado School of Mines providing personal interaction and the ability to physically examine rock specimens. We also committed to having hybrid meetings that are broadcasted and recorded.

Financial Position

DREGS' financial position is strong with \$68,665.25 in assets (Stocks, Bonds and Cash) as of January 1, 2022. Our expenses are minimal with ample funds for the new website, food for meetings, printed newsletters, and new audio-visual equipment needed to facilitate hybrid and virtual meetings. Income is primarily from membership dues. We have currently 143 paying professional members. This is about 62% of the members that we had by the end of 2021, so we strongly encourage members to pay dues. We are transitioning to a 12-month membership, as opposed to calendar year, so paying dues at any time is beneficial.

Our strong financial position allows us to continue to support the student SEG chapter and scholarship fund and even to provide modest funding for analytical costs related to field trips and symposium subject to approval by the Executive Committee. Examples include, but are not limited to, petrography, age dating, and geochemical and isotopic analysis.

Looking forward to 2022

A significant change in 2021 was the expansion of the Executive Committee from 10 to 12 persons and the election of new officers. These are:

- John DeDecker - Vice President
- Tim McIntyre - Second Vice President
- Erik Tharalson - Treasurer
- Lauren Zeeck - Student SEG Representative

- Cory Beaver - Speaker Chair
- Phil Persson - Field Trip Chair

These younger officers have already brought fresh ideas to invigorate the society. Among these suggestions are increasing DREGS' international reach via a Round Up-like symposia, strengthening Student-DREGS ties (not just at CSM but with other schools in the region and, perhaps, beyond), playing to our local strengths by leveraging our association with CSM, the USGS, and other local societies and institutions (CSS, GSA, etc.), and improving industry-academic cooperation.

Website

DREGS' new website(<https://www.dregs.org/>) went live in mid-March of 2022. The new site enables online dues payment and automated billing, links to recorded DREGS meetings, and a calendar of events – including meetings and events of interest of other organizations. Archival material and a jobs board will be added in the future.

It also contains a short personal bio page for each member where they can post their photograph, professional affiliations, past and current work and research activities, etc.

DREGS changed membership duration from January 1 to the date of one's payment of dues. Counterintuitively, this is simpler to automate and administer than a lockstep calendar year membership.

Lauren Zeeck has done a great job spearheading the website design and has done nearly all the heavy lifting to make the new website a reality. Also, many thanks to Jim Piper who maintained the old website and contributed to getting the new website off the ground.

Finally, we are still soliciting high resolution photos related to exploration and mining, so please contribute!

Field Trips

We have several interesting field trips planned for 2022. Most are within a day's drive of Denver, but some may be further afield. The most recent field trip was to the South Platte Pegmatite District on April 2. Please check the website for the most current field trip information

(<https://www.dregs.org/fieldtrips>).

Other planned trips include a tour of the Detroit City Project at the Sweet Home Mine in early July (tentatively planned for July 8th) as well as a possible visit (TBA) to the Henderson or Climax molybdenum mines with Freeport-McMoRan later this summer. Please stay tuned for more information.

GSN and SEG

Barring additional COVID restrictions, DREGS intends to have a booth at both GSN (Reno) this Spring and at SEG (Denver) in August. We will be looking for volunteers to man the booths.

SEG Student Chapter

The Mines SEG Student Chapter is holding a field trip to the SW US in May to include multiple destinations between Las Vegas and Reno, NV in the Walker Lane Gold Trend. Stops include the Castle Mountain Mine (CA), Moss Mine (AZ), Mountain Pass Mine (CA), and Coso Geothermal Power Plant (CA), as well as the mining districts around Beatty, Goldfields, Tonopah, and Bodie Hills.

The incoming chapter President, Daniel Schmidt, will begin his term in August along with Michael Kirschbaum (Vice President), Rémi Germain (Treasurer), Pedro Francisco (Secretary), and Raul Montesinos (Social Chair).

PC² Initiative

DREGS, together with the Colorado Scientific Society, is also spearheading the “PC² = Precambrian Colorado” initiative. At the time of this writing, “PC²” has four field trips to the Colorado Front Range and one topic session accepted for the GSA annual meeting in Denver in October 2022. The intent is to whet the appetite for more detailed and far-reaching trips and topics to be organized for the subsequent GSA Rocky Mountain Section meeting in Fort Collins in May 2023 and beyond.

Looking Forward

“It's tough to make predictions, especially about the future.” Yogi Berra

At the end of 2021, exploration geologists faced two daunting challenges; low discovery rates and the need to supply the world with the elements needed for a net-zero carbon economy. The recent outbreak of war in Ukraine only amplifies these challenges. The resulting uncertain realignment of political alliances and global trade networks coupled with already rising resource nationalism make these two challenges even more urgent and difficult to address. To make matters even worse, government policy in the United States is overtly hostile to domestic exploration and production at the

very time that these are most needed. I suspect that government policy will not change until after we are in a full-blown crisis.

Low exploration success indicates that the Junior explorer-discoverer business model is broken. The days of small budgets and short timelines resulting in discovery are largely over. This is principally the result of the exhaustion of the inventory of shallow orebodies and the area of prospective terrain being shrunk by ESG policies, resource nationalism, and international political realignment.

Additionally, exploration funding over the past several decades has been dominated by gold, because it offered the best returns, principally due to higher gold prices, lower capital costs and heap leaching that enabled the conversion of geochemical anomalies into orebodies. Other commodities such as copper have received good funding but, even here, recent exploration success is very poor. The situation for most other commodities is ever worse and exploration success is not sufficient to meet projected demand. To date, advances in exploration technologies have not been able to counteract this trend.

Regardless of where you stand on the climate change debate, the reality is that there are political forces of tidal strength that are forcing society to adopt technologies to create a net-zero carbon future. The IEA estimates that to reach the goals of the Paris Agreement (climate stabilization at “well below 2°C...” IEA Sustainable Development Scenario [SDS]) requires a **quadrupling** of mineral requirements for clean energy technologies by 2040. An even faster transition, to hit net-zero globally by 2050, would require **six times** more mineral inputs in 2040 than today (<https://iea.blob.core.windows.net/assets/24d5dfbb-a77a-4647-abcc-667867207f74/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>).

Thus, there is a profound disconnect between commodity prices and the political environment needed to stimulate exploration to get us to zero-carbon economy. I doubt that the private sector is up to financing the massive increase in exploration expenditures that will be required to fulfill the dream of a zero-carbon economy, even if our exploration prowess were capable of such a feat. This suggests that unprecedented government involvement is necessary, and that too, appears to be a remote possibility, at least in the United States. Notwithstanding the partial invocation of the US Defense Production Act on March 30, reportedly to encourage production of REE and Li. In the absence of any reversal of the myriad of anti-resource development policies this is little more than a political stunt and the situation will remain dire as long as the underlying disincentives to exploration and production remain in place.

And this may not even be the worst of it. As global energy markets and distribution networks are disrupted, as energy prices rise, as supply chains are broken and global trade networks are realigned or eliminated, the respective cost and availability of fertilizer (K, P, N) rises and decreases. Widespread global hunger in a world of 8 billion people becomes a more likely possibility. Feedback loops will likely cause other problems that are unforeseeable. This is particularly true in the case of higher energy costs, which are deeply embedded in all aspects of economy in general and in exploration and production in particular.

Given that it typically takes 10 to 20 years (or more) to make a discovery and bring it into production in the United States, it seems probable that we will fail rather spectacularly in attaining our zero-carbon aspirations. Stand by for much rending of garments and gnashing of teeth.

Eventually government policy will probably right itself and markets will discover the correct price for commodities to insure sufficient availability. In the meantime, DREGS members need to stay attuned to the rapidly changing political and economic realities for opportunities to mitigate these multiple shortages.

As resource scarcity continues, DREGS members must look for ways to mitigate this vulnerability. A profound reality is that ore types are very unevenly distributed around the world, and EGS/Environmental restrictions prohibit us from exploring for and developing resources where they actually occur. DREGS members may be challenged to find sources of critical elements in poorly endowed geologic terrains. Outside the box theorizing about new deposit types may help, as well as uber deep exploration below midcontinent phanerozoic cover. But neither of these is a panacea nor likely to be broadly successful.

DREGS is an apolitical scientific and technocratic organization with both industry-centric and academic and governmental research affiliations. I am not suggesting that DREGS become political, but the reality is that the biggest impediments to exploration success *are* political. Given this reality, all we can do now is work at the technical margins.

L. J. Karr
President, Denver Regional Geologists' Society