Welcome to the Great Debate;  
It’s time to decide who is the most important

In 3,000 B.C., the not-so-famous Roman geologist Sulphurius Emanaceous said, “Without geologists, there would be no civilization.” To which the equally unknown miner Ignominious Terriblus replied, “Pone pecuniam tuam ubique os tuum es” (Put your money where your mouth is.). This began a multimillennium-year debate about which sector of the mining industry is the most important to civilization. It is time to finish this debate!

Why, you ask? The mining industry is a fraternity of men and women dedicated to advancing society — and the U.S. National Mining Hall of Fame and Museum (NMHFM) is the penultimate organization that celebrates those miners who have made significant and lasting contributions to the industry. Its museum is a world-class educational venue for all ages with fun, interactive exhibits, such as walk-through mine replicas and a lunar exhibit, dioramas of mining techniques, historic maps, photographs and tools. The museum houses thousands of precious mineral, metal, and gem specimens. NMHFM educates the public on why the extraction of minerals and metals is necessary to support life in the 21st century and how modern mining has embraced responsible mining and ecological processes and is utilizing advanced technology to ensure the safety of its employees. It needs our collective support. One of the goals of the museum is to be able to present to the public some of the new, game-changing technology that has been developed. In order to do so, the museum needs significant funding.

Our industry is also a business where lifelong friendships are forged through the nature of what we do — and we like to have fun. So why not integrate fun with fundraising? This debate, sponsored by SME and NMHFM and published in the pages of Mining Engineering, will support this vital organization telling mining’s national story while also allowing us to share a smile or two.

Enter the Great Debate, where teams of the world’s leading braggarts from seven different mining sectors have been enlisted to brag, roast, cajole and otherwise humorously make their case. Each month in 2020, Mining Engineering will publish a sector’s position statement on why it is the most important. In return, we ask you to prove the value of your sector by making donations in any amount, and as often as you can, on the National Mining Hall of Fame and Museum website. The winning sector will be determined based on the number of donors (points) and the amounts raised by the sector (dollars). Develop teams to enhance your sector’s chances of winning, challenge your colleagues in other sectors to match or exceed your donation, utilize your employer matching gift programs to double your impact and ensure your sector wins perpetual bragging rights. You will make a difference no matter how much you send in.

Team Sector Leaders include:

- Douglas Silver: Representing geoscientists, geologists, geochemists and geophysicists (dugag@aol.com).
- Tim Arnold: Representing miners, engineers and equipment operators (midasminer@gmail.com).
- Marc LeVier: Representing metallurgists and processing people (marc.levier@comcast.net).
- Ruby Barickman: Representing emerging leaders — those under 40 (ruby.barickman@gmail.com).
- Ann Carpenter and Kelly Ward: Representing women in the mining industry (ann.carpenter57@gmail.com and kward@haleyaldrich.com).
- William Lipps: Representing environmental, safety and governance professionals (willlipps@shimadzu.com).

We encourage you to get involved and send your best ideas to these thought leaders to fortify your sector’s position. Challenge your friends (even those outside the industry) to

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Great Debate: Your vote counts in this age-old mining debate
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donate. Watch for periodic updates in Mining Engineering and check the museum’s website (mininghalloffame.org) frequently for updates during the challenge to keep abreast of sector rankings. The two finalists will hold a final smackdown debate at the National Mining Hall of Fame Induction Banquet in Las Vegas on Sept. 26, 2020, during MineExpo, where the winner will be announced. “The National Mining Hall of Fame and Museum invites members of the mining industry’s sectors to have fun writing persuasive, inspiring and even humorous arguments about why their sector is the most important,” coaxed NMHFM executive director Stephen Whittington.

Visit the NMHFM website at https://mininghalloffame.org/page/great-debate for more information on the 33rd Annual National Mining Hall of Fame Induction Banquet where tickets are still available for this Las Vegas phenomenon.
The Roman geologist Sulphurius Emanaceous was absolutely correct. Without geoscientists, there wouldn’t be ore bodies. Without ore bodies, there wouldn’t be mines. Without mines, there wouldn’t be a need for mining or processing engineers (the latter are also known as metallurgists). Without engineers, there wouldn’t be environmental issues and the need for original equipment manufacturers (OEMs) and most vendors. Could it possibly be any simpler? I know that some of you are engineers, so do you need me to slowly walk you through this logic?

The three pillars of mining — geology, mining and processing — become one big pillar with two stubby pillars.

Geoscientists carry a heavy burden with mankind being so dependent on our superhuman skills. But we also know that our genius makes the world a better place. Without our successes, humans would still live in caves (miners’ home turf). It gives us indescribable pleasure knowing that our hard work and ability to decipher nature’s secrets creates thousands of jobs for those less fortunate — people who would otherwise be using their college and graduate degrees working at fast-food restaurants.

But we are also humble and live normal lives despite being surrounded by the immense adulations of others. Mac Davis summed it up perfectly, “Oh Lord, it’s hard to be humble when you are perfect in every way.” This mantra guides us through every day.

However, we have an awesome obligation to mentor others in the mining industry. For instance, in this new age of environmental awareness, we have had to teach engineers that the best way to prevent forest fires is by not strip mining. Processing engineers must learn that the froth on a float cell is not a milkshake and that optimizing a flow sheet does not mean coloring within the lines. While most of you take your jobs for granite, we actually know what a granite is.

OEMs owe us twice. They get to use our newly discovered metals to build their toys for boys and then sell them to unsuspecting engineers.

Given our elite status in the world of mining, we would like to offer the following advice to our engineering brethren:

- If they are yawning at your presentation, it is not because they didn’t get enough sleep.
- You should not have more friends on the internet than in real life.
- Buying flowers for your girlfriend or upgrading your RAM is not a moral dilemma.
- You can write on paper that does not have both vertical and horizontal lines.

Seriously, everyone is important in the mining industry. We geoscientists are just more important. For instance, there is no god named Engin. There is one named Geos. Just saying.

So geoscientists unite! Let’s prove once and for all that we are the masters of the universe. Please vote with your wallet to help us win our self-ordained supremacy.

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The Great Debate will continue through 2020 exclusively on the pages of Mining Engineering magazine and online at https://me.smenet.org/greatdebate/. To donate in the name of your favorite sector, go to bit.ly/Gr8Deb8 to make your vote count.
The Great Debate — Round Two

Miners — The backbone of the industry;
Help us support the MINING Hall of Fame and Museum

Let me start this discussion by reminding everyone that we are raising funds. Funds for a very worthy cause, the National Mining Hall of Fame and Museum (NMHFM). I am calling your attention to the name: The National MINING Hall of Fame. Not the geoscientist hall of fame. Not the metallurgist hall of fame. The mining hall of fame. Geologists don’t need a hall of fame; their names already adorn every “do not serve” list in nearly every bar in America.

When Doug Silver asked me to write an article about the supremacy of miners, I was hesitant. Picking on metallurgists and geologists is always fun, but punching down always makes you feel a little dirty afterward. Like the way LeBron James probably feels when he plays a pickup game … with middle schoolers.

Since miners can be silver-tongued without needing to lick rocks, allow me to expound the virtues of our profession. While geoscientists are trained to play with crayons, and metallurgists play with bubbles, miners are experts at using complex modeling procedures, explosives and massive machines. Miners (like the rest of the world) recognize that an “IP anomaly” is a urinary tract infection, not another way to burn (pun intended) through cash. Miners also know that “unconformity” is the social behavior of a geologist when not in field camp. Don’t get me started on how badly they screwed up the word cleavage (my apologies to the women miners for that one).

Miners can be proud that Herbert Hoover (FYI to the emerging leaders, he was also the 31st president of the United States) was a miner that translated Agricola’s De Re Metallica from Latin to English. Hoover and Agricola are in the NMHFM, along with Hoover’s wife Lou, who partnered with him on the translation. A little-known fact from that translation is that the ratio 16:1 is not derived from precious metal prices. It was stated in De Re Metallica thusly: “XVI to I-Ratio autem a speciminibus geologists mineralibus suum sub ubi.” Herbert and Lou did not have the heart to include it in the translation, but it is time that the world knows the truth. The translation roughly states: “16 to 1 — the ratio of a geologist’s mineral specimens to his underwear.”

While metallurgists will wax on and on about how nothing happens without them, they do seem to ignore the fact that without miners, nothing is delivered to them. In actuality, though, if we delivered nothing, they would not be able to lose all the value held within the rock.

Now is the time for miners to come to the forefront and show their mettle (FYI to the emerging leaders, I didn’t misspell that word). We know we are the backbone of the industry. Miners don’t need to pat themselves on the back for a job well done, unlike our brethren who celebrate every time one of the 10,000 holes hit a little grade, or they pour an ounce of gold (after sending pounds of it to the tailings facility). Miners humbly accept that our job is to be the jack of all trades in the industry and guide and mentor the others. If the industry were the Beatles, McCartney, Lennon and Harrison would all be miners. The rest of you are Ringo.

So, I encourage you to donate today and often to the National Mining Hall of Fame and Museum. Stand proud for your industry by putting your wallet to work. Geologists outnumber the miners 10 to 1, so we need a concerted effort. Do not let the fact that a huge percentage of those geologists are waiting tables in coffee shops deter you. Make us proud. More importantly, make us win!

To donate go to bit.ly/Gr8Deb8 to make your vote count.
I was humbled and honored to be asked to represent metallurgical/process engineers in this Great Debate by one of mining society’s all-time great braggard, boaster and roaster, Doug Silver. The Great Debate is posed on the question, “Which mining industry discipline has made the greatest contributions to civilization?”

All engineers involved in the development and operation of mines know that the key to a successful mine is the process engineer. We are required to tell the geologists how to sample, how to assay (yes, our group also includes analytical chemists), how to interpret the data, and ultimately how to set cut-off grades in order to keep the mine profitable. Geos (a STEM degree without knowledge of math), as everyone knows, fall in love with rocks, they lick rocks, they examine them with a hand lens (they forget that mineralogists have high-powered and high-resolution devices called microscopes and SEMs … oh yes, mineralogists are part of our crowd as well … welcome, mineralogy brothers and sisters). As such, they would drill to the other side of the planet, “Just another 3 meters!” The process engineer must tell the geo to stop drilling and find another target. (A vice president of exploration once told the head of process that the geos had found enough resource to last the company for 100 years. The process engineer replied, “Well a bit of grade would help. Is this rock from your mountain estate driveway?”)

Process engineers are the innovators of our society. We make gold from no grade; we make high-grade concentrate with no penalty elements, high recovery and maximum profitability. If the mine fails, it’s always about the metallurgy. We produce value from nothing. We innovate and mines are created. Meanwhile, the mining engineers keep plodding along, just looking for more rocks to blow up. And then they ship anything and everything as “ore.” (Musical score playing in the background, “Hi-Ho, Hi-Ho, it’s off to work we go, blowing stuff up.”). Their motto is “We blow stuff up.” That’s it. They have nothing else to offer. Boom, muck, truck; boom muck, truck. Boring!

When environmental cleanup became the law, who did the company look to for design, operation and compliance? The process engineers, that’s who. Why? Because the process engineers have chemistry in their DNA, and are always up for a challenge. Long before the environmental engineer was invented, process engineers led the way in reclamation and restoration. Again, all the marbles fall on the shoulders of the metallurgical engineer. In a Star Wars-like analogy of mining, the geologist is Darth Vader — always secretive, plotting and shielded. The process engineer is Luke Skywalker — shedding real light and truth on the deposit. The mining engineer is the unshaven Wookie just along for the ride. AHHHRRRRRR!

In the end, it’s the metallurgist, the plant operator, who made the design efficient and economical. We are the crew under the microscope of scrutiny. If we fail, there is no mine. As President Harry Truman said, “The buck stops here.” We seek no glory and receive little recognition, while other braggarts and boosters grab the spotlight.

The advancement of civilization is witnessed by the production of steel, alloys, aluminum, base metals, precious metals, PGMs, coal and uranium for energy, and industrial minerals in all aspects of our life. If it isn’t grown, it must be mined and processed. Society’s lifestyle today is testimony to the success of the mining industry, ergo the process engineer. Meanwhile, our “friends” continue to blow stuff up and lick rocks. The other disciplines can only stand and watch as the ore is placed in the most responsible hands in the industry, the cradle of innovation, the true Deus Omnium Opes, Creator of All Wealth, metallurgical/process engineers. (If you are a student in any discipline but metallurgical engineering, rethink your future NOW!)

DISCLAIMER: 1) No mining executives were harmed in producing this article, as they were never involved. No surprise here. 2) I have a brother who is a mining engineer: my colleague, Jim Arnold, who suffers from the same malady, MBIME, and we pay for therapy for our family members.
The Great Debate — Round Four

The Great Debate begins with a bang; Three sectors have made their cases, three more to go

The epic smackdown of industry thought leaders has reached the midterms. Before this all began I guessed that the best analogy at this point would be a heavyweight title fight from the days when boxing was king, but this knockdown, drag-out fight is something far less civilized than the sport of kings. This is not a title fight; this has become more like a political campaign with each side taking swipes.

The first real body blow was landed by the geoscientists who were allowed to throw the first punch, and landed it did: “Without geoscientists, there wouldn’t be ore bodies. Without ore bodies there wouldn’t be mines. Without mines, there wouldn’t be a need for mining or processing engineers (the latter are also known as metallurgists). Without engineers there wouldn’t be environmental issues and the need for original equipment manufacturers (OEMs) and most vendors. Could it possibly be any simpler? I know that some of you are engineers, so do you need me to slowly walk you through this logic?”

Game on!

The miners countered by stating the obvious that this noble fundraiser that began in January with the aim of raising money for the National Mining Hall of Fame and Museum in Leadville, CO is for “The MINING hall of fame. Not the geoscientist hall of fame. Not the metallurgist hall of fame.”

And then it got personal: “Picking on metallurgists and geologists is always fun, but punching down always makes you feel a little dirty afterward. Like the way LeBron James probably feels when he plays a pickup game … with middle schoolers.”

Ouch.

Meanwhile, the metallurgists, who were grouped with miners as “two stubby pillars” by the geoscientists, were drawn into the fray by the miners, who noted, “They (metallurgists) do seem to ignore the fact that without miners, nothing is delivered to them. In actuality though, if we delivered nothing they would not be able to lose all the value held within the rock.”

It was a tough shot, but there was no need to worry about the metallurgists. It’s as if they had been waiting for this moment for a long time. “All engineers involved in the development and operation of mines know that the key to a successful mine is the process engineer. We are required to tell the geologists how to sample, how to assay (yes, our group also includes analytical chemists), how to interpret the data and ultimately how to set cut-off grades in order to keep the mine profitable. Geos, as everyone knows, fall in love with rocks, they lick rocks, they examine them with a hand lens.”

And for their brethren working as operators and miners, “Meanwhile, the mining engineers keep plodding along, just looking for more rocks to blow up. (Musical score playing in the background, “Hi-Ho, Hi-Ho, it’s off to work we go, blowing stuff up.”). Their motto is “We blow stuff up.” That’s it. They have nothing else to offer. Boom, muck, truck; Boom, muck, truck. Boring.”

Even the emerging leaders, a group we haven’t even heard from yet, were not spared in the first half of the Great Debate — which is not surprising as it seems everyone wants to pick on millennials for, well, being millennials.

“Miners can be proud of Herbert Hoover (FYI to the emerging leaders, he was also the 31st President of the United States).”

So the geoscientists, the miners and the metallurgists have had their say, but the debate is not over, not by a long shot. In the coming months, emerging leaders, women in mining and the environmental health and safety group will be making their cases on these pages.

And you can make your voice heard as well by joining The Great Debate at https://me.smenet.org/greatdebate/. Chime in, and keep the discussion going. But as they say, money talks and the best way to make the case for your sector is to vote and donate at bit.ly/Gr8Deb8, early and often. And stay tuned for the second half of The Great Debate.