

## Mining is the most fundamental engineering discipline and the most rewarding\*

by A.J.S. Spearing

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The Publications Committee felt that the following comment was worth publishing to give Prof. Robbie Robinson a break. He will be back next month. Prof. A.J.S. (Sam) Spearing is Corresponding Member of Council for the USA. He is associate professor of mining and mineral resources engineering at Southern Illinois University, Carbondale. The Journal welcomes contributions from other Corresponding Members of Council. Mining is the most fundamental of the engineering disciplines as without the raw materials, we have nothing and no other engineering disciplines. The old adage: 'If it cannot be grown it must be mined' is as true now as it ever was. In fact mining forms an essential part of bulk farming by providing not only the equipment but also most of the fertilizers (sometimes, however, not sensibly used).

This does not mean that mining is without serious issues, especially environmental and safety problems (I prefer challenges rather). Environmental issues are today being mainly resolved through judicious legislation and an improved social consciousness from the mining companies. Examples of this are common around southern Illinois where considerable ground has been successfully rehabilitated after strip (surface) mining and is now being economically used for non-mining applications. There is also an undeniable fact that without coal and nuclear power generating plants this country would return to the 'dark ages' (quite literally) and mining will be essential for power generation for decades to come, whatever anyone says to the contrary.

Alternative power sources such as hydropower, solar power, wind power, tidal power and fuels from geologically 'pre-coal' sources such as biomass should still be developed but they will probably never make up the majority of our insatiable power cravings. It is also worth noting, that as I understand it, a solar panel cannot generate more energy that it takes to make one at present (I may be wrong, but I am only a mining engineer...). Wind power sounds exciting but if anyone has been near a large wind farm as I have, the visual and audio pollution is rather unpleasant. Making fuels from biomass seems something worth pursuing but I cannot support making fuels from basic food groups such as corn, on our planet where people are still starving.

In addition do we really think that the resultant increases in corn prices across this continent because of the new fuel market in the USA will reduce the number of, for example Mexicans, who have to cross the border illegally in order to survive, now that their basic food costs substantially more? What other option would be available to them? If America can land people on the moon and help develop the computer and the nanotechnology age, I cannot believe that the problem of carbon dioxide emissions from thermal power plants cannot be resolved. If indeed it cannot then we may as well all give up because alternatives, without the subsidies, would cost the average household much, much more.

Unless an engineer is amongst the talented and privileged few who are involved in the real earth-shattering (no pun meant from this miner) engineering developments such as fusion, nanotechnology and the like, most engineers will spend a satisfying career applying well-known formulae and codes of practice to build useful 'things'. This is clearly essential and can be very rewarding, but every mining engineer in contrast has the opportunity during his or her career to really make a difference. These challenges and opportunities come from the fact that we 'build' excavations in the rock and therefore don't use materials with well-known properties or loading conditions; and still need to make a return on the investment.

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Written by Administrator

Friday, 01 February 2008 02:00

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Before anyone howls about making a profit from mining, consider that all working cost increases in mining have a dramatic effect on every other sector and that no activity or occupation can ever be risk free (although this must always be the goal). Safety underground is and always will be paramount and the cause of the challenges; and the solutions lie in research and development from experts not from politicians wishing to be seen to react quickly. It should be remembered that the world renowned US Bureau of Mines was 'killed' by politicians years ago to save less than \$100 million per year. Granted some of it exists still in the National Institute of Occupational Safety and Health (that does great work considering its budget), which for some strange political quirk reports to the Center for Disease Control.

Perhaps some would say that this is the correct place to house it, as mining is a disease since the only time it is heard about by the public is after a very tragic accident. If politicians want to help, they should encourage well planned and regulated mining operations and help fund and support research activities and mining related programmes. The amount of money needed is truly trivial in the scope of the US economy and it won't even be seen as a blemish on the budget. Mining engineers have a wonderful and challenging career opportunity and can make a real difference to mine safety and productivity on a single underground section or mine or for a mining company. The starting salaries are reasonably high and promotional opportunities are huge, since the average age on the coal mines is around the mid-fifties—goodness even I come out young on that scale.

The bottom line is we all need to support mining and help solve the issues and challenges rather than just throwing stones all the time (which is all too easy), unless we all really want to give up our cars, computers, houses, roads, MP3 players—and yes even our toothpaste. Do we really believe that making mining too costly in the USA and depending rather on developing or third world countries is the solution? Clearly any poor practices must be improved and these improvements must be continuous, but is this going to be done by the public, or worse the legislators, or is it going to be done by encouraging young people to enter an industry to make a real difference? Would every anti-mining person please tell us how to eliminate our dependence on mining—actually don't bother—rather focus efforts on helping to make it safer and more environmentally friendly and then continue to enjoy all the benefits from mining.

The trend in mining safety is in the correct direction overall but clearly large accidents cause the safety to go in the wrong direction, but does this mean we 'throw the baby out with the bath water'? Does NASA stop the space programme because of the tragedies or do we stop all bridge construction after a collapse? Clearly not. Then let us all be rational and support responsible mining and encourage the youth to pursue a rewarding mining engineering career. We owe that to all the hard-working mining personnel and especially to those who have been affected by tragic accidents, because whether we like to admit it or not, we probably owe our lifestyle to mining! Mining rocks! A.J.S. (Sam) Spearing PhD PE PrEng CEng Associate Professor Mining and Mineral Resources Engineering Southern Illinois University Carbondale, USA \*This article is reprinted with the permission of The Southern Illinoisan, which is a daily newspaper based in Carbondale, Illinois, USA Feb 2008