

'Publish or Perish' □ 'The Academic Man: A Study in the Sociology of a Profession' □
Logan Wilson, 1942

This first issue of 2010 features a selection of contributions from the Hardrock Safety conference in September 2009. This is as important a topic as any for an industry that deals with a work function as hazardous as that of deep-level hard rock mining. It is also as complex as any involving rock mechanics, seismology, zero defect in engineering and instrumentation, plus psychology, training and exhaustion hygiene, as illustrated in the papers. In seismology, for example, there have been non-stop efforts to correlate seismic signals with an early warning methodology to avoid rock bursts and other seismic disturbances which can lead to a disastrous loss of life. This work has been going on for over half a century from the time the Chamber of Mines obtained its first (analogue) computer, which was soon replaced by a succession of the best digital systems in an attempt to model the seismic effects into a useful predictive pattern.

Although I was not involved in such work, I remember being told about some statistically significant correlation between seismic effects with tidal motion and phases of the moon. Not too difficult to understand in retrospect with the advances in understanding of movement of the tectonic plates in the centrifugal forces due to earth's rotation round the centre of gravity located on its axis with the moon. But it illustrated the complexity of the modelling comparable with the models of global warming and climatic effects such as cyclones and El Nino. As shown in this issue, there has been progress but deep-level mining will always represent a hazard governed by random dangers, never to be completely predictable.

Thus, if we are to exploit our large deep-level gold and platinum resources as the metal prices move upwards, the emphasis on remotely controlled selective automated mining is moving from the realm of science fiction into feasible reality. Mechano- and electro-robotics and automated reef identification systems, used to minimize human exposure, must surely be the order of the day.

A more mundane, but unusual item is included in this issue in the form of a letter to the editor. This is from Dr. Philip Lloyd, a veteran campaigner in the metallurgical and etrochemical field and not unknown for useful comments in previous years.

In this instance, he comments on a review on uranium leaching in the Mintek 75 issue in October 2009. He points out that the reviewer has omitted to make mention of the first instance when bioleaching was used in South Africa for leaching of low-grade uranium ores. He is correct in the claim that the microbiologists of the Physical Sciences Division of the Chamber of Mines Research Organization (COMRO) identified the *Thiobacillus ferro-oxidans* as the micro-organism responsible for the conversion of pyrite to sulfuric acid and ferric sulphate.

This was made known well before the 1960s in an attempt to convert the golden dumps of the

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Written by RE Robinson
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City of Gold into green grassy hills to ameliorate the dust pollution in the southern suburbs. They were able to achieve success by digging in lime at the surface before planting a hardy grass, which flourished and seemed to be sustainable once nurtured to a reasonable coverage. Maybe this will be the forerunner of growing bio-mass and bio-fuel on mine dumps. This was done in the 1950s.

I was well aware of the possibility of using the microbiological approach for uranium leaching while at the Central Metallurgical Laboratory of Anglo American but because of the slow reaction rate, this possibility was rejected in favour of a pressure leach approach. I was appointed as head of the Extraction Metallurgy Division and Director of the Government Metallurgical Laboratory in the early 1960s and was aware of the work of COMRO and NUFCOR and, undoubtedly, had some discussion with the people concerned but do not recall any report of results from East Geduld. Nor do I recall a paper to the Commonwealth Mining Conference. I have no doubt that this work was indeed undertaken, but the problem was that in terms of the Atomic Energy Act, it was forbidden to release or publish any results on the extraction of uranium from South African source material. I had the mortification of reading American Patents copied word for word from reports I had submitted to the GML but was prohibited from publishing, not even as a university thesis.

Lloyd's criticism is not simply a trivial attempt to get a place in the 'Guinness Book' of scientific firsts. There has been much public reference to the 'Mintails' initiative to re-establish a repeat of the past Ergo operations for the recovery of metals from remaining waste residues along the full length of the Witwatersrand gold mining areas. This could be a big step towards a detoxification of the mine discards. This is approaching the nature of a national emergency project because of the recognition of the impending disaster of the radioactive acid mine drainage (AMD) leakages into the environment and water aquifers on either side of the hydrological continental divide. Any previous authentic scientific work in detail could be of value. I am sure that Mintek and the authors will attempt to find some records in their archival system and I hope NUFCOR will have detailed reports in their library and there can be a report-back communication in due course or, even more desirable, a 'discussion paper' on the detoxification topic from someone like Dr Lloyd.

So thank you, Philip, for the lead-in to the following more general observation. We have had many momentous conferences take place in the last year, not only in South Africa but worldwide. The latest is the Copenhagen conference on global warming. In South Africa, there has been the top level government sponsored conference on carbon capture and storage, on alternative forms of energy and new scientific directions and policy, and, most topically, water management in the mining industry. These have, I am sure, been entertaining talk shops. For my quotation, I have used a well-known cliché which has stood the test of time since it was first used in 1942 as the basic criterion for scientific and technical accreditation. Only at their peril can academics, researchers, and even nations ignore those publication standards established for over a century by worldwide professional expertise for scientific integrity and credibility.

Pulpit type pontification in PowerPoint based conferences, the current norm for most technology transfer, is no substitute for an accredited publication.

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But transfer of technology and analyses of outcomes and economics are an essential function of the professional specialists, such as those in the mining and metallurgical global community without which national development can go awry.

With our 'realtime' publication abilities, which will swing into full effect in the new year, we will be well placed to assist government and many of our associated organizations to publish, digest and comment on the specialized scientific aspects of these conferences. We would welcome such an interaction. Indeed we believe it is in such interaction with the professional expertise in the country that our national status as a first world country can be promoted. Technical transparency and technology transfer are close relatives to technical maturity.