

Journal Comment

New Year Options

*"There is a tide in the affairs of men
Which, taken at the flood, leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries....."*
William Shakespeare (Julius Caesar)

There is once again a selection of papers for a variety of specialists. The two papers on statistics of sampling are far too erudite to allow comment from me. I mention them in deference to the many students and statisticians who enjoyed the pioneering work of the internationally honoured Danie Krige, a platinum medallist of the SAIMM.

The first, by F. Lombard *et al.*, is on 'Assessment of the precision and bias of an on-line gauge',

The other paper on sampling, by Julián M. Ortiz *et al.*, involves sampling from blastholes by reverse circulation drilling which seems to be common practice in Chile for open pit mining.

The work reported on production of activated carbon from coal, Q.P. Campbell *et al.*, enticed my interest. Since the 1970s, many nanochemists have tried to match the imported activated carbon made from coconut shells. A wide range of materials, from peach pips to old motor car tyres, have been carbonized to find a better activated carbon. It was possible to match the capacity, but they all fell down in the comparison of abrasion resistance, where coconut shell derived carbon reigned supreme, presumably because of its fibrous origin. But the planned work must continue, particularly in the light of the latest novel concepts of carbon-in-pulp equipment, where abrasion is much reduced in comparison with conventional systems.

By far the most sensational paper in this issue is the paper on the Kell Hydrometallurgical Process for PGM and base metals recovery by Keith Liddell of Switzerland and Mike Adams of Australia.

The description, data and, calculations are most convincing. The claim that the process is a great step forward in costs, recoveries, versatility, and environmentally, in comparison to existing smelting operations, seems unquestionable. It is a landmark example of meticulous and creative thinking in putting together a flow sheet that many of us recognized as having promising potential for many decades.

The strategic significance of the planned pilot/demonstration plant is such that it suggests that this should be rated a national priority, if only by virtue of the indicated reduction in electrical power demand from Eskom. Of equal importance is the attraction to investors in developing the UG2 Reef in smaller mining operations in the eastern rim of the Bushveld Complex, with obvious strategic significance. However, one should not jump to optimistic conclusions until the pilot plant programme has been implemented.

But at this stage I have the impression that the pilot plant is unlikely to reveal setbacks, but more likely to indicate that taking the complete processing sequence from mine to final product will demonstrate even more profound advantages economically and in terms of national benefits.

It is fortuitously appropriate that these comments follow those of the November issue, where the advantages of computer models for analysis of strategic options in portfolios for mining and mineral developments were discussed. Such analyses on a broad basis appear to be essential in the case of the Kell Process, including the job creation aspect, the prospect of establishing many mines and associated cluster villages with byproduct industries with sustainable family schools and sports facilities, is incredibly important.

It is customary to use the January comment to look forward to future prospects for innovative R&D portfolios and interaction between universities and research institutions, industry, and the SAIMM professional body.

I see an extremely full plate ahead, particularly as regards the all-important challenges of job creation.

The Kell Process option has brought a wealth of important opportunities for valuable interaction between researchers and industry. It is important to examine all the stages of mining, comminution, mineral dressing, and the possibility of a hydrometallurgical alternative to replace the roasting step.

Apart from the Kell Process, there are many other topics apparent in the papers published in recent months and years.

Space does not permit any detailed discussion. Perhaps citing a few keywords can indicate the scope, arising from not only the Bushveld Complex which has dramatically been re-emphasized, but more generally:

- ▶ Titanium metal, fluoride hydrometallurgy, and titaniferous magnetites
- ▶ Vanadium (and lithium) battery systems, catalysts, and alloy steels
- ▶ Fluorspar and fluorine chemicals
- ▶ Waste coal utilization and aluminium production
- ▶ Carbon capture and storage
- ▶ Rare earths from byproducts and monazite
- ▶ Deep level mining, automation, and rock breaking and safety
- ▶ Mine Call Factors, gold losses, and selective blast mining
- ▶ Acid mine drainage, slimes detoxification, and byproduct recovery
- ▶ Uranium hydrometallurgy
- ▶ Mining cluster sustainability and job creation.

The list is far from complete, not even on the mining and metallurgical engineering topics. There has additionally been made reference to education topics and, for example, the spectacular recruitment of mining and metallurgical oriented engineers and scientists at South African universities is significant. There has been frequent reference to biofuels and alternative forms of energy, and these are topics in which mining and metallurgy have an immense interest and impact. There has also been reference to research planning and particularly to National portfolio strategies which are crying out for some detailed information, all of which point to a picture of a great potential in future years.

Journal Comment (continued)

In fact the New Year's message to our readers is that there is an unsurpassed tide of opportunity focussed on South Africa's potential to become a major R&D centre in the world. There exists a platform to become involved in reporting and coordinative transfer of such work on a wide international basis. There is the other almost overwhelming factor of the need for creation of employment opportunities locally and across Africa. The problem goes much further than mineral, mining and metallurgical activities, but there is no doubt that the mineral industries are being looked at to provide the leadership. This incentive will ensure a driving force to guarantee funding and dedication.

This tide of challenges must indeed be taken at its height.

With the international contribution evidenced in the Kell Process we have an opportunity to achieve a spectacular initial but sustainable success rapidly, and this will certainly catalyse many other collaborative ventures.

We need, figuratively speaking, a Julius Caesar to lead the initiative and this must come from the professional corporate associates of this *Journal* and its parent body. ♦

R.E. Robinson