In-pulp technology

by R.V.R. Handfield-Jones*

For many of us, formal academic education slows abruptly when we leave a tertiary institute of learning. We start applying and connecting newly acquired knowledge with the practicalities of a career, and begin to think in a manner that is technology-oriented. Subsequent vocational advancement is offered by the many mining and professional journals that circulate through departments, and by conferences and schools that are organized in-house and via the SAIMM and other professional institutions. The importance of these schools cannot be overstated: they combine people and developing technology to the benefit of the industry as a whole.

RECENT SCHOOL

The SAIMM's school on Recent Developments in In-pulp Technology, which was held at Mintek on 7th and 8th October, 1991, was just such an event, and its logical progression and mix of research, technology, and management of carbon as a means of recovering gold from solution was well received. Of further interest were the two tantalizing papers on the chemistry, kinetics, and potential for resin-in-pulp as an alternative to carbon-in-pulp.

The magical—or so it had seemed six years ago—tailings solution value of 0,002 g of gold per ton was reported as being achieved regularly on a number of plants, and there is no doubt that efforts to attain eluted carbon grades of more than 50 g of gold per ton, coupled with a greater understanding of the importance of the quality of regeneration (be it in rotary or Rintoul kilns) have contributed significantly to this achievement.

The debate on the absorption mechanism of the aurocyanide complex appears to be reaching a satisfactory conclusion, with more and more evidence being found to support the ion-pair absorption theory as the major mechanism in the leach. The elution of gold from carbon continues to remain split between the AARL and the Zadra methods, each process having its adherents. Considerable interest is being generated in the concept of using very low concentrations of cyanide in both elution processes. Totally cyanide-free elutions exhibit poorer rates than when 0,01 M concentrations of cyanide are present.

Continuous elution techniques attracted interest, as did continuous carbon regeneration. An interesting development in continuous regeneration was visited. Discussion as to where to locate the carbon acid-washing step was informative, and concluded that the circuit design and the degree and type of tcarbon fouling must decided the final approach.

Maintaining CIP plant efficiency was alluded to by most speakers, but most practically by Nick Schoeman. Control, instrumentation, and modelling played their useful and familiar roles, while the School was rounded off with a practical tutorial by Wayne Stanger on the use of computer modelling in CIP operations.

CONCLUSION

All in all, the School amounted to a well-spent two days for those who attended. As P.R. Bailey wrote in Paper 1: 'Carbon-in-pulp has come of age'.

* Technikon Witwatersrand, Department of Metallurgy, School of Mines, P.O. Box 17011, Doornfontein, 2028 Transvaal.