

SPOTLIGHT

on the Accounting for Gold School

by D.L. MORRISON*

The School on the Accounting for Gold, which was organized under the auspices of The South African Institute of Mining and Metallurgy by Dr Hugh E. Bartlett, Consulting Metallurgist of Johannesburg Consolidated Investment Company Limited, was held at the South African Nature Conservation Centre at Delta Park, Johannesburg, on 15th to 17th May, 1989. It was attended by 178 delegates, including 2 from the UK and 4 from Zimbabwe. A total of 19 papers were presented covering the components of gold-accounting procedure, sampling techniques, and new sampling technology.

Mr Gene Fivaz, President of the Institute, in his opening address, emphasized the importance of containing production costs in order to maintain the Republic's competitive position in world markets. In respect of the country's gold-mining industry, he stressed the need for accuracy in the measurement of both tonnages and values to provide management with the confidence required for corrective action to ensure the maintenance of profitability.

Technical Proceedings

On the first day, after an overview and a discourse on statistical concepts and sampling theory by Dr Bartlett, the papers dealt with the basics of underground and surface ore accounting, and analyses of underground sampling techniques from chip sampling to the double-bladed diamond saw and broken-ore sampling.

The second day started with a series of papers by Dr Bartlett dealing with the difficulties of run-of-mine sampling, the need for statistical testwork in the design of run-of-mine sampling systems, the measurement of mass on gold mines, and mechanical sampling in plants. He laid emphasis on the advantages to be gained from the sampling of feed to the mills and, when ore originated from a variety of sources, from the sampling of feed from the different sources. He also described the practice and strategies of stop-belt sampling in some detail. Of particular interest was the 'revolutionary' go-belt sampler designed by JCI engineers.

Papers dealing with sampling and evaluation procedures within the Rand Refinery, and with the measuring and monitoring of analytical performance, were most illuminating. The day was capped by a description of Aztec, which is an automatic gold-ore analyser for use in assay offices, and of the long-heralded and equally long-awaited underground gold analyser.

The first paper of the third day dealt with a practical hopper-sampling technique that is used as an early-warning system of grade problems. This was followed by more-academic papers, of particular interest being a

paper on the smoothing of material balances. This is a statistical tool for the adjustment of assay and flowrate data in an effort to produce consistent material balances.

The final paper described gold accounting from the face to the final product at a large gold mine, and introduced a system for the sub-division of the mine call factor into a shaft call factor, a tram call factor, and a plant call factor, each dealing with a relevant section of the run-of-mine ore flow. The practice of stop-belt sampling is applied extensively in determining the components of the various factors. The claims made of improved profitability arising from these intensive monitoring procedures were most impressive.

A panel discussion after lunch in respect of the mine call factor was chaired by Mr Peter Kraus, recently retired Group Surveyor of Anglo American. The discussion was lively, and gave rise to the following major conclusions and comments.

- (i) Sweepings and accumulations of ore left underground are significant components of a poor mine call factor.
- (ii) Extrapolation from sample value to block value is a considerable problem, and the reliability of the estimation depends on truly representative sampling. In this respect, it was claimed that a controlled chip sample will match a diamond-saw sample.
- (iii) In response to criticism that gold estimation requires geological (specifically sedimentological) input, the Chairman explained that all the mining houses make use of geological/survey valuation teams.
- (iv) Dr Bartlett outlined the major valuation control points, and stressed that stop- or go-belt sampling of the belt between shaft and plan is the key parameter.
- (v) Gold loss to residues is insignificant, since the measuring and sampling facilities available enable management to exercise adequate control.
- (vi) Gold theft continues in handfuls or shopping-bag amounts, but is significant only in breaking-and-entering operations.

The discussion had to be cut short at this stage owing to lack of time, and Dr Bartlett officially closed the school.

Acknowledgements

The Institute acknowledges the sponsors of the various exhibition stands, particularly Ramsey Engineering, who sponsored a superb barbecue at the end of the first day.

The Institute itself is to be congratulated for arranging a most interesting and extremely useful seminar.

Photographs

The captions of the accompanying photographs, which were taken by Carlos Dias, all read from left to right.

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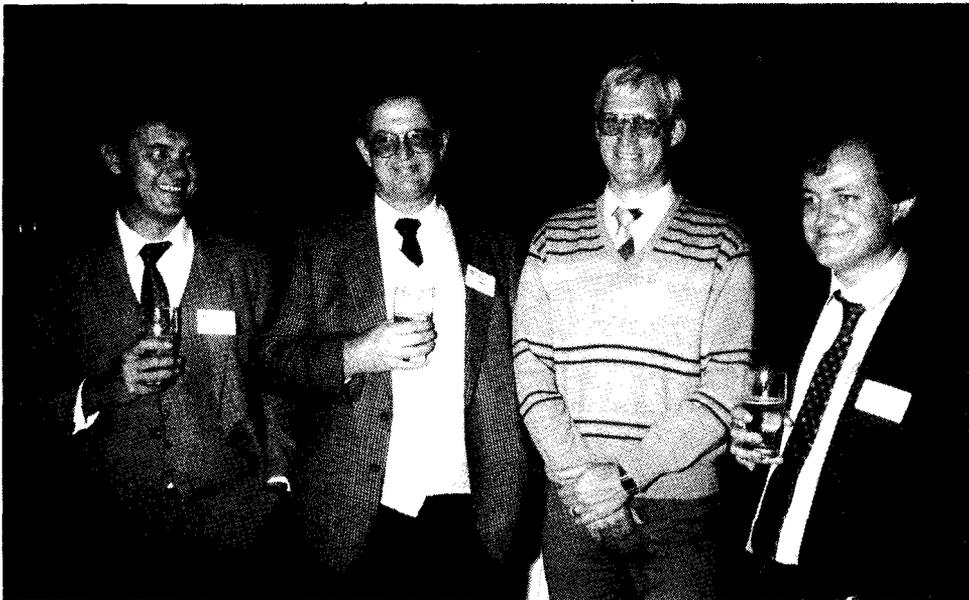
**Gene Fivaz (President, SAIMM)
and Peter van Rensburg (Lindum Reefs)**



**Johan Heunis (JCI), Clive Hunt
(CA Consultants), and Hugh
Bartlett (JCI)**

**Carl Neveling (Chromatech In-
struments), Colin Tite (Metrand
Management Services), Mal-
colm Prosser (Vaal Reefs), and
Chris Sharland (Interlect In-
struments, UK)**

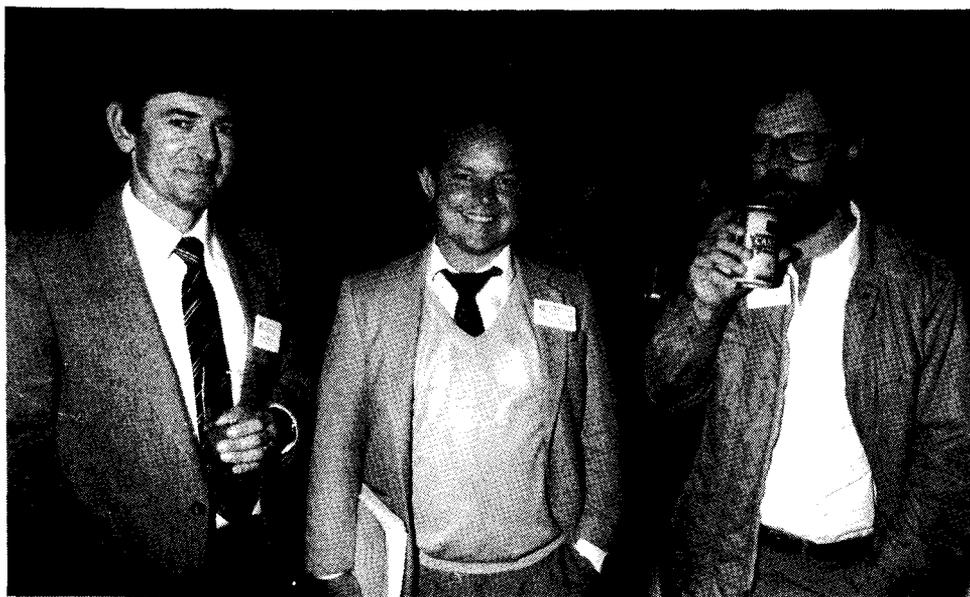




Pieter van Aswegen, Colin Pask, Johan van Walsen, and Andy Carter (all of Genmin)

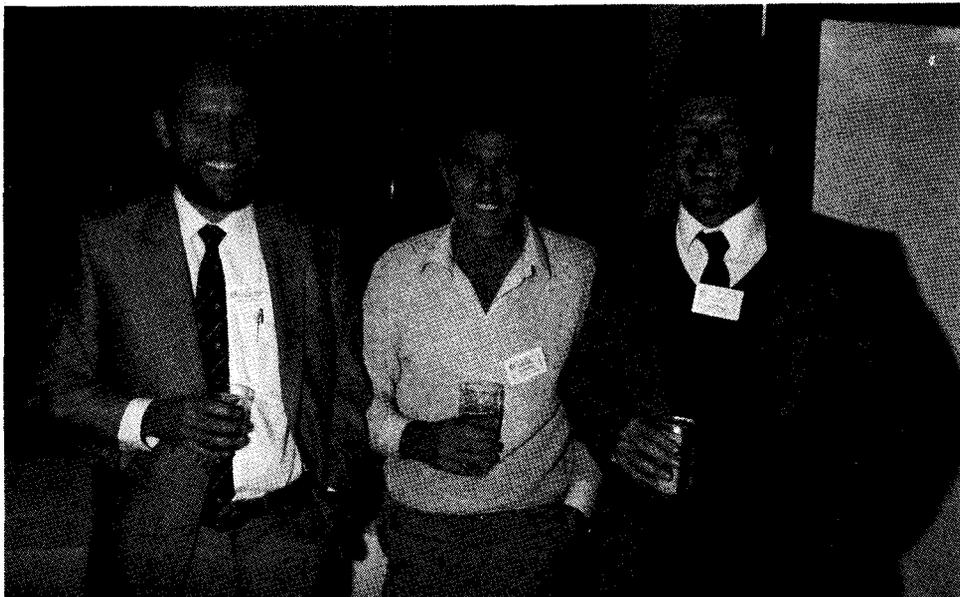


Arthur Roberts (Doornfontein), and Neville Paterson and Don Ross-Watt (Gold Fields)



Abe Rozendaal (West Driefontein), Peter Camden-Smith (Rand Mines), and Phil Lambert (Northam Platinum)

Christopher Sanderson (Gold Fields), Trevor Gillard (Blyvooruitzicht), and Michael Botha (East Driefontein)



Philip Stark (Freegold South), and Richard Thompson and Jeremy Mann (Western Deep Levels)

Andrew King (West Driefontein), Stuart Saich (Doornfontein), and Pieter Coetzee (West Driefontein)





**Flip Zietsman (Blyvooruitzicht),
Tim van Zeller (Harmony), and
Roy Dias (Rand Mines)**



**George Perry (Harmony), Jim-
my Hockly (Rand Mines), and
Peter Kucharski (Blyvooruit-
zicht)**



**Ralph English (JCI) and John
Freer (Genmin)**