

NEWS FROM BRANCHES

WESTERN CAPE BRANCH

10th Annual University of Cape Town – University of Stellenbosch Minerals Processing Symposium

by C.T. O'CONNOR*

The 10th Annual UCT-US Minerals Processing Symposium was held at the Van Riebeeck Hotel at Gordon's Bay from 31 July to 2 August 1991. The conference was attended by 133 delegates representing a broad cross-section of the mining and metallurgical industry in South Africa. For the first time the Symposium, which was celebrating its 10th anniversary, was extended to two days. A call for papers was announced and the organizers were inundated with responses resulting in a very full technical programme which consisted of 29 oral and 15 poster presentations.



Mr J. van Zijl receiving his 50-year gold medal from Mr Gordon Mosenthal

The Symposium was opened with a plenary lecture by Professor E.T. Woodburn, of the Department of Chemical Engineering at UMIST, on the relationship between froth structure and the kinetics of coal flotation. The first session was on flotation and papers were presented by authors from the University of Cape Town on the use of various dithiocarbamates as collectors for pyrite flotation using factorial design techniques as well as a paper from Mintek on the synergistic interactions of mixtures of sulphhydryl collectors in the flotation of sulphide minerals. The third paper in this session concerned the use of an air sparged hydrocyclone for the flotation of coal.

The second session was on modelling and artificial

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intelligence and enjoyed an excellent response from the audience. Two schools of thought were represented in the publications. The first paper, by W. Stange of Witwatersrand University, discussed the control of minerals processing plants using neural network techniques, and this was followed by papers by T.J. van der Walt and C.J. Aldrich of the University of Stellenbosch, on the simulation of flotation and metallurgical processes using connectionist networks and the steady state simulation and optimisation of gravity separation circuits by use of linear programming and neural networks. In the final paper in this session, J.J. Cilliers of the Department of Chemical Engineering, UCT, cautioned the audience with respect to their expectations of neural networks and gave a critical review of the use of neural networks for steady state process modelling and fault diagnosis.

In the third session, papers were presented on milling and classification, and these included an evaluation of the economic aspects of fine solids de-watering (D.W. Boydell, Simon Carves), the influence of the amount of fine material recycled by circulating load on ball milling efficiency and the influence of ore mineralogy on hydrocyclone classification. These last two papers were presented by authors from the Anglo American Research Laboratories.

In the final session of the first day, Professor E.T. Woodburn presented a paper reviewing work done by himself and Professor L.G. Austin on a mathematical model for the liberation of ash from fine coal. M.S. Powell of Mintek presented a paper on the modelling of charge motion in a rotary grinding mill. Bio-technology was the topic of the last two papers of the first day. These were presented by authors from the Department of Chemical Engineering at UCT and dealt with an electrochemical study of sulphide mineral bio-oxidation and factors which affect bio-oxidation rate with high solids concentration.

The second day started with a session on hydrometallurgy which included presentations by authors from Mintek and the Universities of Stellenbosch and Pretoria. These papers covered a wide range of topics—from the electrowinning of gold, to papers on activated adsorption and elution of gold on activated carbon and the quantification of fouling factors for porous adsorbents in slurry reactors. The last paper of this session was on the use of ion-exchange fibres for the recovery of gold cyanide.

The sixth session was dedicated to column flotation, and papers were presented by J. Engelbrecht (Multotec) on the use of baffles in flotation columns, and authors from the Department of Chemical Engineering at UCT on residence time studies in flotation columns, as well as the effect of various parameters on the distribution of bubble sizes in a



Mr Gordon Mosenthal presenting Mr C. Coxon with his 50-year gold medal

Cominco air-sparging test rig. C.M. Goodall of Mintek completed this session with a presentation on the design of a column flotation circuit for a tin-zinc deposit.

The final session of the conference was on analysis techniques. Papers were presented on particle sizing technology (A. Hinde, Mintek), application of quantitative FTIR to minerals processing (M.D. Adams, Mintek) and the development of an instrument for the measurement of pellet sizes (T.P. Lange, Mintek). The conference ended with an entertaining paper by Professor P. Spargo of UCT on the history of mining in the Western Cape.

The general consensus was that the Symposium was most successful. The organizers hope that next year's Symposium may attract more overseas delegates. No published proceedings are available since the organizers do not hold copyright on the papers, but copies of abstracts of all the papers and posters are available at a cost of R20 from Mrs M. Winter, Department of Chemical Engineering, University of Cape Town, Rondebosch 7700, South Africa.

The organizers wish to express their sincere thanks to Senmin and S.A. Cyanamid and the SAIMM for their generous sponsorship of the Symposium.

The A.G.M. of the Western Cape Branch was held on the evening of the 1st August and the following were elected to the Committee:

- Professor F.L.D. Cloete (Chairman)
- Mr J.J. Cilliers (Vice-Chairman)
- Mr L. Lorenzen (Secretary/Treasurer)
- Professor J-P. Franzidis
- Professor C.T. O'Connor
- Professor G.S. Hansford
- Dr R. Knutzen

The Annual Dinner, also held on the evening of 1 August, was attended by about 175 people including many wives of Conference delegates. The guest of honour was Mr Gordon Mosenthal, the outgoing President of the Institution. Also in attendance were Professor M. de Vries, Rector of the University of Stellenbosch, and Mrs de Vries, as well as Professor J.V.O. Reid, Deputy Vice-Chancellor of the University of Cape Town. The highlight of the evening was the presentation of 50-year gold medals to Messrs J. van Zijl and C. Coxon. The other 50-year medallists residing in the Western Cape, viz. Messrs E. O'Connor, O. Weiss and O. Deane, were awarded their medals at private functions earlier in the year.

JOHANNESBURG BRANCH Students' Evening Meeting

by P. SMITH*

The Johannesburg Branch of the SAIMM held their second student's function on 29 August 1991 in the Anglovaal Auditorium in Johannesburg. The concept of the student's function is to strengthen the links between the Institute, tertiary technical educational institutions and industry, by encouraging students to write and present good technical papers. An opportunity for social intercourse between students, members of the Institute and interested professionals from industry is also provided.

Four presentations were given, two mining and two metallurgical, by students from the Mining and Metallurgy Departments of the University of the Witwatersrand and the Witwatersrand Technikon. Attendance was approximately 100, which was by invitation only.

The following presentations were given:

1. 'Problems in Arsenic Recovery at the New Consort Fluosolids Roaster Plant' by A. W. Bailey, Metallurgical Department, Witwatersrand Technikon.

2. 'The Installation, Mechanics and Optimisation of a Vacuum Ore Lifter at Consolidated Modderfontein Mines' by A. Pouroulis, Mining Engineering Department, University of the Witwatersrand.
3. 'Linear Conveyor at Arnot Colliery' by L. M. Ramokhotoane, Mining Department, Witwatersrand Technikon.
4. 'To Test a Measurement System to Determine the Composition of Ore Particles' by M. Valenta, Department of Metallurgy and Materials Engineering, University of the Witwatersrand.

The standard of the presentations was extremely high, with the students demonstrating clearly that they had understood the projects which they had been given. Guidance provided by the Staff of the Educational Institutions and by members of the Johannesburg Branch prior to the presentations certainly bore fruit.

Prizes of books published by the SAIMM were presented to all four students, followed by a cocktail party kindly sponsored by Anglovaal.

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