

—Conference Report _____

XVth CMMI CONGRESS **4 – 9 SEPTEMBER 1994, SUN CITY, SOUTH AFRICA**

The XVth CMMI (Council of Mining and Metallurgical Institutions) Southern Africa was held at Sun City in the new South Africa from 4 to 9 September 1994. The conference was being held jointly by the mining and geological societies of South Africa. Some 800 delegates from all over the world, some with their spouses, attended the conference and were very impressed with the ambience of the Sun City surroundings.

The congress diary started with registration in the Pilansberg Foyer followed by a welcoming function of cocktails and dinner in the Royal Ballroom. At this point some of the joy at being at the conference wore off. Everyone thought that the welcoming cocktails would be, as they normally are, without cost to the delegates. Not so! All drinks apart from the orange juice provided at the lunches were for the delegate's or affiliate's own pocket. Some of the delegates just could not believe it. It was with the drinks that a little profit was made by Sun City. It was here that a not so special South African wine could cost you up to five times more than at the average bottle store.

Apart from the welcoming dinner and the farewell beach party, all of the evening functions were for the delegate's or affiliate's own pockets. There was a game drive into the Pilansberg followed by a dinner (a braai really) in the bush which consisted of traditional South African dishes and braaied meats. There was also a fashion parade followed by dinner in the Lost City at the Palace Pool Deck. Here the bottle of wine was charged by the glass at something like R13.50. If you were at a large table, just imagine what the bottle of wine was going to cost you. During the week there was also an IMM, CSM and RSM get-together, again in the Pilansberg. After cocktails at the Bakubung Lodge, a braai was organised deep in the game reserve.

The farewell beach party was held at the valley of the waves, where man-made waves flow to the man-made beach. Again, a braai was held there with many traditional South African Dishes having been prepared. The evening unfortunately was marred by the presence of a cold front which made the thermometer plummet. So rather than bikini-clad maidens frolicking in the waves we were dressed for winter.

The technical part of the conference was divided into papers covering four parallel sessions for mining, extractive metallurgy, metals technology and geology. The papers covered a wide spread of technical content from new developments to the refinement of existing technologies. There were many papers of interest to the delegates and this made it difficult to attend parallel sessions. It was therefore unfortunate that delegates had to be very selective in which papers they were going to attend.

At the closing address given by a number of speakers, attention was drawn to the necessary development of technology for the recovery of dwindling resources throughout the world. A guest speaker was the Minister of Mineral and Energy Affairs, Mr. Pik Botha, who gave a very entertaining speech on how Mr and Mrs Average in South Africa, and for that matter in any part of the world, conduct their lives using minerals or metals in one form or another. The point of his speech was that minerals and metals form an integral part of everyday life and we really can not do without them.

After the conference there were a number of tours around South Africa and neighbouring states and some of the overseas attendees took the opportunity to go on these tours.

Overall, the XVth Congress was a success with an opportunity to advance the cause of technology. It was also a success from the point of meeting and making new contacts in the fields of geological exploration through to the application of minerals and metals in our everyday lives.

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INNOVATIONS IN MINERAL PROCESSING **6-8 JUNE 1994, SUDBURY, CANADA**

A conference on Innovations in Mineral processing was held from June 6 to 8, 1994 at the Laurentian University in Sudbury, Canada. The conference was organized by Dr. Turgut Yalcin of Laurentian University and although by far the majority of delegates were from Canada it was also attended by delegates from countries as far afield as China, South Africa, Australia, Finland and Italy.

The conference was organized to provide a forum for the communication, exchange and promotion of innovative ideas in mineral processing at a time of rapidly expanding research and development in this area. The opening address was presented by the Honourable Shelley Martel, the Minister of Northern Development and Mines (Ontario), while the keynote address by Huls covered the effects of innovations on a large mining company. The point was made that innovators would be better off accepting an agreement with a mining company for commercialization of new ideas at a fixed fee, rather than tying in the price with royalty payments.

The proceedings contain 43 papers authored by 104 scientists from 16 countries, dealing with a large range of topics. The importance of flotation in the mineral processing industry was demonstrated in that the majority of papers focused on chemical and physical developments in this field, covering conventional and column flotation, as well as new flotation chemicals. Other topics included magnetic separation, size reduction, classification and hydrocyclones, flocculation, fluidized bed separation, simulation, material balancing and improved processing of a large variety of ores.

Although the Proceedings contain a number of papers on magnetic separation, only two papers were actually presented which focused on the novel application of this technology. This was due to a number of delegates that unfortunately were unable to attend due to a lack of funding. The concept of dry induction belt separator (DIBS) was presented by Cavanagh in which Labrador Trough type ore, at about 5% silica, was reduced to about 1% silica concentrate, at more than 90% iron recovery. The DIBS concept is one in which a herringbone array of permanent magnets in rubber sheeting is used to induce a magnetic field in magnetizable particles. These particles roll out of the stream as an upgraded concentrate. The second contribution was by Li and Watson, who presented a paper on developments in vortex magnetic separation.

The conference was closed with a most enjoyable visit to the Science North museum and a boat tour on the scenic Ramsey Lake, adjoining the university grounds. The award for the best presentation went to Marticorena et al., for their work on developing a new pyrrhotite depressant at Inco.

The conference was well-organized and presented an opportunity for both the mining management and the academic sectors to exchange new and exciting ideas. It is essential that this type of forum exists to promote the interaction and communication between these very important parts of the industry, and it is certainly hoped that it will be repeated in future.

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MINERALS ENGINEERING '94 CONFERENCE
SEPTEMBER 26-28, 1994, LAKE TAHOE, NEVADA, USA

The international conference Minerals Engineering '94 was held at Lake Tahoe, Nevada, USA from September 26 to 28, 1994. The organizers of the conference were the Minerals Engineering journal, Camborne School of Mines (England) and the Mackay School of Mines, University of Nevada-Reno.

The conference programme included all aspects of treatment and extraction metallurgy for the processing of minerals; in particular methods of separation of ores, industrial minerals and coal, hydro and biometallurgy, technological expertise in the utilization of refractory ores as well as the application of computers for these purposes. The above mentioned problems were presented in the form of 48 papers and 23 posters. Participation of more than 80 specialists, more than half of that number from outside the USA and Canada confirmed an interest in these topics.

The conference was opened with two keynote lectures which provided a review of present methods of mineral separation (R.A. Williams) and of utilization of mineral processing in the environmental and recycling industries (D.E. Spiller). The remaining papers were divided into eight sections: disintegration (4 papers), gravity and magnetic separation (5), the application of computers (5), the

application of froth flotation (10), gold metallurgy (6), chemical and biological methods (5), industrial minerals (5) and the environment (6).

Two papers and one poster dealt with magnetic methods of mineral processing. A paper "Vortex magnetic separation" (Z.Li and J.H.P. Watson) described a study of the upstream and downstream magnetic capture on a single wire using a high-speed video camera and an image-processing system. Different shapes of the magnetic deposit on the wire were observed in different situations. The mechanism of vortex magnetic separation in the wake area behind the wire was also investigated through analysis of particle trajectories. The measurements revealed that at moderate Reynolds numbers the velocity of the returning flow near the stagnation point is usually smaller than 1 cm/s. This benefits the magnetic capture of the magnetic particles on the downstream side of the wire because the drag force caused by the returning flow is much weaker than the one in the front of the wire.

A paper "Multiforce dewatering for magnetic waste materials" (J.L. Watson and P.L. Gardner) deals with the development of a novel process for dewatering waste pulps containing fine magnetic material. The process involves chemical flocculation in a magnetic field and the application of vacuum to remove the water from the flocculated pulp. The patented technique of multi-force dewatering has been implemented through construction of a novel piece of equipment consisting of a vacuum drum filter fitted with an internal fixed rare earth magnet. It has been shown that the application of the magnetic field significantly alters the filtration mechanism for pulps containing magnetic particles. The overall results of the multi-force filtration is a large increase in the filtration capacity. A poster "Selective mineral separation using magnetic tagging technology" (M.H. Kerbey and R.A. Williams) presented a review of utilization of various degrees of coating of mineral grains with ferromagnetic substances aimed at improving their magnetic separation.

The following topics also attracted considerable interest: the modelling of processes of disintegration and flotation, the application of computers in the control of technological treatment operations, parameters of column flotation, the improvement of cyanidation in gold extraction and the possibility of replacing cyanide by thiourea, innovations in the technologies of treatment of phosphates, potassium salt, zeolites and boron minerals, and the utilization of adsorption properties of activated carbon in the environmental protection.

The conference confirmed the well-known trend of the progress of utilization of computers and of modern analytical and mineralogical methods, mainly to improve the management and control of separation processes. Innovations of technological procedures and of equipment, presented at the conference, were oriented predominantly at the refractory ores or special types of raw materials. Papers presented at the conference will be published in a special issue of *Mineral Engineering* journal. High scientific level, as well as attractive field tours and social programme emphasize the professionalism of the organisers and place this, already the fourth, Minerals Engineering Conference among important international events in mineral processing, tradition of which has been well established.

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