



# President's Page \_\_\_\_\_

## The status of the engineer

An editorial in the April 1990 edition of *Mining Magazine* is worth a wider audience in South Africa, particularly as the SAIMM enters its own centenary decade and the process of change in the minerals industry world-wide makes increasing demands on the professionalism of its leaders. The editorial considers the changing status of engineers, who up to the 1880s had been held in high regard by society.

A decline in status started with the collapse of the Tay Bridge in 1879 and with the finding of the inquiry into the disaster that 'the bridge had been badly designed, badly constructed and badly maintained'. The position was exacerbated by the promoters of dubious mining projects and the frequently misleading reports of mine managers and consulting mining engineers.

The editorial continues: 'It was to combat this kind of malpractice that the various professional institutions were founded, with a view to ensuring that engineers adhered to acknowledged codes of practice in carrying out their work and conducted their affairs in an honourable manner. Two such organizations were the American Institute of Mining Engineers (AIME), founded in 1871, and the London-based Institution of Mining and Metallurgy (IMM), formed in 1892.

'The AIME, now incorporated into the Society for Mining, Metallurgy, and Exploration, Inc. (SME), . . . needed to play the role of a communicator of knowledge and experience and, more especially, of technological development. These aims are still set out in the current booklet issued by the SME, which states, "The SME is the technical organization for professionals engaged in the mineral industries".'

'The IMM's objectives have, from the beginning, been "the general advancement of mining and metallurgical science and, more particularly, for promoting the acquisition of that knowledge which constitutes the profession of the mining engineer". Well-defined guidelines were laid down for the Council to determine whether or not a candidate should be admitted. Suitably modernized as time has passed, such rigorous professional criteria are still applied today.

'These institutions, and others like them throughout the world, serve as guardians of the standards of workmanship and professional conduct which those in the industries they serve should strive to maintain. With planning enquiries, environmental implications and the like all frequently reported on at length on TV and in the popular press, minerals industry operations are increasingly carried out under the watchful eyes of a sceptical public. The man in the street enjoys using products made from mineral ores, but is ready to decry the activities of the minerals industry itself.

'The institutions, while guarding professional standards, need also to serve their members by helping to educate the public. This will increasingly be their role in the 1990's as pressures on the industry become more numerous.'

I cannot but associate the SAIMM with its (slightly) older cousins overseas. As we begin the build-up to our hundredth year in 1994, and reflect inevitably on what we have achieved, I believe we shall find that we have not been found wanting.

President

# Alumina and bauxite

Economists forecast a slower economic growth rate in 1990, but expect continued increase in demand for aluminum at a 3 per cent annual rate during the decade. This translates into higher production demand on alumina and bauxite producers. It can also be expected, in these days of trades and swaps, that the requirement for uniform- and better-quality alumina and bauxite will lead to technological innovations.

With this in mind, six specific bauxite/alumina sessions are being planned for the 1991 TMS Annual Meeting, which is being held in New Orleans from 17th to 21st February, 1991. Authors are asked to submit technical papers for presentation in New Orleans, and for publication in the hard-cover volume *Light Metals 1991*.

The tentative subjects for the six sessions are as follows:

1. *Raw Materials for Alumina Production*  
Bauxite exploration, mining, transportation, properties. Alternative fuels, caustic, soda ash, etc.
2. *Bayer Process Technology I*  
Process and equipment technologies associated with unit operations—bauxite size reduction, desilication, digestion, mud settling, and washing.
3. *Bayer Process Technology II*  
Process and equipment technologies associated with

unit operations—precipitation, calcination, impurity removal, and environmental aspects.

4. *Bayer Process Simulation and Control*  
Modelling and simulation, process control, sensors in parameter measurement.
5. *Chemical Additives in Bayer Process*  
Use of flocculants (both synthetic and natural), crystal modifiers, humate removal reagents, dewatering aids, defoaming reagents, impurity control reagents—lime, zinc sulphide, etc.
6. *Non-metallurgical Use of Alumina and Bauxites*  
Production and application of bauxite, aluminium hydroxide, and alumina for non-metallurgical use.

The object of the papers should be to communicate technical and economic information to colleagues in the industry.

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## Structural and numerical analysis

Struceng & Femcad (structural analysis and finite-element method) is a conference and exhibition that is to be held in Grenoble (France) on 17th and 18th October, 1990. It is sponsored by the Institute for Industrial Technology Transfer (IITT-International).

Also sponsored by IITT-International, Femcad & Optimization (numerical analysis and structural optimization) will be held in Los Angeles (USA) on 5th and 6th November, 1990.

The main topics of both world Conferences are as follows:

### *Numerical Analysis of Structures*

- Structural optimization
- Finite element and other numerical methods
- Structural analysis software, benchmark tests
- Constitutive equations of new materials and composites
- Fracture mechanics, metal deformation
- Fatigue, thermal elasto-plastic analysis
- Large deformation of solids, material flow, combustion
- Calculation of behaviour of materials using loading history
- Composite and other materials
- Structural analysis by measurement
- Vibration tests, correlation with numerical analysis

- Modal analysis, synthesis of sub-structures

### *Pre- and Post-processing CAD*

- Automatic mesh generation, adaptive meshing
- Expert systems in structural analysis and CAD
- Computer graphics, CAD mechanisms
- Structural analysis and CAD interfacing

### *Applications*

- Key design in aerospace and aeronautic industry
- Structural analysis in power generation
- Applications in civil engineering, automotive, ship-building
- Mechanical and electronic industry
- Structural analysis in heavy conditions
- Application of SAS in fluid mechanics, electromagnetic, acoustics
- Micro-computer applications.

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