

# Annual report

FOR THE YEAR ENDED 30TH JUNE, 2000

## Council for 1999/2000

### President

M.H. Rogers

### President Elect

Dr L.A. Cramer

### Vice Presidents

#### Senior

A.A.B. Douglas

#### Junior

S.J. Ramokgopa

#### Immediate Past President

J.R. Dixon

#### Honorary Treasurer

J.A. Cruise

## Members of Council

B.C. Alberts	H.G. Mosenthal
W. Assibey-Bonsu*	G.Y. Nisbet
Dr N.A. Barcza	N.M. O'Brien
R.D. Beck	R.G.B. Pickering
Prof. A.N. Brown	Prof. R.P. Plewman
Dr L.A. Cornish	S.J. Ramokgopa
Dr L.A. Cramer	Prof. R.E. Robinson
J.A. Cruise	M.H. Rogers
J.R. Dixon	D.A.J. Ross-Watt
A.A.B. Douglas	Prof. R.F. Sandenbergh
F.M.G. Egerton	Dr P.D. Scott
Prof. R.M.S. Falcon	Dr H. Scott-Russell
C.E. Fivaz	Dr T.R. Stacey
K.J.R. Ford	Dr O.K.H. Steffen
R. Graham	D.J. van Niekerk
Dr R.V.R. Handfield-Jones**	Dr W.H. van Niekerk*
J.P. Hoffman	P.E. Venter
H.E. James	J.C. Viljoen
P.J. Knottenbelt**	J.N. Wallington
R.P. Mohring	

## Branch Chairmen

Johannesburg Branch	M.J. Daniel
Free State Branch	C.B. Sheppard
Pretoria Branch	Prof. R.F. Sandenbergh
Western Cape Branch	P.G. Gaylard
Mpumalanga Branch	K.T. Bladwell
Bushveld Branch	C.A.F. Sweet
Zululand Branch	G.J. Kok

## Past Presidents Serving on Council

B.C. Alberts	R.P. Mohring
Dr N.A. Barcza	H.G. Mosenthal
R.D. Beck	G.Y. Nisbet
Prof. A.N. Brown	Prof. R.P. Plewman
J.A. Cruise	Prof. R.E. Robinson
C.E. Fivaz	D.A.J. Ross-Watt
J.P. Hoffman	Dr H. Scott-Russell
H.E. James	Dr O.K.H. Steffen

## Key Objective of the Institute

*To initiate and give effect to the means whereby the requirement for technology and scientific knowledge of the minerals and metals section of the South African economy is satisfied; and to represent and promote the interests of its members.*

## Arrangement of this Report

In accordance with the current management policy, this report on the activities of the Institute is presented under eight main headings:

1. Interests of Individual Members
2. Technical Meetings
3. Publications
4. Regional Development
5. Engineering Science and Technology in South Africa
6. International Liaison
7. State Liaison
8. Management and Administration.

## 1. Interests of Individual Members

### Portfolio Holder: Dr L.A. Cramer

#### Key Performance Areas

*In the interests of individual members, the SAIMM*

- ▶ *undertakes to assess the qualifications, experience, and the level of responsibility of applicants for membership, and allocates a membership certificate in an appropriate grade as a means of granting appropriate professional and technical status to individuals who practice in the minerals and metals sector;*
- ▶ *arranges conferences, colloquia, schools and seminars where technical information on mining, metallurgical and allied issues is disseminated. Both members and the general industry benefit from these inter-changes;*
- ▶ *undertakes to prepare and publish career-guidance brochures, bursary handbooks, audio-visual and video programmes, optional school-curricula material, etc., and participates in the activities of the RADMASTE Centre to stimulate scholars and students to select careers in the minerals and metals sector of the South African economy;*

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- ▶ *guards the professional interests of engineers, scientists, technologists, and technicians by providing a corporate voice and by representing their interests on bodies such as the Engineering Council of South Africa;*
- ▶ *through representation on ECSA, assists with the evaluation of curricula at universities and technikons with a view to improve the level of education of graduates and diplomates and ensures that the courses are relevant to the needs of the minerals and metals sector;*
- ▶ *makes awards, in the form of medals, prizes and certificates, in order to recognise technical excellence, to stimulate a sense of pride in high standards of performance, and to encourage individuals involved in the minerals and metals sector to share the results of their work through publication. The following are eligible for SAIMM awards: individuals for the very highest achievements in the South African mining and metallurgical industry, SAIMM members and non-members for papers of the highest standard published in the Journal or other SAIMM publications, and students from universities and technikons for exceptional academic performance;*
- ▶ *arranges technical excursions, banquets, and other social events to create opportunities for professional association and fellowship for its members.*

### 1.1 Membership Committee

Dr L.A. Cramer, Chairman

A.A.B. Douglas, Vice-Chairman

Dr N.A. Barcza

R.D. Beck

Prof. A.N. Brown

J.A. Cruise

J.R. Dixon

F.M.G. Egerton

C.E. Fivaz

H.E. James

R.P. Mohring

H.G. Mosenthal

G.Y. Nisbet

Prof. R.P. Plewman

D.A.J. Ross-Watt

Prof. R.F. Sandenbergh

Dr T.R. Stacey

Dr O.K.H. Steffen

D.J. van Niekerk

#### Membership

Members of the SAIMM comprise engineers, metallurgists, chemists, physicists, geologists, certificated managers, and technikon diplomates, all of whom have an interest in the fields of mining, extractive metallurgy, metals technology, and other related areas.

*Corporate Members are classified as follows.*

HONORARY LIFE FELLOW: must have rendered services to the Institute, science, or industry.

FELLOW: (Minimum age 30 years.) A person eligible for election or transfer into the class of Fellow shall be any minerals professional employed for a minimum of five years in a senior technical position of responsibility provided that the candidate has had ten years combined technical tertiary education and appropriate experience, or experience only.

MEMBER: (Minimum age 25 years.) A person eligible for election or transfer into the class of Member shall be employed for a minimum of two years in a technical position of

responsibility provided that the candidate has had five years combined technical tertiary education and appropriate experience, or experience only.

*Non-Corporate Members are classified as follows.*

COMPANY AFFILIATE: companies associated with mining or metallurgical industries are eligible for membership.

HONORARY FELLOW: persons of distinction in public service, science, or the arts.

ASSOCIATE: a person eligible for election or transfer into the class of Associate shall be any person with a recognized industry qualification, within the disciplines of mining, extractive metallurgy, or metals technology.

STUDENT: a full-time student or post-graduate student at a university, technikon, or any other educational institution approved by Council, who is being trained to occupy a technical position in the mining or metallurgical industry or associated organizations.

#### Membership Roll

Members of the Institute are divided into CORPORATE and NON-CORPORATE members all of whom are entitled to attend and speak at meetings. Only corporate members are entitled to vote. All applications for membership or transfer require **one** Proposer and **one** Seconder.

RESIGNATION: A member may resign from the Institute by sending his written resignation to the Secretary together with payment of any monies due.

RETIRED MEMBERSHIP: A Fellow or Member who has *bona fide* retired from active business may retain membership at a reduced subscription providing he has been a member for 20 years. Members can contact the Secretary to establish the number of years of service prior to submitting a written request for Retired Membership to the Institute.

STUDENTS: A candidate may remain a Student member only while he is being educated or trained in a manner approved by the Council.

When he no longer qualifies as a Student member, he shall automatically be transferred to the category of Associate. Students are reminded to forward a copy of their degree certificates to the Institute on graduation.

A candidate may not remain a Student member after the end of the Institute's financial year in which he attains the age of twenty-eight years, unless the Institute receives written confirmation from the university or technikon that the Student member is still a full-time student.

CHANGE OF DETAILS: It is essential that members contact the Institute without delay with regard to change in designation, change in employer, payment address or change in postal address. Without this the communication link to members is broken. Also members must ensure that where subscriptions are paid by a company that the Institute has on record the correct payment address.

#### Benefits of Membership

Individuals derive various benefits from membership of the Institute:

- ▶ contact with fellow members;
- ▶ special reduced fees when attending congresses, symposia, colloquia, conferences, schools, discussion groups, etc.;
- ▶ notices of events promoting technology transfer, which also satisfies the need for continuing education;

Table 1

## Summary of new applications and membership movements for 1999/2000 and comparison of membership grades and total membership 1999/2000

Membership grade	Members July 99	New members	Transfers in	Transfers out	Reinstatements	Resignations	Deceased	Struck-off	Computer adjustment	Net gain/(loss)	Members June 2000
Honorary Life Fellow	30						1			-1	29
Honorary Fellow	4										4
Life Fellow	30					1				-1	29
Fellow	378	16	53	9	3	17		8		+38	416
Retired Fellow	156		9			7	5			-3	153
Life Member	1										1
Member	768	36	30	53	3	24	5	25		-38	730
Retired Member	75		10	1		9	2	1		-3	72
Associate	930	40	33	40	5	24		68	+5	-49	881
Retired Associate	10		1			2				-1	9
Student	244	96		33	4	6		54		+7	251
Company Affiliate	136	17				9		1		+7	143
<b>Total</b>	<b>2762</b>	<b>205</b>	<b>136</b>	<b>136</b>	<b>15</b>	<b>99</b>	<b>13</b>	<b>157</b>	<b>+5</b>	<b>-44</b>	<b>2718</b>

- ▶ a bi-monthly *Journal* with a balanced content and of high technical standard, which serves as a communication medium to keep members informed on matters relating to their professional interests;
- ▶ participation in technical excursions, banquets, and other social events, which create further opportunities for professional association and fellowship;
- ▶ tax deduction of membership fees in most cases;
- ▶ Reduced registration fees for professional registration through the Engineering Council of South Africa.

### Companies that become Members of the Institute

- ▶ benefit from the opportunities to exchange knowledge, particularly regarding new developments and research;
- ▶ receive the Institute's publications of international conferences held in South Africa, as well as monographs on a variety of subjects and regular copies of the bi-monthly *Journal*;
- ▶ are entitled to send two non-member employees to mining and metallurgical schools, colloquia, congresses, visits, and excursions at member rates;
- ▶ receive newsletters and notices regarding all Institute activities;
- ▶ benefit from the fact that Company Affiliateship is tax-deductible;
- ▶ have ample opportunity to send delegates to attend technical meetings to obtain information and to benefit from the experience of others.

### 1.2 Career Guidance and Education

F.M.G. Egerton, Chairman

P.J. Knottenbelt, Vice chairman

Dr R.M.S. Falcon\*

Prof. R.F. Sandenbergh

Prof. G. Gerrans\*

R. Tait\*

S.J. Ramokgopa\*

\*Co-opted members

The Committee met regularly during the 1999-2000 council year. Efforts were concentrated on career guidance and publicising careers and opportunities in the metals and minerals industries. The 'Career Guidance and Information

Package' was distributed widely and continues to be well accepted. The committee continues to be active in various expositions throughout the country.

Radmaste packages were distributed to many underprivileged schools throughout South Africa, via the chairmen of the regional branches.

During 1999 five topics were derived from the major human resources processes involved with skills acquisition, development, deployment and retention.

Topic 1: Recruitment and Selection

Topic 2: Further or Higher Education

Topic 3: Socialization and Initial Training

Topic 4: Deployment and Retention

Topic 5: Continuing Education and Training

The above key topics were developed in the form of action steps.

The outgoing chairman of the committee wishes to thank the members of the committee and the secretariat without whose dedicated efforts the above-mentioned activities would not have been possible.

### 1.3 Promotion of the SAIMM

Members are aware that discussions are being held with other Professional Societies and Professional Associations in the Minerals Industry in South Africa with a view to forming an umbrella body to represent members' interests in Industry issues.

Discussions with the Geological Society of South Africa have revealed sufficient areas of mutual interest and synergies for there to be a partial merger of the two Learned Societies. At the same time it has been recognised that there are member's interests which are specific to each of the organizations. It is envisaged that the SAIMM and the GSSA will continue to manage these 'specific interests' on behalf of their members, while the areas of mutual interest will be managed jointly. Work on the partial merger continues under Council's guidance.

In the course of the year the Institute concluded an agreement on closer co-operation with the South African Coal Processing Society. The main areas of co-operation being:

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- ▶ Observer status on each others councils
- ▶ Participation by the SACPS on Extractive Metallurgy TPC
- ▶ Sharing of mailing lists in order to increase market penetration
- ▶ Publishing refereed papers authored by SACPS members in the *Journal*.

These arrangements will be of mutual benefit to the members of both organizations and to the organizations themselves.

The Institute has concluded an agreement on limited co-operation with the Institute of Mining and Metallurgy. In terms of the agreement, IMM members resident in South Africa and who are not members of the SAIMM will be included on our mailing list. The Institute secretariat will also assist in organising *ad hoc* events for the IMM. These events will not compete with the activities of the Institute.

Discussions on the formation of the umbrella body are being held with the South African National Institute of Rock Engineers, the Mine Ventilation Society and the members of the Mines Professional Associations.

During the year Letters of Introduction were sent to the Office of the State President and eight other Government Ministries and to some 1027 businesses operating in the Minerals Industry. The intention of the letters was to alert the recipients to the activities of the Institute and to canvass new members, both of Company Affiliates and individual members. The response has been disappointing and should be regarded as an indication of the effort that will be required in the future in order to maintain membership levels and interest in the Institute.

### 1.4 Awards and Adjudication Committees

#### Awards and Adjudication Committee—Mining

M.H. Rogers, Chairman

A.A.B. Douglas	Dr T.R. Stacey
F.M.G. Egerton	D.J. van Niekerk
R.P. Mohring	J.C. Viljoen
R.G.B. Pickering	

#### Awards and Adjudication Committee—Extractive Metallurgy/Metals Technology

Dr L.A. Cramer, Chairman

J.P.W. Bennie*	N.M. O'Brien
Dr L.A. Cornish	Dr R.L. Paul*
K.J.R. Ford	Prof. R.F. Sandenbergh
Prof. A. Garbers-Craig*	Dr W.H. van Niekerk
R. Graham	

\*Co-opted members

#### Brigadier Stokes Memorial Award

The Brigadier Stokes Memorial Award, which takes the form of a platinum medal, is awarded to an individual for the very highest achievement in the South African mining and metallurgical industry, and is not necessarily based on technical expertise.

The Award was established in 1980, and the previous recipients were as follows:

1980	Dr H.F. Oppenheimer
1981	Dr W. Bleloch
1982	Dr F.G. Hill
1983	Dr A.W. Whillier (posthumously)
1984	Prof. D.G. Krige
1985	Dr R.E. Robinson

1986	Prof. M.D.G. Salamon
1987	Dr T.F. Muller
1988	Dr W.J. (Wim) de Villiers
1989	Dr R.A. Plumbridge
1990	Dr W.G. Boustred
1991	Mr P. du P. Kruger
1992	Mr E. Pavitt
1993	Prof. D.A. Pretorius
1994	Dr H. Wagner
1995	Dr Oskar Steffen
1996	Mr B.E. Hersov
1997	Prof. D.W. Horsfall (posthumously)
1998	Mr B.P. Gilbertson
1999	Mr L. Boyd

This year the award is being made to Alex Mokken for his outstanding contribution to the industry over many years.

#### SAIMM 50 Year Club

The Institute established the 50 year club in 1989 to recognize the faithful and loyal support of its senior members with 50 years' unbroken membership. They become members of the club on the 50th anniversary of joining the Institute. Their names are published each year in the annual report and they are presented with a gold lapel badge on a suitable occasion. There are no fees, and the only obligation of members is to wear their lapel badges with pride and affection at all meetings of the Institute. The present members of the club are as follows:

Year to June	Member	
1924	E.C. Polkinghorne*	
1926	R.M. Martin	
1927	W. Allen*	
1930	E.T. Dunstan* (posthumously) P.L. Ward*	
1931	F. Bowdler	
1932	J.E. Laschinger*	
1933	F.D. Cartwright C.H. Coxon J. Levin D.D. McWilliam*	E.R.C. O'Connor B.M. Roberts A.A. von Maltitz T. Waterman
1934	A.C.M. Cornish-Bowden* H.E. Cross* E.F. Laschinger* E. Margo	J.W.V. Mortleman* K. Rood* A. Siff* O. Weiss*
1935	O.B. Swallow*	
1936	O. Deane* T.L. Gibbs R.C.J. Goode* F.G. Hill* D.M. Jamieson* D.J. Rogers	A.H. Mokken H.L. Monro* R.M.F. Seawright A.C. Pigott* J.S. van Zijl* L. Walter*
1937	W. Bleloch* L.A. Bushell* K.W. Findlay	J.J. Klein* C.D. Storrar
1938	V.C. Barnes E.T.S. Brown* R.S. Cooke* J.K.E. Douglas A.L.A. Forder*	C.A. McKechnie* J.A. Nixon E. Popplewell C.G. Sowry E.W. Thiel*
1939	G. Armstrong-Smith D.E.R. Ayres	T.A. Newman R.S. Pearson

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	L.D.C. Bok	D.C.J. Squirrell*
	A.W.L. Brereton	G.G. Stanley
	E.H.D. Carman	R.F.J. Teichmann*
	G.D. Gettliffe*	I.S. van Eyssen*
1941	W.G.H. Jackson*	S.J. Venning
	A.H.H. Davison*	D. de V. Oxford*
	D.J. Forder	E. Pavitt
	A.R.C. Fowler	A.C. Petersen*
	H.F.W. Ketelbey	E.R. Rudolph
	J.D. McNamara	P.W.J. van Rensburg*
	T.F. Muller*	
1942	R.E. Burnton	O.L. Papendorf
	R.C. Espley-Jones	V.O. Steed
	N.M. Hayne*	J.E. van Leeuwen*
	R.T. Naudé	W.C. Walmsley*
1943	A.F. Dick	R.P. Plewman
	R.B. MacGillivray	J.F. Reid
	D.J. Molony*	P.B. Weehuizen
	J.D. McMorran	
1944	J.L. Curtis*	K.E. Steele*
	E.T. Pinkney	A.S. Swartz
	L.J. Prince	A.H. Taute
	V.M. Reinecke*	
1945	V.C. Robinson*	W.I. Spence
1946	G.H. Grange	C.J. Parr*
	M.H. Grusd	J.D. Pollard
	W.B. Howe	J. Pope*
	P.A. Laxen	A.N. Shand*
	J. Marr-Levin	G.R. Still
	G.Y. Nisbet	
1947	D.F. Foster	N.A. Stacey
	J.P. Hugo	J.A. Tyser
1948	G.P. Bennett	D.F. Grieve
	J.F. Curtis	D.A. Immelman
	O. Davel	V.C. Ward
1949	B.E. Hersov	R.P. Plasket
	B.H.L. Leach	N.C. Pope
	M.J. Martinson	W.T. Ruhmer
	D.G. Maxwell	T. Zadkin

\* Deceased since becoming members of club

### Gold and Silver Medals

Papers published in the *Journal* from March 1999 to February 2000 by members of the Institute were considered for medals.

### Gold Medals

No awards were made.

### Silver Medals

Silver medals were awarded to the following:

B.J. Venter, K.I. Afewu and G.O. Lewis for their paper published in the July/August issue of the *Journal* entitled 'Developing a methodology for estimating the performance of a series system of non-ideal CSTRs'.

M.F. Wells for his paper published in the July/August issue of the *Journal* entitled 'Construction of a concrete plug in South Deep's main shaft to seal off a major water intersection'.

### Honorary Life Fellows

Honorary Life Fellowship is awarded by Council to Corporate Members of the Institute who have rendered outstanding service to the industry or to the Institute over a considerable period of time. Council has conferred Honorary Life Fellowship on the following persons:

Pre-		
1923	Dr A. Aiken	S.H. Pearce
	A.F. Crosse	J.P. Williams
	J. Littleton	
1923	Dr J. Moir	
1930	H.A. White	
1931	P. Cazalet	Prof. J.A. Wilkenson
	A. Whitby	
1932	J.R. Thurlow	
1934	Dr Wm. Cullen	A. McArthur Johnston
	W.R. Feldtmann	Prof. G.H. Stanley
	E.H. Johnson	
1938	G. Melvill	F.W. Watson
	S. Newton	
1941	J. Henderson	
1943	Sir R.N. Kotzé	
1946	Dr J. van N. Door	T.K. Prentice
	C.J. Gray	R.S.G. Stokes
	Jas Gray	Prof. S.J. Truscott
	J.V. Muller	Prof. G.A. Watermeyer
	Prof. John Orr	J.A. Woodburn
1951	W.W. Mein	
1953	Dr P.E. Hall	Prof. B. St. J. van der Riet
1954	Prof. C. Biccard Jeppe	
1955	Dr P.N. Lategan	
1958	R.A.H. Flugge-de-Smidt	
1960	G. Hildick-Smith	A.J. Walton
	Dr A.J. Orenstein	F. Wartenweiler
	Dr H.J. van Eck	
1961	Dr C.S. McLean	
1966	Dr F.G. Hill	Dr F. Meyer
1970	H.E. Cross	D.M. Jamieson
	R.C.J. Goode	
1974	R.J. Adamson	C.J. Irving
	Dr W. Bleloch	J.F. Reid
	H. Britten	
1975	Dr M. Barcza	Dr J.T. McIntyre
	Prof. J. de V. Lambrechts	
1976	D.G. Maxwell	Lt Col. A.R.O. Williams
1978	J.K.E. Douglas	V.C. Robinson
	Prof. D.D. Howat	
1979	Dr J.P. Hugo	P.W.J. van Rensburg
1980	Hon. S.P. Botha	Prof. R.P. Plewman
	Hon. P.G.J. Koornhof	Dr R.E. Robinson
	A. Louw	
1982	Dr M.G. Atmore	
1983	C.S. MacPhail	
1985	Dr P.R. Jochens	Dr M.D.G. Salamon
	D.G. Malan	
1986	Prof. D.G. Krige	G.Y. Nisbet
1987	Prof. A.N. Brown	
1988	J.D. Austin	D.A. Viljoen
	Prof. R.P. King	
1989	P.A. von Wielligh	
1990	Prof. S. Budavari	Prof. G.T. van Rooyen
	L.W.P. van den Bosch	
1991	Dr H. Wagner	
1992	Dr J. Lurie	

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1993	No award	
1994	B.C. Alberts	
1995	R.D. Beck	H.E. James
	P.R. Janisch	
1996	Prof. R.J. Dippenaar	
	J.S. Freer	
	H.G. Mosenthal	
1997	J.A. Cruise	
1998	D.A.J. Ross-Watt	
1999	No award	

In 2000 this award is to be conferred on Dr N.A. Barcza, J.R. Dixon and R.P. Mohring for their outstanding contribution to the Institute over a number of years.

### Student Prizes

Prizes were awarded to the following students for the best student dissertations in part fulfilment of the B.Sc. (Eng.) degree:

#### Mining

W.C.S. Kotze, University of Pretoria  
'Haul road dust suppression'.

#### Extractive Metallurgy

No award was made.

#### Metals Technology

No award was made.

#### Other Prizes

Other prizes, made to students at the Universities of the Witwatersrand and Pretoria, were presented at faculty prize-giving ceremonies held at the respective Universities.

The prize winners were as follows.

#### University of the Witwatersrand

##### Prestige Prize

Mining	D. Holm
Metallurgy	D. Nardini

##### Book Prize

Mining	S. Newberry
Metallurgy	No Award

#### University of Pretoria

##### Prestige Prize

Mining	W. Kuys
Metallurgy	T. Dry

##### Book Prize

Mining	W. Kotze
Metallurgy	C.J. du Preez

#### Technikon Prizes

##### Prestige Prize

Metalliferous Mining	D. de Wet
Coal	J. Breytenbach

#### University of Cape Town

##### Prestige Prize

Chemical Engineering	K. Dunn
Materials Engineering	J. Buchanan

#### University of Stellenbosch

##### Prestige Prize

Chemical Engineering A. van Niekerk

#### Cape Technikon

##### Prestige Prize

Chemical Engineering R. Cameron-Dow

The prizes for the Universities of Cape Town and Stellenbosch, and the Cape Technikon will be awarded on 24 August 2000 at the Western Cape Branch Annual General Meeting.

##### Atlas Copco Travel Grant

No award was made in 2000.

##### Outokumpu Travel Grant

No award was made in 2000.

#### 1.5 Banquet Committee

J.A. Cruise, Chairman

Dr L.A. Cramer	R.P. Mohring
J.R. Dixon	N.M. O'Brien
A.A.B. Douglas	M.H. Rogers

The banquet was again held at the Sandton Sun and Towers Hotel and was once again a sell-out.

This year the committee decided to have a guest speaker who could give both an in-depth look at the current political climate and also be humorous. Our choice of Mr Harald Pakendorf fitted the bill to the tee. He gave insight into the characters of our political leaders and the reasons he had high hopes for the political well-being of the country.

As usual the banquet guests had their fill and tripped the light fantastic past the bewitching hour.

#### 2. Technical Meetings

Portfolio Holder: Dr L.A. Cramer

#### 2.1 Technical Programme Committee—Mining

R.G.B. Pickering, Chairman

Dr W. Assibey-Bonsu*	P.S. Piper*
D. Cockcroft	J. Porter
D.H. Diering	G.L. Smith*
A.A.B. Douglas	Dr T.R. Stacey
F.M.G. Egerton	J. Truter
D.R. Fleming*	D.J. van Niekerk
Dr G.V.R. Landman	J.C. Viljoen*
P. Mwasinga*	J.N. Wallington*
N. Maslen	R.P.H. Willis

\*Co-opted members

The technical Programme Committee—Mining arranged a number of events for the 1999/2000 SAIMM year. There were two international events, three colloquia and one school. The topics were selected to achieve the overall objective of the SAIMM of disseminating relevant and up-to-date technology to its members and to the mining industry in general. None of this could have been achieved without the hard work and commitment of the committee members and the SAIMM secretariat.

The following events were organized in the past year and special mention must be made of the convenors of these events. The colloquium *New Mining Methods*, convenor

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R.P.H. Willis. The school *Narrow Tabular Orebody Mining* organized by F.M.G. Egerton. The colloquium *National Environmental Management Act*, organized by Dr T.R. Stacey. The colloquium *Underground Lateral Transport*, organized by N. Maslen. A wide-ranging selection of topics attended by some 1 275 delegates and supported by 34 both local and international sponsors. These events contributed to the dissemination of information to our members and to the considerable numbers of non-members who attended. They also provide a substantial contribution to the financial well-being of the Institute.

As well as the events mentioned above the committee provided representatives to assist with the organization of 5 International events due to be held over the next three years. Special mention must be made of the *12th International Conference on Coal Research and Mine Hoisting*. These events promise to be truly exceptional events.

None of these events would have been possible without the willing contribution of all members of the Mining Committee and their assistance is sincerely appreciated. The Secretariat are to be commended on their efficiency which ensures that all events are professionally organized and take place with the minimum of fuss.

### 2.2 Technical Programme Committee — Extractive Metallurgy and Metals Technology

Dr W.H. van Niekerk and N.M. O'Brien, Joint Chairmen

Dr G. Akdogan  
G.F. Bainbridge\*  
J.P.W. Bennie  
Dr L.A. Cornish  
Dr M.B. Cortie\*  
D.J.A. Davies  
Dr A Garbers-Craig\*  
R. Graham  
Prof. J.M.A. Geldenhuis\*  
*\*Co-opted members*

C. McInnes\*  
T. Owen  
Dr R. Paul  
Prof. R.F. Sandenbergh  
P.E. Venter  
Dr P.D. Scott  
C. Visagie\*  
Dr I.M. Wolff\*

The 1999/2000 year has been very successful but also a very 'different' year for the Metallurgy Technical Programme Committee

Because of the increasing workload on both the secretariat and the TPC members on planning and organizing events—particularly conferences. Council requested that the two metallurgy committees, Extractive Metallurgy and Metals Technology, be combined. This process began in March under the Chairmanship of Dr Willem van Niekerk with Noel O'Brien as Vice-Chairman. The synergy from this move was immediately apparent with better communication between the committee members, a more even distribution of workload and better organized events. We expect that this combined Metallurgy Committee will be formalized in the new SAIMM year.

An issue of concern is that events held during the year showed that attendances are falling. Whereas we endeavour to

Table II

#### Schedule of Mining Technical Conferences, 1999/2000

Type of Event	Date	Title	Convenor	Venue	Attendance
Colloquium	29 July 1999	New Mining Methods	R.P.H. Willis	Movenpick Indaba Hotel	132
International Symposium	8–12 August 1999	Fragblast	C.V.B. Cunningham	Sandton Sun Hotel	132
School	13–14 October 1999	Solvent Extraction & Electrowinning		Indaba Hotel	68
School	21–22 October 1999	Narrow Tabular Orebody	F.M.G. Egerton	Mintek	219
International Symposium	1–2 November 1999	Metallurgy Africa	N.M. O'Brien/ R. Graham	Indaba Hotel	92
Colloquium	11 November 1999	National Environmental Management Act	Dr T.R. Stacey	Mintek	152
International Symposium	15–17 November 1999	HMC '99	J.H. Selby	Holiday Inn Durban	133
Colloquium	3 March 2000	Underground Lateral Transport	N.Maslen	Mintek	231
Colloquium	7 March 2000	Coal Preparation for Safe and Efficient Mining	D. Power	Witbank	126
Colloquium	25 May 2000	Modelling and Control of Mineral and Metal Proc.	Prof. A.M. Garbers-Craig	Mintek	72
International Symposium	13–18 May 2000	Tuncon	J. McKelvey	ICC Durban	357
					1339

International Event Involvement		
Date	Title	SAIMM Representative
6–8 September 2000	Mine Hoisting	R.G.B. Pickering
12–15 September 2000	Coal—the future	D.J. van Niekerk
17–19 September 2001	RaSiM 5	Dr T.R. Stacey
25–28 September 2001	6th International Symposium on Mine Mechanization and Automation	R.P.H. Willis
11–15 March 2002	XIVth International Coal Preparation Congress	R. Graham
5–10 October 2003	International Minerals Processing Conference	Prof. C.T. O'Connor
September 2003	International Rock Mechanics Symposium	Dr T.R. Stacey
2004	International Conference on Molten Slags, Fluxes salts	Prof. P.C. Pistorius

stage topical and meaningful events, it is up to the general membership to support these events and to provide feed-back. We are acutely aware of the cost of these events and do everything possible to keep costs down whilst providing quality functions and venues. We can only continue to do this if our members attend in sufficient numbers to spread the cost burden.

Despite the low attendances, acceptable profits were made thanks to sponsorships from various companies whose generous contributions are gratefully acknowledged.

The TPC Metallurgy has worked particularly hard this last year and we acknowledge the contributions made by:

Cathy McInnes, Chris Rule, Le Roux Strydom, Leslie Cornish, Andrie Garbers-Craig, Tom Owen, Peter Scott, Frank Bainbridge, Dick Graham, Roelf Sandenberg, Chris Horsley, Peter Hand, Kevan Ford, Roger Paul, Kobus Geldenhuis, Guvan Akdogan, Mike Cortie and Cyril Visagie. The mentorship of Dr Larry Cramer is also acknowledged.

Planning for the future is an ongoing process and some major international events will be held in South Africa under the auspices of the SAIMM in the next few years. You are referred to our long-term schedule of events for details and we urge you to start planning to attend these events. To highlight just a few; South Africa was recently selected as host for the prestigious 7th International Conference on Molten Slags, Fluxes and Salts to be held in 2002 in Cape Town. A School on Developments in Iron and Clean Steel Production, with two overseas lecturers, will be held on 17 and 18 of July 2000. A colloquium on Bacterial Oxidation for the recovery of metals is scheduled for 4 July 2000. A conference on copper, nickel, cobalt and zinc is planned for October 2000.

Finally, the increasing difficulty of getting members to write and publish papers of suitable professional standard is also of concern to the Institute. South Africa is a major force in the international mining industry and a leader in the development and implementation of innovative technology. It is definitely worth telling the rest of the world just how much of a contribution southern Africa is making to keep the industry

competitive and socially responsible. We would urge all of our members to give serious consideration to publishing through the SAIMM *Journal* and presenting papers at the various local and international conferences in which the SAIMM participates.

## 2.3 Committee for the Environment

Dr T.R. Stacey, Chairman

F.M.G. Egerton

Dr P. Scott

J.S. Freer\*

A.A. Smithen\*

D. Limpitlaw\*

\*Co-opted members

The function of the Committee is to ensure that environmental matters relevant to the mining and metallurgical industries are dealt with as part of the Institute's activities. Activities for which the Committee was responsible during the year included:

- ▶ representation on the Environmental Planning Professions Interdisciplinary Committee (EPPIC). EPPIC was closed during the year
- ▶ Ensuring that environmental matters are included in SAIMM colloquia whenever appropriate. For this purpose, the Committee works through the Technical Programme Committee—Mining, and specifically has a representative from the TPCs—Extractive Metallurgy and Metals Technology
- ▶ ensuring that environmental issues are part of mining and metallurgical education. For this purpose the Committee has a representative from the Career Guidance and Education Committee
- ▶ participating in the establishment of the Excellence in Mining Environmental Management (EMEM) Awards. These have been established by the Department of Minerals and Energy with the help of patron organizations, of which the SAIMM is one. The SAIMM is represented on the Executive Committee for the Awards, has participated in establishing the criteria for judging of the awards, and is providing the secretariat for the financial and administrative sub-committee
- ▶ organizing specific SAIMM colloquia on environmental topics. During the year a very successful colloquium was organized jointly with the International Association for Impact Assessment (IAIA) on the National Environmental Management Act. A targeted colloquium on the Management of HIV/AIDS in the Mining and Metallurgical Industries will be held in August 2000
- ▶ monitoring and commenting on environmental legislation, and on other environmental and topical issues
- ▶ providing *Journal* papers, and copy for 'Green Topics' in the *Journal*

## 3. Publications

**Portfolio Holder: S.J. Ramokgopa**

Prof. R.E. Robinson, Chairman

F.M.G. Egerton (Vice Chairman)

Prof. R.M.S. Falcon

Dr T.R. Stacey

Dr P.D. Scott

Prof. R.F. Sandenbergh



# Annual report

## 3.1 Journal

The *Journal* suffered two setbacks in the year under review. Firstly the October and the November/December issues had to be combined due to an overload in the administrative staff. Not only did this result in a loss in advertising revenue and adverse reactions from advertisers but also increased the backlog in papers waiting to be published.

Secondly, the posting of the contents page and abstracts on the SAIMM website fell into disarray when the site was handed over to a commercial organization, with the result that nothing has been recorded since August 1999. This has played havoc with attempts to have keywords recorded in abstract systems and search engines. However, alternative plans are under way for the website and hopefully more comprehensive inclusion of *Journal* contents will be possible shortly. It must be reaffirmed that in the global environment a presence on the Internet is essential. Thanks to the efforts of the admin staff, the publication target dates are close to being re-established. In an effort to streamline and improve the refereeing procedures—a referee advisory panel has been constituted to nominate and monitor the most appropriate persons. This step is part of an effort to cut pipeline delays and attract more submissions from local researchers particularly in mineral processing and extraction metallurgy. If this can be achieved there will be more than enough Transactions material which, if taken with the huge backlog of *Journal* papers will justify a monthly issue. It is believed that increased advertising revenue can more than make up for increased costs. I should like to thank the members of the publications committee for their support and all the staff at SAIMM for their hard work and willing cooperation and kindness.

## 4. Regional Development

Portfolio Holder: Dr L.A. Cramer

### Key Performance Areas

*To promote the interests of members based in different regions, the SAIMM*

- ▶ supports the establishment and maintenance of branches to satisfy the local needs of its members for professional association and the exchange of technical information;
- ▶ co-operates with other member societies of AS&TS and with associations and interest groups that have close ties with operating mines and metallurgical plants by holding joint technical meetings and collaborating in the field of publication.

### 4.1 Regional Development Committee

Although no formal meetings were held by the Committee feedback and updates were received from the Branches.

Branch Chairmen were encouraged to attend at least one Council meeting per annum, to report on the progress within their Branches.

### 4.2 SAIMM Branches

#### 4.2.1 Johannesburg Branch

A.S. MacFarlane, Acting Chairman

L.A.C. Cornish (Secretary) A.J. Field

G. Chamberlain

D. Cockcroft

D. Deiring

V. Duke

D.R. Fleming

S. Rupprecht

G.L. Smith

P.E. Smith

This report covers the period from July 1999, to June 2000.

During this period, Mr Mike Daniel held the Chair of the Johannesburg Branch, until the end of April, when he relocated to a position in Australia. At this point, he handed over the Chair of the Branch to Mr Alastair Macfarlane.

The Committee would like to thank Mr Daniel for the hard work that he put in to the Branch, during his time as Chairperson.

In an effort to spread the constituency represented by the Committee, several new members were invited to join the Committee, and their input has been most valuable. Recently, in addition to the members indicated above, who served during the year, Messrs A. Thin and P. Mwasinga have accepted to serve on the committee. The Branch pursued an active programme of technical visits and presentations, which were generally very well attended.

Amongst the visits arranged was an outstanding one to the Witkop Flour operation near Zeerust, which allowed members not only to enjoy a very informative technical visit, but also to savour the delights of 'Bosman country'.

Another very successful visit was arranged to a demonstration of explosives technology at AECI, and recently a visit was undertaken to Mponeng Mine, to the ice plant. Technical presentations were most successful, covering a range of topics, as shown below.

The attendances at the presentations are indicative of continued support, for a wide range of topics, all of which were of very high quality, and excellent technical content. Included in the presentations was a session for the top students of the Wits Technikon and the Wits University Mining and Metallurgy Departments to present their project reports, which was of great benefit and interest to all concerned.

The Committee has arranged a full programme for the new year, and looks forward to continued support from the members of the Branch, and the Council.

As Chairperson, I would like to thank the Committee members for their hard work during the year, and to thank the Council and the Secretariat for their support and assistance.

Also, sincere thanks must be recorded for the presenters, sponsors and hosts of presentations and visits, which made the year a successful one.

#### 4.2.2 Free State Branch

F.P. Guilherme, Chairman

J.J.H. Bester

J.J. Jooste (Secretary)

C.B. Sheppard

D. Wright

M. Glasspool

S.S. Smit

M.J. Steyn

G.V. Thompson

The Free State Branch had an eventful year through 1999/2000. Unfortunately, the year's success was once again overshadowed by the decline of membership numbers due to the downscaling of the Free State gold operations and the associated transfers.

A number of events were scheduled during the 1999/2000 period for the SAIMM Free State Branch. The events included general meetings, various visits as well as committee meetings.

The calendar of events for 1999/2000 were as follows:

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Event	Date
Committee Meeting	5th August 1999
General Meeting—Presentation on Australian Metallurgical plant visit	9th September 1999
Committee Meeting	4th November 1999
Environmental Rehabilitation visit	2nd December 1999
Committee Meeting	3rd February 2000
Gold Plant security system visit	22 February 2000
Committee Meeting	4th May 2000
Annual General Meeting—Welkom Club	21st June 2000

### General Meetings

The general branch meeting, held on the 9th of September 1999 at the Loraine Recreation Club in Allenridge, was hosted by Avgold.

An informative and entertaining presentation was delivered by Peter Colvin on aspects of his technical visit to Australia as a member of an Avgold technical team. This was an interesting overview of the operations and facilities visited.

### Technical visits

A visit was arranged to the Environmental Rehabilitation programme sites within the AngloGold surface operations in the Goldfields on the 2nd December 1999. Visitors were afforded an insight into the methods adopted within the rehabilitation philosophy which has seen some significant progress being made.

A further visit was arranged to AngloGold's Free State 2 gold plant. This visit focused on the retro-fitting of asset protection technology to an old plant operation.

A technical visit was arranged to Target mine on the 24th March 2000 to the mechanized development operations, as well as the innovative decline systems. Unfortunately, this visit had to be cancelled due to unforeseen circumstances.

I would like to express my appreciation to the committee members for their valuable contributions throughout the year. Furthermore I would like to thank the managers in office who supported the Institute and contributed their time to its activities.

I wish the incoming committee members a successful and eventful year.

#### 4.2.3 Pretoria Branch

Prof. R.F. Sandenbergh, Chairman

Dr T. von Moltke, Vice Chairman

G.A. Fourie

Prof. J.M.A. Geldenhuys

J. Grobler\*

H. Hutchinson\*

H.A. Sandenburgh\*

R.J. Thompson

\* Student representatives

The Pretoria Branch again had a successful year during which a number of meetings and other functions were held. The committee functioned well owing to the enthusiastic support and co-operation of its members.

The Annual General Meeting of the Branch was held on 28th July 1999 at the University of Pretoria. It was a pleasure to have the President Elect, Mr Mike Rogers with us. Mike gave us a

very informative lecture on *Coal—an industry in change*.

The Branch, together with the Departments of Materials Science and Metallurgical Engineering and of Mining Engineering, again presented a series of Metallurgical Forums and Mini Symposiums. These events were structured to be of interest to our students as well as other members and with ample time for discussion. The attendance at these events was usually about 60 people. Cocktail parties were held after each meeting and also served as a get-together for the members and also allowed our younger members to make contact with senior engineers from industry. We were again fortunate to have a number of prominent speakers at these events.

Prof. Jan Miller of the Department of Metallurgical Engineering at the University of Utah, gave a seminar on flotation with talks titled *Experimental techniques in flotation research* and *Selected industrial separations* on the afternoon of the AGM.

On 12 August 1999 Dr Keith Weller of the CSIRO in Australia gave a talk on the milling research done in his group.

On 15 October the branch hosted the annual poster session in extractive metallurgy where the third-year students in Metallurgical Engineering presented their projects on Hydrometallurgy. The posters were adjudicated by representatives from industry.

We started off in 2000 on 3 February with a seminar by Prof. R.J. Fruehahn of the Centre of Iron and Steelmaking at the Carnegie Mellon University, on *Modification of inclusions in steel*. This seminar was very well attended and his lecture was followed by a lively discussion prompted especially by representatives from industry.

On 18 February Prof. Fathi Habashi, well-known author of books on extractive metallurgy and professor in the Department of Mining and Metallurgy at Laval University in Quebec, gave a talk on *The history of hydrometallurgy*. In his talk he reviewed the development of the science and engineering of hydrometallurgy and also highlighted the problems that should be addressed in future.

On 2 March Dr Mulalo Doyoyo of MIT gave a talk on *Fracture processes and energy partitioning during projectile travel through ceramic and silica glass systems*. His talk emphasized the theoretical aspects of the development of ballistic resistant materials and some perspective of the practical aspects of the manufacturing of such materials were given by the representatives of the local industry.

On 12 April Mr Dick Bakker, Chief Inspector of Mines of the Department of Minerals and Energy, gave a talk on the challenges and opportunities that the new safety legislation poses to the minerals industry. The title of his talk was *The challenge in mining*. His talk was followed by a lively discussion with significant inputs from the students.

On 22 June Dr Craig Garlick of BHP in Australia gave a talk on *Inclusion engineering—a key tool in achieving operations stability at BHP Whyalla*. This talk was again well attended representatives from industry and was followed by a lively discussion of this very topical subject in steelmaking.

The Committee is satisfied with the format and attendance of the events that were hosted during the year. We were fortunate to have a number of distinguished speakers at our meetings and are grateful to them for their time and effort. We would also like to again acknowledge the contributions of our sponsors

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who made it possible for us to host these meetings and social events.

### 4.2.4 Western Cape Branch

Prof. P. Gaylard (Chairman)

J. Eksteen (Vice-chairman)

A. Nesbitt (Secretary/Treasurer)

Prof. C. Aldrich

Dr D. Bradshaw

Dr D. Deglon

Prof. R. Knutsen

Dr C. Lang

Prof. L. Lorenzen

Prof. C. O'Connor

Prof. F. Petersen

Dr M. Powell

M. Winter (Branch Secretary)

The Western Cape Branch of the South African Institute of Mining and Metallurgy enjoyed yet another successful year, starting with the Mineral Processing '99 Conference, held on 5 and 6 August 1999 at the President Hotel, Bantry Bay. The conference was preceded by a workshop, held on 5 August, on 'Materials Selection in Mineral Processing'. Unfortunately, attendance at this workshop was poor, despite the wide range of topics covered in a series of excellent presentations by a number of experts in the fields of physical metallurgy and corrosion science. Particular thanks are due to the companies who sponsored the workshop: Anglo American Research Laboratories, Columbus Stainless Steel, The Hot - Dip Galvanisers Association of Southern Africa and Mintek.

The conference, itself, was very well supported, as in previous years, with some 180 delegates attending. The plenary lectures were presented by Professor Alban Lynch, formerly Director of the Julius Kruttschnitt Mineral Research Centre at the University of Queensland in Brisbane, Australia, and by Professor John Herbst, of the University of Utah in the USA. Professor Lynch's lecture was titled 'Simulation in mineral processing—history, present status and possibilities', while the title of Professor Herbst's lecture was 'Mine to mill optimisation: new tools, new benefits'. Thirty-seven papers were presented over the two days, in addition to 14 poster snapshot presentations, as a preview to the poster session at the end of the first day of the Conference, at which 32 posters were displayed. Thirteen of the papers were presented by overseas visitors, with a further paper presented by representatives from the University of Zambia, while the conference was widely supported by most of the South African academic institutions and research and research organizations and also received a gratifying level of support from industry. The Branch extends its sincere thanks to all who contributed to both the Conference and the Workshop, whether as a delegate or as a speaker. In particular, thanks are due to the sponsors of the Conference: Pelichem (Pty) Ltd, Baker Hughes, Crusader Systems, Outokumpu Technologies, Senmin and Svedala. This sponsorship is used to subsidize post-graduate attendance at the Conference. As in previous years, the Branch owes a considerable debt of thanks to our secretary, Mrs Meg Winter, for her excellent organization of both events.

The annual student evening of the Branch, organized in collaboration with the local Branch of the South African Institute of Chemical Engineers, was held at the Peninsula Technikon on 13th April 2000. Unfortunately, the timing of the function clashed with exams at both Cape Town and Stellenbosch Universities, so the function was not as widely attended as had been expected. Nevertheless, those who did

attend enjoyed a pleasant social evening.

The annual student tour took place from 31 March to 9 April 2000. This year's tour was organized by Mr Emile Scheepers of Stellenbosch University. Thirty-six students and five members of staff travelled by bus to Phalaborwa, where they visited the operations of Foskor and Palabora Mining Company. This was followed by visits to the Feralloys plant at Machadodorp and to the Fairview Mine at Barberton. As in previous years, the tour was a great success. The Branch extends its sincere appreciation to the technical staff of the Western Cape Mineral Processing Facility (WCMPF), and particularly to Mr Emile Scheepers and his colleagues who participated in the tour, for their work in arranging the tour and in running the WCMPF. The financial support of the Minerals Education Trust Fund for the WCMPF and this students' tour is gratefully acknowledged.

As reported last year, the Western Cape Branch is to host the XXII International Mineral Processing Conference (IMPC), on behalf of the SAIMM, from 5 to 10 October 2003. The local steering committee, consisting of Prof. Cyril O'Connor of the University of Cape Town, Prof. Leon Lorenzen of the University of Stellenbosch and Prof. Francis Petersen of the Cape Technikon, held a meeting at the Johannesburg Country Club on 15th March 2000, to launch the Conference Steering Committee. The meeting was attended by some 25 people from industry and from the Gauteng universities and research organizations. Response to the launch was enthusiastic and the various sub-committees, needed to organize a conference of this size, were established. The XXI IMPC is to be held in Rome from 23 to 28 July 2000 and the Branch will have a booth at the Conference to publicise the Cape Town conference. Initial financial support for the Conference has been encouraging and the Branch is particularly grateful for the financial backing provided by the Treasurer of the SAIMM.

In conclusion, I would like to express my sincere thanks to the out-going committee, for their support during the past year. On behalf of the Branch, I would like to thank the SAIMM Council and the President, Mr Mike Rogers, as well as the SAIMM secretariat, for their support during the past year.

### 4.2.5 Mpumalanga Branch

K.T. Bladwell, Chairman

R. Phillis, Vice Chairman

J. Sutherland, Secretary

B. Bell

J. Collins

P. Gericke

A.M.P. Henderson

R. Jennings

T. Mkatshana

J. Raath

D. Smith

The Branch had a good year with most of the committee's attention having been focused on arranging the Gala Dinner for 9 March 2000. The dinner was a great success and was attended by 220 people. It was held in honour of Mike Rogers who was a Past Chairman of our Branch and the guest speaker was Clem Sunter. The only disappointing aspect was that 2 companies reneged on their undertaking which put the finances under strain.

A technical meeting was held on the 11 November and was attended by 25 people. The topics presented were 'The changing requirements and interpretations of the

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Environmental Act' by Mr F. Wagner and 'Picking a cost effective dust management system' by Mr A. Miller. Both the presentations were well received and a lively discussion followed.

Unfortunately the technical meeting in Evander had to be postponed due to a poor response. However, our strategy of targeting specific people within our industry to assist in canvassing support for technical events is having good results.

The committee has benefited a great deal from the inputs of our new committee members and I wish to take this opportunity to thank all the committee members for their support and effort during the past year.

### 4.2.6 Bushveld Branch

C.A.F. Sweet, Chairman

The first meeting after the Bushveld AGM was held at Union Section where the focus was on a number of R and D Projects. The electronic blasting generated such a high level of interest that a large number of follow-on visits were arranged with people coming from as far afield as Zimbabwe.

The last visit for the current year is to the BMW factory in Rosslyn to see how our mining products were converted into the final products of use.

### 4.2.7 Zululand Branch

G.J. Kok, Chairman

#### Branch Objectives

It is important that each year the Branch is reminded of its objectives and for this reason they are repeated here.

- ▶ To encourage and develop interest in all technical disciplines involved in the practice of mining and metallurgy in the Zululand area.
- ▶ To encourage the exchange of technical information between the various disciplines involved in mining and metallurgy.
- ▶ To encourage interest in the technical disciplines amongst scholars and students, with the aim of developing more potential scientists and engineers.

#### Membership

Membership remains low at 8 support from Bayside and Hillside employees has not improved significantly. I thank the core members from RBM for your support and I will continue to encourage members from other areas.

#### Meetings

Late '99 meetings consisted mostly of last minute arrangements such as Nalco Chemserve, with low numbers attending.

A proposed site visit to Nyala Minerals was not allowed due to their technology being proprietary.

For 2000 more combined meetings were held when speakers of interest were available and these has large total attendances, with the Iscor presentation pulling in more than 50 attendees.

This does seem to be a viable option considering the difficulties of getting speakers of sufficient interest.

However, we do face the risk of losing a separate identity if

this is maintained. We are still doing well considering the increased workloads of today's industry.

#### Social Events

The golf day was again a large success giving the Institute another presence in the social calendar.

#### Heavy Minerals Conference

The Heavy Minerals Conference was plagued by the loss of a block booking and this bit into the numbers attending. If not for this it would have matched the success of the 1998 meeting. I thank the HMC committee for their work.

#### Education

A new slide projector was brought for the John Ross Geography department.

Later this month we will again take part in the Zululand Life skills centre's career exhibition. It is becoming difficult to get individuals to man stands and we will again depend on a few appointed volunteers from RBM.

## 5. Engineering Science and Technology in South Africa

Portfolio Holder: R.P. Mohring

### 5.1 Engineering Council of South Africa (ECSA)

	<i>Mining</i>	<i>Metallurgy</i>
<i>Representative</i>	R.P. Mohring	Prof. R.F. Sandenbergh
<i>Alternates</i>	H.G. Mosenthal J.A. Cruise	Dr N.A. Barcza P.J. Venter

The Institute nominates members on the Council of ECSA, and also nominates members to the registration and professional advisory committees for mining and metallurgy.

During the past year, these committees continued their important work of screening the qualifications and practical experience of applicants for registration as Professional Engineers.

Assistance continues to be provided by nominees of the Institute in the accreditation of courses offered by universities and technikons in the disciplines of mining and metallurgy.

#### Professional Advisory Committees

##### PAC Mining

Prof. A.N. Brown	D.A.J. Ross-Watt
J.A. Cruise	Dr O.K.H. Steffen
A.A.B. Douglas	D.J. van Niekerk
R.P. Mohring	
M.H. Rogers	

##### PAC Metallurgy

Prof. R.F. Sandenbergh	
Dr N.A. Barcza	Dr A.K. Haines
R.D. Beck	H.E. James
Dr L.A. Cramer	Dr W.H. van Niekerk
Prof. R.H. Eric	D.I. Watson
K.J.R. Ford	

#### ECSA Activities

To date 162 companies have registered 323 commitment and

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undertakings to train their Engineers-in-Training according to Policy Statement R1/1. The Policy Statement R1/1 was revised during the year to take into account the latest requirements of the engineering technologists, technicians and certified engineers.

Satisfactory progress was made during the year by the task team who are developing outcomes-based standards for education and training within the engineering profession.

During 1999/2000 ECSA continued to carry out the following activities relating to the engineering profession in South Africa.

- ▶ Setting standards for registration
- ▶ Registering applicants who comply with the standards
- ▶ Accrediting qualifications
- ▶ Prescribing and enforcing a code of conduct
- ▶ Publishing a tariff of recommended fees for consulting work
- ▶ Recognizing engineering institutes
- ▶ Liaison with other engineering bodies
- ▶ Seeking international recognition for ECSA registered engineers

Significant progress was made with regard to the proposed change in administration of the Mining Industry Certificates of Competency, however little progress was made on the Mechanical and Electrical Certificates under the Factories Act.

South Africa is now a full signatory of the Washington Accord which allows for mutual recognition of academic qualifications between the parties to the Accord. Further negotiations towards reaching agreement on mutual recognition of engineering registration were held during the year. ECSA have established an International Committee to progress this and other issues related to international recognition as reported last year.

The new registration procedure which entails an interview as part of the professional review will come into effect on the 1st January 2001.

Two Bills which will regulate the Engineering Profession are due to be passed by Parliament shortly. The Council for the Built Environment Bill and the Engineering Profession Bill are at the portfolio committee stage and will hopefully be presented in Parliament this year. These Bills will result in a significant change in the composition of the Council as the Bill provides for both public and state representation on the Council. ECSA have been fully involved in commenting on the various drafts of the Bills.

The current position whereby the SAImm has a legal right to be a recognised society in current legislation will no longer apply. The Institute needs to ensure that they retain this status through negotiations with the new ECSA Council.

The initiatives of ECSA regarding Outcomes Based Education requirements for university bachelor degrees resulted in guidelines for the accreditation of university engineering degrees, as well as for training requirements for registration. It was also decided to have a compulsory professional review in the form of an interview with all persons applying for registration. The professional review will be introduced as part of the registration requirements from the beginning of 2001. One of the main thrusts of ECSA over the past years has been to obtain international recognition for South African Professional Engineers. This was finally

achieved this year with the recognition of ECSA as a full member of the Washington Accord.

### 5.2 The Institute of Professional Engineering Technologists (IPET)

*Representative*

Dr R.V.R. Handfield-Jones

IPET is the only professional society catering for the interests of Professional Engineering Technologists. All its efforts during the past year was aimed at enhancing the position and status of this group and providing opportunities to improve themselves as professionals and as individuals.

A highly successful regional Technikon research seminar was held at Witwatersrand Technikon in October 1999 where mostly M. Tech research papers were read.

The proposed new Engineering Profession Bill and the Bill on the Council for the Built Environment were studied and again commented on. The IPET president presented the objections of the Institute at the public hearing of the Portfolio Committee at the Houses of Parliament in Cape Town.

IPET annually presents a 75 mm gold medal to the Technikon student at B. Tech level with the highest academic achievement in all engineering disciplines country-wide. This year the award goes to Mr Cedric Comley, who completed the B. Tech in Mechanical Engineering at the Port Elizabeth Technikon with an average of 85.57%.

A seminar on registration as Professional Engineering Technologist is planned for early in 2001, as well as a follow up research seminar in collaboration with NRF. The Institute is actively seeking avenues of co-operation with other Engineering Institutes like SAImm that could be of mutual benefit.

### 5.3 Engineers' Liaison Committee

*Representative*

Prof. R.F. Sandenbergh

The Pretoria Engineers Liaison Committee is the rallying point for the Pretoria branches of the ten learned engineering societies.

The 37<sup>th</sup> Annual Hendrik van der Bijl Memorial Lecture was held at the University of Pretoria on 17 May 2000 and was organized by the Gauteng North Branch of the South African Society for Consulting Engineers. The lecture with the title Consulting Engineering 2000 was given by Dr Bingle Kruger, Chairman of BKS Pty Ltd. The lecture was most informative and the social gathering that followed was enjoyed by all.

### 5.4 South African National Council on Tunnelling (SANCOT)

*Representative*

Dr T.R. Stacey

*Alternate*

J.A. Cruise

SANCOT continues to be an active member of the International Tunnelling Association (ITA), and has a member on the ITA Executive Committee. It provides input to various ITA Working Groups, and operates its own committees on Shotcrete specifications, hydraulic roughness in tunnels, exploratory works, legal requirements and contractual practices.

Apart from current activities on the Lesotho Highlands Water Project, civil tunnelling in southern Africa is depressed at present. This has resulted in a decrease in interest in

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SANCOT affairs and resignation of some members. Of particular concern is the decreased participation from the major owner organizations such as Transnet, the Department of Water Affairs and Forestry and the Department of Transport. This represents a challenge to SANCOT for the future.

The ITA Executive and Council Meetings, and annual meetings of the ITA Working Groups took place at the World Tunnel Congress, which was held in Durban in May 2000. This is the first time that the ITA World Tunnel Congress has been held in South Africa. The congress was organized by a committee consisting of SANCOT, the SAIMM, SANIRE and the LTS. The SAIMM Secretariat was responsible for the administration. The congress was attended by approximately 350 delegates, most of whom were from abroad, and was very well received. There were many compliments regarding the organization of the event.

### 5.5 The Environmental Planning Professions Interdisciplinary Committee (EPPIC)

Representative Dr T.R. Stacey  
Alternate J.S. Freer

EPPIC was established approximately 25 years ago with the aim of promoting the use of Integrated Environmental Management amongst the planning professions. EPPICs mission was to achieve a situation where all activities are planned and managed to bring about the sustained maximum net benefit to man and his environment. Interest in EPPIC has waned over the past few years, an example being the SAICE, which was substantially responsible for its formation, indicating that they wished to withdraw from membership. Another major factor was the recent introduction of the National Environmental Management Act (NEMA), in terms of which integrated environmental management is a requirement for all projects. During the year, the EPPIC Committee reviewed the situation and it was considered that, with the introduction of NEMA, EPPICs main aims had been achieved. It was therefore with a sense of pride in its achievements over a quarter of a century that the Committee took the decision to close EPPIC at the end of 1999.

### 6. State Liaison

#### Portfolio Holder: S.J. Ramokgopa

The main emphasis of the year was to improve the profile of the Institute, especially in relation to Government departments.

Letters introducing the Institute and listing key objectives were sent to all departments.

#### 6.1 Mining Qualifications Authority (MQA)

Representatives D.J. van Niekerk J.C. Viljoen

The MQA's application to the SA Qualifications Authority (SAQA) to be registered as a Standards Generation Body (SGB) as well as to be accredited as an Education and Training Quality Assurer (ETQA) has been provisionally approved for a period of 3 years considered by SAQA. The major issue to be resolved is whether or not the MQA will be allowed to register both as an SGB and ETQA for the Industry. The Mine Health and Safety Act, 1996 (Act No. 29/1996) specifically assigns both these two functions to the MQA.

The MQA has been established as a Sector Education and

Training Authority (SETA) for the Industry in terms of the Skills Development Act, 1998 (Act No. 87/1998). Three separate tripartite task teams have been established to develop appropriate implementation plans for the MQA to give effect to the following aspects of a SETA for the Industry which are not covered by the MQA Implementation Plan nl. A Skills Development Plan, Leaderships in the Industry (sector) and the Skills Development Levy (0,5% of cost of human resources) which has come into effect on 1 April 2000.

2000 is the year of delivery for the MQA in respect of standards generation and qualifications design. To this end the Policy Implementation Guideline on the generation of Standards and the design of Qualifications have been finalized. 23 Tripartite Standards Generation and Quality Design Groups (SGGs) have been established since January 1999. Facilitators and the members of these SGGs have been trained in the art of standard writing. A multi-partite Mining and Minerals Standards Generated Body (SGB) has been established to steer, coordinate and monitor the standards generation process through the following Standards and Qualifications Coordinating Groups (SQCGs):

- ▶ Engineering
- ▶ Occupational Health and Safety
- ▶ Inggokelela ('Basket of miscellany').

What is of specific interest for members of the SAIMM are the technical and engineering competencies which will be required in terms of the core business process(es) of the Industry. The Institute should ensure effective participation in those initiatives dealing with the levels 5 to 8 standards and qualifications.

A Qualifications Design Task Team was established during April 2000 to develop definitions, common vocabulary, appropriate models and criteria to be used during qualifications design. This report deals with very sensitive issues such as competent person, registration, licensing and the notion of a practising person.

### 7. International Liaison

#### Portfolio Holder: M.H. Rogers Key Performance Areas

To achieve its objectives, the SAIMM

- ▶ participates in and represents South Africa on bodies such as the Council of Mining and Metallurgical Institutions (CMMI), the Iron and Steel Society Inc (ISS), the Mining, Metals & Minerals Society (TMS), and together with Mintek on Infacon
- ▶ appoints Corresponding Members in areas such as Australasia, Botswana, Brazil, Canada, Chile, Europe, Far East, Ghana, New Zealand, United Kingdom, and the United States of America, and interacts with sister institutes in other countries to promote international exchange of scientific and technical information.

#### 7.1 Council of Mining and Metallurgical Institutions (CMMI)

National Representatives

M.H. Rogers  
Dr O.K.H. Steffen  
Prof. C.T. Shaw  
Prof. D. Buchanan

Alternates

The Institute has been instrumental, and successful in

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resurrecting the compilation of a South African Code for Mineral Resources and Reserves. It is envisaged that this code will be officially published and recognized by the end of 1999. The drawing up of the South African code has been done in conjunction with the other members of CMMI to arrive at an internationally acceptable code. This initiative has illustrated the need for the Institute to become recognized internationally and play its part in the global game.

### 7.2 APCOM

*National Representative* Dr F.A. Camisani-Calzolari

The symposium APCOM '99 is the 28th of the series and was held in Golden (Denver), Colorado, during 20–22 October 1999.

The attendees were 171 from all over the world. South Africa was represented by 5 participants. There were a total of 103 papers of which 3 were from South Africa. All the South African papers were well received. The keynote address was delivered by Prof. D.G. Krige and was entitled 'Conditional bias and uncertainty of estimation in geostatistics'. That was also the topic for the panel discussion.

The symposium covered the following topics, in order of presentation:

- ▶ Mineral resource and mineral reserve classification
- ▶ Rock mechanics—Computer modelling of stress and deformation in rocks
- ▶ Cost Estimation, large project management and control systems
- ▶ Geostatistical resource estimation
  - a) Conditional simulation for uncertainty and risk analysis
  - b) New techniques for old problems
  - c) Simple, indicator and lognormal kriging—problematic data sets and geostatistics alternatives.
- ▶ Evaluation and mining system optimization through fuzzy logic and artificial intelligence
- ▶ Blasting optimization
- ▶ Mine planning and design optimization
  - a) Open pit mining
  - b) Underground mining.
- ▶ Mine loading and hauling production optimization through dispatch systems
- ▶ Computer application in industrial mineral
- ▶ Strategic planning and management decision analysis
- ▶ Mine production scheduling
- ▶ Environment and safety applications
- ▶ Geographic information system
- ▶ Computer simulations for mining applications
- ▶ Metallurgical process control
- ▶ Environmental and production simulations for underground coal mining.

The International Council meeting took place on 20 October 1999. Future APCOMs have been scheduled as follows:

- ▶ 29th symposium APCOM 2001 in Beijing, China, 25–27 April 2001
- ▶ 30th symposium APCOM 2002 in Phoenix, USA, 11–13 March 2002
- ▶ 31st symposium APCOM 2003 in South Africa, September 2003

- ▶ 32nd symposium APCOM 2005 at the University of Arizona, March 2005.

The next regional APCOM will be in Helsinki, Finland, during September 2001. The regional APCOM, which was scheduled for 7–9 December 1999 had to be cancelled for lack of interest.

### 7.3 INFACON

*National Representative* Dr N.A. Barcza

Plans for Infacon Nine in Quebec City, Canada from 3 to 6 June 2001, are well advanced. The Congress is being organized by the Ferroalloys Association (of North America). Information on the event can be found on their web site: <http://www.infacon.com>

The Congress is sponsored by a number of international organizations in the ferroalloy business. A symposium on Manganese Health Issues is being held during Infacon Nine, since the potential toxicity of manganese has become an important issue. Five papers from South Africa are included in the Infacon Nine programme of about sixty papers. Topics in the technical programme cover simulation, control and modeling, all the ferroalloys, environmental, health and safety issues, and equipment.

The SAIMM is represented by Dr N.A. Barcza, who is the chairman of the International Committee on Ferroalloys (ICFA). South Africa is hoping to host the following Infacon Congress in 2004 under the auspices of the SAIMM and Mintek, as was the case in 1992 (Infacon 6).

## 8. Management and Administration

**Portfolio Holder: S.J. Ramokgopa**

The Secretariat consists of:

Mrs Sam Moodley (Manager)  
Mrs Pam Bester (Publications Co-ordinator)  
Miss Nazli Mamdoo (Junior Clerk)  
Miss Zuliakha Mohamed (DTP Operator)  
Miss Karen Norman (Conference Co-ordinator)  
Mrs Ginette Oliver (Membership Secretary)  
Mrs Anna Panana (Junior Secretary)  
Ms Marshane Perez (Conference Co-ordinator)\*  
Mr André Schoeman (Contract Accountant)  
Mrs Apathia Sello (Junior Clerk)  
Mrs Dawn van der Walt (DTP Operator)

\*Resigned during the year

The SAIMM, Office Bearers and Council records their appreciation to the above for their service.

### 8.1 Finance

J.A. Cruise, Honorary Treasurer

Subscriptions received showed an increase on the previous year, being Company Affiliates R193 997 (R175 751) and individual membership R687 359 (R452 111).

The substantial increase in the latter was due to the increase in the subscription rate to R400 p.a. (R250 p.a.).

Income from colloquia and schools decreased from the previous year to R353 337 (R428 579).

A surplus on the sale of investments of R166 732 (R292 638) was recorded for the year. Interest and dividends received were lower than the previous year at R13 344 (R32 997).

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The result of the above showed an increase in total income received of R1 374 944 (R1 243 183).

The total expenditure for the year decreased to R1 497 292 (R1 511 421). This is mainly due to a reduction in *Journal* expenses to R558 755 (R603 023) and an increase in advertising to R173 916 (151 718) giving a net *Journal* expense over income of R360 995 (R448 525). Provision for doubtful debts decreased to R18 966 (R35 000) and subscriptions written off amounted to R70 583 (R50 926). An exceptional expense item was incurred during the year being that of the cost of the release of our lease and the subsequent move to our new rent-free offices in the Chamber of Mines Building—an expense of R144 514 this year which should provide a cost saving benefit of some R180 000 p.a. for the foreseeable future.

Our investments in the equity market decreased in value by some 15% over the year. During the year we have changed our investment advisors from Quyn Martin to RAD AFC. Our cash position at the bank improved to positive R638 509 (negative R178 806). This was due to a special effort being put into the timeous collecting of debts. As such, the improved cash flow towards the end of the year, has ensured that we are no longer dependant on the sale of investments for the day to day running of the Institute.

In last year's financial report, I stated that to make ends meet, we would have to double our subscriptions over two years. This would have meant a subscription rate of R500 p.a. for this year. I am pleased to report that, due to the cost savings achieved during the year and the improved cash flow, we have been able to limit the increase in subscriptions to 10% this year i.e. to R440 p.a.

Finally, our thanks go to our secretariat for containing the costs and to our accountant Mr André Schoeman for his efforts in streamlining our accounting system.

### Addendum

#### New Members

##### Fellow

J.D. Du Plessis, M.J. Du Plessis, N.R. Finch, J.W. Jacobs, J.V. James, H.P.F. Kern, H.P. Machill, P. McKenzie, J.H. Pottas, P.R. Rogers, E.H. Roos, I.L. Strydom, J. Svoboda, J.B. van Deventer, D.A. Viljoen, M.W. Von Wielligh.

##### Member

J. Badenhorst, R. Badenhorst, K.D. Balt, B.K. Belle, D.J. Byrne, B.C. Connellan, D.B. Field, F. Grobler, H.P. Grobler, G.A. Hodgkinson, I. Jackson, E. Leeka, T.P. Letwaba, S.A. Louwrens, S. Mahomed, K.T.Z. Manyukwi, J.A. Martin, R. McGregor, H.B. Mostert, L.L. Mtomba, P.P. Mukumbe, J.P. Mullins, K. Naidoo, W.D. Northrop, D.K. Olivier, D. Penswick, H.J.S.D.B. Pinheiro, J.D. Priestley, L. Raaths, Z. Ramos, T. Rangasamy, C. Roberts, P. Soni, M.J.P.M. Struik, A.R.T. Thin, H. Urkan, F.M.C.D.C. Vieira, M. Woodhall, K.S. Youngman.

##### Associate

R.M. Adams, V. Bhimsan, B.G. Campbell, W.H.J. de Villiers, T. Dry, S.J.D.W. Fourie, M.Z. Fuyane, S.L. Gutter, L. Hannweg,

J.P. Hartze, S.J. Hattingh, F. Hugo, W.J. Kay, N. Kernahan, O.C. Kilian, J.F. Kirsten, G.J. Kok, J.T.F. Le Roux, M.D. Lebakeng, M.O. Makofane, I.C. Martin, P. Maruping, D.P. McManus, P.H. Meyer, S.T. Moagi, P.Q. Nesbit, N.I. Nhlengethwa, A.J. Nxumalo, V.J. O'Donovan, D.H. Pullen, J. Schmitt, B.N. Scott, M.M. Sekhokoane, P. Tomo, P. van Greunen, A. van Niekerk, A.J. van Rooyen.

##### Student

C.S. Babela, R.T. Bamuzi, J. Breytenbach, L.M. Brits, M.L. Cemane, J.T.M. Chauke, G. Crowley, P.G. De Beer, P. De Bruin, D. De Wet, C.T. Dire, P.J. Du Preez, G.J. Field, A. Fourie, M. Fourie, M. Gaoetswe, S. Gumede, R. Hendricks, F.S. Hlophe, R. D. Hull, H. Hutchison, D. Jansen van Rensburg, F. January, G.E.K. Jarvis, W.G. Kgasi, E. Langenhoven, C.J. Lategan, J.B. Legwale, C.F. Lourens, R. Lubbe, N.S. Malapane, J.A.S. Malherbe, D.A. Maluleke, T.V. Mangope, M. Maoketsa, W.M. Mbali, M.I. Mekgwe, B.C. Melamu, Q.F. Mhlomgo, S. Mndebele, M. Mobwano, D.T. Mohapi, M.P. Molapo, L.M. Molise, H. Moller, J.E. Montgomery, G.R. Moolman, M.P. Motlana, W.B. Motlhabane, M.M. Motlhageng, W. Motlhamme, D.D. Munro, T.P. Mvala, S.M.L. Mzimela, D. Ncube, M.J. Netshipale, T.P. Ngcobo, N.P. Ngema, D.G. Ngubane, V. Nhlapo, A.M. Nkumanda, F.P. Nong, I.B. Ntimane, I.D. Ntoke, N.B. Nxumalo, Z. Nzimande, N.J. Phakathi, C. Philander, G.S. Phillips, S.G. Ponni, A.P. Prinsloo, J. Prinsloo, N.J. Rapulane, H.C. Rautenbach, H.A. Sandenbergh, M.M. Sangweni, J. Scheepers, M. Scott, S.W. Sebokedi, A.B. Simelane, S. Sithole, B.M. Sokamo, J.L. Steyn, M.T. Tamme, C.I.T. Teffo, M.X. Twala, J.P.B. van den Berg, D.C.S. van der Merwe, C. van Rooyen, M.J. van Wyk, H.S. van Zijl, C.J. van Zweeden, E.N.M. Vinken, A. Wilkens, M.S. Zulu, G.S.D. Zwane.

##### Company Affiliates

Anglogold Training and Development Services  
Bell, Dewar & Hall Incorporated  
Compagnie Generale de Geophysique  
Delkor Technik (Pty) Ltd  
Diamond Fields South Africa (Pty) Ltd  
Digby Wells and Associates  
Dorr-Oliver South Africa Ltd  
Goodyear SA (Pty) Ltd  
Humboldt Wedag SA  
Lakefield Research Africa (Pty) Limited  
MCC Contracts (Pty) Ltd  
Metorex Limited  
MSA Projects (Pty) Ltd  
Namakwa Sands  
Pandrol  
Richards Bay Minerals  
Sulzer SA Ltd

##### Resignations

##### Fellow

D.W. Bosch, J.J. Burke, F.I. De Waal, G. Greenwood, H.W. Gussmann, M.J. Lourens, J. Lurie, R.E. Mitchell, W.J. Reekmans, R.S. Shoemaker, E.R. Sutton, D. Twigg, Z. van der Walt, J.A. van der Westhuizen, P.J. Venter, B. Verbaan, J.W. Wilson.



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## *Retired Fellow*

S.A. Finney, B.R. Hotz, R. Pendreigh, J. Reysenbach, R.R. Richardson, F.L.C. Rosslee, W.J.C. Venter.

## *Member*

R.J. Adey, E. Barnardo, D. Bessinger, K.A.G. Blendulf, M.C. Carruthers, F.W.C. Coetzer, E.J. de Jager, M.A. De Ruijter, M.G. Demmer, S.R. Farinha, H.H. Gielen, A.T. Harrison, P.G.J. Hol, D.A. Holtum, D.P. Hunter, G.M.S. Maas, K. McVey, D.A. Miller, V.R. Moodley, R.H. Murray, E.B. Pretorius, C.A. Scheepers, W.H.L. Schroeder, B.H. Walters.

## *Retired Member*

F.D. Abbott, C.F. Boles, N.R. Brown, E.E. Eichenberger, L.S. Gibbs, L. Hewitt, W. Morris, B.C. Oberholzer, R. Retief.

## *Associate*

D.J. Bester, G.R. Davey, P.A. Escorcio, R.W. Fricke, D.S. Haslam, E.A. Karberg, S. Kitshoff, G. Kruyswijk, L. Lategan, F.C. Levey, N.J. Lincoln, R.L.C. Maggs, K.D. Meiring, W.S. Mey, J.H.J. Potgieter, A. Pouroulis, P.A. Scheepers, R.W.A.M. Soontiens, G.J. Steyn, J.P.A. van der Heever, J.P. van der Westhuysen, B. Ward, P.S. Westcott, D.N. Winn.

## *Retired Associates*

L.M. Cameron, B.A. McKay.

## *Students*

C. Cloete, R.C. Horak, J.C. Kerr, S.T. Mafora, K.T.N. Modimakoane, C.J. Pretorius.

## *Company Affiliates*

BCL Limited  
Black Mountain Mineral Development Co  
Consolidated Murchison Limited  
Denel (Pty) Ltd  
Gold Fields of South Africa Ltd  
Ingersoll Rand Company SA (Pty) Ltd  
Lindum Reefs Gold Mining Co. Ltd  
Scitec (Pty) Ltd  
Vergenoeg Mining Co.

## **Members Transferred to Higher Grade**

### *Transfer from Member to Fellow*

W.J. Abel, A.R. Barnes, S.J. Bluhm, R.C. Burton, G.C. Butler, M.A.J. Button, P.G. Carvill, A.M. Edwards, P.H. Ferreira, E. Ford, K.J.R. Ford, P.G. Gaylard, R. Graham, A.K. Haines, B.G. Harvey, F.A.F. Hathorn, G.A.J. Jordaan, K.K.J.C. Kabongo, M.J. Kilbride, P.J. Knottenbelt, G.S. Lawes, P.J. Ledger, K.S. Liddell, I.F. Livingstone-Blevins, I.A. MacFarlane, S.I. Malone, M.H. Moys, W.A. Nairn, N.M. O'Brien, R.L. Paul, J.M.S. Pinel, L.M.S. Pinel, R.C. Rossouw, S. Simukanga, A.G. Smith, J.C. Steenkamp, C.A.F. Sweet, O.J. van der Schijff, W.H. van Niekerk, F.H. von Glehn, L. Wade, R.G. Wadley, P.S. Wentworth.

### *Transfer from Associate to Fellow*

W.N. Cartner, J.P. de Witt, N.O. Lotter, W.D.R. Robinson,

J.C. Simms, J.D. Thornton, C. van Loggerenberg, J.N. Wallington, M.F. Wells.

### *Transfer from Associate to Member*

E. Acheampong, J.D. Bethel, S.T. Buyers, L.A. Cafferty, G.R. Chamberlain, J.E. Collins, A. Dimou, M. Du Toit, J.G.R. Eklund, V. M. Fitzmaurice, S.E. Green, G. Guler, R.C.B. Hochreiter, J.M. Jansen van Vuuren, J.P. Leader, D.P. MacGregor, R.Z. Machowski, R.S. Moodley, J.M.S. Mtonga, S.M. Naik, P.M. North, T.S. O'Connor, P.L.D. Pege, A.D. Pooley, J.C.A. Roos, J.N. Tarboton, A.R. Teeke, M.S. van Staden, M. van Staden, P.J. van Staden, R.G. Wienand.

### *Automatic Transfer to Associate*

N.D. Baloyi, E. Barnard, M.J.A. Basson, P.H. Boshoff, T. Chitsike, W. Du Toit, P.S. Esterhuysen, W.D. Esterhuysen, M.J.K. Jarvis, A.G. Kgatlane, W. Kotze, J. Kruger, J.K. Maepa, W. Manala, A.M. Marawa, N.D. Maslen, L.Q. Meko, K. Mophuting, H. Olivier, S. Peenz, M. Ramotebele, O. Richter, D.C. Ritchie, R.J. Rutiri, O.V. Seboni, A. Steinmueller, G.J. Steyn, Y. Sun, M.L. Treloar, H. Tukker, H.J. van Rooyen, N.J. Wittridge, D.P. Wright.

## **Deceased**

### *Honorary Life Fellow*

J.F. Reid.

### *Retired Fellow*

A.R.C. Fowler, J. Hall, W.S. Rapson, A. Tennent, J.L. van Eyssen.

### *Member*

M.A.H. Harris, C.N. Louw, D.D.W. Mather, J.B. Mkandawire, T. Moolman.

### *Retired Member*

A.M. Guthrie, R.A. Mackellar.

### **Retired Fellow**

H.G. Albertyn, W.G. Boustred, H.P. Hart, R.O. Heckroodt, D. Rankin, B. Rohrmann, P.J. Ryan, J.R.H. Shaw, K.A. van Gesse.

### **Retired Members**

R. Campbell, M.J. Deats, F. Fenwick, J.M. Fowlds, D.K. Maxwell, N. Mayer, R.C. More O'Ferrall, W.B. Parker, P.L. Rossouw, R.H. Swan.

### **Retired Associate**

D.A. Arnold.

### **Members who were Reinstated**

#### *Reinstated as Fellow*

D.W. Bosch, F.W. Kluckow, F.K. Letowski.

#### *Reinstated as Member*

J.Z. Banda, P.S. Mokgokong, J.M. Mtonga.

#### *Reinstated as Associate*

P.M. Cook, E.H.W. Theron.

#### *Reinstated as Student*

C.F. Haasbroek, T.B. Mokeke. ◆

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