

Annual Report and Accounts

FOR THE YEAR ENDED 30th JUNE, 1971

COUNCIL

The following served on Council during the year under review:

Office bearers: Messrs V. C. Robinson (President), Prof D. D. Howat and Dr J. P. Hugo (Vice-Presidents), J. K. E. Douglas (Immediate Past President) and D. G. Maxwell (Honorary Treasurer).

Ordinary Members of Council: Dr M. G. Atmore, Dr J. M. Bereza, H. P. Carlisle, W. W. Malan, C. E. Mavrocordatos, Prof R. P. Plewman, Dr R. E. Robinson, Dr M. D. G. Salamon, P. W. J. van Rensburg, L. W. P. van den Bosch, P. A. von Wielligh.

Branch Chairmen: J. Meintjes, J. M. Meyer (Acting), J. N. Saunders (Retired).

Past Presidents serving on Council: R. J. Adamson, M. Barcza, H. Britten, R. C. J. Goode, P. Lambooy, Prof J. de V. Lambrechts, Dr J. T. McIntyre, J. F. Reid, H. Simon.

Ten Council meetings were held during the year with an average attendance of eighteen and the standing committees held forty-six meetings.

FINANCE

The annual accounts, which are attached to this report, show an excess of income over expenditure of R5 051 compared with an excess of expenditure over income last year of R4 608. This major reversal of fortunes is due in the first instance, of course, to the increased subscriptions. There were, however, other important contributors, particularly sales of the Proceedings of the Symposium on Open Pit Mining and profits on the operation of symposia and colloquia.

It would appear from a study of the accounts that there has been a substantial drop in expenditure on secretarial fees. In actual fact, however, our total expenditure on secretarial fees was higher. A portion of this expenditure was charged against the administration of the Symposium on Open Pit Mining and, in addition, the charge against the Journal accounts for secretarial fees was increased.

It will be recalled that in last year's annual report it was mentioned that subsequent to the new arrangement for publication of the Journal, the expected improvement in the finances of the Journal had been slow in materialising. After a total period of 18 months there was still no sign of improvement and it was accordingly decided to end the arrangement. As a result, the drain on the finances of the Institute was considerably lessened in the second half of the year.

During the course of the year Council became concerned about the rapid depletion of our accumulated funds and gave careful and detailed attention to all aspects of the Institute's financial affairs. Particular attention was given to:

1. The fact that the Institute does not have a solid financial backing and must appeal for funds every time any special event such as a symposium is held.
2. The responsibilities of the Institute to the profession and the community, with particular reference to the desirability of establishing Institute bursaries and participating in other educational activities.
3. The rapidly rising cost of living.
4. The immediate financial position of the Institute.
5. The rapidly increasing cost of publishing the Journal due to the increasing number of papers available.

In the meantime the immediate financial position of the Institute has improved but as this is due largely to non-recurring or irregular items of revenue, it should not be given undue weight.

After careful consideration it was decided that an appeal should be made to industry for financial assistance, which would be used to cover the cost of symposia and other unusual expenditure and also, if possible, to build up the capital resources of the Institute so that there is a solid foundation for the future. Before appealing to industry, Council wished to be quite certain that there could be no criticism of the Institute for not having done our best in a personal capacity. Furthermore, Council examined many comparative statistics, including those circulated to members, which showed that, while expenditure per member has risen at an average annual rate of 7,5% over the last fifteen years, subscription revenue per member has risen at only 3,4% per annum. It was with this background that your Council decided to raise the subscriptions.

Initial approaches have been made to the big mining groups and there has been a very generous response, although the details of how financial assistance will be provided have not yet been worked out. It seems likely that some form of affiliated company membership will be the most suitable method of achieving this. When these details have been fixed, it is the intention to extend the appeal to all corners of the mining industry as well as manufacturing and metallurgical industries. It is believed that these measures will ensure that the finances of the Institute are placed on a firm foundation on which the expanding activities can be planned.

The MacArthur Forrest Memorial Fund shows an excess of income over expenditure of R73 and the total fund was, therefore, increased by this amount to R4 411.

The balance sheet shows that the market value of quoted shares and debentures increased during the year from R6 540 to R9 160. The market value is now almost exactly the same as the book value. Accumulated funds now amount to R23 010 compared with R17 959 a year ago.

MEMBERSHIP

Eleven Fellows, twenty-two Members, sixteen Graduates, eighteen Associates, and thirty-two Students were elected during the year. One Fellow and one Member were reinstated. Thirteen members were admitted to retired membership. Transfers: Member to Fellow, eight. Graduate to Fellow, one. Graduate to Member, three. Associate to Fellow, one. Associate to Member, two. Associate to Graduate, two. Student to Member, one. Student to Graduate, fifteen. Student to Associate, one.

Your Council records with deep regret the death during the year of the following:

Sir G. A. Davenport (Honorary Life Fellow), H. J. G. C. Arndt, J. H. A. Diering, D. J. Powrie, R. J. J. Rademeyer, R. B. Tasker, F. J. Tromp, C. J. D. Veal (Life Fellows), D. G. Beadle, C. C. Cullen, B. D. Crawford, E. A. Meltzer, J. A. Papenfus, F. O. Read (Fellows), P. G. M. May (Member), A. M. Carmichael, M. V. S. Stedman (Associates), J. F. du Plessis (Student).

A comparative statement of the membership as at 30th June, 1971, and the end of the previous year is shown in the following tabulation:-

	30th June 1970	30th June 1971
Honorary Life Fellows	8	7
Honorary Fellows	6	12
Life Fellows	191	184
Fellows	530	535
Members	465	467
Graduates	80	114
Associates	172	178
Students	161	159
	<u>1 613</u>	<u>1 656</u>

PAPERS AND JOURNAL

The Presidential address by Mr V. C. Robinson and fifteen papers which were published in the Journal during the year are listed below:

- August, 1970: Presidential Address:
 "Four Decades in the Mining Industry".
- September, 1970
 "Theory of cold-blast iron production with stack-gas of low nitrogen content" by Wm. Bleloch.
- October, 1970
 "The design, erection and operation of a Purlex plant at Buffelsfontein Gold Mining Company Ltd" by B. G. Meyburgh.
- November, 1970
 "Die gebruik en bewaring van steenkool in Suid-Afrika" deur A. W. S. Schumann
- December, 1970
 "The disposal of polluted effluents from mining, metallurgical and metal finishing industries, their effects on receiving water and remedial measures" by G. J. Stander
 "A statistical analysis of accidents to Bantu personnel in the Gold Mining Industry" by J. J. Bettencourt and A. Jensen.
- January, 1971
 "Open pit drilling and blasting" by A. Bauer.
- February, 1971
 "The design and development of a rockcutting machine for gold mining" by J. P. M. Hojem, N. C. Joughin and C. Dimitriou.
- March, 1971
 "The future development of the iron and steel industry in South Africa" by J. P. Coetzee.
 "Recent trends in the application and technology of refractory materials in iron and steel production" by H. J. S. Kriek.
- April, 1971
 "A follow-up report on longwall coal mining at Durban Navigation Collieries (Pty) Limited" by M. J. Deats.

May, 1971

- "Biogeographical/Geobotanical and Biogeochemical investigations connected with exploration for nickel-copper ores in the hot, wet summer/dry winter savanna woodland environment" by Monica M. Cole.
 "Trends in Ferro-alloy production" by S. Selmer-Olsen.
- June, 1971
 "Recent experiences of continuous casting at Highveld Steel and Vanadium Corporation Limited" by W. K. C. Boemer, G. A. Davies, J. Hall.
 "A 100-MN jacking system for testing coal pillars underground" by N. G. W. Cook, K. Hodgson, J. P. M. Hojem.
- July, 1971
 "The percussive drilling of quartzite" by W. A. Hustrulid.

SYMPOSIUM

Symposium on the theoretical background to the planning of open pit mines.

A symposium followed by organised tours was held in the Cranbrooke Hotel from 31st August to 4th September, 1970. The symposium was attended by 312 delegates including 57 from outside the Republic. The symposium was of a high technical standard and was also financially successful thanks to the support of the Chamber of Mines of S.A. and of Industry.

The following twenty one papers were presented:-

- "The basic economics of open pit mining" by R. P. Plewman.
 "The basic economics of open pit mining" by J. L. Halls.
 "Optimizing open pit geometry and operational procedure" by O. K. H. Steffen.
 "Some general formulae for the geometry of open cast mines" by H. J. Stucke.
 "Geological factors significant to the stability of slopes cut in rock" by D. R. Piteau.
 "Significant geologic factors in rock slope stability" by F. D. Patton.
 "The interpretation of geological factors for use in slope theory" by A. MacG. Robertson.
 "Selection, compilation and assessment of geological data for the slope problem" by L. Muller.
 "Fracture studies at the Kimberley Pit" by C. D. Broadbent.
 "The interpretation of water pressure factors for use in the slope theory" by K. A. Lyell.
 "Three-dimensional percolation of fissured rock" by W. Wittke.
 "Improving the stability of rock slopes by drainage" by E. Hoek.
 "A mathematical theory for the calculation of the stability of slopes in open cast mines" by J. E. B. Jennings.
 "The stresses surrounding open pit mine slopes" by T. R. Stacey.
 "Three-dimensional stability analysis of slopes in jointed rock" by Klaus W. John.
 "Control for early warning of potential danger in open pits" by I. B. Watt.
 "Slope monitoring systems used in the prediction of a major slope failure at the Chuquicamata mine Chile" by B. A. Kennedy and K. E. Niemeier.
 "Theory of blasting as applied to open pit mines" by A. N. Brown.
 "Practical considerations of blasting in open cast mines" by P. Lambooy.
 "Principles underlying pit equipment selection" by P. A. Hodges.
 "The basic principles of equipment selection for surface mining" by A. N. Shand.

FUTURE SYMPOSIA

Tenth International Symposium on the Application of Computer Methods in the Mineral Industry.

This symposium will be held at the Wanderers Club from 9th to 14th April, 1972. It will be the first of this series to be staged outside North America and the first response shows a strong overseas and local interest.

Sixty papers under the following headings will be presented and these together with discussion will be published after the symposium:-

- “Market Analysis”
- “Exploration and Ore Reserve Estimation”
- “Project Design”
- “Planning of Operation”
- “Control of Operations”
- “Implementation of Computer Systems”

COCKTAIL PARTY

An enjoyable cocktail party, at which many distinguished guests were present was held in the Main Hall of Kelvin House, after the Annual General Meeting, on 26th August, 1970. The Staff of the Associated Scientific and Technical Societies are to be congratulated on the excellent catering provided for guests and members.

INSTITUTE'S AWARDS

Gold medals were awarded to the following:- Prof R. P. Plewman and W. D. Ortlepp for their paper entitled “The development and application of a digital computer method for the solution of strata control problems” written jointly with F. H. Deist (Visitor) and presented in September, 1969.

A Silver medal was awarded to Dr N. P. Finkelstein for his paper entitled “The influence of sulphhydryl and cationic flotation reagents on cyanidation of native gold” written jointly with K. G. Ashurst (Visitor), and presented in June, 1969 at the Symposium on the Recovery of Pyrite.

Prizes for Student Papers were awarded to the authors of the following papers:-

“Electrolytic extraction from powder metallurgical compounds by J. T. Davies.

“Measurement of the electrical resistance of components involved in the manufacture of high-carbon ferro-chromium”, by D. I. Watson.

“Displacements and stresses in the vicinity of a horizontal longwall”, by J. F. du Plessis (Deceased).

“The utilisation of the critical path method in the practical mining situation”, by H. G. Albertyn.

New medals bearing the redesigned coat-of-arms of the Institute have been struck and the first awards of the new medals will be made in respect of the above papers.

EXCURSIONS

The following visits took place during the year:-

29th January, 1971—Rand Refinery—60 members.

11th June, 1971—Fuel Research Institute of S.A.—50 members.

Owing to a number of excursions arranged concurrently with Tuncon in July, 1970, fewer Institute excursions were arranged during the year. The visits to the Rand Refinery and the F.R.I. were most successful and the Institute wishes to thank the two organisations for the opportunity given to members to visit them.

GENERAL MEETINGS AND COLLOQUIA

During the year, in addition to the Annual General Meeting, six General Meetings were held of which two were combined with one day Colloquia. The average attendance at all these meetings was 128. The attendances at the colloquia were 121 and 196 respectively.

In addition to attracting good attendances the colloquia were very successful and appear to have vindicated Council's decision last year to experiment with this type of meeting. Further colloquia are planned for September and November of this year.

ASSOCIATED SCIENTIFIC AND TECHNICAL SOCIETIES OF SOUTH AFRICA

Messrs V. C. Robinson and D. G. Maxwell represented the Institute on the Controlling Executive with Prof D. D. Howat and Dr J. P. Hugo as their respective alternates. A full account of the activities of the Associated Societies is given in their Annual Proceedings, a copy of which is sent to all members.

The Institute records with great pleasure that the 1971 National Award of the Associated Societies was made to Dr M. D. G. Salamon (Council Member) and Dr N. G. W. Cook of the Chamber of Mines Research Laboratories for their work on Rock Mechanics.

THE FEDERATION OF SOCIETIES OF PROFESSIONAL ENGINEERS

Messrs R. C. J. Goode and J. K. E. Douglas represented the Institute on the Board of Management of F.S.P.E. with Prof D. D. Howat and Dr J. P. Hugo as alternates.

Salary Survey:

A survey of salaries paid to engineers in 1970 will be undertaken.

Income Tax:

Income tax relief is now granted in respect of post graduate study expenses.

Fifth Conference on Engineering Education:

A successful conference was held and a number of resolutions taken. A letter, containing comments and recommendations received from individual Institutes on the resolutions, has been sent to the Minister for National Education.

Constitution and By-Laws:

A new Constitution and By-Laws is at present under consideration.

Education Liaison Committee:

This committee has been appointed in terms of a recommendation of the Straszacker Commission. It will

work to establish closer liaison between engineering employers and institutions providing education for engineers.

Technicians:

A sub-committee has been appointed to consider means of furthering the training and education of technicians and of improving liaison between employers and teaching establishments.

Practical training of newly graduated Engineers:

F.S.P.E. has approached various recognised engineering Institutes to suggest suitable programmes for newly graduated engineers.

Registration of Engineers

The following statistics of registrations have been provided by the S.A. Council for Professional Engineers:-

Application forms posted	± 23 780	
" " received	10 562	
Total registered 1969		2 436
1970		2 232
to June, 1971		640
Total rejected		1 847
Under consideration		3 407
		<hr/>
		10 562
		<hr/>

ORANGE FREE STATE BRANCH

Office bearers:

- Chairman—J. N. Saunders
- Vice-Chairman—G. Y. Nisbet
- Immediate Past Chairman—N. A. Honnet

Due to the sudden retirement of Mr J. N. Saunders, the committee, at a meeting on the 3rd February, 1971, elected Mr G. Y. Nisbet as Chairman with Mr J. M. Meyer as Vice-Chairman. After the transfer of Mr Nisbet to C.D.M. the committee, at a meeting on the 12th May, 1971, decided that Mr Meyer should hold the position in an acting capacity for the remainder of the year.

Committee Members:

Messrs C. J. Isaac, J. G. Kirchner, L. O. W. Leimer, R. S. Pearson, I. G. Thomas, A. von Holdt. Transfers of several office bearers and committee members resulted in Messrs J. M. Meyer, D. M. Smith and G. C. J. Young being co-opted onto the committee.

General Meetings:

Four General Meetings were held during the year, as follows:-

Annual General Meeting—27th August, 1970	
	Present 31
General Meeting—17th November, 1970	
	Present 40
General Meeting—10th February, 1971	
	Present 32

General Meeting—16th June, 1971

Present 23

The attendance at meetings fell off slightly during the year.

Presentations

The following talks were given during the year:-
 "The Professional Engineers Act" by Mr R. C. J. Goode.
 "Controlled Blasting in Stopes and New Explosives Developments" by Mr A. Paschalides.
 "Uranium Extraction, Processing and Conversion for Fuel Element Manufacture" by Mr J Freer.
 "Latest Research Projects by the Chamber of Mines" by Dr W. Rapson.

Visits

The following visits took place:-

25th November, 1970—Local visit of O.F.S. Goldfields to see new innovations at Harmony, Welkom and Western Holdings.

In view of the popularity of this type of visit it has been decided to repeat it again this year.

5th April, 1971—Cookhouse Tunnel—Tunnel Borer—Number of members who participated—10

22nd June, 1971—Rand Refinery—Number of members who participated—10

Turnouts to the latter two visits, which were most interesting and informative, were most disappointing.

Committee Meetings

Three Committee meetings were held during the year. Committee Members are thanked for their help on these occasions.

Membership

The total membership of the O.F.S. Branch, as at the 15th July, 1971, was 136, a decrease of 1 over the previous year, made up as follows:-

Fellows	—	30
Members	—	42
Associates	—	30
Graduates	—	14
Students	—	20
		<hr/>
		136
		<hr/>

Finance:

The Branch expenses for the year ending the 30th June, 1971 had been R5,00 (Bank Ledger Fees).

Secretarial Services

The branch records its appreciation of the service rendered by Mr. A. Paschalides during the year.

WITBANK/MIDDELBURG BRANCH

Committee:

The following members served on the Branch Committee during the year under review:-

Messrs J. Meintjes (Chairman), A. Bain (Vice-Chairman), I. Botha A. W. Brereton, G. E. Carlyon, B. T. Hosking, E. J. Jackson, B. D. McNiece, W. D. Winship and A. N. Turner.

Mr Turner was invited on 22/9/70 to serve on the committee.

Mr A. Bain also assumed the duties of Honorary Secretary until 15th September, 1970, when Mrs A. Bain was elected to the position.

The Branch records its appreciation of their services in this capacity during the year.

Meetings:

The meetings and attendance during the year were as follows:-

	<i>Present</i>
Annual General Meeting on 28/8/70	31
General Meeting on 12/11/70	9
General Meeting on 18/3/71	39
General Meeting on 17/6/71	18

The attendance at General Meetings showed an improvement over the previous year, but was still disappointing when taking into account the total number of members on the Branch roll.

Papers and Addresses:

“The Status of Professional Engineers” by R. C. J. Goode.

“The activities of S.A. Cyanamid Pty. Ltd., Witbank” by P. Rademan

“Pillar Extraction with Conventional Trackless Mechanised Units” by J. D. Flint & O. Taylor.
“Static Electricity” by N. I. Thomas.

HONORARY SERVICES

Appreciation is recorded of the services of the Honorary Legal Advisers, Messrs van Hulsteyn, Feltham and Ford and your Council is most grateful for the valuable services rendered by Mr D. G. Maxwell as Honorary Treasurer.

Appreciation is recorded of the services of the Honorary Editor Mr H. P. Carlisle and the Honorary Assistant Editors, Messrs R. E. Leyman, J. C. Mostert, L. W. P. van den Bosch, D. A. Viljoen and P. A. Von Wielligh.

SECRETARIAT

The Council records its appreciation to the Associated Scientific and Technical Societies of S.A. for the service rendered during this year. In particular, thanks are due to the Manager, Mr Boden and to the Secretary, Mr D. C. Visser.

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Balance Sheet at 30th June, 1971

1970		1971		1970		1971	
R	R	R	R	R	R	R	R
CURRENT LIABILITIES				CURRENT ASSETS			
2 862		3 526					
				12 603	CASH -- At bank		
372		286		9 698	Current account	2 297	
25 844		—		22 301	Savings account	4 007	
				5 759		6 304	
				28 060	At call	4 075	
		5 000				10 379	
—					DEBTORS		
29 078			8 812	400	Loan to S.A. Tunnelling Conference	—	
				96	Advertisers in journal	2 121	
				49	Orange Free State branch	49	
				44	Witbank—Middelburg branch	15	
22 567		17 959		—	Prepaid expenses	659	
		5 051		269	Sundry	2 214	
4 608	Deficit						5 058
17 959			23 010	858			
47 037			31 822	1 584	STOCK—Proceedings of Pyrite Recovery		
				678	at cost	—	
				—	—Ties at cost	508	
				—	—Journals at nominal value	1	
				—	—Publications at nominal value	1	
				2 262			510
				68	DEPOSIT		118
				56	SUBSCRIPTIONS IN ARREAR		99
				46	AMOUNT DUE FROM MacARTHUR FORREST MEMORIAL FUND		2
				31 350			16 166
					INVESTMENTS		
				9 197	QUOTED SHARES AND DEBENTURES	9 197	
				6 300	(Market value R9 160 1970 — R6 540)		
					BUILDING SOCIETY SHARES	6 300	
				15 497			15 497
				45	MEDALS		
				61	At cost	157	
					FURNITURE		
				84	At cost less depreciation	1	
				47 037	DIES		
					At cost less depreciation	1	
							31 822
					MacARTHUR FORREST MEMORIAL FUND INVESTMENT as per contra		
				393	BUILDING SOCIETY SAVINGS ACCOUNT	422	
				591	R600 6½% ELECTRICITY SUPPLY COMMISSION LOCAL REGISTERED STOCK — 1989/91	591	
4 206		4 338		2 200	BUILDING SOCIETY SHARES	2 200	
307		323		1 200	PARTICIPATION BONDS	1 200	
4 513		4 661		4 384		4 413	
175		250		46	Less Amount due to general fund	2	
4 338		4 411		4 338		4 411	
<u>R51 375</u>		<u>R36 233</u>		<u>R51 375</u>		<u>R36 233</u>	

D. C. VISSER,
for Secretaries.

D. G. MAXWELL,
Hon. Treasurer.

To the Members

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY.

We have examined the books, accounts and vouchers of The South African Institute of Mining and Metallurgy and have satisfied ourselves of the existence of the securities. We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit. In our opinion proper books have been kept by the institute, so far as appears from our examination of those books.

The attached balance sheet and income and expenditure account are in agreement with the books of account. In our opinion, and to the best of our information and according to the explanations given to us, the balance sheet gives a true and fair view of the state of affairs of the institute as at 30 June, 1971, and the income and expenditure account gives a true and fair view of the income and expenditure for the year ended on that date.

ALEX. AIKEN & CARTER,
Chartered Accountants (S.A.), Auditors.

SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Income and Expenditure Account for the Year ended 30th June, 1971

1970	R	1971	R	1970	R	1971	R
	8 849	SECRETARIAL FEE	8 033	14 484	SUBSCRIPTIONS	19 707	
		OVERHEAD CHARGE—		—	LIFE MEMBERSHIP SUBSCRIPTIONS	120	
		Associated Scientific and Technical		371	ENTRANCE FEES	738	
	4 348	Societies of South Africa	5 086	1 220	INTEREST RECEIVED AND ACCRUED	1 649	
		INSTITUTE JOURNAL—		214	DIVIDENDS	358	
17 068		Expenses	17 178	570	SURPLUS ON SALE OF PUBLICATIONS	2 368	
900		Secretarial fee	1 400	—	SYMPOSIA AND COLLOQUIA	1 938	
	17 968		18 578				
6 929		Deduct: Advertising	9 051				
4 417		Sales	6 182				
3 114		Subventions	1 034				
	14 460		16 267				
3 508		AUDIT FEE	2 311				
125		CONTRIBUTION TO FEDERATION	125				
		OF SOCIETIES OF					
		PROFESSIONAL ENGINEERS	1 075				
1 156		AMOUNTS WRITTEN OFF					
7		Furniture	60				
9		Dies	142				
	16		202				
		DONATION TO SOUTH AFRICAN					
		FEDERATION OF UNIVERSITY					
200		ENGINEERING STUDENTS	200				
638		GENERAL EXPENSES	674				
		LOSS ON REALISATION OF IN-					
		VESTMENTS	—				
160		MEDALS	105				
619		POSTAGES	1 262				
1 808		STATIONERY AND PRINTING	2 754				
40		TRAVELLING EXPENSES	—				
		EXCESS OF INCOME OVER EXPEN-					
		DITURE TRANSFERRED					
		AGAINST ACCUMULATED					
Deficit	4 608	FUNDS	5 051				
	<u>R16 859</u>		<u>R26 878</u>		<u>R16 859</u>		<u>R26 878</u>

SCHEDULE OF QUOTED SHARES

	Purchase Price	Current Price
200 Rand Mine Properties	R5,80	R3,25
3 080 UNISEC	2,70	2,50
600 Stellenbosch Wine Trust Ltd.	3,45	4,75
550 Tiger Oats & National Milling	4,37	4,65
‡ 100 S.A. Brewery 7% First Mortgage Debenture Stock 1974/84	1,19	0,87