

Annual Report and Accounts

FOR THE YEAR ENDED 30TH JUNE, 1970

Your Council has pleasure in submitting its report for the year ended 30th June, 1970.

COUNCIL

The following served as Office Bearers during the year under review:

Messrs J. K. E. Douglas (President), V. C. Robinson and Prof D. D. Howat (Vice-Presidents), R. C. J. Goode (Immediate Past President) and D. G. Maxwell (Honorary Treasurer).

Members of Council: Mr. R. J. Adamson, Dr. M. G. Atmore, Mr M. Barcza, Dr J. M. Bereza, Messrs H. Britten, H. E. Cross, A. R. C. Fowler, G. W. Holl, Dr J. P. Hugo, Messrs N. A. Honnet, P. Lambooy, Prof J. de V. Lambrechts, Mr C. E. Mavrocordatos, Dr J. T. McIntyre, Messrs J. Meintjies, T. C. A. Meyer, J. A. Nixon, Prof R. P. Plewman, Dr R. E. Robinson, Messrs J. F. Reid, H. Simon and P. W. J. van Rensburg.

Ten Council meetings were held during the year with an average attendance of seventeen and the standing committees held 45 meetings.

FINANCE

The annual accounts, which are attached to this report, show an excess of expenditure over income of R4,608 compared with R2,124 last year. This deterioration can be attributed largely to two important factors, namely an increase in secretarial fees of R1,789 and an increase in the loss on the Journal from R2,343 to R3,508. In addition, our contribution to the expenses of the Federation of Societies of Professional Engineers increased by R607 from R549 to R1,156.

The increase in secretarial fees is partly due to our increased demand for services and partly to increased salaries. In order to maintain its essential services it has been necessary for the A.S. & T.S. to increase salaries in order to keep pace with commerce and industry. With regard to the Journal, we did not expect immediate dramatic results from the changes that were effected as from the beginning of last year in the arrangements for publication. However, the improvement has been even slower in materialising than we expected. This situation is being watched carefully and we will not hesitate to make further changes if necessary.

It became clear early in the year that the financial position was deteriorating and your Council decided that it was essential to meet the situation by raising subscriptions and entrance fees. At the same time it was decided that there are no grounds for a distinction between Town and Country members and that in future the scale for the compounding of subscriptions should be based on anticipated future membership, rather than past membership. These changes have had only a minor effect on the accounts under consideration.

The MacArthur Forrest Memorial Fund shows an excess of income over expenditure of R132 and the total fund was, therefore, increased by this amount to R4,338.

The balance sheet shows that the market value of quoted shares and debentures decreased during the year from R13,059 to R6,567, while accumulated funds now amount to R17,959 compared with R22,567 last year. It will also be noted that we are holding R25,844 on behalf of the Symposium on Opencast Mining.

MEMBERSHIP

Twenty-eight Fellows, twenty-four Members, seventeen Graduates, twenty-five Associates and twenty-seven Students were elected during the year.

Four Members were admitted to Life Membership; Five Members were transferred to the grade of Fellow; one Student was transferred to the grade of Member; two Graduates and one Student were transferred to the grade of Member; six Students were transferred to the grade of Graduate; One Associate was transferred to the grade of Fellow; One Associate was transferred to the grade of Graduate. One Fellow, one Member, six Graduates, four Affiliates and ten Students were removed from the Membership Roll in terms of by-law 7.7.1.

Your Council records with deep regret the death during the year, of the following: R. A. H. Flugge-de-Smidt, C. S. McLean, Dr H. J. van Eck, (Honorary Life Fellows), J. C. Humphreys, O. Lazar (Life Fellows), D. G. Beadle, J. G. Craig, P. U. Fisher, R. G. McConnell, J. H. Moore, S. Sterling, L. R. Ulyate (Fellows), H. H. Burger, E. A. C. Dickson, R. Jack, S. Ring (Members), M. J. Worrall (Graduate).

A comparative statement of the membership as at 30th June, 1970, and the end of the previous year is shown in the following tabulation:

	30th June 1969	30th June 1970
Honorary Life Fellows	10	8
Honorary Fellows	6	6
Life Fellows	189	191
Fellows	514	530
Members	448	465
Graduates	68	80
Associates	155	172
Students	162	161
	<u>1,552</u>	<u>1,613</u>

RECLASSIFICATION OF MEMBERSHIP

The designations of grades of membership were altered to accord with the practice in professional institutes both here and overseas and members were advised of the new classifications.

MEMBERSHIP DRIVE

A committee was established to organise a drive for membership as it was felt that there are numbers of persons in our mining and metallurgical industries who are not yet members but who qualify for membership. Members of the committee were allocated responsibility for campaigning in sections of industry and for publicising the aims, objectives and advantages of belonging to the Institute.

PAPERS AND JOURNAL

The publication of the journal, including advertising sales, was arranged by Kelvin Publications (Pty) Ltd. this year. While there has been an increase, advertisement sales are still disappointing and are not yet sufficient to offset the cost of the journal. The assistance of all members in this respect would be appreciated.

The Presidential Address by Mr J. K. E. Douglas and thirteen papers which were published in the Journal during the year are listed below:

August 1969: Presidential Address:
"Lime in South Africa."

September 1969:
"The development and application of a digital computer method for the solution of strata control problems," by R. P. Plewman, F. H. Deist and W. D. Ortlepp.

October 1969:
"Factors affecting the mechanical efficiency of men shovelling rock in stopes," by C. H. Wyndham, J. F. Morrison, J. H. Viljoen, N. B. Strydom and R. Heyns.
"Acclimatizing men to heat in climatic rooms on mines," by C. H. Wyndham and N. B. Strydom.

November 1969:
"A rapid method of calculating temperature increases along mine airways," by A. M. Starfield.

December, 1969:
"A new bubble pick-up technique as a rapid flotation test method," by A. F. Lee.

January, 1970:
"The application of the electrical resistance analogue to mining operations," by J. W. Wilson and R. C. More-O'Ferrall.

February, 1970:
"Kinetics of copper segregation by Torco process," by M. I. Brittan.

March, 1970:
"The functional relationship between dust hazard and the rate of collecting funds to pay compensation for pneumoconiosis," by R. S. J. du Toit.

April, 1970:
"Recovery plant practice at De Beers Consolidated Mines, Kimberley, with particular reference to improvements made for the sorting of final concentrates," by W. K. B. Loftus, H. S. Simpson and M. J. King.

May, 1970:
"Effect of matrix structure and mechanical deformation on carbide coarsening," by W. E. Stumpf and C. M. Sellars.

June 1970:
"Manpower utilization in South Africa with special reference to the mining industries," by H. H. McGregor.

July, 1970:
"Some aspects of quarrying economics," by C. Fiore, W. C. Coningsby and A. Kok.
"Use of South African blastfurnace slag for ceramic purposes," by P. J. Nel and A. Taüber.

SYMPOSIA

The Institute participated in sponsoring and organising two symposia during the year.

1. *The South African Tunnelling Conference 1970 — Tuncon 70*

A successful conference was held in the Witwatersrand University Great Hall from 21st July to 24th July, 1970 under the sponsorship of the S.A. Institute of Mechanical Engineers, the S.A. Institute of Civil Engineers, the Geological Society of South Africa and this Institute. This conference was attended by 456 delegates including representatives from 20 countries outside the Republic.

The following 36 technical papers were presented and discussed:

Tunnels in South African Water Development Projects, by W. J. R. Alexander.

Underground Railways for Urban Transportation, by J. V. Bartlett.

Tunnels and Urban Transportation, by B. C. Floor.

The Uses of Mine Tunnels, by N. C. Joughin and A. Whillier.

Rock Tunnelling for Hydro-Electric and Hydraulic Purposes in Central and Southern Africa, by E. T. Engels and J. J. Burden.

Road Tunnel Construction, by T. M. Megaw.

Railway Tunnels in South Africa, by J. G. Holahan.

Underground Oil Storage in Finland, by M. Kilpinen.

Geoscience Site Investigations for Tunnels, by H. Helfrich, B. Hasselström and B. Sjögren.

The Determination of Joint Populations and their Significance for Tunnel Stability, by D. R. Piteau and A. MacG. Robinson.

Aerial Photographic, Geological and Drilling Exploration of the Proposed Boyes Drive Tunnel, by M. J. Mountain and B. A. Kantey.

Exploratory Drilling for Tunnelling, by J. V. G. Middleton.

Sitting and Protection of Tunnels in Deep Gold Mines, by J. W. Wilson.

Geological-Engineering Exploration for the Orange Fish Tunnel, by H. J. Olivier.

Field Determination of Deformation Moduli in Karroo Sediments, by A. A. T. Wilson and A. S. Brown.

A Note on the Design of Tunnel Linings, by M. D. G. Salamon.

The New Austrian Tunnelling Method, by H. Wagner.

The Development of High-speed Soft Ground Tunnelling using Precast Concrete Segments and Tunnelling Machines, by R. J. McBean and D. A. Harries.

The Behaviour of a Prototype and a Model Mine Tunnel, by N. Krauland.

Rock Reinforcement for Tunnels, by W. M. Smith and P. S. Thiel.

Physiological Requirements in Tunnel Environments, by C. H. Wyndham and N. B. Strydom.

Road Tunnel Ventilation, by J. de V. Lambrechts.

Tunnelling Technology in Germany, by G. Girnau.

Soft Ground Tunnelling, by A. M. Muir Wood.

Control of Direction and Grade in Tunnels, by P. R. Janisch.

The Development of a Tunnel System Model, by J. D. Bledsoe.

Rail Transport Systems in Tunnel Construction, by C. Grandori.

Mechanized Drill Rig for Tunnelling, by T. Grönfors.

Drilling of Ventilation and Service Shafts in Tunnelling, by J. V. G. Middleton.

The Orange-Fish Tunnel: A Comparative Study of Method and Equipment, by W. H. Cooper.

Machine Tunnelling in Hard Rock, by G. C. D. Claassens and D. R. Pike.

Economic Factors in Tunnel-boring, by R. J. Robbins.

Mechanical Boring of the Azotea, Oso and Water Hollow Tunnels, by V. L. Stevens.

Tunnel-boring in Granite, by W. Hildebrand.

Tunnelling with Machines Working on the Undercutting Principle, by P. Barenson.

Construction of the Claremont-Danville Road Tunnel, Pretoria, by J. H. Edwards and D. R. Graham.

2. *The symposium on Stainless Steel*

A successful symposium was held at the President Hotel from 8th to 12th September, 1969 under the sponsorship of the Southern Africa Stainless Steel Development Association, the S.A. Corrosion Council and this Institute. This was attended by 300 delegates, many of whom were from overseas. The following 12 technical papers were presented:

Stainless Steel—Corrosion and Progress, by Dr F. P. A. Robinson.

The Application of Design and Economics in the Use of Stainless Steels, by Dr C. G. W. Roffey.

Corrosion Problems in the Use of Stainless Steels and Titanium in the Pulp and Paper Industry, by S. Hendrikson.

Stainless Steels in the Wine Industry, by Dr E. N. Costa.

The Use of Stainless Steels in the Mining Industry, by A. H. Mokken.

Stainless Steel in the Chemical Industry, by Dr J. O. Edstrom.

The Use of Stainless Steels in the Food and Drink-processing Industries, by B. Connolly.

Stainless Steel Castings in South Africa. Part I, by Dr J. M. Bereza. Part 2, by J. Morley.

Stainless Steel Bar in South Africa, by H. R. R. Holton.

Production in South Africa of Stainless Steel Flat-rolled Products, by P. J. Muller and D. J. Crowe.

Aspects of Supply and Demand for Stainless Steel Products in South Africa, by H. A. Snow.

The Welding, Soldering and Brazing of Stainless Steels, by D. Slater.

FUTURE SYMPOSIA

Your Council is busy with the organisation of two additional symposia.

1. *Symposium on the Planning of Open Pit Mines*

This symposium will be held at the Cranbrooke Hotel, i.e. from August 31st to September 4th. Twenty-one papers on the theoretical background to the planning of open pit mines are to be presented and discussed. About 250 delegates are already registered and the Symposium includes post conference tours to Kimberley and the Eastern Transvaal.

2. *Tenth International Symposium on Computer applications in the Mineral Industry*

A series of symposia on this subject have been held in the North American continent and we were very honoured to receive an invitation to hold the tenth in the series in South Africa. This symposium is scheduled for 1972 and work has started on organising this event.

TALKS

Two talks were given during the year at Kelvin House. "Ninth Commonwealth Mining and Metallurgical Congress — report by delegates". W. R. Lawrie, L. W. P. van den Bosch, Dr. W. S. Rapson, R. C. J. Goode.

"Open Pit Drilling and Blasting". Professor Bauer — Head of Mining Department, University of Kingston.

10TH MINING & METALLURGICAL CONGRESS

Advice has been received that Canada has agreed to be the host country at this congress in 1974.

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 27th August, 1969. 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 and Silver Medal — No Award.

The following were awarded prizes for Student Papers: "An investigation into the effects of cathodic over-protection of coal-tar extract pipe coatings and on the underlying metal", by G. P. J. van den Berg.

"The reactions occurring when serpentine is heated from 0°C to 1000°C", by N. A. Barcza.

"The physical and structural geological features affecting the method of mining and stoping an ore-body", by P. J. Cook.

"Refrigeration in mines", by C. J. Fauconnier.

EXCURSIONS

The following visits took place during the year:

23rd October, 1969 — Hendrik Verwoerd Dam — 60 members.

27th February, 1970 — Datsun Motor Co. and Danville Claremont Tunnel — 60 members.

25th June, 1970 — C.S.I.R. — 30 members.

These excursions were most enjoyable and Council wishes to thank the organisations concerned for the hospitality shown to the members of the Institute.

GENERAL MEETINGS

The average attendance for the year was 40. In addition to the Annual General Meeting, nine General Meetings were held.

After much consideration your council concluded that in view of the changed circumstances which have resulted from the wider geographic location and more diversified interests of members that some reorganisation of meetings is indicated. It is proposed therefore that the monthly meetings which, in any case, are not well attended should be replaced by quarterly meetings. It is envisaged that these meetings should take the form of colloquia at which several papers will be presented on a chosen subject and discussed informally. Two committees are being established to organise these colloquia, one for mining and one for metallurgical subjects. The journal will continue to be published monthly for the publication of papers as usual and arrangements will be made for presentation when justified.

ASSOCIATED SCIENTIFIC AND TECHNICAL SOCIETIES OF SOUTH AFRICA

Messrs J. K. E. Douglas and D. G. Maxwell represented the Institute on the Controlling Executive with Mr. V. C. Robinson and Prof D. D. Howat 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 following are of interest to members:

Extension of the A.S. and T.S. presence to other centres

The Atheneum at Newlands in Cape Town has become the home of the branches of member societies in the Western Cape, a branch committee of A.S. and T.S. has been formed in Natal and the possibility of providing a "home" for the societies in Durban is being investigated. Several new societies have been admitted to affiliated membership of A.S. and T.S.

National Award:

The second National Award of a gold medal was made to the West Driefontein team who saved the mine from catastrophic flooding in October and November 1968.

Dining Room — Kelvin House:

The basement of Kelvin House is being converted into an elegant dining room at a cost of R20 000. The appeal for donations for this purpose has so far only raised some R7,000. Members are urged to give attention to this worthy appeal.

50th Anniversary of the Associated Societies:

On 12th June, 1970 a banquet was held to celebrate this event. The State President and Mrs Fouche were the guests of honour.

Lunch Hour Lectures:

The lunch hour lectures organised by A.S. and T.S. proved very popular and attracted good attendances.

SOUTH AFRICAN COUNCIL FOR PROFESSIONAL ENGINEERS

The Professional Engineers Act (Act 81 of 1968) came into force on the 14th February, 1969. During the first 12 months after the Act came into force SACPE received 9,392 applications for registration. Of these 3,106 have been accepted, 2,038 have been referred to referees for further information and professional opinions, while 272 have been turned down. The remaining 3,976 applications are still being processed. In addition new applications are still arriving at the rate of several per day.

Meanwhile, people who have applied to be registered but have not yet been informed of the result, are asked to be patient. The committees concerned are meeting as frequently as possible and carefully examining each case to ensure that the requirements of the Act are met.

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 Mr V. C. Robinson and Prof D. D. Howat as alternates.

A number of matters of concern to Engineers are occupying the attention of the Board of Management. Among these are the following:

1. The investigation of avenues to professional status for those whose academic qualifications are at present unacceptable.
2. Implementation of the recommendations of the Straszacker Commission on the method of training for university degrees in engineering.
3. Training of engineering technicians.
4. The publication of a Careers Guide and information on recruitment to the engineering profession.
5. Liaison with overseas engineering organisations.
6. Surveys of salaries paid to engineers.

7. Remission of income tax for engineers attending approved post graduate study courses and international conferences.

ORANGE FREE STATE BRANCH

The following served on the Committee of the Branch for the year under review: Messrs N. A. Honnet (Chairman), J. N. Saunders (Vice-Chairman), J. G. Kirchner (Immediate Past Chairman), L. O. W. Leimer, W. R. Lawrie, R. S. Pearson, L. J. Thorne, M. S. Grobler, A. T. Lewis, T. Zadkin.

During the year, however, Messrs. M. S. Grobler, A. T. Lewis, T. Zadkin and W. R. Lawrie were transferred away from the area and the following members were co-opted on to the committee: Messrs A. F. Leger, I. G. Thomas, and L. J. Thorne.

General Meetings:

Four general meetings were held during the year:

Present

Annual General Meeting (21st August, 1969)	..	21
General Meeting (12th November, 1969)	..	34
General Meeting (11th February, 1970)	..	34
General Meeting (8th July, 1970)	.. ..	29

Presentations:

The following talks were given during the year:

"Aspects of the 9th Mining and Metallurgical Congress" by Mr W. R. Lawrie with a contribution by Mr R. C. J. Goode.

"The design of Underground Cooling Towers for Optimum Performance" by Dr A. Whillier.

"Mining at Pilgrims Rest", by Mr A. R. C. Fowler.

"New Metallurgical Developments in the Anglo American Corporation Gold Mines" by Mr J. N. Saunders.

Visits:

The following visits took place:

10th November, 1969 — Orange Fish Tunnel — inlet section — 15 members participated.

25th February, 1970 — S.A.S.O.L. — Works at Sasol — 17 members participated.

29th July, 1970 — Highveld Steel and Vanadium Corporation at Witbank — 14 members participated.

Membership:

Membership of the branch as at the 15th July, 1970, was 137, a gain of 8 over the previous year.

Membership was made up as follows:

Fellows	..	..	..	..	..	..	..	34
Members	..	..	..	..	..	..	..	46
Associates	..	..	..	..	..	..	..	26
Graduates	..	..	..	..	..	..	..	13
Students	..	..	..	..	..	..	..	18
								<hr/>
								137
								<hr/>

Honorary Secretary:

During the year, the Honorary Secretary, Mr M. G. Cullen, was transferred to Kroonstad and his place was taken by Mr. A. Paschalides. The branch records its appreciation of the hard work done by both these gentlemen.

WITBANK-MIDDELBURG BRANCH

Committee:

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

Messrs J. Meintjies (Chairman), A. Bain (Vice Chairman), I. Botha, A. W. Brereton, G. E. Carlyon, B. T. Hosking, E. J. Jackson, B. D. McNiece, P. J. Muller and B. F. van der Merwe. Mr. W. D. Winship was co-opted onto the Committee on 19th May, 1970.

Meetings:

The meetings and attendance during the year were as follows:

	<i>Present</i>
Annual General Meeting (28th August, 1969) ..	31
General Meeting (13th November, 1969) ..	25
General Meeting (29th January, 1970) ..	14
General Meeting (23rd April, 1970) ..	14
General Meeting (25th June, 1970) ..	12

Papers and Addresses:

“Impressions of the Mining and Metallurgy Congress Tour to Australasia” illustrated by a film by A. Bain.

“Conservation and Reclamation of Water in South Africa” illustrated by slides and a short film by Dr Stander, Director of the National Institute for Water Research.

“Billet Casting of Low Carbon Ferrochrome” by B. F. van der Merwe.

“Note on a Volumetric Technique for the Determination of Stress in Rock” illustrated by slides by F. Q. P. Leiding of Pretoria University.

“Dealing with Dust and Fume from Electric Furnaces at Rand Carbide Limited, Witbank” by J. Meintjies.

Secretariat:

The Branch records its appreciation of the services rendered by Messrs P. J. Muller, B. van der Merwe and A. Bain, who provided Secretarial services during the year.

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 valid services rendered by Mr D. G. Maxwell as Honorary Treasurer.

Appreciation is recorded of the services of the Honorary Editor Mr P. W. J. van Rensburg and the Honorary Assistant Editors, Messrs D. G. Beadle (deceased), A. R. C. Fowler, G. W. Holl, Dr M. G. Atmore, Messrs H. P. Carlisle and R. E. Leyman.

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. Both these gentlemen suffered illness this year and have our best wishes for a complete recovery. Our thanks go to the able assistants who stepped into the breach, Mesdames Vosloo, Cohen, Egnal, Lane and de Gersigny.

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Income and Expenditure Account for the Year ended 30th June, 1970

1969		1970		1969		1970	
R	R	R	R	R	R	R	R
7 060	SECRETARIAL FEE	8 849		13 785	SUBSCRIPTIONS	14 484	
	ASSESSMENT AND LEVY—			35	LIFE MEMBERSHIP SUBSCRIPTIONS	—	
4 168	Associated Scientific and Technical Societies of South Africa	4 348		417	ENTRANCE FEES	371	
	INSTITUTE JOURNAL—			1 180	INTEREST RECEIVED AND ACCRUED	1 220	
13 553	Expenses	17 068		341	DIVIDENDS	214	
900	Secretarial fee	900		422	SURPLUS ON SALE OF PUBLICATIONS	570	
14 453		17 968		490	9th COMMONWEALTH CONGRESS CHARTER FLIGHT	—	
5 006	Deduct: Advertising	6 929		2 124	EXCESS OF EXPENDITURE OVER INCOME TRANSFERRED AGAINST ACCUMULATED FUNDS	4 608	
4 354	Sales	4 417					
2 750	Subventions	3 114					
12 110		14 460					
2 343		3 508					
145	AUDIT FEE	125					
	CONTRIBUTION TO FEDERATION OF SOCIETIES OF PROFESSIONAL ENGINEERS	1 156					
	DEPRECIATION—						
7	Furniture	7					
3	Dies	9					
10		16					
	DONATION TO SOUTH AFRICAN FEDERATION OF UNIVERSITY ENGINEERING STUDENTS	200					
200	GENERAL EXPENSES	638					
809	LOSS ON REALISATION OF INVESTMENTS	160					
545	MEDALS	—					
16	POSTAGES	619					
544	STATIONERY AND PRINTING	1 808					
1 593	TRAVELLING EXPENSES	40					
160	75th ANNIVERSARY CELEBRATIONS	—					
652							
<u>R18 794</u>		<u>R21 467</u>		<u>R18 794</u>		<u>R21 467</u>	

SCHEDULE OF QUOTED SHARES

	Purchase Price	Current Price
200 Rand Mine Properties	R5.80	R2.25
800 Second Nassau	2.70	2.06
600 Shares Stellenbosch Wine Trust Ltd.	3.45	2.60
550 Tiger Oats & National Milling	4.37	3.55
1,100 S.A. Brewery 7% First Mortgage Debenture Stock 1974/84	1.19	0.87