Annual Report and Accounts

FOR THE YEAR ENDED 30th JUNE, 1975

COUNCIL AND STANDING COMMITTEES, 1974–1975

Office Bearers: Prof. R. P. Plewman (President), Dr R. E. Robinson and Dr M. D. G. Salamon (Vice Presidents), J. K. E. Douglas (Honorary Treasurer), and P. W. J. van Rensburg (Immediate Past President).

Elected Members of Council: Dr M. G. Atmore, E. Collier, G. H. Grange, Dr P. R. Jochens, Dr D. I. Legge, D. G. Malan, C. T. Shaw, L. W. P. van den Bosch, D. A. Viljoen, H. M. Wells, P. A. von Wielligh.

Branch Chairmen: B. T. Hosking (Witbank-Middelburg Branch), D. A. Smith (Orange Free State Branch).

Past Presidents Serving on Council: R. J. Adamson, M. Barcza (until May 1975), H. Britten, H. E. Cross, Prof. J. de V. Lambrechts (until December 1974), R. C. J. Goode, Prof. D. D. Howat, Dr J. P. Hugo, D. M. Jamieson, D. G. Maxwell, Dr J. T. McIntyre, V. C. Robinson.

Ten Council meetings were held during the year, with an average attendance of 19, and the standing and sub-committees held 74 meetings.

COMMITTEE CHAIRMEN

Membership, Dr M. D. G. Salamon; Technical Programme-Metallurgy, D. A. Viljoen; Technical Programme-Mining, G. H. Grange; Vacation School-Metallurgy, Dr P. R. Jochens; Vacation School-Mining, Dr M. D. G. Salamon; Awards, Prof. R. P. Plewman; Excursions, Dr D. I. Legge; Constitution, Rules and Policy, P. W. J. van Rensburg and Prof. R. P. Plewman; Mines and Works, P. A. von Wielligh; Education, P. W. J. van Rensburg.

REPRESENTATIVES ON OTHER BODIES

Associated Scientific and Technical Societies

Members: V. C. Robinson and Prof. R. P. Plewman.

Alternates: Dr R. E. Robinson and Dr M. D. G. Salamon.

Federation of Societies of Professional Engineers

Members: J. K. E. Douglas and P. W. J. van Rensburg.

Alternates: Prof. R. P. Plewman and G. H. Grange.

South African Council for Professional Engineers

Member: R. C. J. Goode.

Alternate: G. H. Grange.

Engineers' Liaison Committee (Pretoria)

Member: Dr J. P. Hugo.

Alternate: P. W. J. van Rensburg.

MEMBERSHIP

Thirteen Fellows, seventeen Members, eleven Graduates, three Associate Members, eighteen Associates, twenty-six Students, and one Company Affiliate were elected during the year. Nine Fellows, four Members, and three Associates were admitted to retired membership. Eight Fellows were elected to Honorary Life Membership. Three Members and one Graduate were transferred to Fellows, nine Graduates and two Students to Members, six Students to Graduates, one Student to Associate, and one Associate to Associate Member. Six Fellows, ten Members, three Associates, and one Student resigned.

A statement of membership as at June 30th 1975 and the end of the previous year is shown in the following tabulation:

	30th June, 1974	30th June, 1975
Honorary Life Fellows ..	9	15
Honorary Fellows	8	8
Life Fellows.....	170	170
Fellows	544	536
Members	512	523
Associate Members	10	15
Graduates	130	133
Associates	194	210
Students	173	175
Company Affiliates	70	71
	1 820	1 851

OBITUARIES

Your Council records with deep regret the death during the year of the following members: M. Barcza, Honorary Life Fellow and Past President of the Institute; J. A. Boyd, F. E. Keep and J. H. Taylor, Life Fellows; I. D. B. Corner, C. O'G. Deane, R. E. Gilmour, A. C. Hofmeyr, M. W. Howell, T. J. Robin and F. C. Steinhobel, Fellows; J. J. Frankel, Member; T. J. Higgs, Associate.

FINANCE

The annual accounts, which follow this report, indicate that income again exceeded expenditure by a margin of R21 410 (last year R28 524). This year's income of R71 184 showed a further increase compared with last year's figure of R55 025. Costs, however, also increased, and it is calculated that, excluding non-recurrent costs, the cost of running the Institute increased by R6 654 from R25 501 to R33 155 for the current year. The main increases were involved in secretarial fees, stationery and printing, and in publication of the *Journal*.

All indications are that costs will continue to rise, and we have been advised that the A.S. & T.S. will be increasing their secretarial fees by 25 per cent in the year ahead to meet their rising costs.

This year's surplus was derived entirely from the revenue from sales of publications (R13 644) and a surplus from the 1974 Winter School (R10 654). There can be no certainty that revenue from these sources can be repeated each year.

Our funds are in a satisfactory position because of these worthwhile activities, but the administration of the Institute should not depend on them. Council will accordingly have to give consideration in the year ahead to an upward adjustment of subscriptions to meet rising costs.

Last year the Education Fund was founded with an initial capital of R30 000, and this year your Council decided to transfer a further R20 000 from accumulated funds to this fund. The amount in this fund at the year end, including interest and less expenditure, was R55 991. The MacArthur Forrest Memorial Fund showed an excess of income over expenditure of R40, and the amount in this fund is now R4889. The total funds (i.e., accumulated funds plus Education Fund plus MacArthur Forrest Fund) totalled R120 847 at the year end (last year R96 005).

As advised last year, the Institute funds have been invested on the advice of Syfrets Trust in quoted debentures, fixed interest stocks, and loans paying good interest rates. An amount of R75 061 is now invested in this manner, and the balance is on fixed deposit in building societies, in bank accounts, and on call at Syfrets Trust.

JOURNAL

The following papers were published in Volume 75 of the *Journal of the South African Institute of Mining and Metallurgy.*

August 1974

Job evaluation and the changing wage pattern, by D. L. van Coller

The mode of current transfer between electrode and slag in the submerged-arc furnace, by W. P. Channon, R. C. Urquhart, and D. D. Howat

September 1974

Photometric sorting of ore on a South African gold mine, by N. J. Keys, R. J. Gordon, and N. F. Peverett

The design, construction, and use of a practical ice-jacket for miners, by N. B. Strydom, D. Mitchell, A. J. van Rensburg, and C. H. van Graan

October 1974

Presidential Address: Minerals and manpower, by R. P. Plewman

November 1974

The mechanism of gold adsorption on activated charcoal, by R. J. Davidson

Mechanisms in the autogenous mill and their mathematical representation, by G. G. Stanley

December 1974

The production, properties, and selection of ferrosilicon powders for heavy-medium separation, by B. Collins, T. J. Napier-Munn, and M. Sciarone

January 1975

Improvements in stope drilling and blasting for deep gold mines, by A. J. A. White, N. C. Joughin, and N. G. W. Cook

The mechanization of haulage drilling in the gold mines of Anglo American Corporation, by J. W. Wilson and J. G. Taylor

February 1975

Prediction of the performance of explosives in bench mining, by C. M. Lownds

A comparison between hydraulic and pneumatic drills, by T. C. Marshall

Notes on the composition of pre-European copper and copper-alloy artefacts from the Transvaal, by H. M. Friede

March 1975

The organization and management of a large mechanized colliery, by G. C. Thompson and P. G. Henderson

In situ complete stress strain characteristics of large coal specimens, by L. W. van Heerden

April 1975

An extension of lognormal theory and its application to risk analysis models for new mining ventures, by B. M. Wainstein

The commissioning of a test facility for the calibration of anemometers, by J. J. van Rensburg

May 1975

A study of the arrangements for pulp discharge on pebble mills, and their influence on mill performance, by A. H. Mokken, G. K. I. Blendulf, and G. J. C. Young

A study, by continuous monitoring of particle size in the cyclone overflow, of factors influencing run-of-mine mill performance, by A. H. Mokken, G. K. I. Blendulf, K. A. G. Blendulf, and N. R. Cowin

June 1975

An electromechanical investigation of the dissolution of copper, nickel, and copper-nickel alloys in ammonium carbonate solutions, by M. J. Nicol

The use of heavy-medium separation in the processing of iron ores, by H. C. Voges

July 1975

The incorporation of individual cooling in a compressed-oxygen closed-circuit breathing apparatus, by N. B. Strydom and E. Shvartz

Intermittent heat exposure, and the retention of heat acclimatization, by N. B. Strydom, R. Kok, P. L. Jooste, and W. H. van der Walt

The influence of two weeks of microclimate cooling on the state of heat acclimatization, by N. B. Strydom, A. J. S. Benade, and W. H. van der Walt

STUDENT PRIZES

Prizes for the best student papers were awarded as follows:

Metallurgy

Direct stainless steel production, by G. J. Dyason

Mining

Selection of stripping, loading and haulage equipment for a strip mining operation, by J. E. Olivier

Rope guides versus fixed guides, by D. W. Butcher

Risk and the mining investment decision, by I. M. W. Preston

HONORARY LIFE FELLOWS

In recognition of their many years of service to the Institute, your Council unanimously elected the following to Honorary Life Fellowship:

M. Barcza, H. E. Cross, R. C. J. Goode, D. M. Jamieson, J. de V. Lambrechts, D. G. Maxwell, J. T. McIntyre.

EXCURSIONS

As a result of the petrol restrictions during the past year, Council decided to curtail the number of excursions, and, consequently, only one took place, which was initiated by the O.F.S. Branch. This was a highly successful visit, over two days, to the Vaal-Tugela Water Project, and the Institute is grateful for the co-operation received from the Department of Water Affairs.

EDUCATION FUND

The Education Fund has grown from the initial R30 000 set aside by Council for the purpose of promoting education in the fields of mining and metallurgy in 1974, to R55 991. The interest generated by the fund has been used to finance projects of the five Education Sub-committees. Each sub-committee is responsible for a specific area of education, and several projects have successfully been carried through.

The fund has provided sponsorship for eight delegates from universities and the WCATE to the Vacation Schools, and has subsidized the forthcoming visit of Professor Antti Niemi, from the University of Helsinki, who will address Institute members on September 17th. Prizes and medals are to be awarded to outstanding students at the universities and to authors of post-graduate research papers. Further, the fund will be used to subvent overseas travel of members for research purposes.

A close liaison is being kept with the WCATE and the universities, and problems concerning the education and future of both technicians and engineering graduates is receiving attention.

Alternative routes to registration as professional engineers are being studied, and attempts are being made to formulate guidelines on which to base suitable examinations that would satisfy SACPE's requirements of an acceptable standard of engineering knowledge.

A comprehensive questionnaire was sent to members earlier in the year, in an attempt to pinpoint the areas in which vacation and post-

graduate training was causing dissatisfaction among engineers. Several valuable conclusions were drawn from the answers received to this questionnaire, and further study is required before an acceptable plan of action can be drawn up.

The general feeling of concern at the small number of recruits entering the minerals industry is shared by the Institute, and, in an attempt to alleviate the situation, a great deal of attention has been given to methods that will direct the interest of scholars towards careers in mining and metallurgy. It is felt that the organization of an international student-exchange scheme, whereby foreign students spend vacations working in South Africa and South African students are given the same opportunities overseas, would be an appropriate way of attracting scholars to the engineering faculties. In addition, the publication of articles and radio broadcasts concerning careers in mining and metallurgy were undertaken. The most successful method of recruiting, however, was the initiation of the Phoenix Programme.

The concept of the Phoenix Programme originated with the formation of the Minerals Industry Manpower and Careers Unit in Britain. Under the leadership of Mr Geoffrey Cox, the aim of the unit was to stimulate interest in mining and metallurgical engineering among the science and careers masters at various schools, and to make them aware of the career opportunities available in these professions, in the hope that they, in turn, would generate enthusiasm and interest among their scholars, and so encourage them to enter into the relevant faculties at university. This was achieved by inviting a number of schoolmasters to attend Phoenix Courses of five or six days duration, during which they were initiated into the basic theory and practice of mining and metallurgy by means of lectures, field trips, case and feasibility studies, decision making, etc.

At the instigation of the Minerals Manpower Committee at NIM, Mr Cox led several courses in South Africa. These proved an effective method of motivation, and resulted in a marked increase in the number of mining and metallurgical registrations at the universities.

The Phoenix Courses alone, however, cannot be entirely effective without a strong follow-up programme, through which schoolmasters, having attended a course, can be kept in contact with new developments and provided with advice, information, and assistance. To this end, the Chamber of Mines and the Institute have appointed a Liaison Officer. It is intended also to appoint a suitable leader to run future Phoenix courses in South Africa.

The Institute, having limited funds at its disposal, cannot be expected to finance a project of this magnitude, and it is therefore hoped that the minerals industry, for whose benefit the programme is conducted, will contribute financially to a central fund administered by the Institute and representatives of contributing organizations. The continuation of the Phoenix programme is felt to be a vitally important factor in the effective recruitment of manpower to the minerals industry, which cannot survive if the number of recruits is not increased very significantly over the next decade.

MINING COLLOQUIA

Two mining colloquia entitled 'Drilling, Blasting and Ore Winning' were held during the year. Both were extremely well attended. The first was held on 13th November, 1974, when the following papers were presented under the chairmanship of Dr M. D. G. Salamon:

Improvements in stope drilling and blasting for deep gold mines, by N. G. W. Cook, A. J. A. White, and N. C. Joughin, Chamber of Mines Research Laboratories

A comparison between hydraulic and pneumatic rockdrills, by T. C. Marshall, Delfos and Atlas Copco (Pty) Ltd

The mechanization of haulage drilling in the gold mines of Anglo American Corporation, by J. W. Wilson and J. G. Taylor, Anglo American Corporation of South Africa, Ltd

Prediction of the performance of explosives in bench mining, by C. M. Lownds, AE & CI Research Laboratories

The organization and management of a large mechanized colliery, by G. C. Thompson, General Mining and Finance Corporation Ltd, and P. G. Henderson, Transvaal Navigation Collieries/New Clydesdale Colliery

The second colloquium was held on 21st May, 1975, when the following papers were presented, under the chairmanship of Dr F. G. Hill:

Primary fracture from an array of shotholes, by C. M. Lownds and P. C. Seligmann, AE & CI Research Laboratories

The development of drilling and blasting practice at Palabora Mining Company Limited, by C. C. Crosson, M. J. H. Tonking, and G. Paterson, Palabora Mining Company, Limited

Mining practice in the Kimberley Division of De Beers Consolidated Mines Limited, by J. V. Cleasby, H. J. Wright, and M. T. G. Davies, De Beers Consolidated Mines Ltd

The improved rate of stope face advance at Buffelsfontein Gold Mining Company Limited, by B. P. Christos, Buffelsfontein Gold Mining Company Ltd

Potential for the mechanization of stoping in gold mines, by N. C. Joughin, Chamber of Mines Research Laboratories

A further colloquium will be held on November 19th, 1975, on the topic of 'Valuation'.

METALLURGICAL COLLOQUIA

Two metallurgical colloquia were held during the year under review, both of which were extremely well attended. The first, held on September 18th, 1974, covered the topic of 'Heavy-medium Separation and Ore Sorting' and was followed by a cocktail party sponsored by Hoechst (S.A.) (Pty) Ltd. The following papers were presented under the chairmanship of Mr E. R. Rudolph:

The production and properties of ferrosilicon powders for heavy-medium separation, by B. Collins, Hoechst (S.A.) Ltd, M. Sciarone, Metalloys Ltd, and T. J. Napier-Munn, De Beers Industrial Diamond Division

Dense-medium cyclone design and practice for diamond recovery in Africa, by I. R. M. Chaston, Anglo American Corporation of S.A. Ltd

The use of heavy-medium separation techniques in the processing of iron ores, by H. C. Voges, Iscor

Photometric sorting of ore on a South African gold mine, by R. J. Gordon and N. F. Peverett, Photometric Sorters

Dense-medium processes in the production of low-ash coal, by D. W. Horsfall, Anglo American Corp. of S.A. Ltd

Uranium ore up-grading at the Vaal Reefs East gold plant, using a high-density medium cyclone plant, by J. Worth, Vaal Reefs

The second colloquium, chaired by Mr E. Roux, which was followed by a cocktail party kindly sponsored by Fraser and Chalmers Equipment (Pty) Ltd, was entitled 'Recent Advances in the Design and Performance of Flotation Equipment', and included the following papers:

Aspects of flotation circuit design, by E. Lindgren and P. G. Broman, Sala Equipment (Pty) Ltd

The development of large-volume

flotation machines and the economic advantages of their use in high-capacity plants, by P. Edwards, Joy Manufacturing Co. Ltd

Design criteria and recent developments on large-capacity Wemco flotation cells, by P. Kind, Envirotech Corp.

Agitair developments on flotation machines, by J. P. Dreyer, Edward L. Bateman Ltd

The objectives of the NIM Flotation Research Group, University of Natal, by N. Dawson

Flotation models on industrial circuit, by L. A. Cramer

Studies of a deep froth column, by M. Moys

Effect of operating variables on concentrate grades and recoveries: suggested scale-up criteria, by R. Dunne

Flotation studies on a unit cell in a pilot-plant milling circuit, by R. Finlayson

A simple froth model for scale-up, by E. Woodburn

Further activities during the remainder of the calendar year include a symposium entitled 'Forty-Nine Steps in Mineral Dressing' on September 17th and 18th, 1975, and a joint colloquium with the Institute of Foundrymen and Institution of Metallurgists on 'New Techniques in the Foundry Industry', at which Dr P. R. Beeley, of the University of Leeds, will be the guest speaker.

The Institute has felt the need for some time to cater for the interests of the physical metallurgists, to which end the above colloquium has been arranged. In addition, a Trust Fund has been established to provide funds for future colloquia of this nature, and several organizations in the foundry industry have already contributed.

VACATION SCHOOLS

Metallurgy

A Vacation School on Electric Furnace Melting was conducted at the University of the Witwatersrand over a period of four days. The two main lecturers were Mr R. Langman, Electricity Council Research Centre, U.K., and Mr R. Reddy, Union Carbide Corporation, U.S.A.

Mr Langman reviewed electric melting and holding furnaces, discussed the electric arc furnace for steel making, and compared arc melting with induction melting. He lectured on the details of the process technology of electric-furnace steel making, including instrumentation, computer control, and simulation of electric furnaces. Detailed attention was given to the engineering design aspects of arc furnaces and their supply, and Mr Langman's final lecture reviewed current research being undertaken in the United Kingdom in the field of metal melting and holding.

Mr Reddy lectured on the advantages of metallized iron ore and the effect of metallized iron ore on the operation of the electric arc furnace. He presented comparative steelmaking economics, including the capital and operating costs of metallized iron ore processes, and concluded his lectures with an analysis of the present and future status of direct reduction on a world-wide basis.

Lectures were presented on the fundamental metallurgical and electrical aspects of electric furnace melting, electric arc furnace refractories, electric arc furnace coupled with vacuum degassing, and the effect of electric melting furnaces on power distribution systems.

As part of the programme, two plant visits were made — to Iscor Vanderbijlpark Works, to see the two 150-tonne electric arc furnaces coupled with vacuum degassing, and to Dunswart Iron and Steel Works to see the metallization of iron ore in a rotary kiln and the subsequent melting of scrap/metallized iron ore charges.

Although, in line with previous Vacation Schools, the intention was to limit attendance to 40 participants, the demand was such that registration was finally closed at a total of 72, including the lecturers. Four participants attended the School as guests of the Institute's Education Fund.

Very sincere appreciation is expressed to the lecturers and also to Iscor and the Dunswart Iron and Steel Works for the very stimulating visits.

Mynbou

Die klaarblyklike gewildheid van die metallurgiese vakansieskole die afgelope drie jaar, het die mynbouafdeling van die Instituut aangespoor om twee soortgelyke skole met die onderwerp "Investment Decisions in the Minerals Industry" te reël.

Die skole is deur prof. B. W. Mackenzie van McGill Universiteit gelei wat soortgelyke skole in Amerika, Kanada en Australië aangebied het. Te oordeel na die oorweldigende reaksie van applikante, behoort mynbouvakansieskole 'n gewilde item in die toekomstige aktiwiteite van die Instituut te wees.

PYROMETALLURGICAL DISCUSSION GROUP

The Pyrometallurgical Discussion Group was formed four years ago, its main objective being to provide members with an opportunity of holding informal discussions on various topics related to pyrometallurgy. No formal papers are presented, but each meeting is led by two speakers known to be closely associated with their particular subjects, and spontaneous exchange of ideas and discussion is encouraged. The convenor of the Discussion Group during the past year has been Dr J. B. See, of the National Institute for Metallurgy, and, during the three meetings the Group has held over the past year, the following topics have been covered:

Alkalis in the blast furnace, by D. Vrettakos, Iscor

Forecast of Iscor's refractory requirements, by F. Nyikos, Iscor

Production of stainless steel in South Africa — trends in expansion and processes, by W. D. Winship, Southern Cross Steel Co. (Pty) Ltd

Kinetics of oxidation of sulphur from blast-furnace slags, by J. B. See, NIM-Wits Pyrometallurgy Research Group

The submerged-arc furnace, by S. Selmer-Olsen, Amcor Management Services Ltd

The Pyrometallurgy Research Group at the University of the Witwatersrand, by J. B. See, NIM-Wits Pyrometallurgy Research Group

Some properties of titaniferous slags, by J. C. G. K. van der Colf, University of the Witwatersrand

Basic refractories — raw materials, production and application, by D. Brown, Cullinan Refractories

BASE METALS DISCUSSION GROUP

Since its establishment last year, the Base Metals Discussion Group has proved a popular forum for the interchange of information on a wider basis than that covered by the Pyrometallurgical Discussion Group. The meetings of the two groups follow a similar pattern, allowing a free exchange of ideas on topics of general metallurgical interest. Under the chairmanship of Dr A. K. Haines, National Institute for Metallurgy, the following topics were discussed during the year:

Recovery of nickel and copper from high-grade matte at Impala Platinum by

the Sherritt Process, by R. Plasket, Impala Platinum Ltd

Aspects of the chemistry of the Platinum Group Metals, by R. Edwards, National Institute for Metallurgy

The economics of copper recovery using LIX reagents, by E. R. Dement, General Mills Chemicals, Inc.

The tailings leach plant at Chingola, by J. A. Holmes, Anglo American Corp. Ltd

LECTURES

Together with the S.A. Institutions of Mechanical Engineers and Chemical Engineers, a joint meeting was held on October 31st, 1974, at which Prof. H. Rumpf, Head of the Institute for Mechanical Process Technology at the University of Karlsruhe, presented a lecture entitled 'Advances in Particle Technology: Research and Application'.

On October 23rd, 1974, a joint lecture with the Department of Metallurgy, University of the Witwatersrand, took place, entitled 'Basic Factors Affecting Alloy Formation in Magnesium', and was delivered by Prof. G. V. Raynor, visiting Professor in the Department of Metallurgy, from The Royal Society, Leverhulme, England.

Prof. Antii Niemi, Research Professor at the Helsinki University of Technology, will be presenting a lecture on September 17th, 1975, entitled 'Effect of Automation on Operation Technology and Workers' Opinions in Concentrators'.

THE ASSOCIATED SCIENTIFIC AND TECHNICAL SOCIETIES OF SOUTH AFRICA

The A.S. & T.S. had a busy and successful year, during which progress was made on several important projects.

The Institute was represented on the A.S. & T.S. Controlling Executive by Mr V. C. Robinson and Prof. R. P. Plewman, with Dr R. E. Robinson and Dr M. D. G. Salamon as their alternates.

The Associated Societies have been active in other centres, notably Natal, Western Cape, Eastern Province, and Pretoria. Members of the Controlling Executive have been able to give assistance and advice to those trying to foster the A.S. & T.S. presence in other areas.

An important activity of the A.S. & T.S. this year has been the organization of the Conference on 'Resources of Southern Africa — Today and Tomorrow', which will be held at the Rand Afrikaans University from September 22nd to 26th, 1975.

A very full programme has been arranged to cover a large and important spectrum of the main resources of the southern portion of the continent.

The Controlling Executive continues in its endeavours to build up the A.S. & T.S. Trust, and all members, and this includes the Institute, are urged to support the Trust to the utmost of their ability.

The Controlling Executive also continues to keep close liaison with FSPE and other such bodies to their mutual advantage.

SOUTH AFRICAN COUNCIL FOR PROFESSIONAL ENGINEERS

It must be accepted that modern engineering is a complex combination of sciences, and that there is an ever-increasing variety of projects to which the professional engineer must apply his knowledge and skills. Not only must he ensure technical effectiveness and the economic viability of the undertaking, but he has also to provide for the safety of the public and the protection of the environment. For these exacting tasks, the Council has determined that the minimum requirements shall be a four-year baccalaureat degree in engineering at a South African university or its equivalent, plus three years of acceptable engineering training.

During the year, more attention has been given to the alternative educational routes to registration. An information document giving further particulars of the three successive levels of examination forming the alternative route will be available shortly. In addition, Council has accepted, in principle, that the proposed Advanced National Diploma for mechanical and electrical students at the Colleges for Advanced Technical Education (CATE) would be acceptable, if offered, as an exemption from Part II of the Council's examination. (No such Advanced Diploma Course has yet been proposed in the metallurgical or mining disciplines; but the SAIMM is watching the position, and will be prepared to assist the CATE in the establishment of such a course should sufficient demand arise.)

The registration of professional engineers continues to keep pace with the applications, and nearly 10 000 have now been accepted. A full list will be published in the SACPE Annual Report, due for issue shortly. Considerable attention has had to be given to assessing certain foreign qualifications, and several discussions, both in South Africa and in Europe and North America, have taken place in order to obtain a better appreciation of overseas' standards. These discussions have in addition confirmed Council's opinion that their own standard is realistic and not excessively high.

In conjunction with the Federation of Societies for Professional Engineers (FSPE), the possibilities of introducing separate categories of registration within the engineering spectrum are being examined. Broadly speaking, three categories can be envisaged:

1. the professional engineer with a four-year degree,
2. engineers with qualifications just below the professional engineer, and
3. technicians.

Dit is noodsaaklik dat die jong gegradueerde ingenieur 'n omvattende inleiding tot die praktiese aspekte van sy beroep gegee word, en die Raad vestig steeds aandag op die noodsaaklikheid om te verseker dat die ingenieur-in-opleiding 'n opleidingsprogram volg waaroor behoorlik toesig gehou word. Verskeie werkgewers is bewus van die probleme en hulle opleidingsprogramme is in beginsel aanvaar. Die oorheersende vereistes is in die Raad se Beleidsverklaring 1/2 gepubliseer. Om hierdie baie belangrike fase in die opleiding van die professionele ingenieur te koördineer, het die Raad besluit om 'n Opleidingsbeampte wat by die Registrateur se kantoor bereik kan word, aan te wys.

Ope Raadsvergaderings is op 16 Augustus 1974 in Kaapstad en op 21 Februarie in Johannesburg gehou. Interessante besprekings het tydens hierdie byeenkomste plaasgevind en

daar word geglo dat sommige misverstande opgeklaar is. In Johannesburg is daarop gewys dat SARPI tans nog geen regsbevoegdheid oor nie-geregistreerde ingenieurs het nie. Daar is ook bevestig dat professionele ingenieurs in gesalarieerde betrekkings kan, mits dit deur hulle diensvoorwaardes toegelaat word, hulle dienste in 'n raadgewende hoedanigheid aanbied en universiteitspersoneel behoort dit te doen; maar dat dit verwag moet word dat die gelde wat hulle vra, ooreen moet stem met die wat gewoonlik deur professionele ingenieurs in privaatpraktyk gehef word.

'n Saak wat groot kommer by SARPI wek is dat hy geen regsbevoegdheid oor maatskappye het wat die soort ingenieursdienste aanbied wat vir professionele ingenieurs gereserveer word nie. FVPI is om raad gevra in hierdie verband, en daar word gehoop dat opgetree kan word om hierdie onbevredigende situasie te beëindig.

Laastens het SARPI besluit om R30 000 te skenk met die doel om die hoë onderwysstandaard te handhaaf. Dit is in ooreenstemming met die Van Wyk De Vries-kommissie se aanbeveling dat elke professie onderwys behoort te ondersteun. Daar word gehoop dat dit ander organisasies sal aanspoor om ook so te maak en dus die toekomstige prestasie van die professie verseker.

DIE FEDERASIE VAN VERENIGINGS VIR PROFESSIONELE INGENIEURS

Die Instituut is weer eens deur twee Raadslede in die Raad van FVPI verteenwoordig, mnre. J. K. E. Douglas en P. W. J. van Rensburg, met prof. Plewman en mnr. G. H. Grange as hulle plaasvervangers.

Gedurende die jaar het 'n aantal belangrike onderwerpe aandag geniet. FVPI se rol is druk bespreek en dit is verblydend dat 'n hersiene en kragtiger Grondwet goedgekeur is.

Die Komitee wat na afloop van die Sesde Konferensie oor die "Opleiding van Ingenieurstegnici" gestig is om die besluite van die Konferensie uit te voer, het sy werk afgehandel. 'n Omvattende verslag oor sy bedrywighede is uitgereik en baie is bereik.

Die Sewende Konferensie oor „Ingenieurs-in-opleiding" is in Julie 1975, in Kaapstad gehou. Dit is goed bygewoon en is as suksesvol en opbouend beskou. Die aanbevelings van hierdie Konferensie sal in die komende jaar aandag van die Raad ontvang.

Another important subject that received attention was the recognition to be given to personnel in the field of engineering who do not comply with the requirements for registration as professional engineers. This applies particularly to persons with government certificates, engineering specialists, and a wide range of technicians. The opinions of all member Institutes was obtained by way of a comprehensive questionnaire, and it was generally agreed that the standards for registration of professional engineers should not be lowered. Consideration is, however, being given to the possibility of introducing separate categories of registration to include the various grades of engineering. The Publicity Committee of FSPE was active and directed its efforts towards recruitment to the profession, publicity for the profession itself, and the enhancement of the public image of the profession. This has been done through talks to schools, brochures, and radio talks. Attention is also being given to the possibilities of the television medium. Approaches were also made to the universities and the education departments to encourage them to give more attention to career guidance and the training of teachers in this subject. Arrangements have also been made to publicize the activities of engineers through the journal of the Engineers Association of S.A. (EASA), and this will be circulated to members of all Institutes.

The Federation collaborated closely with the S.A. Council of Professional Engineers (SACPE) and with Government authorities in all matters relating to the profession of engineering. Contact was also maintained with international organizations such as the World Federation of Engineering Organisations (W.F.E.O.) and the Commonwealth Engineering Council (C.E.C.).

S.A. NASIONALE TONNEL-BOUKOMITEE (SANTOK)

SANTOK is in 1973 gestig met die doelstellings om die waardebepaling van tonnelbou-aktiwiteite op 'n nasionale vlak te koördineer, die vordering in tonnelboutegnologie te stimuleer en deel te neem aan die aktiwiteite van die Internasionale Tonnelbouvereniging. Lidmaatskap bestaan uit institute en organisasies wat tonnels besit of beheer of betrokke is by die ontwerp, oprigting, onderhoud of werking van tonnels en SANTOK is 'n stigterlid van die Internasionale Tonnelbouvereniging.

The Institute was represented on SANCOT by Prof. R. P. Plewman and Mr D. M. Jamieson. The committee, under the chairmanship of Mr A. A. T. Wilson, dealt, *inter alia*, with the following subjects:

The collection of data that will indicate the amount of tunnelling planned for the next few decades in the Republic of South Africa

A review of existing legal requirements for the safety of workers in the civil-engineering tunnelling industry as opposed to those concerned with the mining industry

A study of contracting practices in the formulation and acceptance of tenders for engineering schemes

The identification of technical needs to be met through research and development

A directory of organizations engaged in any research that might have a bearing on tunnelling practices

The Chairman of SANCOT attended a General Assembly of the International Tunnelling Association, which was held in Munich in April of this year, where it was decided that a conference entitled 'Tunnelling '76' will be held in London in the first week of March 1976.

ORANGE FREE STATE BRANCH

Committee

D. A. Smith (Chairman), G. J. C. Young (Vice-Chairman), E. T. Wilson (Immediate Past President), R. R. Perkin (Honorary Secretary), and H. M. W. Eschenburg, A. F. Geotzsche, A. T. Lewis, H. G. Mosenthal, C. Mostert, and A. N. Shand.

Meetings

Three General Meetings were held during the year, with an average attendance of 39. Three committee meetings were also held, and the chairman wishes to place on record his appreciation of the assistance

given him by members of the outgoing committee.

The following talk, demonstration, and film shows were presented:

Minerals in South Africa, by P. W. J. van Rensburg

Rauföss implosive method of compression jointing of cables and bars with the use of detonating cords, by G. Bowmer and N. Bennett

South African techniques in shaft sinking — Film

Out of the Blue — Film

Visit

A visit was made to the Department of Water Affairs' Tugela-Vaal Scheme on the 14th and 15th May, 1975. The itinerary included trips to the Driel Barrage, Upper Tugela Canals, the Metz Tunnel Outlet, and the Sterkfontein Dam. Other members of the Institute were invited to participate, and fourteen Johannesburg members joined the O.F.S. Branch. It was the concensus of opinion of the participants that this was one of the most interesting and informative visits undertaken by the Institute, and that it had given them a real insight into the complexity and magnitude of this scheme.

Membership

The total membership of the O.F.S. Branch, as at 20th June, 1975, was 124, made up as follows:

Fellows	18
Members	35
Associate Member	1
Associates	41
Graduates	12
Students	17

This figure shows no change from that recorded last year. It is considered opportune to appeal again to all non-members who are eligible to apply for membership of the Institute.

Finance

The Branch incurred no expenses during the year. A banking account is not operated locally.

WITBANK–MIDDELBURG BRANCH

Committee

B. T. Hosking (Chairman), and A. Bain, I. Botha, A. C. W. Brereton, V. N. Crowder, H. Easingwood, E. J. Jackson, J. Meintjes.

Meetings

It is regretted to report that the past year has been one of limited activity owing to prolonged visits overseas by at least four committee members, illness, and severe pressure of work caused by expansion programmes in the industrial sphere. However, towards the year end matters improved considerably.

During the year, two committee members tendered their resignation: Mr H. Easingwood on his transfer to Pretoria, and Mr I. Botha on his transfer to the Vereeniging area.

The committee asked Mr K. P. Schleicher to serve as a member, who kindly accepted. Mr C. Bird kindly agreed to serve as Honorary Secretary/Treasurer.

Three committee meetings were held during the year, at which it was not always possible to obtain a quorum.

A general meeting was held on the 12th June in the Moth Hall, Witbank, at which Mr W. L. van Heerden presented a paper entitled 'In Situ destruction of large coal pillars'. The paper was most suitably illustrated with slide pictures. A great deal of discussion took place on the paper.

Visit

A visit took place on the 12th August, 1975, to the Highveld Steel and Vanadium Corporation Ltd.

Finance

The Branch has a credit balance of R23,41. It should be noted that bank charges for the year 1974 were R7,50, and R8,00 for the year 1975. The incoming committee should consider obviating these high-proportion bank charges.

Election of Office Bearers

The following office bearers have been elected for next year: E. A. Jackson, Chairman; V. N. Crowder, Vice-Chairman; and C. Bird, Honorary Secretary/Treasurer.

The Chairman extends his thanks to the committee members for their support during a difficult year, and his congratulations to the incoming office bearers.

ERE-DIENSTE

Waardering word geboekstaaf vir die dienste van die Ereregsadviseurs, mnre. Van Hulsteyn-Douglas, en die Raad is baie dankbaar vir die waardevolle dienste as Erepenningmeester wat deur mnr. J. K. E. Douglas gelewer word.

Die reëling van die Instituut se verskeidenheid funksies vereis baie tyd en moeite van die Komiteevoorsitters en sameroepers van Besprekingsgroepe, en dank word uitgespreek teenoor die betrokkenes vir die gewillige samewerking gedurende die afgelope jaar.

SEKRETARIAAT

Die Instituut teken sy dank aan teenoor die Geassosieerde Wetenskaplike en Tegniese Verenigings vir die dienste wat gedurende die afgelope jaar verskaf is. In besonder, dank aan die Bestuurder, mnr. E. Boden, die Onderbestuurder, mnr. D. S. Trueman, mej. J. Theron die Sekretaresse, en haar assistente, mev. B. Prince en mev. A. Greeff.

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Balance Sheet at 30th June, 1975

1974 R	R		1975 R	R
		CURRENT LIABILITIES		
10 616		CREDITORS	5 317	
543		SUBSCRIPTIONS RECEIVED IN ADVANCE	520	
615		FLIGHT DEPOSITS FOR TENTH COMMONWEALTH MINING AND METALLURGICAL CONFERENCE	—	
18 266		REGISTRATION FEES FOR JUNE-JULY 1975 VOCATION SCHOOL	26 848	
	30 040			32 685
		ACCUMULATED FUNDS		
57 752		Balance at 30 June 1974	58 531	
30 000		*Less:* Transfer to Education Fund	20 000	
27 752			38 531	
30 779		*Add:* Excess of income over expenditure for the year ended 30 June 1975	21 410	
	58 531			59 941
		FOUNDRY TRUST FUND as per contra		
		Donations		1 050
		EDUCATION FUND as per contra		
		Balance at 30 June 1974	32 625	
30 000		TRANSFER FROM ACCUMULATED FUNDS	20 000	
2 625		*Add:* Interest and dividends received	4 775	
			57 400	
		Less: Expenses	1 409	
	32 625			55 991
		MACARTHUR FORREST MEMORIAL FUND as per contra		
4 657		Balance at 30 June 1975	4 849	
367		*Add:* Interest received 440		
—		Donation —		
367			440	
5 024			5 289	
175		*Less:* Awards	400	
	4 849			4 889
	R126 045			R154 556

1974 R	R		1975 R	R
		CURRENT ASSETS		
		CASH — At bank		
22 206		Current account	12 164	
270		Savings account	—	
22 476			12 164	
20 042		On fixed deposit including accrued interest	20 536	
3 465		At call	31 550	
45 953			64 250	
—		*Less:* Applicable to Foundry Trust Fund 1 050		
1 172		Education Fund 533		
1 172			1 583	
44 511				62 667
		DEBTORS		
788		Debtors for sales of journal and publications, less provision	1 530	
3 019		Advertisers in journal	2 022	
49		Witbank-Middelburg branch	23	
5 512		June-July 1975 vacation School expenses to date	1 930	
629		Sundry	2 051	
	9 997			7 556
584		STOCK — Ties at cost	290	
1		— Journals at nominal value	1	
1		— Publications at nominal value	1	
	586			292
130		DEPOSIT		195
175		SUBSCRIPTIONS IN ARREAR, less provision		92
54		AMOUNT DUE FROM MACARTHUR FORREST MEMORIAL FUND		97
	55 753			70 899
		INVESTMENTS		
14 446		QUOTED SHARES AND DEBENTURES (Market value R7 133; 1974: R12 867)	9 671	
5		UNQUOTED SHARES	—	
18 036		LOANS AND UNQUOTED DEBENTURES	11 725	
	32 487			21 396
		MEDALS		
329		At cost		329
		FURNITURE		
1		At cost less depreciation		1
		DIES		
1		At cost less depreciation		1
		FOUNDARY TRUST FUND as per contra		
		Amount due from general fund		1 050
		EDUCATION FUND INVESTMENTS as per contra		
769		CASH ON FIXED DEPOSIT including accrued interest	—	
1 271		BUILDING SOCIETY SAVINGS ACCOUNT	6 086	
19 401		QUOTED DEBENTURES (Market value R23 851; 1974: R18 136)	29 176	
12		UNQUOTED SHARES	17	
10 000		UNQUOTED DEBENTURES AND LOANS	20 179	
31 453			55 458	
1 172		*Add:* Amount due from general fund	533	
	32 625		55 991	
		MACARTHUR FORREST MEMORIAL FUND INVESTMENTS as per contra		
1 110		BUILDING SOCIETY SAVINGS ACCOUNT	693	
591		R600 6¼% ELECTRICITY SUPPLY COMMISSION LOCAL REGISTERED STOCK—1989/91	591	
2 000		LOAN	2 000	
2		UNQUOTED SHARES	2	
1 200		PARTICIPATION BONDS	1 700	
4 903			4 986	
54		*Less:* Amount due to general fund	97	
4 849			4 889	
	R126 045			R154 556

ASSOCIATED SCIENTIFIC AND TECHNICAL SOCIETIES OF SOUTH AFRICA
Per D. S. TRUEMAN, *for Secretaries*

To the Members,
THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY.

We have examined the attached balance sheet and income and expenditure account. In our opinion they fairly present the financial position of the Institute at 30 June 1975 and its income and expenditure for the year ended on that date.

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

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Income and Expenditure Account for the Year ended 30th June 1975

1974 R	R		1975 R	R
		Secretarial fee and overhead charge —		
	16 691	Associated Scientific and Technical Societies of South Africa		19 278
	125	Audit fee—1975	225	
		—adjustment for prior years	175	
				400
		Contributions—		
602		Federation of Societies of Professional Engineers	988	
200		South African National Committee on Tunnelling	200	
	802			1 188
	143	Bad debts written off		192
		Donations —		
300		South African Federation of University Engineering Students	300	
1 000		A.S. & T.S. Trust	—	
	1 300			300
	617	General expenses		979
	200	Medals		—
	2 236	Postages		1 904
	1 775	Stationery and printing		5 049
	—	Printing of publications		16 619
		Institute journal		
17 726		Expenses	18 315	
2 483		Secretarial fee	3 083	
20 209			21 398	
6 235		*Deduct:* Advertising 6 913		
9 237		Sales 8 706		
2 125		Subvention Department of National Education 1 914		
17 597			17 533	
	2 612			3 865
	25 524	Excess of income over expenditure carried down		21 410
	R55 025			R71 184
	30 779	Surplus transferred to accumulated fund		21 410
	R30 779			R21 410

1974 R		1975 R
24 138	Subscriptions	24 580
13 600	Company affiliates subscriptions	14 000
906	Entrance fees	627
3 427	Interest and dividends received	5 963
4 560	Surplus on sale of publications	13 644
649	Symposia and colloquia	1 316
7 495	Vacation School	10 654
250	Transfer from provision for doubtful subscriptions	400
R55 025		R71 184
25 524	Excess of income over expenditure	21 410
2 255	Surplus on sale of investments	—
R30 779		R21 410