

Annual Report and Accounts

FOR THE YEAR ENDED 30TH JUNE, 1977

Council and Standing Committees, 1976-1977

President: Dr M. D. G. Salamon.

Vice-Presidents: P. A. von Wielligh and Dr M. G. Atmore.

Honorary Treasurer: J. K. E. Douglas.

Immediate Past President: Dr R. E. Robinson.

Members of Council: J. D. Austin, E. Collier, C. T. Fenton, J. A. Holmes, Dr P. R. Jochens, Prof. R. P. King, Dr D. G. Krige, Prof. F. Q. P. Leiding, D. G. Malan, C. T. Shaw, D. A. Viljoen, R. A. von Maltitz.

Chairman, Witbank-Middelburg Branch: E. J. Jackson.

Chairman, Orange Free State/Klerksdorp Branch: A. N. Shand.

Past Presidents Serving on Council: R. J. Adamson, H. Britten, J. K. E. Douglas, R. C. J. Goode, Prof. D. D. Howat, Dr J. P. Hugo, D. G. Maxwell, Prof. R. P. Plewman, V. C. Robinson, P. W. J. van Rensburg.

Ten Council meetings were held during the year, and the standing and sub-committees held seventy-one meetings.

Standing Committee Chairmen: Membership, Dr M. G. Atmore; Technical Programme — Metallurgy, J. A. Holmes; Technical Programme — Mining, C. T. Shaw; Vacation School — Metallurgy, Prof. R. P. King; Vacation School — Mining, Dr D. G. Krige; Awards, Dr R. E. Robinson; Excursions, C. T. Fenton; Adjudication, Dr R. E. Robinson; Constitution, Rules and Policy, Dr R. E. Robinson; Mines and Works, C. T. Shaw; Education, Dr R. E. Robinson; Pyrometallurgical Discussion Group (Convenor), Dr J. B. See; Phoenix National Committee, Dr R. E. Robinson.

Representatives on Other Bodies

Associated Scientific and Technical Societies:

Members: Dr R. E. Robinson and Prof. R. P. Plewman.

Alternates: P. A. von Wielligh and Dr M. D. G. Salamon.

Federation of Societies of Professional Engineers:

Members: D. A. Viljoen and Prof. R. P. Plewman.

Alternates: Dr M. D. G. Salamon and Dr M. G. Atmore.

FSPE Technician and Education Liaison Committees:

Member: R. A. von Maltitz.

FSPE Rationalization Committee:

Member: Dr M. D. G. Salamon.

South African Council for Professional Engineers (Institute Nominees):

Members: Dr R. E. Robinson and P. W. J. van Rensburg.

Alternate: Dr D. G. Krige.

South African National Committee on Tunnelling:

Member: D. G. Malan.

Alternate: Prof. R. P. Plewman.

Engineers' Liaison Committee (Pretoria):

Member: Dr J. P. Hugo.

Alternate: P. W. J. van Rensburg.

James Moir Memorial Lecture Committee:

Representative: Prof. D. D. Howat.

World Mining Congress — National Committee:

Members: Dr M. D. G. Salamon, Prof. R. P. Plewman, and Prof. F. Q. P. Leiding.

International Apcom Organizing Committee:

Representative: Dr D. G. Krige.

Membership

Sixteen Fellows, twenty-seven Members, six Associate Members, nineteen Graduates, twelve Associates, thirty-four Students, and two Company Affiliates were elected during the year. Nine Members, four Graduates, one Associate, and one Student were transferred to Fellows; thirty-one Graduates, five Students, and one Associate were transferred to Member; seven Students to Graduates; three Students to Associates; and one Student to an Associate Member. One Fellow and one Associate were re-instated.

Twelve Fellows, one Member, and one Associate were admitted to retired membership. One Life Fellow, five Fellows, five Members, three Associates, three Graduates, one Student, and one Company Affiliate resigned. Forty-one members from all grades were struck off.

The membership at 30th June, 1977 and at the end of the previous year is shown in the following tabulation:

	30th June, 1976	30th June, 1977
Honorary Life Fellows	17	16
Honorary Fellows	8	8
Life Fellows	171	172
Fellows	547	533
Members	517	558
Associate Members	21	24
Graduates	123	105
Associates	205	210
Students	179	172
Company Affiliates	80	81
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	1878	1879

Obituaries

Your Council records with deep regret the death during the year of the following members: C. G. Evans, J. P. Rees, Life Fellows; S. R. Bryant, H. MacConachie, M. Mrost, A. W. van Zyl, Fellows; L. T. Campbell-Pitt, F. W. Collins, A. J. Duncan, I. G. Evans, F. W. Kleinschmidt, P. L. Vaughan, R. W. Wallace, H. Wason, Members.

Finance

The annual accounts show an excess of income over expenditure of R18 355, compared with an excess of

R24 159 last year. A breakeven situation had been expected, and several reasons can be given for this unexpected surplus. An amount of R3615 was recovered from the Liquidators of Wilson and Mansfield, with whom the Institute had deposited R10 330 on call in 1973. The vacation schools yielded a surplus of R6296. The high standard and the popularity of these schools meant that more candidates were admitted than were, originally budgeted for, and this accounts for the surplus in this account. It must be remembered, however, that members of the organizing committees and the others who assisted gave their services on a free and voluntary basis, and there would certainly have been no surplus if there had been a charge for these services. In fact, the fees charged in relation to other week-long courses in town are very moderate indeed.

A deficit on the *Journal* account of R12 000 had been budgeted for, based on the revenue and costs of the previous year. In fact, the deficit was only R1144 owing to improved advertising revenue and reduced printing costs. The reduction in the latter was primarily due to a lower number of pages printed.

Sales of publications accounted for R2997. Revenue from this source is beginning to decline compared with previous years because there have been no new publications recently. Nevertheless, there is a continued demand for the Open Pit Symposium publication and, as stocks were depleted, it was decided to reprint 500 copies.

Attention was drawn last year to the rising costs of administering the Institute. This year the net costs, after the cost of the vacation schools, symposia, the *Journal*, and the printing of publications had been excluded, rose from R35 393 to R42 682, an increase of 21 per cent. This increase relates partly to inflation and partly to the increased activities of the Institute. As indicated, increased costs were counterbalanced by increased revenue, but this was somewhat fortuitous. The decision of Council to increase the fees by 25 per cent this year is considered fully justified under the circumstances.

In accordance with Council's directive that, if possible, the Education and MacArthur Forrest funds should be adjusted annually to allow for the effect of inflation on the value of money, amounts of R7700 and R882 respectively were transferred from accumulated funds to these two funds.

In regard to the investment of funds, the arrangement with Syfrets Trust continued satisfactorily. A total of R100 588 has now been invested on their advice in debentures and loans paying good interest rates. The balance is in more liquid form in building societies, banks, and on call and on prime paper at Syfrets Trust.

Education Functions

The Education Committee and its Career Guidance Sub-Committee were involved during the year in recruiting activities for both university graduates and technicians. They were also concerned in post-graduate training and were instrumental in arranging a seminar in Cape Town for engineering students to discuss the problems associated with employment in the minerals

industry immediately after graduation. Several areas of discontent were brought to light at this seminar, and action will be taken by the industry to ensure that training programmes and graduate outlook are made compatible.

The Education Committee has also been responsible for instituting prestige prizes for university students in the departments of metallurgy and mining. These prizes are awarded not only for academic merit but also in recognition of the enthusiasm and activities of the students in the development of the department and in its relation to the Institute and the profession. The first prizes were awarded in May at a special function held at the University of the Witwatersrand, when a paper was presented by Dr M. G. Atmore on *The Future of the Metallurgical Industry in South Africa* (published in the *Journal*, (July 1977).

Closely associated with the activities of the Education Committee is the Phoenix Programme. Considerable financial support was obtained from the mining and metallurgical industry outside the Chamber of Mines, and a national committee for Phoenix courses was formed and held its first meeting in July 1977. A Schools Liaison Officer has been appointed by the Chamber of Mines to follow up the contacts with school teachers made during the Phoenix courses, and it is hoped that these activities will have a profound effect on recruitment to the universities.

Journal

The following papers and notes were published in Volume 77 of the *Journal of the South African Institute of Mining and Metallurgy*.

August 1976

Ancillary smelter operations and sulphuric acid manufacture at Impala Platinum Limited, by R. P. Plasket and D. A. Ireland.

Treatment of zinc silicates by the Waelz process, by J. E. Clay and G. P. Schoonraad.

Feasibility studies of the on-stream analysis of lead in mineral slurries, by S. K. Kawatra.

September 1976

Metal founding — a modern perspective, by P. R. Beeley.

The structural design of large grinding mills, with reference to shellmounted bearings, by D. A. Fenton.

October 1976

Presidential Address: The role of research and development in the South African gold-mining industry, by M. D. G. Salamon.

November 1976

Cutting strong rock with a drag bit assisted by high-pressure water, by M. Hood.

An electric tin smelter for the processing of low-grade tin concentrates in South Africa, by E. C. Stoltz.

Stress-corrosion studies on materials used for surgical implants, by C. R. Thomas and F. P. A. Robinson.

December 1976

Effective thermal conductivities of packed beds of chromite ores, by M. L. Young and J. B. See.

Modern materials for underground support, by M. McChesney.

January 1977

The metallurgy of tin smelting in a submerged-arc furnace, by H. A. Uys.

Tinplate, and electrolytic tinning at the Iscor Works, Vanderbijlpark, by D. L. B. Pollnow.

Oxygen enrichment of the converter air at Rustenburg Platinum Mines, by J. E. Forbes.

February 1977

The production of electrolytic manganese in South Africa, with special reference to the Delta Manganese operation at Nelspruit, by M. Harris, D. M. Meyer, and K. Auerswald.

Electrowinning of nickel at the Bindura Smelting and Refining Company, by H. T. Brown and P. G. Mason.

The electrolytic extraction of zinc at the Zinc Corporation of South Africa Limited, by C. J. van Niekerk and D. R. Allen.

March 1977

The reduction of fluxed and non-fluxed manganese ores by ferromanganese silicide, by W. P. Channon and J. B. See.

The design and operation of a double-V compartment vertical-flow settler, by B. N. Soutar.

Experience with Mars pumping of underground water, by N. E. K. Schuttler.

April 1977

Recovery of energy from the water going down mine shafts, by A. Whillier.

Gravity-fed water systems in mines, by A. Whillier and J. van der Walt.

Health hazards of South African mine water, by P. Smit.

May 1977

The use of cylindro-conical settlers for the clarification of underground water, by E. C. Hunter and G. T. C. Emere.

The pumping of water from mines in the Central Witwatersrand, by J. A. Tyser.

Changes in the level of serum vitamin C in mine-workers, by N. B. Strydom, G. G. Rogers, W. H. van der Walt, and A. van der Linde.

Ultrasonic flowmeters, by A. E. Hall.

June 1977

Potential applications of thiourea in the processing of gold, by T. Groenewald.

Iron Age metal working in the Magaliesberg area, by H. M. Friede.

An experimental study of iron-smelting techniques used in the South African Iron Age, by H. M. Friede and R. H. Steel.

July 1977

The Alusaf aluminium smelter at Richards Bay, by H. T. Kaiser and P. de Waal.

The elution of gold from activated carbon using deionized water, by R. J. Davidson and D. Duncanson.

Rapid changes of air temperature in underground airways, by K. Vost.

The future of the metallurgical industry in South Africa, by M. G. Atmore.

Student Prizes

Prizes for the best student papers, written in part-

fulfilment of the B.Sc. Engineering degree and submitted to the Institute for consideration, were awarded as follows:

Mining

The effect of the extraction of number 2 shaft pillar at Blyvooruitzicht Gold Mine on the shaft pillar excavations, by S. M. Gould.

A prediction of a long term future of tin based on influences exerted by the metal market and logistic curves drawn as a function of total cumulative ore reserves, by A. G. W. Knock.

Accident prevention and the cost of injuries in the gold mining industry, by E. Rorke.

Metallurgy

A dilatometric investigation of a 400-grade maraging steel, by R. C. Buchanan.

Awards

Papers published in the latter part of Volume 76 and the first part of Volume 77 of the *Journal* were considered eligible for an award by Council, and the under-noted authors achieved the distinction of a silver medal:

Dr N. C. Joughin for his paper entitled 'Potential for the mechanization of stoping in gold mines' (published in the January 1976 issue of the *Journal*).

Mr M. Harris for his contribution to the development of the electrolytic manganese process in South Africa, and for his paper entitled 'The production of electrolytic manganese in South Africa, with special reference to the Delta Manganese operation at Nelspruit' (written in conjunction with Mr D. M. Meyer and Mr K. Auerswald, and published in the February 1977 issue of the *Journal*).

Excursions

With the rate of inflation and the state of the economy of the country, your Council again decided to limit the number of excursions made during the past year. Thus, only one was held — on 24th May, 1977, when two bus loads of members visited the Fuel Research Institute in Pretoria and the Pretoria West pilot plants. Members toured the headquarters of the Institute, and the following divisions at the laboratory: engineering, coal preparation and combustion, chemical, coal survey, coal conversion and coal sample preparation, and coking. At the pilot plants, coal preparation, combustion, briquetting, and carbonization were viewed. The Institute is grateful for the co-operation and hospitality received from the Fuel Research Institute.

The Orange Free State Branch organized a most interesting excursion to the P. K. le Roux Dam on 2nd June, 1977, through the courtesy of the Department of Water Affairs. An invitation was extended to the general body of the Institute, several members of which participated.

Mining Colloquia

A colloquium was held on 17th November, 1976, on the topic of 'Pumping, settling, clarification, and treatment of underground water'. The colloquium was attended by 145 delegates, and the following papers, most of which have since been published in the *Journal*, were presented:

Pumping of water from defunct mines of the central

Witwatersrand, by J. A. Tyser, East Rand Proprietary Mines Limited.

Experiences gained with Mars pumping at Vaal Reefs Exploration and Mining Company Limited, by K. Schuttler, Vaal Reefs Exploration and Mining Company Limited.

The use of ultrasonic flowmeters for water flow determination, by A. E. Hall, Anglo American Corporation of S.A. Limited.

Energy recovery from water going down mine shafts, by A. Whillier, Environmental Engineering Laboratory, Chamber of Mines of South Africa.

Design and operation of a double-vee compartment vertical flow settler, by B. N. Soutar, Gold Fields of S.A. Limited.

The pumping from the coast and storage of oil in the Witbank area, by Messrs Pipe Consultants.

Restoration and maintenance of the water balance in the vicinity of Western Areas Gold Mining Company, by A. Vogelzang, Western Areas Gold Mining Company Limited.

Health hazards of mine water, by P. Smit, Gold Fields of S.A. Limited.

Metallurgical Colloquia

A colloquium entitled 'Electrometallurgy' was held on 10th September, 1976, and was attended by approximately 80 delegates. Dr N. P. Finkelstein and Dr M. G. Atmore chaired the morning and afternoon sessions, and the following papers were presented:

Tin plate and electrolytic tinning at Iscor Works, Vanderbijlpark, by D. L. B. Pollnow, Iscor.

The Alusaf aluminium smelter at Richards Bay, by H. T. Kaiser and P. de Waal, Alusaf (Pty) Limited.

The electrowinning of nickel, by H. T. Brown and P. Mason, Bindura Smelting and Refining Company Limited.

The activities of the Electrochemistry Group at the National Institute for Metallurgy, by M. J. Nicol, National Institute for Metallurgy.

Mathematical modelling of electrowinning and electrorefining processes, by A. W. Bryson, University of the Witwatersrand.

The history of electrolytic manganese production in South Africa and a brief description of Delta Manganese operations at Nelspruit, by M. Harris, D. M. Meyer, and K. Auerswald, Delta Manganese Limited.

The development and improvements of electrolytic extraction of zinc at Zinc Corporation of S.A., by C. J. van Niekerk and D. R. Allen, Zinc Corporation of S.A. Limited.

Copper recovery from solvent extraction electrolytes using lead alloy anodes, by G. Egget and D. Naden, Davy-Ashmore S.A. (Pty) Limited.

A second colloquium was held on 23rd March, 1977, on the topic 'Environmental control in the metallurgical industry'. This colloquium was opened by the President of the Institute, and the two session chairmen were Mr R. Plasket and Mr J. A. Holmes. The meeting was attended by 150 delegates and the following papers were presented:

Environmental control of the mining industry, by G. H. Grange, Chamber of Mines of South Africa.

Air pollution and the metallurgical industry, by N. Boegman, Department of Health.

Air pollution and considerations in the planning and siting of industries, G. P. N. Venter, Air Pollution Research Group, CSIR.

Control of acid mine drainage, by D. Bosman, Anglo American Corporation of S.A. Limited.

Potential use of acid mine drainage sludges for water pollution control, by L. R. J. van Vuuren and S. G. Wiechers, National Institute of Water Research, CSIR.

Selection and design aspects of equipment for the cleaning and treatment of gases in the ferrous and non-ferrous metals industries, by J. P. Herselman, Lurgi South Africa (Pty) Limited.

Some aspects of energy and the environment in the steel industry, by J. J. Heynike, Iscor.

Control of air pollution at Rand Carbide Limited, Witbank, by J. Meintjes, Rand Carbide Limited.

A questionnaire was sent during the year to members, setting out a number of alternative topics for future colloquia. Analysis of the completed questionnaires indicated that the most popular topic was 'Process control and automation in metallurgical plants'. However, it was the view of the committee that this subject would not be entirely appropriate because of the IFAC Symposium held in Johannesburg in September 1976 and the plans for a NIM-sponsored symposium on process control to be held in September 1978. Accordingly, enquiries are in hand to establish whether a colloquium could be arranged on the next most popular subject, namely 'The merits of pilot plants and problems of scale-up'.

Vacation School — Metallurgy

During the year the Vacation School Committee has continued to organize schools on the pattern that has been used successfully in the past. During August 1977, a School on 'Grinding — theory and practice' was held. The School was led by Prof. L. G. Austin of the Pennsylvania State University and Mr A. R. MacPherson of Canadian Bechtel Limited.

Vacation School — Mining

In co-operation with the Mine Ventilation Society of South Africa, two consecutive Schools were held from 25th July to 5th August on the subject of 'Mine ventilation'.

Pyrometallurgical Discussion Group

The Pyrometallurgical Discussion Group held meetings on 23rd September, 1976, and 28th April, 1977. Both these meetings were held in the Lecture Theatre at Kelvin House. The speakers and their topics were as follows.

23rd September, 1976

Some aspects of the design of a six electrode-in-line matte smelting furnace, by Dr A. A. Hejja, Department of Metallurgy, University of the Witwatersrand.

Aspects of copper production at Palabora Mining Company, by Mr F. Phillips, Palabora Mining Company. *28th April, 1977*

The electrical characteristics of submerged-arc furnaces, by Mr J. Meintjes, AECI Limited.

Ore processing by plasma, by Dr S. M. L. Hamblyn, National Institute for Metallurgy.

The attendance at each meeting was about 20 people from industry, research institutions, and the university. This small attendance permitted some interesting discussions.

World Mining Congresses

Last year, at the request of the International Organising Committee of World Mining Congresses, the South African National Committee was formed under the aegis of the Institute, the Chairman being Dr H. G. Denkhaus of the CSIR. Plans are now in progress to organize the Tenth World Mining Congress in Istanbul during October 1979. An exhibition of mining materials and study tours are also to be arranged. The general theme of the congress will be 'Mining and mineral raw materials in the service of mankind'. Several papers are expected from South Africa.

Royal Society of South Africa

The above Society celebrated its hundredth year of existence by holding a lecture on 28th June, 1977, with which this Institute, together with the Geological Society of South Africa, was proud to be associated. The lecture was delivered by Prof. John Sutton, FRS, Vice-President of the Royal Society of London, and was entitled 'Crustal Evolution and the Distribution of Ore Deposits through Geological Time'.

Institution of Mining and Metallurgy, London

The South African Institute of Mining and Metallurgy was privileged to be able to extend its hospitality to Mr G. J. Mortimer, President of our sister institution in London, by hosting a cocktail party on 9th June, 1977, to which members of the I.M.M., London, were invited.

Council of Commonwealth Mining and Metallurgical Institutions

The above Council, of which the Institute is a member, plans to hold the Eleventh Commonwealth Mining and Metallurgical Congress in Hong Kong from 6th to 12th May, 1978. Several South African papers are to be presented, and group travel arrangements for members to attend the Congress will be made through this Institute.

The Associated Scientific and Technical Societies of South Africa

The Institute has continued to contribute to the activities of the Associated Scientific and Technical Societies, where progress has been made in establishing activities in other centres to bring about greater co-operation and co-ordination between the different societies.

The A.S. & T.S. Trust continued to make good progress. During the year the Trust was able to make its first concrete contribution to the encouragement of the presence of A.S. & T.S. in other centres. This took the form of a donation of R4000 for improved facilities in the Athenaeum, the headquarters of A.S. & T.S. in the Western Cape. Particularly pleasing is the new

A.S. & T.S. *Newsletter*, the first issue of which was produced during the year under review.

The Institute wishes to record its appreciation for all the services offered by the A.S. & T.S., particularly the use of the facilities at Kelvin House and the efficient secretarial services.

South African Council for Professional Engineers

SACPE has been concerned with establishing formal training programmes for engineers-in-training and ensuring that these programmes are acceptable in terms of engineering content for registration of professional engineers. Consideration has also been given to the formation of a Board for the registration of technical people working in engineering fields, but no finality has been reached in this regard.

The Federation of Societies of Professional Engineers

The Institute was represented on the Board of FSPE by two Council members, Prof. R. P. Plewman and Mr D. A. Viljoen, with Drs M. D. G. Salamon and M. G. Atmore as alternates.

Recognition of personnel in the field of engineering who do not comply with the requirements for registration as professional engineers was again the subject of much debate. The Institute's fear that the proposed amendment to the Professional Engineers Act No. 81 of 1968 would lead to the establishment of numerous Boards, thereby involving senior engineers in many man hours of debate and committee work has to some extent been allayed. It is understood that SACPE, upon whose recommendation the Minister may establish a Board of Control, will endeavour to limit such Boards to four categories. It is felt that all distinguishable categories could be accommodated under the four general headings.

Regarding technician training, the Federation has proposed that the Advanced National Diploma, which is accepted by SACPE as equivalent to their Part II qualification, be modified to serve as the entry qualification subject to agreement by the appropriate Boards of Control. The proposal by Mr R. C. J. Goode that this diploma should be renamed 'Diploma in Technology' was also generally accepted.

The Eighth Conference on Engineering Education will be held at the University of Natal during September. The conference is being arranged around the theme 'A review of all aspects of engineering training in the Republic', and papers will be presented by those who have special interest in the training of engineers and technicians.

The Federation was represented by two members of its Board at the World Federation of Engineering Organisations General Assembly in Warsaw during June 1977. The basic themes covered transfer of technical information, transfer of appropriate technology, co-operation between industry and engineering educational establishments, standardization, technical progress, and the role of scientific and technical associations.

Together with the majority of member societies, Council has indicated its unwillingness to subvent the publication *The Professional Engineer*. The FSPE

recommendation that the successor to this publication becomes the central journal for all engineers in the proposed scheme for the rationalization of engineering journals is also being opposed. The *Journal* of this Institute is of high standing both locally and internationally, and the publication of a journal of lesser quality and appeal, which could result from the rationalization proposal, is not regarded as an acceptable alternative.

FSPE continues to do useful work in the area of career guidance. During the year the Federation published several articles on engineering, and maintained close contact with school guidance officers in the four provinces.

The need for subvention of lecturers at universities was considered, and suggestions for attracting lecturers for engineering included joint appointments in the university and in industry or the public sector, or the formation of multi-disciplinary research and development corporations to undertake research and development work on contract to industry and the public sector.

While your Council is concerned over the tendency of FSPE to devise concepts and new functions for itself, which in some instances it has sought to impose on member societies, FSPE has shown that it can fulfil an important role in the development of the engineering profession in South Africa.

South African National Committee on Tunnelling

Although SANCOT may not appear to have had a busy year, the Committee continues to play an important role in the tunnelling industry with membership on a corporate basis.

The Committee concentrated on the following:

Safety, which involved an international group who were instructed to commence activities with the following tasks: to prepare an index of existing standards and national legal and administrative regulations; to compare existing safety codes of each member country; to identify procedures already widely accepted.

Research matters, which involved the compilation of a directory of research organizations and research on which they are engaged, as well as setting out the geotechnical research needs in tunnelling in South Africa. A joint report will be produced on the state of research.

Contracting practices, which were circulated, together with standard forms of contract documentation, and work was continued by identifying problem areas in current contracting practices.

Review of existing legal requirements in tunnelling, which involved the work of a sub-committee preparing amendments to the Mines and Works Act to give recognition to the special circumstances of civil engineering tunnels.

Collection of demand data and statistical demand forecast, which includes a forecast that some 70 km of civil engineering tunnels are likely to be started in the period 1975-1980 despite the present economic climate. SANCOT continues to provide a forum for exchanges of opinion and information in this regard.

Orange Free State/Klerksdorp Branch

Committee

A. N. Shand (Chairman), B. J. Drysdale (Vice-Chairman), G. J. C. Young (Immediate Past Chairman), A. R. Godfrey (Honorary Secretary), and E. J. Dominy, H. M. W. Eschenberg, E. C. Hunter, Z. J. Lombard, D. A. Smith, and P. S. Wentworth.

Mr Drysdale and Mr Smith both retired during the year and were obliged to resign from the committee. The chairman wishes to record his appreciation of the sterling work performed by these two gentlemen in the service of the Branch. Mr Smith served as chairman of the local committee for the year 1974-1975, and Mr Drysdale served on the committee from the 1975-1976 session.

Meetings

Three committee meetings were held during the year, and the chairman wishes to record his appreciation of the assistance given him by the committee. Attendance at these meetings averaged 40. Three general meetings were also held during the course of the year.

Presentations during the year included the following:

A review of modern research trends in extractive metallurgy, by Dr R. E. Robinson.

Latest trends in explosives for long-hole development, by P. S. Wentworth.

Metal in Harmony — Film.

Study in Steel — Film.

A party of twenty-six members from the Branch and the Institute visited the P. K. le Roux Dam on 2nd June, 1977. It was very gratifying to the organizers of this event that the response from members was extremely good. As in the past, the Department of Water Affairs were excellent hosts and spared no effort in ensuring that the members enjoyed a most satisfying outing. Their generosity is gratefully acknowledged.

Membership

The total membership of the O.F.S. Branch as at 30th June, 1977, was as follows:

Fellows	18
Members	42
Associates	41
Graduates	6
Students	9

This represents a small decrease on last year's figure. However, it is felt that the potential membership is much greater, and all members of the O.F.S. and Klerksdorp areas are urged to contact the Branch so that they can be informed about the activities of the Branch.

Witbank-Middelburg Branch

Committee

E. J. Jackson (Chairman), K. P. Schleicher (Vice-Chairman), R. K. Miller (Honorary Secretary), and A. N. Melvill, R. Smith, A. N. Turner, W. Weber, and T. Wilmot.

Meetings

Four committee meetings and three general meetings were held during the year. The following addresses were delivered:

30th September, 1976: Coal rescue drilling unit, and

demonstration of its mobility with models, by J. Turnbull.

24th February, 1977: The world economic situation and its effect on South Africa, by L. Boyd.

20th April, 1977: Open cast mining, by Messrs Sutherland, Rankin, and Dickson.

On 22nd June, 1977, an excursion was made to the Southern Cross Steel Company (Pty) Limited in Middelburg.

Finance

All the activities were self financing, a credit balance of R9,91 being reflected at the year's end.

General

The chairman wishes to record his appreciation to the committee for their support throughout the year, and

requests Branch members to give the incoming committee their full support to encourage better involvement in the activities of the Branch.

Honorary Services

Appreciation is recorded for the services of the Honorary Legal Advisers, Messrs van Hulsteyn-Douglas, and the Council is most grateful for the invaluable assistance given to the Institute by the Honorary Treasurer, Mr J. K. E. Douglas

The organization of the many and varied functions of the Institute demands much time and effort on the part of the committees and their chairmen, and gratitude is expressed to these persons for their co-operation during the past year.

Company Affiliates

The following members have been admitted to the Institute as Company Affiliates.

AECI Limited.

Afrox/Dowson and Dobson Limited.

Amalgamated Collieries of S.A. Limited.

Apex Mines Limited.

Associated Manganese Mines of S.A. Limited.

Billiton Exploration S.A. (Pty) Limited.

Blackwood Hodge (S.A.) Limited.

Blyvooruitzicht G.M. Co. Ltd.

Boart International Limited.

Bracken Mines Limited.

Buffelsfontein G.M. Co. Limited.

Cape Asbestos South Africa (Pty) Ltd.

Compair S.A. (Pty) Limited.

Consolidated Murchison (Tvl) Goldfields & Development Co. Limited.

Deelkraal Gold Mining Co. Ltd.

Delfos & Atlas Copco (Pty) Limited.

Doornfontein G.M. Co. Limited.

Durban Roodepoort Deep Limited.

East Driefontein G.M. Co. Limited.

East Rand Prop. Mines Limited.

Engineering Management Services (Pty) Ltd.

Envirotech (Pty) Ltd.

Free State Saaiplaas G.M. Co. Limited.

Fraser & Chalmers S.A. (Pty) Limited.

Gardner-Denver Co. Africa (Pty) Ltd.

Goldfields of S.A. Limited.

The Grootvlei (Pty) Mines Limited.

Harmony Gold Mining Co. Limited.

Hartebeesfontein G.M. Co. Limited.

Highveld Steel and Vanadium Corporation Limited.

Hubert Davies Heavy Equipment (Pty) Ltd.

Impala Platinum Limited.

Ingersoll Rand Co. S.A. (Pty) Ltd.

Johannesburg Consolidated Investment Corp. Ltd.

Kinross Mines Limited.

Kloof Gold Mining Co. Limited.

Lennings Holdings Limited.

Leslie G.M. Limited.

Libanon G.M. Co. Limited.

Lonrho S.A. Limited.

Lorraine Gold Mines Limited.

Marievale Consolidated Mines Limited.

Matte Smelters (Pty) Limited.

Natal Cambrian Collieries Limited.

Northern Lime Co. Limited.

O'okiep Copper Company Limited.

Otjihase Mining Co. (Pty) Limited.

Palabora Mining Co. Limited.

Photometric Sorters.

President Steyn G.M. Co. Limited.

Pretoria Portland Cement Co. Limited.

Prieska Copper Mines (Pty) Limited.

Rand Mines Limited.

R. J. Spargo Limited.

Rooiberg Minerals Development Co. Limited.

Rustenburg Platinum Mines Limited (Union Section).

Rustenburg Platinum Mines Limited (Rustenburg Section).

St. Helena Gold Mines Limited.

Shaft Sinkers (Pty) Limited.

S.A. Land Exploration Co. Limited.

Stilfontein G.M. Co. Limited.

The Griqualand Exploration and Finance Co. Limited.

The Messina (Transvaal) Development Co. Limited.

The Randfontein Estates Gold Mining Co. Witwatersrand Ltd.

The Robbins Co. (Africa) (Pty) Ltd.

The Steel Engineering Co. Ltd.

Trans-Natal Coal Corporation Limited.

Tvl Cons. Land & Exploration Co.

Tsumeb Corporation Limited.

Union Corporation Limited.

Vaal Reefs Exploration & Mining Co. Limited.

Venterspost G.M. Co. Limited.

Vergenoeg Mining Co. (Pty) Limited.

Vlakfontein G.M. Co. Limited.

Welkom Gold Mining Co. Limited.

West Driefontein G.M. Co. Limited.

Western Areas Gold Mining Co. Ltd.

Western Deep Levels Limited.

Western Holdings Limited.

Winkelhaak Mines Limited.

THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

Income and Expenditure Account for the Year ended 30 June, 1977

1976		1977		1976		1976	
R	R	R	R	R	R	R	R
24 686	Secretarial fee and overhead charge — Associated Scientific and Technical Societies of South Africa	30 133		25 392	Subscriptions	25 775	
225	Audit fee — 1977	225		14 000	Company affiliates subscriptions	16 200	
1 611	Contributions — Federation of Societies of Professional Engineers	1 241		503	Entrance fees	965	
275	Council of Commonwealth Mining and Metallurgical Institutions	—		7 604	Interest and dividends received	9 534	
200	South African National Committee on Tunnelling	200		5 604	Surplus on sale of publications	2 997	
2 086	Bad debts written off	1 441		771	Symposia and colloquia	804	
177	Donation—South African Federation of University Engineering Students	677		12 016	Vacation School	6 296	
300	General expenses	300		—	Transfer from provision for doubtful debts	750	
1 066	Medals	2 572		—	Bad debt recovered — dividend from insolvent estate P. Wilson & E. Mansfield & Company (Note: R10 239,57 written off 30 June 1973)	3 615	
320	Postages	9		NOTE: Voluntary contributions by members amounting to R1 486 were collected and paid over by the Institute to the A.S. & T.S. Trust and are not included in the income statement. (1976 — R1 362).			
2 341	Stationery and printing	2 398					
4 192	Printing of publications	4 755					
20 946	Institute journal—Expenses	17 575					
3 685	—Secretarial fee	4 086					
24 631		21 661					
	<i>Deduct:</i>						
5 604	Advertising	7 907					
9 595	Sales	9 031					
3 094	Subvention—Department of National Education	3 579					
18 293		20 517					
6 338	Excess of income over expenditure trans- ferred to accumulated fund	1 144					
24 159		18 355					
<u>R65 890</u>		<u>R66 936</u>		<u>R65 890</u>		<u>R66 936</u>	

Metal structures

The National Committee on Metal Structures of The Institution of Engineers, Australia, is continuing its regular series of Conferences. The 1978 Metal Structures Conference will be held in Perth from 30th November to 1st December, 1978.

The conference will provide a forum at which the latest developments in the design and construction of metal structures associated with the mining, gas, or oil industries can be reported and discussed. It will also provide an opportunity for the exchange of ideas and experiences between engineers working in the fields of research, teaching, design, fabrication, and construction.

Contributions are invited on any aspect of any type of metal structure pertaining to the theme of the conference. They may be fundamental, theoretical, experimental, applied, or industrial, and may deal with matters of analysis, design, testing, fabrication, erection, or economics. Intending authors are invited to submit the titles of proposed papers together with a brief

synopsis (not more than 250 words) outlining the aims, content, and conclusions of their papers. Synopses must be received by 27th January, 1978, and should be accompanied by a statement of the authors' intention to attend the Conference.

Authors will be notified of the provisional acceptance of their papers on 1st March, 1978. They will then be asked to submit the full text of their papers by 30th June, 1978, for final consideration. Accepted papers will be pre-printed by the photo-offset process direct from the author's manuscript and will be circulated to registrants prior to the Conference.

All correspondence relating to the Conference and proposals for papers should be addressed to

The Conference Manager,
Metal Structures Conference 1978,
The Institution of Engineers, Australia,
11 National Circuit,
Barton A.C.T. 2600, Australia.