Annual General Meeting* of the Institute

The 87th Annual General Meeting of the South African Institute of Mining and Metallurgy was held at Kelvin House, Johannesburg, on Wednesday, 15th August, 1984. Professor R.P. King (President) was in the chair, and declared the meeting open at 16h00.

Obituaries


As a mark of respect to the memory of the deceased, I ask you to stand and observe a few moments' silence.

Minutes

President: The minutes of the last Annual General Meeting were published in the September 1983 issue of the Journal, which has been circulated. The minutes were confirmed.

Welcome

President: It is a pleasure to welcome a number of guests who have come especially to be with us this afternoon: a welcome first of all to our Honorary President, Mr George Nisbet, President of the Chamber of Mines, who is a Past President of the Institute; Honorary Life Fellows, Dr Atmore, Dr Hill, Mr Jamieson, Mr MacPhail, Mr Maxwell, Mr Reid, Dr Robbie Robinson, Mr Vic Robinson, and Mr Von Wielligh; Mr P. Bosman, General Manager of the Chamber of Mines, and Mr John Erasmus, General Manager of AS&TS.

Also present are a number of Presidents of our sister institutes, and we are very pleased to have with us this afternoon Dr Ivan Schwartz, President of AS&TS; Mr Kyle, President of the Geological Society of South Africa; Mr Schoeman, Vice-President of the Institute of Land Surveyors; Mr Miller, President of the Institution of Mechanical Engineers; Mr Schijf, President of the South African Institute of Assayers and Analysts; Mr Raath, President of the Institute of Certified Mechanical and Electrical Engineers; Mr Loots, President of the Institution of Civil Engineers; Mr Hart, President of the Institution of Chemical Engineers; and Mr Schmitz, President of the Mine Ventilation Society.

Thank you very much for coming along this afternoon. We are indeed very pleased to have you with us.

Membership

President: The names of members admitted and transferred to higher grades of membership are given in the Annual Report, which was tabled this afternoon. It is indeed encouraging to see a continual healthy growth in our membership. I welcome all the new members, and congratulate those who have been transferred to a higher grade.

Honorary Life Fellowship

President: Honorary Life Fellowship is awarded by Council to Corporate Members of the Institute who have rendered outstanding service to the industry or to the Institute, and this year it is my very great pleasure to announce that Council has decided to award Honorary Life Fellowship to Mr Dave Viljoen.

Mr Viljoen is a Past President of the Institute, and has served on Council since 1972. Dave has been a very active member of Council: his contribution to the Institute has been very considerable and he remains a very, very active member of Council.

It gives me great pleasure, then, to ask Mr Viljoen to come forward and receive his certificate of Honorary Life Fellowship.

Brigadier Stokes Memorial Award

President: The President of this Institute has to perform very many pleasant duties during the course of his presidential year, but I think the most pleasant of all is the award of the Brigadier Stokes Medal. This award, which was instituted five years ago, is the highest award that this Institute can offer, and it is made to an individual for the very highest

* All the photographs at the meeting and ensuing cocktail party were taken by Carlos Pais.
achievement to the South African mining and metallurgical industry.

This year it gives me great pleasure to announce that the award for 1984 is to Professor Danie Krige, for his achievements in the development and application of geostatistics. Danie Krige's achievements in this field are of the highest order. His pioneering work has been recognized internationally, and is very widely used wherever mineral deposits must be evaluated. His contribution has been truly international, and his rare ability to match elegant mathematical theories to practical problems has placed geostatistical methods in the category of everyday tools for the mining industry.

Danie Krige was born in Bothaville on the 26th of August in 1919. In 1934 he matriculated at the Monument High School in Krugersdorp, and he graduated with a B.Sc. degree in mining engineering from the University of the Witwatersrand at the end of 1938.

He then worked for five years as a Sectional Surveyor for the Anglo-Vaal Group and obtained the Mine Surveyor's Certificate of Competency in 1940. He joined the Department of Mines as a Deputy Inspector of Mining Leases in 1944, and he was on the technical staff of the Government Mining Engineer for eight years. During that period he assisted the Government Mining Engineer in the original, and also the subsequent, uranium negotiations with the American and British authorities. He was responsible for the design of the uranium pricing formula, and also several other advantageous provisions of the uranium contracts, and these led to the establishment of South Africa's highly successful, and indeed very profitable, uranium industry.

During the same period he also handled several of the post-war lease applications in the Orange Free State and in the Klerksdorp Gold Fields. It was the realization that decisions on these new gold mines were being taken on a limited number of borehole results without any scientific analysis of the risks involved that led Danie to start basic research into the problems of ore valuation. He attacked the problem using mathematical statistics, an approach that had not been applied very extensively at that time.

By 1951 he had completed sufficient research to earn a Degree of Master of Science from the University of the Witwatersrand. The result of his M.Sc. research work began to appear in the literature in 1951, and this immediately stimulated interest in several countries. Indeed, his first papers were republished in French as early as 1955.

In 1952 he returned to the head office of the Anglo-Vaal Group as Group Financial Engineer, a position he was to hold until his retirement in March of 1981, when he was appointed to the Chair of Mineral Economics at the University of the Witwatersrand.

Danie is a long-standing member of the Institute, and has made a very great contribution, as a member, as a member of Council, and as Treasurer.

He served on the sub-committee of the Prime Minister's Economic Advisory Council that investigated State aid for marginal gold mines, and he designed the State aid formula that was enacted in 1968. This formula was to assist a large number of gold mines to survive a period of low gold prices, and represents a significant contribution to the stabilization and growth of the gold-mining industry and to the economy of South Africa as a whole during a very difficult period.

He also served for many years on various committees of the Chamber of Mines. In 1974 he was the Chamber-nominated member of the joint Government-Chamber Mining Mission to Iran, which investigated aspects of closer co-operation with Iran on mining matters. Unfortunately, political factors precluded those agreements from reaching fruition.

As Group Financial Engineer for the Anglo-Vaal Group, he was in charge of the departments of mining economics, operations research, geostatistics, technical computing, and group survey.

Danie Krige has a wide range of affiliations, which gives us some indication of his breadth of engineering and scientific interests. He is a Professional Engineer, and he is a member of the Mining Chamber of the Afrikaanse Handelsinstituut. He is a mining engineering member of the Income Tax Special Court, a member of the International Association for Mathematical Geology, a founder member and fellow of the South African Statistical Association, and an Honorary Life Member of the Institute of Mine Surveyors of South Africa. He is also a member of the Society of Mining Engineers of the American Institute of Mining, Metallurgical and Petroleum Engineers. He was elected as the first Chairman of the Geostatistical Association of South Africa, which is a branch of the Geological Society, and he is also active in local school and church activities in Florida, on the West Rand.

These details give us some indication of the success that Danie has achieved in his career, but it is primarily for his achievements in geostatistics that the Institute honours him today with the award of the Brigadier Stokes Medal. His achievements in this field are truly outstanding by any standards. He has been a prolific author, and, although his first major paper appeared only 12 years after his first degree, he has no fewer than 48 publications to his credit, and some of these have been translated into French and Russian. Many of his papers have appeared in this Institute's Journal, and it is papers like these that have given our Journal the international prestige that it now enjoys.

Right from the very beginning, Danie Krige's scientific papers have been of outstanding quality. His first paper, published, as I have mentioned, in 1951, is an example of this, and it attracted the attention of no less a man than Brigadier Stokes himself. Fortunately, Brigadier Stokes's opinion of that paper is still available to us, as written discussion in our Journal.

Stokes's contribution to the paper is indeed very illuminating, and tells us a great deal about the state of statistical valuation at that time. I do not have time to quote extensively from the paper or the discussion, interesting as they are, but it is worth while, I think, to take note of the gist of Brigadier Stokes's comments.

First of all, it was clear to Stokes that he was dealing with a pioneering paper of the highest order, and there is no doubt that Brigadier Stokes would have heartily approved
of the linking of his name with that of Danie Krige in the singularly appropriate way that we are doing today.

Stokes recognized Krige's application of statistical methods as a major breakthrough in the mining industry. However, he was very quick to point out that a demonstration that practical benefits could be gained from the methods would still have to come. That was in 1951.

Danie Krige was to take up that particular challenge in full measure, and from then onwards a steady stream of papers and discussions has flowed from his pen. Many of these have shown just how effective the theoretical techniques can be in improving the profitability of mining enterprises.

As a result, the practical advantages of geostatistical methods have now been widely demonstrated and, in fact, are generally acknowledged.

Danie Krige's work was not merely parochial in context, and very early on the essence of his geostatistical method was taken up internationally, particularly by the very strong school under Professor Matheron in France. As a result, his work has achieved well-deserved recognition in virtually every country of the world.

In 1963 he was awarded the degree of Doctor of Science in Engineering by the University of the Witwatersrand, which is the highest academic degree than can be awarded by the Faculty of Engineering in that University.

In 1981 he was awarded an Honorary Doctorate in Engineering by the University of Pretoria.

The quality, impact, and utility of his publications have been widely recognized by this Institute, and he has received no fewer than five Certificates of Merit, one Silver Medal, and two Gold Medals: one for his paper on 'Two-dimensional weighted moving-average trend surfaces for ore valuation' in 1966, and one for two papers dealing with 'Risk analysis for new mining ventures and the mining tax structure' in 1979.

Danie Krige is sought after as a lecturer, and has lectured in many countries of the world. This year he was invited to deliver the Julius Wehner Memorial Lecture by the Institution of Mining and Metallurgy in London, and he was awarded the coveted William Krobein Award by the International Association for Mathematical Geology.

Today we honour an outstanding scholar and an outstanding engineer, and it gives me great pleasure to ask Professor Danie Krige to come forward and receive the Brigadier Stokes Memorial Medal for 1984.

Professor Krige: I see this highest award of the Institute as a signal honour to me. The President has said many kind things about me today, and I thank him sincerely. However, on this very significant occasion to me, I cannot be other than humble in the knowledge that no man lives, works, or achieves anything in isolation. The honour should therefore be shared out, and I would like to do just that by way of a few words of sincere appreciation.

First, I acknowledge that throughout my career I have always looked for guidance and strength from above.

Ek is ook baie dankbaar vir 'n ouerhuis waar ek net die beste ontvang het. My eggenote, Ansie, het my bygestaan nou vir 40 jaar al, en gesorg 'n gelukkige huilsoek en gesinslewke. Ek sal nog steeds op haar bly leen — vorentoe ook. Hierby sluit ek ook my hele gesin in, want hulle het vir my 'n vas trappek tuis gegee, waarsonder ek nie in my loopbaan ook gelukkig en voorspoedig sou kon wees nie.

I am deeply appreciative also of all the colleagues who worked with me and assisted me throughout my career. I worked basically for three employers: the Mines Department, Anglo-Vaal, and, more recently, the University of the Witwatersrand. All three provided me with ample opportunities to do research, to attend local and overseas symposia and congresses, to establish contacts with colleagues working in the same fields locally and overseas, and to publish papers without restriction. Such a sustained range of opportunities is, I believe, very rare for any scien-

Professor Danie Krige receiving the Brigadier Stokes Medal for 1984
tist, and I am deeply grateful that I was, and still am, so privileged.

This Institute, of course, played a critical role in providing me with a forum for the presentation of many of my papers and the critical discussion of new ideas. The worldwide circulation of these papers in the *Journal* led directly to the establishment of stimulating contacts with colleagues in many overseas countries, and also to my association for more than 20 years with the international series of symposia known as AFCOM.

Discussions of papers published in the *Journal* or presented at colloquia formed a very significant part of my association with this Institute. Many of the contributions were critical rather than complementary, but this was also essential, and I think it is essential for any scientist to have some critical discussion of his ideas. I can truthfully say that I profited most from such contributions.

It is also very appropriate that Brigadier Stokes, to whom this medal is linked, contributed very significantly, both critically and in a complimentary way — the President did not mention quite how critical he was in certain respects — to the discussion on my first two papers, which were published in the *Journal* more than 30 years ago, but he gave me a push then, to help me on the way, and I think he is here tonight in spirit to make this award to me.

I therefore pay sincere tribute to this Institute for what it has done for me, and for many others to date. I know it will continue to provide similar opportunities in the future.

Baie dankie nogmaals vir hierdie groot eer. Hierdie toekenning sal altyd die hoogtepunt van my loopbaan bly.

**Presentation of Medals**

*President*: This year Silver Medals were awarded to two papers that appeared in the *Journal* during the past year.
The first is a paper authored by Arthur Barnes, Charles Finn, and Steve Algie, its title 'The prereduction and smelting of chromite concentrate of low chromium-to-iron ratio'. Dr Algie, who is not a member of the Institute, will be awarded a Certificate of Merit for his contribution. Unfortunately, he is not able to be with us today as he is in Australia. I now ask Mr Barnes and Professor Finn to come forward and receive their Silver Medals.

The second Silver Medal is awarded this year to Tony Starfield and Andrew Bleloch for a paper entitled 'A new method for the computation of heat and moisture transfer in a partly wet airway'. Professor Starfield is a member of the Institute, but Mr Bleloch is not. I therefore ask Professor Starfield to come forward and receive his Silver Medal, and Mr Bleloch to receive his Certificate of Merit.

I would like to add that Andrew is the grandson of Dr William Bleloch, who himself is a Gold Medal winner of this Institute and was President of the Institute many years ago. Dr Bleloch would have enjoyed being with us this afternoon. This must be the first Annual General Meeting he has missed in many years. Unfortunately, his health did not permit him to attend, but I am sure he is here with us in spirit.

Presentation of Student Prizes

President: Student Prizes are awarded annually to students who present exceptionally good theses during their undergraduate careers, and this afternoon an award is made in Mining Engineering to Mr G. Elliott, of the University of the Witwatersrand, for his thesis entitled 'An Investigation into the Feasibility of the Extraction of Pillars using Longwall Techniques'.

In Fiscismetallurgie, 'n toekennings is gemaak aan mnr. M.J.U.T. van Wijngaarden vir sy skripsie 'Elektrochemiese Onderzoek van die Korrosie karakteristieke van 3CR12'.

Ook in Fiscismetallurgie, 'n toekennings is gemaak aan mnr. P.G.H. Pistorius, ook van die Universiteit van Pretoria, vir skripsie 'n Onderzoek na die Meganisme Waardeur Dendritiese Graafiet in 'n Ni-hard-wit Gietsy Vorm'.

There were no awards in Extractive Metallurgy this year. The Annual Report contains lists of other student prizewinners (p. 314 of this issue). These prizes are not awarded at our Annual General Meeting but at various prize-giving ceremonies held at the appropriate university or technikon.

I congratulate all our prizewinners this year, and hope that these awards will spur prospective students and authors to good things next year.
Annual Report and Accounts

(See pp. 313 to 324 of this issue of the Journal).

President: The most important milestone in our activities this year is the improvement that we have seen in our publications. The flow of papers to the Journal has increased, and this has helped to improve our publication schedule. Members will have noticed that, for the first time in several years, the Journal has been appearing during the month of its cover date. I would like to compliment Mr Henry James, the Chairman of our Journal Committee, and Miss Pamela Binstead, for a very, very commendable effort in this regard.

Under the Chairmanship of John Austin, our monograph series has for the first time achieved a positive cash flow, and that is a very pleasing observation to make.

It was with some apprehension that the Institute undertook the establishment of the monograph series some years ago, and you might recall that it was our intention in doing so to publish, in book form, important material relevant to the mining and metallurgical industry. The emphasis was obviously to be on aspects that are particularly relevant to South African industrial practice.

The publication of technical books, however, is a rather risky undertaking, particularly because the market for such books is not very large. Production costs are high, and it is very difficult to obtain written material for publication. I can assure you that it is a large job to write and edit material of this form. However, we have now published five monographs, and these have come to be recognized internationally as major contributions to the mining and metallurgical technical literature.

It is our firm intention to maintain momentum in this field, and to continue with what I believe to be a very worthwhile effort. Those of you who have had occasion to use our monographs will realize that these books make available to engineers and technicians some of the most modern advances in their fields.

Sales of the books have been international, and this is a sure indication that they have received the kind of international recognition that we are hoping for.

Our technical programme has been well received during the year. In the latter half of 1983, two colloquia were held: one on ‘Flotation’, organized by the Extractive Metallurgy Technical Programme Committee, and the other on the ‘Selection of Mining Methods and Systems’, organized by
our Mining Technical Programme Committee. Both colloquia were very successful.

To avoid clashing with MINTEK 50 in March of this year, we did not hold our normal two colloquia during the first half of 1984. However, we shall be holding colloquia later this year — again in collaboration with the Electra Mining Exhibition.

An important milestone during the year was the conclusion of a formal agreement with the South African Region of the Institution of Metallurgists. The Institution of Metallurgists is based in London, and has traditionally promoted the technical interests of the physical metallurgy community in South Africa. The new agreement provides for a very close collaboration between the two Institutes, with a strong representation from members of the Institution of Metallurgists on our Council and, of course, also on its working sub-committees. All technical activities of the Institution of Metallurgists will accordingly be transferred to this Institute. In this way it is intended that this Institute should provide a much broader coverage of metallurgical activities in the country.

This year saw the first fully fledged one-day colloquium devoted to a physical metallurgy topic. This was the colloquium on 'High-strength Low-alloy Steels', which was held at Vanderbijlpark early in the year. Incidentally, this was the first time that we have used the very excellent facilities of the Technikon at Vanderbijlpark for our colloquia, and, indeed, we were very impressed with the facilities there. The meeting was a great success, and attracted something like 180 delegates.

Our two branches, one serving the Middelburg/Witbank area and the other the Orange Free State/Klerksdorp area, have been active during the year, and we are at present considering the formation of a Klerksdorp/Carletonville branch, to serve the needs of our members in that particular locality.

Two successful excursions were organized by our Banquets and Excursions Committee during the year: to Sasol II and III, and to Premier Diamond Mine. These were both very well supported, and were very much enjoyed by the members who went along.

During the year we lost the services of Mrs Margaret Santilan in the office, and Mrs Mary Jager has taken her place.

I would like to take this opportunity to thank Doris Gardner, Judith Money, Pamela Binstead, and Denisa Jackson for the very efficient and pleasant service that they have rendered to us in the office this year. Mrs Lloyd will be joining us from today, and I hope she will enjoy her stay with us. I thank Mrs Veldman for lending assistance during the past month at a rather critical time.

The team of ladies we have in the office is tremendously important to the smooth functioning of the Institute. It would be very difficult, if not impossible, for the office bearers to keep the Institute moving, let alone at the kind of level we do, without this team of very efficient young ladies. I thank them all very much indeed.

I think we have every reason to be pleased with the progress that the Institute has made during the past year, and I now have pleasure in proposing the adoption of the Annual Report. I call on Professor Krige, our Treasurer, to second the adoption of the report, and also to present the Treasurer's Report for the year.

Professor Krige: The year-end financial statements provide a clear picture of the financial aspects of our Institute's main activities, and of the services rendered to our members and to the mining industry.

The Journal again showed an excess of expenditure over income, but at the somewhat lower level of R34 000. This is, however, reasonable in relation to the income from subscriptions, which totalled some R89 000 and of which no part is officially allocated to the Journal account.

No new monograph was produced during the year, and, as a result of that, the sales of available monographs ensured a surplus for the year on special publications of R35 000.

We had another surplus of R49 000, achieved from colloquia and schools, mainly because attendances exceeded the levels budgeted for on a conservative break-even basis. These surpluses cannot be accepted as likely to recur during 1984/85. We are likely to publish at least one or two monographs during the year, and we cannot bargain on schools providing a similar surplus again.

To cover the increasing costs of running the Institute, it was necessary to increase subscription rates. However, the increases were again kept well below the recent inflation rates.

The Education, Brigadier Stokes, and MacArthur-Forrest funds now stand at a satisfactory combined level of R269 000, which is some 11 per cent higher than last year.

Thanks are due to our secretarial staff and to our accountant, Mr Trueman, and his staff.

Ek secondeer nou graag die mosie vir die aanvaarding van die jaarverslag en finansiele sake.

Office Bearers and Members of Council for 1983/84

President: It gives me pleasure this afternoon to announce that, in accordance with Clause 3.3 of our Constitution, the retiring Council has elected the following office bearers for the coming year.

President: J.D. Austin; Vice Presidents: H.E. James and Dr H. Wagner; Honorary Treasurer: Professor D.G. Krige; and Immediate Past President: Professor R.P. King.

In regard to the election of Ordinary Members of Council, there is a letter from the scrutineers stating: 'We have to report that we have inspected the nomination papers for members of Council for the 1984/85 session, and have found that the ballot papers sent out to Corporate Members of the Institute were in order. There was a return of 433 ballot papers, and this represents a 30,4 per cent poll. There were no spoilt papers. As a result of the scrutiny we find that the following members have been elected to Council: B.C. Alberts, Professor S. Budavari, N.J. Devine, C.E. Fivaz, J.S. Freer, Professor G.G. Garrett, J.J. Geldenhuyys, A.K. Haines, Dr B.K. Lovely, G. Maude, H.G. Mosenthal, B.E. Protheroe, Dr O.K.H. Steffen, and Dr P.T. Wedepohl.

In particular, Mr I.D. Matthews and Mr E.B. Crocker
were elected unopposed to represent non-corporate members on Council’.

**Induction of President**

It is now my privilege and very great pleasure to introduce our new President, John Austin.

John was born in 1938, in Surrey, England, and was educated at Cotsmore School and at Charter House. From 1956 to 1958 he saw national service in the British Army, and as a lieutenant in the East Surrey Regiment he saw service in Germany, Cyprus, and North Africa. After this tour of duty, he joined Anglo American and emigrated to South Africa, starting work in Welkom in 1959.

John started his career in mining as a learner sampler in Welkom, and then as a learner official at the President Steyn Gold Mine.

By the beginning of 1960 his considerable academic abilities were clearly evident. He had written — and this was soon after he started his learner officialship — six teknikon subjects, all of which he had studied by correspondence, and achieved four distinctions and two B’s, winning three first prizes, including the prize for the best mining student. So it was clear that he was destined for higher things, and he attended the University of the Witwatersrand, from which he graduated with a degree in Mining Engineering in 1964. He immediately went on to research, and was awarded the Master of Science Degree in Engineering in 1966.

In 1965 he joined the Valuation Department of General Mining and Finance Corporation, and early in 1966 he started a couple of years’ work on the collieries, where he was Technical Assistant on both Delmas and Blinkpan.

In 1967 he returned to the General Mining head office as Technical Assistant in the Coal Division, where he worked for some five years on the computer simulation of production and planning systems. In July 1972 he joined Anglo-Vaal as Technical Assistant to the Financial Engineer. He was responsible for the development of the computerized ore-reserve system at Prieska Copper Mines, and later for other technical computer systems at head office. He also became involved in share and project evaluation studies.

During this period, he had the considerable benefit, I believe, of working very closely with Danie Krige. When Danie retired early in 1981, John took over as Financial Engineer at Anglo-Vaal, where he is responsible for the financial evaluation of mining investments. Much of John’s work is very naturally of a highly confidential nature, but he still managed to publish two papers in the Institute’s Journal.

In 1967 John married Marijke van Vught, who had emigrated from Holland with her parents and brother in 1954. John and Marijke have two children, and they live in Parktown North.

John is an accomplished sportsman. After flirting briefly with cricket at school, he decided to concentrate on shooting, and he represented England against Canada in 1954 and 1956 in the Junior British Schools team. He was also in the Atheling’s team that went to Canada in 1956. He was one of the army champion shotstills at the Army Rifle Association meeting in 1958, and also a member of the winning English Regiments team.

In South Africa he was a member of the Junior Transvaal Shooting team. Apparently John does not have much time to indulge in this sport, although he does still shoot occasionally.

He played hockey at university, and still plays league hockey for what he terms ‘an old man’s social team’, and he runs three or four times a week, with the half-marathon distance as his maximum. It seems to me a fairly substantial maximum to have.

For relaxation, John and Marijke are currently rebuilding their house, and John indulges in philately, ornithology, and archaeology.

We are very fortunate in having a man of John’s calibre to guide the affairs of the Institute for the next year. He is an outstanding administrator, being thorough and very hard-working. I have had many occasions during the past year to be very grateful indeed for his clear-sighted and efficient assistance.

I take this opportunity of congratulating him on his appointment as President, and wish him a very successful and interesting year of office.

The new President, Mr Austin, then took the Chair.

**Incoming President:** I am very proud to assume the office of President of this Institute, and I am very conscious of the honour. The example given by previous Presidents has set a high standard for me to follow but, with the help of my office bearers and Council, I hope to be worthy of this honour.

My two Vice Presidents have served the Institute with distinction, and this year I shall be relying on their skills and hard work.

I thank Professor Krige for remaining as Honorary Treasurer. Our financial affairs are in very capable hands.

I congratulate the re-elected members of Council, and welcome to the Council Messrs Maude, Mosenthal, Crocker, and Matthews, who join us for the first time, and I express my thanks to the Past Presidents who have agreed to serve on Council. We have always leaned heavily on the experience of our Past Presidents, and I am sure that this year will be no different.

I record my thanks to the employers who allow their senior staff to participate in Institute affairs for the benefit of the industry.

Dr Glen continues to carry out the onerous task of Honorary Editor to our Journal. Its standards are high, and much of the credit goes to her.

Mrs Gardner and her staff, together with the management of AS&TS, are responsible for the day-to-day running of the Institute. I look forward to another year of efficient service.

Finally, I am sure you will join me in thanking, and paying tribute to, the immediate Past President, Professor Peter King. Every presidential year has its own special challenges in addition to the hard work. This year was no exception, and Professor King handled it all with skill and charm. On behalf of Council, I ask Professor King to accept this
shield bearing the Institute's crest as a memento of his year of office.

I now invite Mr James to take the chair on my right, and Dr Wagner to join us on the rostrum.

Dr Wagner: As newly elected Junior Vice President, I should like to express my very sincere thanks and appreciation to the Council for having afforded me this honour, and for the confidence expressed in me. I shall serve the Institute to the best of my ability, and endeavour to maintain the very high standards set by my predecessors.

Incoming President: I now declare that the Annual General Meeting is adjourned for the purpose of convening a Special General Meeting. This Special General Meeting has been called to consider amendments to the Constitution.

Amendments to the Constitution

Incoming President: Notice of this meeting and a list of proposed amendments have been circulated to all members. Before consideration of the changes proposed by your Council, I should like to draw members' attention to the following points.

The present Constitution was adopted in 1976. There was an amendment in 1978, and further amendments last year, in 1983. Some proposed amendments were sent to all members in March this year. The 1983 amendments and the March proposals are included in the circulated documents. The present Constitution exists in English and Afrikaans in the 1976 version. An English version, including the 1978 amendment but dated 1976, has also been available to members.

It should be noted that the following changes on your circulated document were agreed in 1983. On page 2, Clause 3.2.6; page 3, Clauses 9.1, 9.1.2, and 9.3; page 4, from Clause 5(a) to the end of the page; page 5, new Sub-Clause 5(f).

Among the changes to be approved today are those to Clauses 2.4, 2.5, and 2.10, which deal with qualifications for membership. When the Constitution was drawn up, in 1976, the decision was taken that, in order to comply with SACPE requirements at that time, a four-year degree, or its equivalent, was required for admission to Corporate Membership.

The recommended changes are in agreement with that decision, and they will remove the ambiguity in the present wording. The interpretation placed on the present wording by the Membership Committee was confirmed by Council under Clause 3.24.

Under Clause 3.22 of the Constitution, changes to the bylaws and rules for Branches do not have to be approved by members, and they are included here for members' information. They include all changes from 5.2 onwards.
Mr O. Davel, Miss Pamela Binstead, Mr P.W.J. van Rensburg, and Mrs J.G. Harrington.

Mrs Elizabeth Viljoen with her husband Dave Viljoen, who was awarded Honorary Life Fellowship.

Mr John Austin (Incoming President) with his wife Marijke.

From left to right: Dr P.J.D. Lloyd, Dr O.K.H. Steffen, and Professor M.D.G. Salamon.

From left to right: Mrs Doris Gardner, Mr B.C. Alberts, and Miss Pamela Binstead.

Mr F.S.A. de Frey, Professor A.N. Brown, and Dr F.G. Hill.
At this point I must remind members that only Corporate Members are entitled to vote at this meeting. I propose that the recommended changes are approved and that a new Constitution is adopted. Does any Corporate Member have any objections to these proposals?

As there are no objections, the amendments are approved and the new Constitution is adopted with immediate effect. As soon as copies have been printed, they will be sent to all members.

I now declare this Special General Meeting closed, and the Annual General Meeting re-opened.

Election of Auditors and Honorary Legal Advisers
Incoming President: I propose that Messrs Alex Aiken and Carter be appointed auditors, and that Messrs Van Hulsteyn, Duthie and Saner be appointed legal advisors to the Institute for the coming year. Agreed.

Presidential Address
Mr Austin delivered his Presidential Address entitled 'The minerals industry in South Africa: Commodity prices and exchange rates', see pp. 325 to 353 of this issue.

Mr James: It is my privilege to be the first to congratulate our new President on an excellent and illuminating address very well presented. I now ask Mr W.W. Malan, Executive Director of Anglo-Vaal, to propose a vote of thanks.

Mr Malan: It is a very great pleasure and an honour for me to propose a vote of thanks to Mr John Austin for his most interesting and informative address. I cannot help but comment on the fact that Mr Austin's address is one of the first analyses of financial matters affecting the South African mining industry that has been delivered at presidential level to this august body.

The mining industry in the past few years has been through a fairly difficult, perhaps even traumatic, period. Change in many financial areas has been the order of the day, and the incoming President has performed a valuable task in highlighting and enumerating some of the complex issues involved. He has reiterated the vital importance of the minerals industry to the South African economy.

One cannot but be impressed by the variety of our mineral resources. So successful has been the development of our mining industry that we are today recognized the world over as a leading and reliable supplier of essential raw materials.

We must not rest, however, on our laurels. Mr Austin has shown us in his analysis just how complex and difficult times have become. We shall have to show ingenuity as we progress in this highly competitive field. Our mining engineers and financiers are known for their remarkable abilities, and these are going to be stretched to the limit as we are forced to find ways and means of economically mining and processing our vast mineral heritage, and ensuring that the financing of our industry continues in a dynamic but conservative and prudent way.

The President commented on the risks the industry runs with fluctuating prices and exchange rates. He has shown how the use of futures and forward markets can assist in protecting mining revenues. As those of us involved in these financial techniques are only too aware, there is a considerable learning curve, and much experience will be necessary before we can be reasonably relaxed in hedging the commodities that we sell to the wide world.

The complexities of covering the risks in exchange rates makes this task even more arduous. The hedging of gold revenues has become a much publicized part of a gold mine's financial programme. It is true that there continues to be much controversy about whether or not management should adopt such strategies. Even within the gold-mining industry itself, there are divergent views about the prudence and realism of such techniques. Nevertheless, it is a fact of life that is, I believe, becoming recognized by mining management that the world of fluctuating commodity prices and currency rates is with us to stay, and protective measures are prudent and can be highly remunerative.

The major difficulty and, indeed, weakness in the hedging of either commodities or currencies is the requirement to forecast the commodity price or currency for a period. As South Africans know only too well, attempts at forecasting the gold price are virtually impossible, and there are certainly no experts in this crucial field. A successful hedging programme requires management to take a view of prices over the next few months, and then to adopt the hedging strategy agreed upon. There is little doubt that the mining houses in coming years will have to hold their forecasting skills to a high level of expertise. Gone are the days when mining management's attention was entirely devoted to engineering problems. The financial aspects are just as vital, as are the areas of marketing and industrial relations, neither of which I wish to comment on today, but which may well be suitable subjects for our President to analyse in the years to come.

Mr Austin has dwelt on the problems of fluctuations in the exchange rates. I shall devote my remaining comments to the South African situation over the past few years, in which we have seen the rand depreciate considerably against the U.S. dollar — although not quite so dramatically against the currencies of our major trading partners. There is no doubt that in a deep recessionary period for the Western World, our mineral exports have been seriously affected. The economic recovery in the United States, Japan, and, somewhat more slowly, in Europe has resulted in some improvement in our revenues from mineral exports, but it is the fall in the rand value against the dollar that has really saved the mining industry and, of course, the tax revenue of the State.

My problem is that a depreciating currency has inflationary repercussions for the country, which have perhaps not been fully recognized. Already the rate of inflation, as Mr Austin mentions, is higher than that of most of our trading partners, seriously affecting our competitiveness relative to them.

Starting at the high base level of around 12 per cent per annum, we shall have to live with inflationary pressures in the next year or two of the fall in the rand. While the gold-mining industry imports relatively little, other mining sectors, such as coal, find that they still require expensive imported equipment. The cost of direct imports has soared,
and will probably continue to rise steadily. In addition, the country as a whole still imports substantial quantities of goods, including crude oil, and the rand depreciation can only fuel inflationary pressures and place our cost structures under even more pressure than those experienced at present.

In thanking the new President for this fine contribution to the work of this Institute, I must at the same time remind this organization, the fiscal and monetary authorities, and the populace as a whole that inflation remains Public Enemy Number One. We must eliminate it from our economy if we wish to continue to be a successful exporter and supplier of minerals to the world.

**Conclusion**

The meeting ended at 17h51.”

---

**APCOM '86**

The Pennsylvania State University will host the Nineteenth International Symposium on Computer Applications in the Mineral Industries (APCOM) from 14th to 18th April, 1986. The Pennsylvania State University is a permanent member of the International Council for APCOM. Other permanent members are University of Arizona, Colorado School of Mines, and the Society of Mining Engineers of AIME.

The APCOM Symposium is designed to bring together those interested in the application of computers, mathematics, statistics, geostatistics, and operations research to the mineral industries. It will be an opportunity for discussion of new and potential developments in the use of mathematical methods and computers for planning and designing mineral projects, particularly in the areas of exploration, exploitation, beneficiation, financing, management, and control.

The Symposium will be of particular interest to planning, research, and operations personnel in the mineral industries, and to managers, engineers, and computer and operations research scientists engaged in exploration, mine planning and development, marketing, and valuation of mineral projects. It will offer also an opportunity for software and hardware developers and users to share information.

The following are the main themes:

- Exploration
- Orebody Modelling and Ore-reserve Estimation
- Mine Planning, Design, and Operations
- Mineral Processing and Plant Operations
- Investment Planning and Evaluation
- Management Information Systems
- Industry-wide Projections.

Abstracts for proposed papers are required before 1st May, 1985. Abstracts should be no longer than 250 words and should be submitted to Dr James D. Bennett, Mining Continuing Education, Department of Mineral Engineering, 126 Mineral Sciences Building, University Park, Pennsylvania 16802, U.S.A.

Completed manuscripts of approved papers will be required by 1st December, 1985, and should be submitted to the same address. The papers will be published as a bound volume by the Society of Mining Engineers of AIME.