

# Annual General Meeting of the Institute

The Annual General Meeting of the South African Institute of Mining and Metallurgy was held in Kelvin House, Johannesburg, on Wednesday, 27th August, 1980.

Mr D. A. Viljoen (President) was in the chair and declared the meeting open at 4.05 p.m.

## Obituaries

*President:* It is my sad duty to announce the death of the following members of the Institute: T. C. A. Meyer (Past President, 1941 to 1942); E. G. Harding, T. A. Stannard, C. T. Hardy, W. C. Jackson, J. S. Sinton, G. H. Duggan, H. H. A. Müller (Life Fellows); W. M. Frames, K. Gebhard, W. M. Walker, S. L. S. Swart, N. W. Stansmore, H. E. Allen, B. W. F. Towne, R. A. Wilson, D. Waterman (Fellows), R. M. Peterson (Life Member); D. L. Gibbs (Member); B. M. Williams (Associate Member); D. B. T. Cresswell, P. G. Guernier (Associates).

As a mark of respect to the memory of the deceased, and in sympathy with the bereaved, please rise and observe a few moments of silence.

## Notules

*President:* Kan ons die notules van die Algemene Jaarvergadering, wat op 22 Augustus 1979 gehou was en in die September uitgawe van ons *Joernaal* gepubliseer is, bevestig? Bevestig.

## Welcome

*President:* I extend a hearty welcome to you all, especially to the following distinguished guests: Mr H. E. Oppenheimer, Chairman of Anglo American Corporation; Mr A. Louw, Chairman and Chief Executive of Goldfields of South Africa Limited; Mr R. S. Lawrence, President of the Chamber of Mines; Mr J. G. Kirchner, Government Mining Engineer, and Mrs Kirchner; Mr D. N. Stewart, General Manager of the Chamber of Mines; Dr Louw Alberts, President of the National Institute of Metallurgy, and Mrs Alberts; Dr J. W. de Villiers, President of the Atomic Energy Board, and Mrs de Villiers; representatives of other Institutes and their wives; Honorary Life Fellows of our Institute and their wives; and the representatives of the press, the radio, and SABC television.

## Membership

*President:* The names of the candidates who were admitted to Membership since the last General Meeting have been tabled. I welcome the newly elected Members to the Institute, and congratulate those who have been transferred to a higher grade.

## Honorary Life Fellows

*President:* Honorary Life Fellowship is not bestowed by Council lightly, and the qualification is that the recipient must have rendered outstanding service to the industry or to the Institute. This year we honour two

former Ministers of Mines — the Honourable P. Koornhof and the Honourable S. P. Botha; Mr Adriaan Louw, Retiring Chairman and Chief Executive of Goldfields of South Africa; and three Past Presidents of our Society — Professor R. P. Plewman, Dr R. E. Robinson, and Mr P. A. von Wielligh.

## Past Presidents

*President:* The presentation of a plaque bearing the Institute's crest to Outgoing Presidents to commemorate their year of office is a recent practice of our Institute. Two Past Presidents who have contributed greatly to the affairs of our Institute — Professor D. D. Howat and Dr R. E. Robinson — have not received plaques because of inadequate stocks, and it is a great honour for me to rectify this matter this afternoon.

## Brigadier Stokes Memorial Award

*President:* During the year, a prestige award was introduced to commemorate the outstanding contribution made by Brigadier R. S. G. Stokes, Honorary Life Fellow and Past President of this Institute, who died recently at the age of 96, having joined the Institute as a Corporate Member in 1904. Soldier, author, miner, Ralph Stokes served the local mining industry for a period of close on 50 years until his retirement in 1956, and the Institute for more than 70 years. He was one of the last of the few men who fought in the three wars in which South Africa was involved. His book, entitled 'Mines and Minerals of the British Empire', written during his brief spell as Mining Editor of the *Rand Daily Mail*, was a classic early reference work, which was published in about 1910.

Council decided that the Brigadier Stokes Award would consist of a platinum medal and cash award, and would be made for the highest achievement in the field of mining and metallurgy in South Africa. Without doubt, the obvious choice, and most worthy first recipient of this premier award, is Mr Harry Oppenheimer.

Mr Oppenheimer has been described as an adaptable man, unfussed by change, who nonetheless has a clear and firm philosophy of life, characterized by a remarkable degree of self-discipline. His own pattern of logic, clear vision, and rational thought, always positive, has enabled him to successfully meet the problems of his time. His optimism about life in general and about man's capacity to better himself has influenced his actions, and has consequently had far-reaching effects on the South African mining and mineral-processing industries as a whole.

A desire that the Anglo American Corporation Group should always seek to set higher standards in wages and employment conditions, and a deep concern for people, have been woven through Harry Oppenheimer's business activities. He does not, however, lose sight of business realities. In a policy statement, he said, 'It should never be forgotten that the process, which above all other can improve the conditions of low-paid workers, is economic

growth, with the consequent multiplication of employment opportunities. Similarly, in an individual enterprise, the conditions most favourable to any form of improvement in labour conditions is one of expansion. It follows that the continued endeavour to run our enterprises in the most efficient and profitable manner possible, so far from being in conflict with the desire to improve the conditions of the poorer section of the community, is in direct support of it. Hence, sufficient and profitable operation, while not being Anglo American Corporation's only objective, remains the principal objective.'

In answering the question 'What do his close colleagues think of Harry Oppenheimer?', I found these answers in a profile published in 1975. I quote: 'His wisdom and intellect apart, the qualities which impress most are constancy, the gift of lasting friendship, and his considerateness to all. They see him as always positive, always kind, a person who, when errors are made, when some major project goes wrong, will insist that it be put right as quickly as possible, but will not allow recriminations. He does not often show anger, and, when he does, it is not a physically violent thing, but there is no mistaking his displeasure. He turns a very cold eye on the world around him. He cannot abide an unused moment. When not in the office, he is entertaining, or walking in the garden, or reading, or talking, or, of course, going to the races to watch his horses. He dislikes causing distress to anyone, and has the gift of being able to anticipate people's reactions, so that on many occasions what appears to be the achievement of quick unanimity on a difficult subject is, in fact, based on his own original thinking. He is always prepared to give way in some small matters if they will help achieve big things. He is no striker of attitudes, and he is not jealous of his own ideas. He thinks business should be fun, and likes to conduct it with colleagues whom he also regards as his friends, and, in the main, seeks companionship among people with whom he can throw out business ideas, and who know what he is thinking and what his quick references mean. He has courage and good nerves.'

Mr Oppenheimer, in making this award, the Council of the South African Institute of Mining and Metallurgy has recognized your many talents and the unique role you have played in an industry that is of great importance to the economic advancement of all the people of this country.

*Mr Oppenheimer:* Obviously, I'm quite delighted to be honoured in this way by an institute, a distinguished institute, with 86 years of invaluable service to the mining industry. I am also extraordinarily pleased that the form of this award should be a medal that has been instituted in memory of Brigadier Stokes. I, alas, had not seen him for a good many years before he died, but he was a very old friend, and a man of the highest ability and distinction, and with a very particular charm. And to be honoured by the Institute, and to have this honour connected with his memory, is a reason for very special pleasure to me.

I was delighted by all the immensely kind things Mr Viljoen had to say about me. They were so kind that I found them somewhat embarrassing, but I am not going to be dishonest enough to say that they did not give me

great pleasure, because I enjoyed them very much indeed.

I was very interested to learn that, like so many immensely important bodies, the Institute started from really quite simple beginnings, 86 years ago, and largely with the emphasis — so I am told — on the exchange of information between chemists and assayers in those early days soon after the discovery of the cyanide process. But, of course, it was not very long after the Boer War that it became principally an institute for engineers, and it took on its present form and its present direction. And from then on it has grown in importance, steadily, over the years. It is an institute of immense importance within the mining industry, in giving advice and in influencing events within that industry. But it also has a great importance in advising the government and public bodies in the field of mining and related industries, and it now quite clearly represents the largest cross-section of professional and technical expertise in the industry.

And the particularly important factor, which increases its usefulness a great deal, is that it includes among its members, not only members in the private sector of the mining industry, but also people in this field in government service.

Perhaps I can pick out two fields in which the Institute to my mind has rendered very special service, and those are in the vital, basic fields of safety and health in the mines on the one hand, and in technical training on the other.

Perhaps I may dwell particularly on this matter of technical training, because we are at a stage where technical training in this country has taken on an importance and an urgency greater, perhaps, than it has ever had in our history. It is no longer a source of argument, still less of conflict, among South Africans that the technical burden of running South Africa cannot be carried solely by our comparatively small White population as it has, virtually entirely, been carried by them in the past, but we are not going to bring in other races to share in this burden unless technical education can be vastly increased and spread widely among all the people of South Africa. It may be that this Institute, which in the past played such an important role in this field, and which has always retained its great interest in it, may be able to play an even greater part in these new circumstances, where progress in this field is so much more important than it has been in the past.

And then there is another question. The mining industry depends, obviously, on the quality of the people who enter the mining industry, and that is fairly represented by the quality of the people who are members of this Institute. From time to time one does hear — and I don't know how true it is — that young South Africans on the whole are not anxious to enter mining, that it is not as popular a career as it used to be. I do not know if that is true, but, certainly, with the great growth in the industry that one now sees, and also the great increase in its potential life, which, of course, is a vital matter when a young man is considering his career, it is tremendously important that the industry should have a very good image, so that the best sort of young people want to make their careers in it.



**Above: Mr Harry Oppenheimer spoke of the urgency to spread technical education among all the people of South Africa, when he accepted the prestige Brigadier Stokes Memorial Award from Mr David Viljoen, seated next to Miss Linda van Niekerk and Mr George Nisbet. The Junior Vice President, Mr A. N. Brown is on the right.**

**Bottom: The Institute awarded Gold Medals to (left to right) Dr I. J. Corrans, Mr J. Levin, and Dr D. G. Krige for their papers published in the *Journal* during the past year.**



Here, again, it may be that there is a role of extraordinary useful activity for this great historic Institute.

Mr President, you were kind enough to say that I was an obvious person to whom this award should be made. I am not so sure about that. It was kind, to begin with, that you decided not to limit this award to technically trained people, because I have no technical training whatever and very little training of any sort. So that in itself was very kind. But, if there is one thing that, perhaps, does distinguish me in the mining industry, it must be that there is no-one, I should think, in the world who owes more to the skills and to the integrity of the technical world that is represented in this industry, because, you know, if you are fortunate enough to be at the head of a large mining group, people very frequently praise you for your great courage in doing this, that, and the other. Now, what are they really praising you for? They are first of all praising you for your good luck and, of course, that is something worth praise. But they are praising you, fundamentally, for having the courage to trust your technical advisers, and one has the courage to trust one's technical advisers because confidence is built up in them over the years and one has every reason to trust them. And I would say that this Institute, over its long life, has played an enormous part in building up a technical and professional community that enables people like me to be praised and to benefit from having the courage to give them unqualified trust.

Mr President, thank you very much indeed for this award. It is something that I shall never forget, and something that I shall always treasure. This is a very great occasion in my life. Thank you, ladies and gentlemen, very much.

#### Medal Awards

*President:* The extremely high standard of papers published in the *Journal* during the year led Council to award two gold and five silver medals.

The Gold Medals are awarded to Dr D. G. Krige for his contribution to mining economics and for his papers 'An analysis of potential benefits to the State of realistic adjustments to the mining tax structure' (July 1979) and 'Some novel features and implications of a general risk-analysis model for new mining ventures' (September 1979); and to Dr I. J. Corrans and Mr J. Levin for their paper 'Wet high-intensity magnetic separation for the concentration of Witwatersrand gold-uranium ores and residues' (March 1979).

Dr Krige frequently features in our awards' lists, having previously received gold and silver medals. We are indeed fortunate to have regular publications by him included in our *Journal*. His publications have a worldwide readership and receive international acclaim.

In his treatment of the interaction of special features included in the general risk-analysis model for the main types of new mining ventures and their effects on investment criteria, he provides an important supplement to published guides for those involved in decisions on new mining ventures.

As important are his logical deductions, with the help of models, of the effects of change in the mining tax structure, which provides benefits to the State as well as to the gold-mining industry.

Dr Corrans and Mr Levin have broken new ground by adding another concentration process for Witwatersrand ores, namely wet high-intensity magnetic separation. Their recognition of the problem of matrix blockage, and their development of a method for overcoming it show a commendable desire on their part to apply theory to practice. Their simple model describing the operation of the WHIMS machine in terms of operating parameters is further evidence of their desire to put their theories to work.

A Silver Medal is awarded to Mr P. G. Henderson for his paper 'Experience in longwall mining at Coalbrook Collieries' (January 1980), which evaluates solutions to the problems encountered during recent longwalling at Coalbrook. He predicts that longwalling will become the most economical method of ensuring optimum heat values, greater recovery, reduced geographic expansion, and safer roof conditions at Coalbrook.

Dr N. A. Barcza, another winner of a Silver Medal, in his paper entitled 'Slag-metal equilibrium in the production of low-carbon ferromanganese' (May 1979), describes the results of an investigation that must be of great significance to ferromanganese producers. He shows very clearly that the single-step process as commonly practised is not suitable, and the reaction equilibria and rates of reaction indicate that multiple-contact techniques would favour the reaction.

Unfortunately, two winners of Silver Medals are not present this afternoon — Messrs H. J. Bovey and L. N. Stewart. Their paper 'Pressure leaching of uranium-bearing Witwatersrand ores' (November 1979) describes the results of large-scale continuous pilot-plant experiments. They provide valuable process data, as well as important basic information on equipment and materials of construction. Their published results provide the necessary confidence for those contemplating commercial-size uranium-extraction plants.

Professor D. D. Howat and Dr J. van der Colf earn Silver Medals for a suite of three papers: 'Viscosities, electrical resistivities, and liquidus temperatures of slags in the system  $\text{CaO-MgO-Al}_2\text{O}_3\text{-TiO}_2\text{-SiO}_2$ ' (June 1979), 'Rates of oxygen removal from titaniferous oxide melts in graphite crucibles' (July, 1979), and 'Viscosities, electrical conductivities, and liquidus temperatures of slags in the system  $\text{CaO-MgO-Al}_2\text{O}_3\text{-TiO}_2\text{-SiO}_2$  under neutral conditions' (April 1979). Their published work is of great practical value, having been undertaken as a result of the operational difficulties frequently experienced when a titaniferous magnetite ore is smelted in a submerged-arc electric furnace to produce vanadium, pig iron, and a slag rich in titanium oxide.

Professor Howat deserves special mention for the high standard he has set in papers published in the *Journal* over a number of years, and for which he has already been awarded two Gold and two Silver Medals.

Dr P. A. Laxen and Messrs G. S. M. Becker and R. Rubin are the last in the list of Silver Medal winners. In their paper entitled 'Developments in the application of carbon-in-pulp to the recovery of gold from South African ores' (June 1979), they give an extremely lucid account of developments in the use of activated carbon. Their description of the state of the art and the effectiveness of

the process in a variety of South African applications is extremely valuable, especially as the capital and operating costs of the carbon-in-pulp process are claimed to be lower than those of the conventional process.

### Studente Pryse

*President:* Elke jaar word toekennings gemaak vir die beste tesis opgestel deur vierde-jaar studente op die gebied van mynbou en metallurgie. Vanjaar gaan twee pryse aan mynbou studente van die Universiteit Pretoria: Mnr J. A. van der Westhuizen vir sy tesis 'Die gebruik van die minimum en maksimum stropingskurwes in dagmynboubeplanning', en mnr J. P. Richter vir sy tesis 'Geïntegreerde bestuursinligtingstelsels vir die gemeganiseerde Grootegeluk Dagbousteenkoolmyn'. Mr M. B. Ebell, of the University of the Witwatersrand, receives the metallurgical prize for his thesis 'Design of a plant to upgrade flotation tailings from the UG2 Reef'.

### Annual Report and Accounts

*President:* As shown by the Annual Report and Accounts for the year ended 30th June, 1980, the affairs of the Institute have been in the hands of an extremely competent and hard-working group of councillors and Past Presidents, which has made my task relatively straightforward. The substantial increase in the activities of the Institute in recent years, placing a considerable burden on Members of Council, prompted an amendment to the constitution during the year, which now permits the election to Council of fourteen Corporate Members instead of ten.

Perhaps the most important function of the Institute is to encourage interest in the mining industry by school-leavers. There has been a steady degradation in the image of the minerals profession since World War Two. Idealistic young people, misled by the argot of anti-technologists, have turned their backs on one of man's most essential endeavours — the mining of minerals and metals.

I basically repeat what Mr Oppenheimer has just said. We have endeavoured to stimulate young people's interest, and to demonstrate to them the desire of our profession to serve society in a highly humanistic venture, by exposing them to the minerals and metals field through the Phoenix Programme. Under this scheme, seventeen groups of schoolboys and four groups of university-engineering students were taken on mine visits during the year, and fruitful liaison was maintained with provincial education departments and schools throughout the country.

During the year, in keeping with past tradition, the *Journal* maintained its high standard of technical excellence. Important evolutionary trends, however, were evidenced by the introduction of a display on the cover of the *Journal* of different aspects of relevance to the mining and metallurgical industry, and by the inclusion of feature articles highlighting significant events.

Following the Institute's traditional role of disseminating information and providing a forum for continued education, well-attended colloquia and vacation schools again played an important part in the year's activities.

Four-hundred delegates attended a two-day colloquium

in Witbank, which was arranged in conjunction with the Coal Processing Society, entitled 'Mining Methods and Economics for Improved Coal Extraction, Coal Processing, and Preparation'. The excellent arrangements, which included a variety of technical visits, are a credit to the small, but dedicated, Witbank/Middelburg Branch.

Each of the two colloquia held in Johannesburg attracted more than 300 delegates.

At two successful, well-attended vacation schools, members of the industry were exposed to modern trends and developments in underground rock-bearing and pyrometallurgy.

The first two volumes in the Monograph Series, on geostatistics, were well received both locally and overseas, and stocks have been exhausted. These two volumes, after being revised and updated, will soon be ready for reprinting. Volumes on rock mechanics and principles of flotation are eagerly awaited. The Monograph Series, which constitutes an important contribution by the Institute to the profession, has, with the help of the authors, Members of Council, and a small but efficient group of workers, come of age during the year.

Our Orange Free State/Klerksdorp and Witbank/Middelburg Branches have been very active and, judged by their expanding membership, are fulfilling important roles.

Good progress has been made with the preliminary planning of the Twelfth Congress of the Council of Mining and Metallurgical Institutions, which is to be held in 1982. There has been a good response from overseas delegates to the first circular and offers have been received for the presentation of a substantial number of papers.

It is pleasing to report that interaction and collaboration with the Institute of Metallurgists, South African Region, increased to a significant degree during the year. We welcome interaction with that Institute, whose interests are closely aligned to ours.

'n Belangrike gebeurtenis het in November in Pretoria voorgekom, met die konstitusionele oprigting van 'n tak van ons vereniging om na die belange van fisiese metallurgiste te sien. Hierdie gespesialiseerde materiaal-ingenieursafdeling het op verskeie vergaderinge, wat baie goed bygewoon is, 'n verskeidenheid van tegniese, interessante onderwerpe bespreek. Ons wens hulle voorgesette sukses toe, onder die leiding van hul entoesiastiese komitee.

The Institute continues to play a part in the activities of the Federation of Societies of Professional Engineers (FSPE) — the body that deals with problems common to all engineering disciplines, and the South African Council for Professional Engineers — the statutory body concerned with the engineering profession.

Much progress was made by FSPE on many points, including accommodation for Black engineering students attending White universities, the teaching of engineering subjects at Black universities, discussion with military authorities regarding meaningful work for engineers in the army, and the Manpower Report.

As your representative, I was invited to attend the Honourable Prime Minister's Constellation of Southern African States, Carlton Hotel, Conference. The inclusion

of a representative of the Institute on that occasion is an indication of the esteem in which the Institute is held in circles that represented all the important branches of South African activities. On your behalf, I associated our Institute with the Honourable P. W. Botha's concept of a constellation of Southern African states.

In looking ahead, I believe that education, which is fundamental to the vigour and growth of our industry, deserves even greater attention during the coming year. Our energies, as well as our funds, should be directed towards exposing young people of all colours and creeds to the technology of mining and metallurgy.

I repeat what I said in my Presidential Address. To attract young people, strategies should be devised that expose them to the adventures of the miner/pro prospector, the skill of the metallurgist, and the never-ending reward that the earth's mineral wealth confers on man.

The hard work I had expected as President did not materialize, thanks to the dedication of Council Members, and the excellent service provided by Eric Boden through his A. S. & T. S. organization. Linda van Niekerk and her small but devoted secretariat must accept much of the credit for what can be regarded as another successful year for our Institute.

I now call upon Dr Krige to give a brief review of finances, and to second the adoption of our Annual Report.

*Dr Krige:* It is my privilege as Honorary Treasurer, in seconding the motion for the adoption of the Annual Report and Accounts, to say a few words about our finances.

Adequate finances are essential to ensure that proper services are rendered to our members and to our mining and metallurgical communities. Over the years, these services have been expanded, and now cover a very wide spectrum as you have just heard in the Annual Report.

Our monthly *Journal* has a new appearance and expanded scope. Increases in the costs of publication have been largely offset by encouraging improvements in outside sales and in advertising revenue. However, there was still a shortfall of more than R17 000, which had to be met out of general funds. A further improvement in advertising revenue, to R2 500 per month, would cover this shortfall, and this is a reasonable target that we can set for ourselves.

The revenue and expenses for the Monograph Series were just about in balance for the year. This was due to the selling off of our stocks of the first two volumes, and preparing for, but not actually reaching, publication of subsequent volumes and of second editions of the first two. In the new year, this activity could absorb an additional R25 000 of our funds before the revenue from sales reaches a significant level. The Monograph Series now constitutes a major financial commitment, but this is justified in that we are disseminating up-to-date technical knowledge on a world-wide basis.

Vacation schools and colloquia form a substantial part of the services provided to members, and to non-members, at fees that are very moderate. During the year, these functions were, again, very successful and, because of the large attendance, showed a total surplus of some

R32 000. This accounted almost completely for the Institute's gross surplus of R33 000 for the year.

Of this surplus, R15 000 was allocated to the Education and Brigadier Stokes' Funds after the transfer of R10 000 from the Education Fund to the MacArthur Forrest Fund. The latter now stands at over R16 000, and the interest earned on this sum should cover the cost of prizes awarded annually for outstanding student papers.

The Education Fund, at the year-end, stood at almost R103 000, that is R6 000 higher than last year.

The Brigadier Stokes Fund stands at just over R35 000, made up of R5 000 voted from the Institute's General Funds and R30 000 in contributions from various outside sources. The Council is extremely grateful for these outside contributions to a fund that can only enhance the prestige of the Institute. We would naturally welcome any further contributions to this, or to any other of our funds.

The net surplus for the year — that is, some R18 000 — would not have existed, if the further Monograph volumes had been printed when planned. Because of this, together with the uncertain nature of the surpluses (arising from vacation schools and colloquia) and the inflationary pressures on all our costs, it was necessary to raise the subscription fees for all classes of members as from July 1980. The fees had been held at fixed levels for three years, and an increase was unavoidable.

In conclusion, I can record that the Institute's overall financial position is sound, although it does not provide any grounds for complacency.

I would like to express my thanks to you, Mr President, for your support during the year, and to congratulate you on a very successful year. Thanks are also due to Mr Trueman, our accountant, and to Linda van Niekerk and her staff.

I now formally second your motion for the adoption of the Annual Report and Accounts. Agreed.

#### Office Bearers and Members of Council for 1980/1981

*President:* I have pleasure in announcing that, in accordance with Clause 3.3 of the Constitution, the retiring Council has elected the following Office Bearers for the ensuing year.

President: Dr P. R. Jochens.

Vice Presidents: Mr G. Y. Nisbet and Mr A. N. Brown.

Honorary Treasurer: Dr D. G. Krige.

Immediate Past President: Mr D. A. Viljoen.

In terms of the election of the Ordinary Members of Council, there is a letter from the scrutineers saying, 'We have to report that we have inspected the nomination papers for members of Council for the 1980/81 session, and have found that the ballot papers sent to Corporate Members of the Institute were in order. There was a return of 490 papers, representing a ballot of 38,2 per cent. As a result of our scrutiny, we find that the following members have been elected: V. C. Alberts, J. D. Austin, P. T. Fewell, C. E. Fivaz, B. N. Harris, H. E. James, R. P. King, F. Q. P. Leyden, B. K. Loveday, D. G. Malan, J. C. Mostert, G. C. Thompson, R. A. von Maltitz, and H. Wagner.'

**Mr Alberts:** On behalf of the newly-elected members of Council, I assure you of our loyalty and support in our mutual task, that is the furthering of the aims of the Institute and the achievement of its goals.

Verder wil ek al die lede van die Instituut bedank vir die vertroue wat hulle in ons gestel het deur ons te verkies, en belowe graag dat ons ons bes sal doen.

**President:** In terms of Clause 3.2.8 of the Constitution, Mr R. B. Smith, in his capacity as Chairman of the Witbank/Middelburg branch, and Mr G. Mosenthal, Chairman of the OFS/Klerksdorp branch, will also serve on Council, while Dr J. P. Hugo, one of our serving Past Presidents, will represent the newly formed Pretoria Material Engineering Division on Council.

The following Past Presidents have signified their willingness to serve on Council for the ensuing year: Dr M. G. Atmore, Mr H. Britten, Mr J. K. E. Douglas, Professor D. D. Howat, Dr J. P. Hugo, Mr D. G. Maxwell, Professor R. P. Plewman, Dr R. E. Robinson, Dr M. D. G. Salamon, Mr P. W. J. van Rensburg, and Mr P. A. von Wielligh.

#### Induction of President

**President:** I congratulate Dr Peter Jochens on his appointment as President, and have much pleasure in introducing him to you.

At the early age of 40, Peter has become one of the best-known figures in metallurgical circles in this country, and one of the youngest, if not the youngest ever, serving Presidents of our Institute.

Born in Hamburg, Germany, he completed his schooling at Jeppe High, where in his final year he received the Best Student of the Year Award. From the beginning of his post-school career, Peter has been a metallurgist, having started as an assistant at the Rand Mines Laboratory when he was only 17. The Rand Mines Group soon recognized his potential, and awarded him a bursary to study for the Degree in Metallurgy at Wits.

This he did with his usual quiet ability, being awarded the Degree of B.Sc. Engineering *cum laude* in 1962, together with the Chamber of Mines Gold Medal and Research Scholarship.

At a time when activity in research in the Metallurgy Department at Wits. was at about its lowest ebb, he began research work there (in January 1963) and, after only 15 months, was awarded the Degree of M.Sc. Engineering. His worth as a research worker was recognized by the Chamber of Mines, who appointed him a Research Metallurgist, and seconded him to the Metallurgy Department at Wits., where as team leader, he took charge of a research group. Subsequently, as the NIM research group, it at one time comprised graduate research workers from the United States, Canada, the United Kingdom, Australia, and Hungary, together with South Africans.

Peter was awarded the Degree of Ph.D. by Wits. in 1967, and then followed a continuous flow of published papers bearing his name as one of the authors. In the course of this research work, he established close contacts with many metallurgical industries, especially with ferro-alloy plants, all of whom enthusiastically sponsored research work in the Metallurgy Department at Wits.

There was no stopping Peter Jochens. From the Uni-

versity of the Witwatersrand, he went to the National Institute for Metallurgy as Director of the Process Development Division; he became Assistant Director General in 1975, and from January of this year has been Deputy President of NIM.

On two occasions within a period of three years, our Institute awarded him two Gold Medals for papers arising out of research work.

Inevitably, as he progresses in his career, administrative work is absorbing a greater portion of his time and effort, but all who know him at NIM watch their steps very carefully when reporting the results of research work at programme meetings. His memory for what has already been done in the field and his incisive comments on the work are always valuable — and at times, I gather, anticipated with some foreboding.

His outside interests include table tennis, for which he was awarded team colours at Wits., where he captained the first team during 1961. Jogging and swimming are other activities that he claims keep him reasonably fit, while archery is one of his more recent interests.

In painting a picture of any human being, the artist always tends to omit the warts, which Oliver Cromwell insisted should be incorporated in his portrait. Probably Peter has some, but he hides them very well, and has proved to all who know him to be a very likeable and attractive human being, happy with his family and with his work.

Probably, Eileen, who has so loyally supported him during sixteen years of marriage, sometimes regrets that he is quite so fond of his work, although I think she realizes that Peter classifies his enjoyment of the various aspects of family life as his most important interest.

Ladies and gentlemen, we are fortunate in having a man of Peter's calibre to guide our affairs during the coming year. His qualities of thoroughness and attention to detail, combined with a rare wisdom, will enable him to fill the office of President of this Institute with great distinction.

Peter, you have the backing and good wishes of all of us for what is probably going to be the most memorable and exciting year of your career.

**President Elect:** Mr Viljoen certainly has the gift of accentuating the positive aspects and unobtrusively omitting others, that make a normal *curriculum vitae* sound like something that the man would wish to achieve. For that kindness, I thank him very much indeed.

I am very conscious of the honour that the Institute has accorded me in electing me to be its 84th President. The very high standards set by my predecessors are well known to all, and I assure you that I shall endeavour to maintain those standards. The scope of the activities and responsibilities of the Institute continues to increase. In fact, this has to be so to ensure that the Institute provides the optimum service to the growing mining and metallurgical industry. In particular, there are many factors that make it even more important to ensure that there is a platform for the exchange of technical information to encourage adequate and rapid technology transfer. These factors include the rapid changes in technology that are taking place as a result of having to mine lower grades of ore at increasing depths with higher

labour and capital costs, the greater call for pollution control, the need for rationalization of energy utilization, new processing technologies, and computer-assisted control and optimization policies. This is particularly important in the continuing critical shortage of adequately trained manpower.

My first duty — it is, in fact, a pleasure — is to record very sincere appreciation to Mr Dave Viljoen for his service to the Institute as President during the past year. With his customary modest, and yet very thorough approach, and as an exceptionally hardworking example, he has led the Institute through another highly successful year. Perhaps most noticeable to individual members were his outstanding opening remarks at the Institute's technical meetings. Fortunately, as Immediate Past President, he remains an Office Bearer and will, no doubt, continue to make a major contribution.

It is my good fortune to have two extremely able and enthusiastic Vice Presidents, namely Mr George Nisbet and Mr Alf Brown, to assist me during the coming year. Already the pressures on Mr Nisbet are mounting, because he will have the additional responsibility of being President during the year that South Africa will be the host to the 12th Mining and Metallurgical Congress. Mr Brown has had very considerable experience and success in many facets of the Institute. Their election also marks the end of a series of Presidents with a metallurgical background; that is, equilibrium can be seen to have been restored.

The experience, guidance, and advice of Past Presidents are an essential asset, and I am particularly grateful that such a large number have signified their willingness to serve on Council for at least a further year.

I congratulate the re-elected Members of Council and the newly elected Members of Council. We are indeed fortunate that men of such stature and calibre are prepared to serve the Institute in this way. A special word of appreciation is extended to those employers who adopt an attitude of understanding towards those of their senior staff who are serving the Institute.

Dr Krige successfully completed his first year of office as Honorary Treasurer, and it is a pleasure to report that he will undertake this difficult task for the coming year. Even with his nimble mind in the sphere of finances, it was not possible to ward off the inevitable increase in membership fees.

To Dr Helen Glen, our Honorary Editor, and Mrs June Boydell, who is responsible for the production of our publications, I should like to express a very special word of appreciation for their continuing excellent contributions. The *Journal* of the Institute still remains the single largest shop window of the Institute, and therefore rightfully deserves the best attention. Also, a very sincere thank-you to Miss Linda van Niekerk and her willing assistants for the friendly but efficient manner in which the increasing secretarial responsibilities of the Institute are catered for.

The ongoing interest in our affairs and the service to the Institute by Mr Eric Boden and his staff continue to be greatly appreciated.

I now have great pleasure in inviting Mr Nisbet, as Senior Vice President, to take his place on my right, and to ask the newly-elected Vice President, Mr Brown, to join us on the rostrum.

*Mr Brown:* As the newly elected Vice President, I would like, on behalf of the Senior Vice President, Mr Nisbet, and myself, to offer sincere congratulations to our new President, Dr Jochens, and to wish him a fruitful and rewarding year of office.

Mr Nisbet and I are deeply conscious of the high honour that you have bestowed upon us by our election as Vice Presidents, and for this we thank you. We have no illusions regarding the importance of the tasks that lie ahead, nor of the high standards that have been set us by our predecessors.

Mr Nisbet's ability is well known to you. As a newcomer, I pledge our loyalty and our wholehearted support. I congratulate our immediate Past President, Mr Viljoen, on a successful and satisfying year of office, and I would like it placed on record that we have all enjoyed working under his able leadership.

#### **Appointment of Auditors and Honorary Legal Advisors**

*President Elect:* 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**

Dr Jochens delivered his Presidential Address, entitled: The energy requirements of the mining and metallurgical industry in South Africa [given in full on pp. 331 to 343 of this issue of the *Journal*].

#### **Vote of Thanks**

*Mr Nisbet:* Dr Jochens chose to talk on the topic of energy, which is on everyone's lips at the moment. In fact, this afternoon, on my way here, this very topic was being discussed in a general way — not in the way that Dr Jochens has done by specifically relating it to the requirements of the South African minerals industry. He highlighted the fact that, if the minerals industry is to exploit our mineral resources to the greatest possible extent, it is essential for a detailed investigation to be carried out on the relationship between the energy that this requires and the energy resources that could be made available. He also brought to our attention the need for careful planning and effective control.

*Mr Maxwell:* It is indeed a privilege as well as a very great pleasure to have the opportunity to congratulate Dr Jochens on the very fine address that he delivered to us this afternoon. To those of you who have known Peter for as many years as I have, it will come as no surprise that his address was challenging, thoughtful, and thought-provoking. It certainly gave me a lot to think about.

He started off by posing four very important questions, and they are, I feel, doubly important because they have not really been given serious attention before. I think we are all inclined to take our bountiful and cheap energy resources for granted, and just assume that we are going

to have no problem. Dr Jochens has done a great service to South Africa: first of all, by posing the question; secondly, by doing a lot of valuable research, which has provided short and immediate answers to the questions; and, finally, by formulating a whole series of subsidiary questions that must be answered satisfactorily if South Africa is to maintain its pre-eminent position in supplying minerals to the world.

It is really very difficult to allocate any priority to the questions raised by Dr Jochens, but there are a few that are of special interest to me and I have selected them for a few comments of my own.

According to a very recent announcement by the Richards Bay Coal Terminal Company, the terminal will be expanded to handle 44 000 000 tons per year by mid-1984, which, of course, is an advance on the previous programme. So the first question is, in Peter's words: Subsequent to 1984, should coal exports be encouraged to increase or decrease? Well, my calculations tell me that, if our coal supplies are going to give out in the 30s of the next century, and if we assume — as Peter did — a growth rate in local consumption of 4 per cent per year, and if, once again, we assume that we increase that 44 000 000 to, let us say, 60 000 000 — a figure that I have pulled out of the air, the supplies will give out approximately one year earlier. Does it really matter if supplies give out in 2034 instead of 2035 if, in the immediate future — which is of vital importance to this country — we can earn extra money, at least R500 000 000 per year in foreign exchange and provide thousands of extra jobs for our rapidly increasing population?

The important thing, as Dr Jochens says, is to recognize that conventional energy resources are going to give out, and to start making preparations for this eventuality now.

The second question that I would like to touch on is as follows: Is there any reason to change the established policy of exporting both oxide ores and metals while encouraging an increase in local processing? In my own

Presidential Address, nineteen years ago, I made a plea that, while we should do everything within our powers to process our minerals, we should not adopt a dog-in-the-manger attitude. We should play our part as an associate of the free nations of the world, and share with them the minerals that we have in abundance and of which they are in need. My instinct tells me that this is still the correct policy, but I agree with Peter that it deserves close examination.

Finally, in my opinion, one of the most disturbing situations highlighted by this address is the shortage of suitable metallurgical reducing agents. This, of course, is already receiving urgent attention, and we learnt recently of steps being taken by Iscor to overcome this problem. It is undoubtedly one of our most urgent energy problems, and one that should receive continuing attention.

In general, Dr Jochens defined a field that should keep a number of committees and dozens of research workers occupied for years. I do hope that the challenge will be accepted by the appropriate authorities.

The thoughtful attention to detail, the fearlessness, and the general excellence of this address are typical of the way our new President tackles all the tasks with which he is faced. You may thus be assured that our affairs are in very good hands for the next year, and it gives me very great pleasure to propose a hearty vote of thanks for the excellent address that Dr Jochens gave us this afternoon.

*Mr Nisbet:* Mr Maxwell, you have raised some very interesting points relating to Dr Jochens's paper, and your remarks will be published, along with the President's Address, in our *Journal*. I am sure that they will be studied and discussed in future, in conjunction with Dr Jochens's paper.

### Conclusion

*President Elect:* In conclusion, I take this opportunity of thanking each one of you, very sincerely, for your attendance this afternoon. I now declare the meeting closed.

The meeting ended at 6 p.m.



