

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, 1975.

Professor R. P. Plewman (President) was in the Chair.

There were present 45 Fellows, 37 Members, 8 Graduates, 3 Associates, 4 Students, and 45 Visitors, making a total of 142.

The President declared the Meeting open at 16h00.

OBITUARIES

The President: Ladies and gentlemen, it is my sad duty to announce the death of the following members of the Institute: M. Barcza, an Honorary Life Fellow and Past President of the Institute; J. A. Boyd, F. E. Keep, and J. H. Taylor, Life Fellows; I. D. B. Corner, C. O'G. Deane, R. E. Gilmour, A. C. Hofmeyr, M. W. Howell, T. J. Robin, and F. S. Steinhobel, Fellows; J. J. Frankel, Member; and T. J. Higgs, Associate.

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

MINUTES

The President: May we confirm the minutes of the General Meeting held on March 12th 1975 and published in the June issue of the *Journal*?

Agreed.

WELCOME

The President: It is now my very great pleasure to welcome the many members of our Institute and all the distinguished guests who have honoured us with their presence this afternoon. In particular, I would like to welcome our Honorary President, Mr R. S. Lawrence, President of the Chamber of Mines, and also our Honorary Vice-President, Mr T. L. Gibbs, the Government Mining Engineer.

Ons is ook besonder vereer dat

dr. Naude, die Wetenskaplike Raad-gewer aan die Eerste Minister, en mnr. C. A. J. Borman, Direkteur van die Witwatersrandse Kollege vir Gevorderde Tegniese Onderwys, hier aanwesig is om die vergadering by te woon.

We are also honoured by the presence of some 19 Presidents, Vice-Presidents, and Chairmen of our sister scientific and technical organizations. I would particularly like to welcome Mr Gericke of the South African Council for Professional Engineers, Professor Pretorius of the A.S. & T.S., and Dr Lloyd of F.S.P.E.

And then, also the Presidents of the Institute of Welding, Professor Robinson; of the Electrical Engineers, Dr Troost; of the Certificated Mechanical and Electrical Engineers, Mr Gibbs; of the Geological Society, Professor Maske; of the Land Surveyors of the Transvaal, Mr Course; of the Assayers and Analysts, Mr Williams; of the Mine Ventilation Society, Mr Martinson; of the Chemical Institute, Mr Goodman; of the Association of Mine Managers, Mr Pretorius; of the Institute of Foundrymen, Mr Attendorough; of the Production Engineers, Mr Duggan; and of S.A.F.U.E.S., Mr Avalle.

Then, the Chairman of the Council of the Institute of Metallurgists, Mr Snow; the Vice-President of the Town and Regional Planning, Mr Reinecke; the Vice-President of the Association of Consulting Engineers, Mr O'Kell; and Mr Cronje, who is representing E.A.S.A.

Finally, the Chairman of the Southern Transvaal Section of the Chemical Institute, Mr Bloom; the Chairman of the Witbank-Middelburg Branch of our own Institute, Mr Hosking; and the Secretary-Treasurer of our O.F.S. Branch, Mr Bird.

We also have with us Mr Trueman; the Deputy Manager of Kelvin House, Mr Mrost; our Honorary Editor, Dr Glen; Mr Walford; and

also some representatives of the Press.

Finally, it gives me great pleasure to welcome those who will receive Honorary Life Fellowships tonight, and also the winners of our student prizes.

MEMBERSHIP

The President: Ladies and gentlemen, I have pleasure in announcing the names of the following candidates, which have been published in accordance with By-Law 5.2.5., and Council has elected them to membership in the following grades:

Fellows: R. G. Boswell, R. W. Chadwick, D. R. Hardman, J. A. Holmes, T. J. B. Jones, and R. P. King.

Members: M. A. Bridgeford, C. F. Bonney, H. E. Bartlett, L. G. Floyd, A. K. Haines, D. Hatfield, C. G. Heymann, M. J. Howes, J. B. See, E. van Greunen, and S. P. Swanepoel.

Associate Members: J. Coetsee and R. P. G. Steyn.

Graduates: J. J. de Villiers and J. C. King.

Associates: B. J. Bucher, P. A. Combrinck, W. J. N. Gelderblom, L. S. Halasz, J. van Wyk, C. P. Visser, and A. Veress.

Students: D. J. Claasens, P. C. Crous, D. H. Murchison, P. A. Rossouw, and J. P. L. Schultz.

Company Affiliates: Airco Engineering (Proprietary) Limited and Deelkraal Gold Mining Company Limited.

There have also been some transfers:

Member to Fellow: J. B. Nangle.

Graduate to Member: E. E. Eichenbergen, M. J. Hillbeck, L. A. Melis, P. J. Venter, and R. O. Wellman.

Associate to Associate Member: B. M. Williams.

I welcome the newly elected members to the Institute, and I congratulate those who have been transferred to a higher grade.

HONORARY LIFE FELLOWS

The President: And now, ladies and gentlemen, we have reached a very pleasant part of our programme. The Institute wishes to honour some of its members by presenting certificates of Honorary Life Fellowship to them. This is an honour that is not lightly bestowed by Council, and the qualification is that the recipient must have served the profession, or the industry or the Institute, well over a considerable period of time. There were to have been seven such awards tonight but, as you know, Mishi Barcza died in May; so there will only be six.

It's not possible in the time available to me to do full justice to the recipients. All that I'm able to do is to give a brief outline of their several achievements.

I am particularly sorry that Dr McIntyre is not here to receive his certificate in person. He is by far the longest-serving member of Council, having been first elected in 1937. He was awarded the Gold Medal of this Institute, and served as President in the year 1945 to 1946. He is still a keen and active member of our Council, and suitable arrangements will be made to hand him his certificate on another, if less auspicious, occasion.

I would now like to call on Mr Cross to come up to receive his certificate. Ladies and gentlemen, Harry Cross is a graduate in metallurgy from Wits. Most of his working life has been spent with Goldfields. As you will remember, he was their Group Consulting Metallurgist. He became a member of this Institute in 1933 and was awarded the Gold Medal of the Institute. He served as President in the year 1965 to 1966, and again took on this duty for the latter half of the year 1966 to 1967. Thereafter, he served on the F.S.P.E. Council. He is now in private practice, but he still finds time to give us of his wise advice.

Robert Charles Jeffrey Goode was educated at Cambridge and McGill. He started work in Canada but came to the Rand in 1936 to join the Union Corporation. As you will recall, he became the Chief Consulting Engineer of that Group and subsequently an executive director. He served as President of the

Chamber of Mines in 1972. He first joined this Institute in 1936, served as President in 1968 to 1969, and led the South African delegation to the 1969 Commonwealth Congress in the United Kingdom. He is a Past President of the A.S. & T.S., and is still actively engaged in the A.S. & T.S. Trust and in the South African Council for Professional Engineers. He is currently deeply involved in the problems of technicians, and in the problem of an alternative route to registration, but he still finds time to serve on our Council.

David Mackie Jamieson is a product of Wits. and McGill. After three years in Canada and Scotland, he came back to the Rand and joined the Goldfields Group, where in 1958 he was appointed a consulting engineer. He joined the Institute in 1936, was elected to Council in 1958, and served as President in the year 1964 to 1965. When the Education Committee was formed two years ago, David was appointed Chairman of the Committee on Technical Training. This duty he is still doing — and doing well — and many other related duties have fallen on his willing shoulders. He's also our Institute's representative on the South African National Committee on Tunnelling.

Professor J. de V. Lambrechts was educated at Wits. but in stages. He attained a Bachelor's Degree in Mining in 1931 and a Master's in 1946, and became Doctor of Science in 1959. After an initial period on Crown Mines, he joined the Mines Department and in 1947 became the Ventilation Consultant to the Anglo American Group. In 1964 he took on the task of establishing a mining department at the University of Pretoria, and was for ten years the Professor of Mining at that University. He joined this Institute in 1936, and was elected to Council in 1955. He was awarded the Gold Medal of this Institute, and served as its President in the year 1962 to 1963. He continued to serve on Council until his retirement at the end of last year.

Mr D. G. Maxwell is a Johannesburg boy who was educated at the Royal School of Mines. There he graduated in 1940 with a degree in

metallurgy. He served as a fighter pilot with the Royal Air Force during the war, and in 1948 he moved to General Mining, where he soon became the Group Metallurgist, and in 1952 Consulting Metallurgist. He joined the Institute in 1950, and served as its President in the year 1961 to 1962. Since that time he has been Treasurer of the Institute for many years, although he was also active on A.S. & T.S., in particular on a work known as 'A Guide to Authors'. He relinquished the treasurership of this Institute only when he moved to the same post in the A.S. & T.S., a post that he still holds. Nevertheless, he still finds the time to be an active participant in our Council Committees and in our Council debates.

Mr Maxwell: Thank you, Mr President, for your kind words. It is a very great pleasure for me to be able to speak on behalf of my five colleagues and to say how much we appreciate the great honour bestowed on us by the Institute. I would also like to say how sad we all are that Mishi Barcza was taken from us before he was able to receive this firm recognition of the honour that he so richly deserved.

I know that I can speak for all of us when I say that we had already had our reward many times over in respect of any services that we may have rendered the Institute. This reward was in the form of many hundreds of hours of interesting discussions and negotiations, in the form of fine and lasting friendships, and in the form of satisfaction with a job carried out to the best of our ability. Nevertheless, in spite of these rewards that we have already received, it is very gratifying to receive this concrete form of appreciation, and on behalf of us all I would like to say a very sincere thank you.

PRESENTATION OF STUDENT PRIZES

The President: We now come to the presentation of student prizes. This Institute awards prizes for the best student dissertations each year, and I'd like to congratulate the following students and ask them to come forward to receive their rewards.

First, Mr G. J. Dyason for a

dissertation on 'Direct Stainless Steel Production'. Next, Mr J. E. Olivier for a dissertation on 'Selection of Stripping, Loading and Haulage Equipment for a Strip Mining Operation.' The third recipient, Mr D. W. Butcher, who wrote on 'Rope Guides versus Fixed Guides', is unfortunately not here, and we will have to deal with him in another way, but I would like to ask Mr I. M. W. Preston please to come forward. He wrote a dissertation on 'Risk and the Mining Investment Decision'.

ANNUAL REPORT OF THE COUNCIL AND ACCOUNTS FOR THE YEAR ENDED 30th JUNE, 1975

The President: Ladies and gentlemen, my next duty is to present the Council's report [reprinted elsewhere in this *Journal*] for adoption. In presenting this report, I prefer to spend a little time talking about the people behind the document. The report itself is available to you all — it was placed on the chairs before the meeting — and I can think of no better way of accounting for our stewardship of the Institute's affairs than to outline what the members of the Council have been doing during the year.

Dr Robinson, amongst other duties, was, as the Programme Manager, responsible for the *Journal*. The quality of the production pays tribute to him and to Dr Helen Glen, the Honorary Editor, and to Mr Walford, who is responsible for liaison with the printers and advertising agents.

Dr Salamon, presided over the meetings of the Membership Committee. This is not as public a function as the *Journal*, but it is vitally important to every one of you because the reputation of an institute is as much vested in the membership standards as in the quality of its publications. In addition to this, we have a further difficulty in that we have to meet the requirements of the South African Council for Professional Engineers if we are to retain our position as a professional engineering society.

In passing, it's pleasing to record that the membership has again

increased by 31. This figure is not large, but, seen in context, it represents a very respectable rate of growth, which, if sustained, should take the Institute past the 2000 mark in another five years.

Dr Legge was in charge of the Excursions Committee. Despite the curtailment of excursions imposed by the petrol restrictions, he arranged a very successful visit to the Vaal-Tugela water project.

Mr Grange was responsible for the technical programme on mining, and arranged two very successful colloquia, each lasting a day, on the subject of drilling, blasting, and ore winning. Ten wide-ranging papers were presented, and the participants came close to straining the resources of Kelvin House.

Mr Viljoen was responsible for the technical programme on metallurgy. He also arranged two extremely successful colloquia, the first on heavy-medium separation and ore sorting, and the second on recent advances in the design and performance of flotation equipment. Sixteen papers were presented at these colloquia, and again the resources of Kelvin House were strained by the number of participants. Indeed, the next colloquium in the series will perforce have to be held elsewhere as the members wanting to attend have exceeded the capacity of this hall. Mr Viljoen is also largely responsible for our first joint venture with the Institute of Foundrymen and the Institute of Metallurgists, which is due to take place shortly.

Dr Jochens was in charge of the vacation school for metallurgy, and arranged the sessions on electric furnace melting conducted for us by two lecturers from overseas. Seventy-two members participated, and many had to be refused admission because we were over-subscribed.

Dr Salamon, and later Mr Wells, organized the first vacation school on mining. Again, an overseas lecturer was invited to conduct the course, and again the course was over-subscribed.

The Pyrometallurgical Discussion Group convened by Dr See had a very successful year, as has the Base

Metals Group convened by Dr Haines.

The Education Committee under Mr Van Rensburg has begun to make real progress, and the activities of the subcommittees chaired by Mr Jamieson. Mr Goode, and Dr Robinson are now getting to grips with their important tasks.

If you realize that I've mentioned only the generals, and that all the musket bearers must also come from the Council, and if we add to that the duties of your Council members who represent your Institute on other bodies, such as A.S. & T.S., F.S.P.E., S.A.C.P.E., and S.A.N.C.O.T. — not to mention tasks relegated to the lesser-known committees of the Institute, such as the Awards Committee, the Constitution, Rules, and Policy Committee, and the Mines and Works Committee — then perhaps you can be persuaded that the Annual Report in your hands records a year of faithful endeavour by those you elected to represent you.

Naturally, your Council cannot do all this on its own. We've had a great deal of help from Mr Boden and Mr Trueman, and particularly from our Secretary Jane Theron and her assistants, Mrs Prince and Mrs Greeff. Their unflinching willingness to help and their anticipation of our needs have made the work of Council pleasant and almost easy. We owe them our gratitude and our thanks.

Ladies and gentlemen, I have much pleasure in moving the adoption of the Annual Report and Accounts. Before I call on Mr Douglas to review the financial position and to second the motion, I would like to say one more thing.

I believe that the Institute has had a successful year, and my task did not seem unduly difficult. Both these things are due to a dedicated Council with a very good Treasurer, two extremely competent Vice-Presidents, and a conscientious Past President. I would, therefore, like to express my personal gratitude to the office bearers, the members of Council, and our Secretary for making my task so interesting and pleasant.

I would now like to ask Mr Douglas to second the motion.

Mr Douglas: Mr President, hon-

oured guests, ladies and gentlemen. Before seconding your motion, Mr President, it is my pleasure and duty to comment briefly on the state of the Institute's finances. An examination of Accounts, which are attached to the Annual Report, shows a satisfactory position. Once again we have a surplus of R21 410. This did not quite equal the surplus for the previous year, which was R28 524. Nevertheless, it was very satisfactory, but there are certain aspects of it which it is my duty to bring to your attention.

There were two sources of revenue this year that are not necessarily recurrent. Firstly, there were sales of publications amounting to R13 644 and, secondly, there was a surplus from the 1974 Winter School of R10 054. We have done very well with our sales of publications in recent years, these being the proceedings of the various symposia such as the Open-Pit Symposium — which, incidentally, is still selling very well — APCOM, and INFACON. The INFACON Proceedings have only recently, of course, been published at a cost of R16 619, and to date we have recovered R9647. So there's a possibility of further revenue from this source. Nevertheless, we cannot be certain that we can continue to derive revenue from publications of this nature, although this is certainly a very worth-while activity for the Institute.

The surplus from the 1974 Winter School was very welcome, although the initial planning was that the school should be run on a non-profit basis. However, as your President has told you, these schools are very popular and were over-subscribed — almost embarrassingly so — and the net result was that a surplus was shown. Our objective in these schools, nevertheless, is to run them on a non-profit basis and, therefore, this cannot be relied on in future. The point I wish to make is that these two items totalling R24 298 are in excess of the total surplus for the year.

The cost of administering the Institute has risen once again, not only because of inflationary conditions, but also because of increased activities. Excluding non-recurring costs such as the

publication of INFACON, the cost of running the Institute increased from R26 501 to R33 155, an increase of 25 per cent. The main increase was involved in secretarial fees, stationery, and printing, and in the publication of the *Journal*. We have recently been advised by A.S. & T.S. that it is necessary to increase their administration fees by 25 per cent in order to meet rising costs and to enable them to pay salaries at competitive rates. It is important that our normal revenue should cover the cost of administering the Institute and that we should not depend on non-recurrent revenue. For these reasons, I must warn that your Council will have to give consideration in the year ahead to an upward adjustment of subscriptions to meet rising costs.

Any revenue deriving from symposia, winter schools, etc., should be used to build up the Education Fund as this was formed to extend the activities of your Institute in the fields of education, recruitment, etc. Last year the Education Fund was started with an initial capital of R30 000, and a further R20 000 was added to it this year. The amount in this fund at the year end, including interest and less expenditure, was R55 991. This is certainly a good start and provides a source of revenue that can be used to further the aims of the Institute in the field of education.

The activities of the Education Committee and its four subcommittees have indicated that there is considerable scope and that the amounts required could be quite substantial. However, I must again put the brakes on and say that, until we can build this fund to a substantial capital sum, our expenditure will have to be kept to a modest level.

The MacArthur Forrest Fund, which supplies prizes to the Technical College, has stayed at about the same level and paid out some R400 in prize money this year. Our total funds, i.e., the accumulated funds plus the Education Fund plus the MacArthur Forrest Fund, now total R120 847, compared with last year's figure of R96 005. I think you will agree this is very satisfactory compared with what we were some

four or five years ago, but, bearing in mind the comments I have made and the erosion of money values, we should not be complacent.

Of our total funds, an amount of R75 061 is invested in long-term loans and debentures, and the balance is on fixed deposit in building societies and bank accounts, and on call at Syfret's Trust.

Ladies and gentlemen, I believe this briefly summarizes the financial position and, of course, if you wish to study it in more detail, the Accounts will give you that.

I would like to add to what the President has said, and express my personal appreciation to our charming Secretary, Miss Jane Theron. She and her staff have given me a tremendous amount of assistance — not that I did much of the work, they did most of it. I would also like to thank our Mr Trueman, who so faithfully looked after our accounts and those of all the institutes, and has done a very excellent job for us this year.

Finally, Mr President, I would like to say that it has been a great pleasure to work with you and Council this year. It has been a very active and interesting year, and much has been started that will bring credit to the Institute and benefit to our members and the industries we serve.

I now have pleasure in seconding the motion for the adoption of the Annual Report and Accounts.

The President: Thank you, Mr Douglas.

I now request the formal adoption of the Annual Report and Accounts.

Agreed.

DECLARATION OF ELECTION OF OFFICE BEARERS AND MEMBERS OF COUNCIL FOR THE YEAR 1975/1976

The President: Ladies and gentlemen, I have pleasure in announcing that, in accordance with Clause 3.3. of the Constitution, the retiring Council has elected the following as the office bearers for the ensuing year:

President: Dr R. E. Robinson.

Vice-Presidents: Dr M. D. G. Salamon and Mr P. A. von Wielligh.

Honorary Treasurer: Mr J. K. E. Douglas.

Immediate Past President: Prof. R. P. Plewman.

I shall now read a letter from the scrutineers declaring the election of Members of Council for the year 1975/1976. The scrutineers report as follows:

'We have to report that we have inspected the nomination papers for Members of Council for the 1975/1976 session, and have found that the ballot papers sent out to corporate members of the Institute were in order. There was a return of 519 ballot papers and one spoiled paper, representing a 41,8 per cent ballot. As a result of our scrutiny we find that the following Members have been elected: M. G. Atmore, C. T. Fenton, P. R. Jochens, R. P. King, D. G. Krige, D. I. Legge, D. G. Malan, C. T. Shaw, D. A. Viljoen, and H. M. Wells.

Dr Krige: Mr President, ladies and gentlemen, on behalf of the newly elected Members and the re-elected Members, a word of sincere thanks to the Institute for the confidence placed in us.

Ons beskou dit almal as 'n besondere eer om op die Raad te dien en ek is seker ons sal almal na die beste van ons vermoë op die Raad in die volgende jaar dien, en so-doende 'n sukses van hierdie jaar maak. Baie dankie.

The President: Thank you, Dr Krige. I would like to congratulate those Members who have been re-elected, and I welcome the newly elected Members to our Council.

In terms of Clause 3.2.8. of the Constitution, Mr E. A. Jackson, in his capacity as Chairman of the Witbank/Middelburg Branch, will serve on the Council, and under the same clause Mr G. J. C. Young, Chairman of the Orange Free State Branch, will also serve on the Council.

I would like to announce that the following Past Presidents have signified their willingness to serve on Council for the ensuing year: Drs McIntyre and Hugo; Messrs Britten, Adamson, Maxwell, Jamieson, Cross, Goode, Robinson, and Van Rensburg; and Prof. Howat.

INDUCTION OF PRESIDENT

The President: Now, ladies and gentlemen, we come to the most

important matter of business that will concern us today: the induction of our new President, Dr R. E. Robinson.

He was born in Bloemfontein, and was educated at St Andrew's School in Bloemfontein and at St John's College in Johannesburg, and then at the University of the Witwatersrand. He attained the Bachelor's Degree in Chemical Engineering in 1950. Three years later he was awarded the Ph.D. for a thesis on 'The Study of Factors Influencing the Life Cycle of Synthetic Anion Exchange Resins, with Special Reference to the Extraction of Uranium. The work for this degree was conducted at the Government Metallurgical Laboratory and was a major factor in shaping his future career, as will become apparent.

In 1954 he joined the Central Metallurgical Laboratory of Anglo American as head of the Chemical Engineering Section, and while still there he was seconded to the Atomic Energy Board and returned to the Government Metallurgical Laboratory to work on the refining of uranium. Two years later he was appointed Director of the Extraction Metallurgy Division of the Atomic Energy Board, and Director of the Government Metallurgical Laboratory. When this latter institution became the National Institute for Metallurgy, he became its first Director, and in 1972 his post was raised to that of Director General.

So much for the bones of the career of this remarkable man. Let's see what a little of the flesh looks like. He was intimately connected with the development of processes for the recovery and refining of uranium in South Africa. His was also the major influence in the building up of the old Government Metallurgical Laboratory to the status that the National Institute for Metallurgy now holds as one of the foremost metallurgical research institutes in the world.

A prophet is not always without honour in his own land, and this is demonstrated by Dr Robinson's appointment as Honorary Professor of Chemical Metallurgy by his *alma mater* in 1969, this appointment being a recognition of his work and

his contribution to extractive metallurgy. At about the same time he was appointed a member of the Scientific Advisory Council to the Prime Minister.

But there is more. Those of us who have worked with him on Council and elsewhere have come to appreciate his keen mind and his quick, balanced judgment, as also his enthusiasm and drive. An all-round man, who was an active sportsman in rugby, hockey, and cricket but now confines himself to social tennis, he also derives pleasure from choral singing and amateur dramatics; he paints when time permits, and as an amateur photographer he's been awarded the highest honour of the Johannesburg Photographic Society.

I can think of no better man to guide the Institute in this taxing time of change, and, in congratulating Dr Robinson on his appointment to this office, I'm also congratulating the Institute on their choice of President.

Dr Robinson: Professor Plewman, honoured members of the Institute, ladies and gentlemen. You have done me a very great honour in electing me President of this Institute, and I am very conscious that I have not really deserved this and that I will be hard put to maintain the high standard that has been set by the Past Presidents. Fortunately, I can rely on their continued help and guidance, and I thank them all for agreeing to serve on Council. I can assure you that I will particularly call on the advice and assistance of Bob Plewman, our retiring President, and my first and most pleasant duty as your new President is to ask you to join me in expressing to him a most sincere vote of thanks for the work that he has done for the Institute during the last year.

In the report that he presented, you will all have noticed a most serious omission in the names of people that have contributed — he made no reference to himself. The Institute's activities have expanded enormously and, were it not for Professor Plewman's ability to organize and to act as a most able administrator, I'm quite sure that our Council meetings and the work

of the various committees would have been very much more arduous than they have been. He has approached the various problems and difficulties that have confronted Council during the past year with his keen analytical mind, and his ability to boil down complex matters to the essential basic features has been one of the main factors in promoting a most efficient year of operation. He can look back with pride at one of the most successful years that the Institute has had.

I believe that a few days ago he was under the impression that at this particular moment a heavy weight would fall from his shoulders. But, after our Office Bearers' meeting yesterday, I'm afraid he has come to realize that, because he has maintained such an active interest in so many facets of the Institute's activities, his load of work during the forthcoming year, if anything, has increased. He is indispensable, I'm afraid, and will still play a leading role on many of the important committees of the Institute, and as a representative of the Institute to many of the other scientific and technical bodies. I thank him in advance for the contribution that he will continue to make. I ask you to join me in expressing a vote of thanks to him in the usual way.

Ek gaan ook op groot skaal staatmaak op die uiters bekwame Vise-presidente wat u verkies het om saam met my in die Raad te dien. Dr. Salamon het reeds te kenne gegee dat hy gedurende die jaar wat voorlê 'n groot bydrae gaan lewer en ek wil graag ook mnr. Von Wielligh verwelkom wat reeds op 'n uiters bekwame wyse getoon het watter bydrae gedurende sy ampstermyn van hom verwag kan word. Albei van die Vise-presidente het baie groot verantwoordelikhede en verpligtinge in die mynboubedryf en ek is bewus dat die tyd wat hulle aan die Instituut wy, groot persoonlike opoffering sal verg.

Ek wil ook graag die pas verkose lede van die Raad, mnr. Fenton, professor King, dr. Krige, mnr. Jackson (Voorsitter van die Tak Witbank en Middelburg), en mnr. Young, (Voorsitter van die Vry-

staats Tak) verwelkom en hulle gelukwens met hul verkiesing.

Verder wil ek die gewese lede van die Raad gelukwens met hulle herverkiesing en hulle by voorbaat dank vir hul voortgesette bydrae tot die Instituut se sake. Ek moet veral vir mnr. Keith Douglas bedank omdat hy ingestem het om as Ere-tesourier van die Instituut aan te bly. Ek vertrou dat die geldsake van die Instituut onder sy leiding aan die einde van my ampstermyn net so gesond sal wees as wat hulle tans is.

I will also, of course, continue to rely heavily on the services of our Honorary Editor, Dr Helen Glen. There are going to be many problems associated with the *Journal*, but I'm sure, under her continued able and efficient editorship, these will be satisfactorily solved.

I must also express my thanks in advance to the Secretary of the Institute, Miss Jane Theron, who I am sure is going to be a tower of strength in all matters that will call for the President's attention.

I should now like to invite Dr Salamon to take his seat on my right, and to ask the newly elected Vice-President, Mr P. A. von Wielligh, to join me on the rostrum.

Mr Von Wielligh: Mr President, honoured guests, ladies and gentlemen. Before accepting the invitation to join you on the rostrum, it is my very great privilege and duty as the newly elected Junior Vice-President to offer to you, sir, the formal congratulations of Dr Salamon and myself on your election as President of our Institute for the ensuing year.

I also wish to express our very sincere appreciation of the honour here bestowed upon us in electing us to our respective offices. Dr Salamon is well schooled in the duties of Vice-President, and has during the past year diligently and honourably fulfilled his duties as such.

In the full knowledge of the exceptional standard set by our notable predecessors, we will strive to perform our duties in accordance with ideals that, we hope, will be at least equivalent to your expectations, and we undertake to assist you, Mr President, to the best of our ability.

In conclusion, I endorse the re-

marks you made about our retiring President. A word of appreciation to you, Professor Plewman, for the very able manner in which you guided the affairs of our Institute during the past year. You have filled the position with distinction, not only in the performance of the numerous normal duties of the President, but also in the manner in which you led the South African contingent during the Tenth Commonwealth Mining and Metallurgical Congress in Canada last year.

Met hierdie paar woorde, mnr. die President, aanvaar ek nou met dank en trots u uitnodiging om die ere plek in te neem en wil by herhaling bevestig dat ons ons bes sal doen om die verantwoordelikhede wat op ons skouers rus, te help dra.

APPOINTMENT OF AUDITORS AND HONORARY LEGAL ADVISERS FOR THE YEAR 1975/1976

The President: The next item on the agenda is the appointment of auditors and honorary legal advisers for the year 1975/1976, and I wish to propose that Messrs Alex. Aiken and Carter be appointed auditors, and Messrs Van Hulsteyn-Douglas be appointed honorary legal advisers to the Institute for the coming year.

Agreed.

GENERAL BUSINESS

The President: Is there anything that members wish to raise under this heading?

There being nothing under this item, it now gives me pleasure to call on Dr Salamon to take the chair while I deliver my address.

PRESIDENTIAL ADDRESS

Dr Robinson delivered his Presidential Address entitled 'The Case for National Research in Mineral Processing' [reprinted elsewhere in this *Journal*].

VOTE OF THANKS

Dr Salamon: Thank you, Dr Robinson. Ladies and gentlemen, I'm sure that you all listened, as I did, to Dr Robinson's talk with considerable interest. The community of research workers in the minerals industry of South Africa, of course,

is very small, and our problems, whether we work in the public or the private sector, are in many ways similar. For example, we all have to decide about priorities, and, as Dr Robinson said, this is probably the most crucial and most difficult decision to make in the management of research. I think all of you will agree with me that Dr Robinson selected a very thought-provoking subject for tonight, and I'm sure you liked his imaginative presentation. It takes a courageous man to assume the role of the prosecutor and the defence counsel in the same address, especially when the subject matter is so close to his heart. He certainly succeeded in doing this.

Dr Robinson's philosophy is the result of many years of experience, and I'm sure we will find his reasoning, especially his arguments concerning the selection of projects for future work, of considerable help, not only in the national research effort, but also in the private sector.

But I must not allow myself to be carried away by my own interests. It is Mr Mrost's role to propose the vote of thanks tonight, and I therefore call on Mr Mrost, Assistant Associate Adviser of the Chamber, to propose the vote of thanks.

Mr Mrost: Mr Chairman, ladies and gentlemen, it is indeed my very great pleasure to be called upon to propose a vote of thanks this evening, in somewhat unusual circumstances, to apparently three contributors to the Presidential Address: two learned counsel — an elderly cynic on the one hand and, on the other hand, if my imagination has perhaps not overstretched a little, a very handsome and very dashing young man who argued the case for national research and mineral processing; and, of course, to Dr Robinson who, though he must clearly have spent a great deal of time on skilful briefing of counsel, achieved what I presume must be the ultimate in brevity for such an occasion, by confining his personal role to the introduction of the case.

It now remains for us, the jury, and also I guess the wider audience that this case will reach, to consider our verdict and to arrive at some sort of judgment — presumably a

consensus judgment of some kind, the reverberations of which, as the Chairman has indicated, will begin to filter back over some considerable time.

In proposing the vote of thanks, I think the only role that I can play is to, shall we say, join the community here as a jurymen and perhaps offer some points that I believe we should consider in arriving ultimately at a verdict. For this purpose, I think it will be necessary for us to consider the generalized answers to some very broad questions, probably of the following kind: For what purpose or purposes is research undertaken? Do these purposes merit support? If so, what fields of research should be pursued in furtherance of these purposes? By whom should the work be supported, and at what level of expenditure? And, finally, what organizational arrangements should be made in order that the purpose for which the research is carried out is served most effectively?

The purposes for which research is undertaken clearly cover a very wide spectrum, ranging from the satisfaction of human curiosity — as Dr Robinson mentioned, or, shall I say, as defence counsel mentioned — through the improvement of skills in order to improve productivity, thereby contributing to the creation of wealth, and to the solution at various levels of the organizational and other problems of society as a whole. It seems from the evidence led this evening that the purpose of research may even, on occasion, be fraudulent. Nevertheless, I am sure that most of these purposes enjoy extensive support since they derive from well-established economic principles and social foundations — other, of course, than the fraudulent ones.

However, I believe that, as we proceed further to the question of what field of research should be pursued, to what extent it should be supported, and by whom — and thus begin to probe more closely into our varied personal interests and attitudes — answers to our questions will be more or less difficult to formulate depending on the purpose the research is intended to serve. At one extreme, of course, one has a case where a person wishes to support research for the purpose of

his own economic self interest, or, indeed, for any other legitimate purpose at his own cost, and then there are no public difficulties — or very few, I guess, to resolve. The person concerned is accountable only to himself for any errors of judgment or of assessment that he may make.

But when, as a jurymen in this case, I give consideration to the other extreme where public resources are to be applied to research for purposes of broad public benefit, I find that counsel for the defence was not entirely helpful to me. He suggested that cost-benefit analyses would be of assistance — and they are, but not nearly enough so, principally because, while I have no difficulty in comparing costs for given benefits, I have difficulty in comparing benefits in the broad public area. For instance, what is the benefit of defence research, and how does this compare with the benefit accruing from medical research? And there are, of course, many other such examples that can be quoted. The nub of the difficulty seems to me to be that all benefits are not assessable in purely economic terms, so that the application of experienced judgment remains most important in this area.

I should add that, though I have these difficulties in establishing research priorities on the basis suggested by defence counsel in the broad public area — difficulties that others may, of course, not share with me — it nevertheless appears from the cost-benefit comparisons he has made, in which the benefits are expressed in economic terms, that there is indeed a strong case for sponsorship of research in mineral processing at the national level, and that was the nub of the case.

As to the extent of such sponsorship — well, you are the jury! But let me quote to you the scant guidance provided by Samuelson in his standard economics text, in which he states that 'Amongst several factors requiring to be changed in order to promote greater economic growth is the technical efficiency with which the different factor inputs combine to produce a larger output. That is', he says in brackets 'scientific and technical knowledge must be improved.' And he adds to

this statement the corollary that 'The single least contentious measure for inducing greater growth is promotion and subsidy of more research and development'. Simply interpreted so far as any research is concerned, it seems to be a case of the more the better. I hope, as no doubt Robbie does, that all potential sponsors of research will take due note. This, coming from Samuelson, I think, is not a very notable contribution.

I would like now to refer briefly to the last of the questions I suggested should be posed and answered in arriving at our verdict, namely, the question concerning the organizational arrangements to be made in order that the purpose for which the research is carried out will be most effectively served. It is not sufficient, in terms of this statement of the question, that the research is carried out effectively, and still less is it necessarily important that it is commissioned at the lowest price. We all know of cases where, for a variety of reasons, research findings of considerable potential, practical, and implied importance have not been acted upon. It seems important, therefore, that the arrangements

made provide an optimum mix of research ability, development competence, and (by no means least) facilities for the transfer of the knowledge gained and the skills developed in the course of research.

This optimum mix clearly exists in NIM in large measure as evidenced by the Institute's proud record of achievement, to which defence counsel alluded in his address, and on the basis of which I believe that we can unhesitatingly support the entrustment to NIM of the further development of the skills necessary to facilitate the full exploitation of our mineral resources for the benefit of the nation.

Before suggesting, ladies and gentlemen, that you retire to consider your verdict, I think I must draw your attention to one serious omission from defence counsel's address. He failed to make reference to one of the most important factors in the achievements of NIM, namely the strong and imaginative and effective leadership of that Institute by Dr Robinson. I would ask you to redress that omission by according Dr Robinson a particularly strong vote of thanks for the material he has assembled and presented to the

members of this Institute this evening.

Dr Salamon: Thank you, Mr Mrost, for your vote of thanks.

Ladies and gentlemen, as I suspected, Dr Robinson's address has raised a few arguments that will continue, no doubt, after the meeting later this evening. Thank you again, Mr Mrost. I think you highlighted very interesting points in the address, and I would like to join you in congratulating Dr Robinson.

Dr Robinson, would you like to comment on any point made by Mr Mrost?

The President: The debate will go on for many years, and I don't think we'll try to finish it tonight.

The President: Thank you for acting as Chairman, Dr Salamon.

In closing this meeting, I must thank all the members and our visitors for their attendance at our Annual General Meeting, and must remind you that the cocktail party starts in this room at 6.30. With a final thank you for your close attention to my address, I declare this meeting closed.

The meeting closed at 6.15 p.m.

Application of computer methods

The fourteenth APCOM symposium is to be held at Pennsylvania State University from 4th to 8th October, 1976. The programme committee invites abstracts of papers to be considered for presentation at the symposium. The abstract must not be more than 500 words, and should be mailed to reach Dr R. V. Ramani,

116 Mineral Industries Building, University Park, Pa., 16802, U.S.A., not later than 15th January, 1976.

Sessions on the following topics, as they pertain to the mineral industries are being planned: national and international planning for raw materials; investment planning in multi-national companies; health,

safety, environment and manpower planning; computers in coal and mineral processing; exploration and ore-reserve estimation; production planning and control; management information systems; industrial case studies; automation and process control; economic modelling of the mineral sector.

Magazine Supplement

A magazine supplement entitled 'S.A. Tunnelling' is being published at four-monthly intervals to the

journals *Construction in Southern Africa* and *Coal, Gold and Base Minerals of Southern Africa*. This

supplement is the official organ of SANCOT (South African National Committee on Tunnelling).