

75TH ANNIVERSARY BANQUET

A banquet, attended by 467 members and visitors, was held at the Wanderers Club, Johannesburg, at 8 p.m. on Friday, 21st March, 1969, to celebrate the 75th Anniversary of the founding of the Institute.

Introduction of Dr Carel de Wet

R. C. J. Goode (President) Dames en here: Ons het 'n aantal vooraanstaande gaste in ons midde vanaand en mnr Maxwell sal u later meer van hulle vertel. Dit is my aangename plig om u voor te stel aan sy Edele, die Minister van Mynwese, van Beplanning, en van Gesondheid, Dr de Wet en sy gade, mev de Wet.

Sy Edele Dr de Wet het geen bekendstelling nodig nie—alhoewel hy ons minister vir slegs die afgelope twee jaar is, het hy reeds talle funksies van ons Mynbedryf bygewoon en het baie vriende gemaak onder ons. Hy het homself baie bemind onder ons gemaak toe hy Wes-Driefontein onlangs besoek het om hulle ondersteuning en aanmoediging aan te bied in hulle uur van nood.

The Honourable Dr de Wet was born in the Free State. He is a grandson of that very famous general Christiaan de Wet, who caused so much pain to the British forces and for so many months so successfully eluded them in the Transvaal and Orange Free State. He was educated at both the Pretoria and Witwatersrand Universities. He first practised medicine at Boksburg and then moved to Vanderbijlpark, so you see he has an early association with gold mining on the Witwatersrand, and in moving to the Vereeniging-Vanderbijlpark district he became closely involved in our coal mining and metallurgical industries. South Africa's first steel was poured from a 10-ton open hearth furnace belonging to the Union Steel Corporation in Vereeniging in 1913. Dr de Wet has been mayor of Vanderbijlpark and for several years has been their member of parliament.

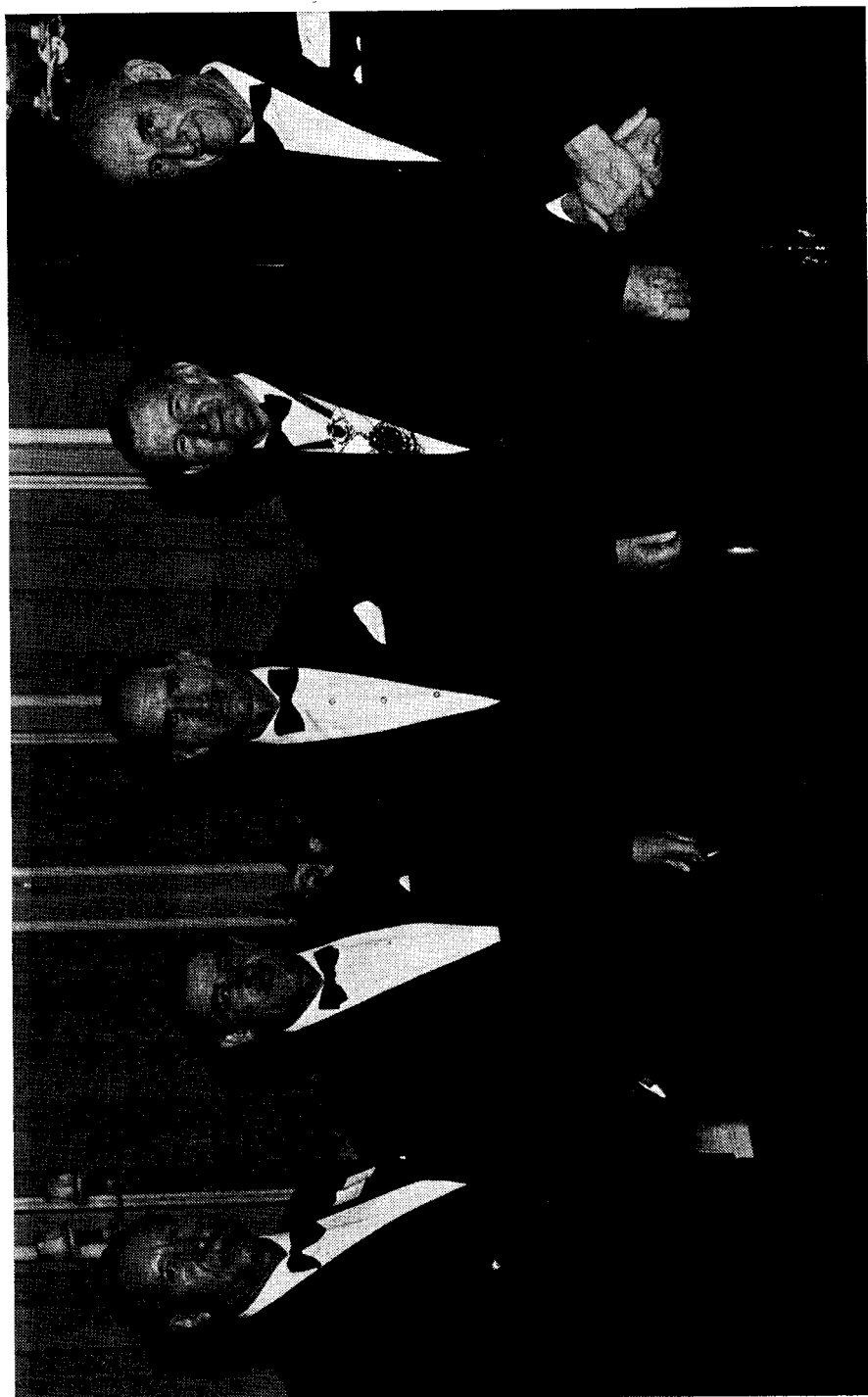
More recently, the Honourable Dr de Wet has filled with great honour that most important office of Ambassador for the Republic of South Africa in London. At present he wears two hats, in that he is Minister of Planning and of Health, but more important is his cloak, that of Minister of Mines, which I trust offers him the greatest comfort. To fulfill these three arduous tasks must demand of him a terrific devotion to duty, and in doing this he carries on that loyal tradition of service to his fatherland so evident in his grandfather.

Dames en here, dit is vir my 'n groot genoeë om Sy Edele Dr de Wet te vra om 'n heildronk in te stel op die Instituut vir Mynwese en Metallurgie.

Toast to the Institute of Mining and Metallurgy

Dr the Honourable C. de Wet (Minister of Mines): Mr President, ladies and gentlemen, Mr President you have introduced me gracefully to this distinguished company and I am appreciative of your remarks. I am fully conscious of the responsibilities that devolve upon me as Minister of Mines in a country where mining makes so vital a contribution to economic progress and development and has, in fact, laid much of the foundation on which our present proud edifice is built.

The achievements of the mining and metallurgical industry in its diversified activities arouse feelings equivalent to paternal pride, but let me speedily add that in considering any family relationship that may exist, the Minister of Mines should not be regarded in the role either of a fairy godmother or an indulgent father.



From left to right—Mr J. K. E. Douglas (Vice-President), The Honourable Dr. C. de Wet, Minister of Mines, Planning and of Health (Honorary Vice-President),
Mr R. C. J. Goode (President), Councillor E. Lewis (Mayor of Johannesburg) and Mr V. C. Robinson (Vice-President).



75th Anniversary Banquet—The Honourable Dr. Carel de Wet proposes the toast to the Institute.

I might more readily cast myself as a benevolent uncle who, in consultation with my colleague, the Minister of Finance, prescribes what is best for the mining industry and the community that serves it.

It is a community that has rendered notable services to the nation and a significant section of that community is represented by the past and present members of this Institute. It is worthy of remark that, through its Honorary President and Vice Presidents (and I have the privilege of being one of them), the Institute is linked with the highest councils in the country and the traditional ready acceptance of such appointments is indicative of the status which the Institute enjoys.

Dit is vir my besonder aangenaam dat Sy Edele die Administrateur van die Vrystaat en Sy Edele die Administrateur van Transvaal, wat ook Vise-presidente van die Instituut is, vanaand hier teenwoordig is.

In viewing the progress of the Institute over the first 75 years of its life and the reasons for celebrating this anniversary, it is appropriate first to cast an eye back over that period to its beginning in 1894.

By 1894 the working of the outcrops of the gold reefs on the Witwatersrand that had been discovered in 1886 had in many places extended below the limits of the free milling ore and among the many problems facing the emergent field was that of recovering economically and efficiently the gold contained in the unweathered pyrites forming a constituent of the cementing matrix of the conglomerates.

The cyanide process of gold recovery was then in its infancy and the active search for a solution of the metallurgical problems associated with the liberation and recovery of gold from the Witwatersrand ore led to lively discussions, which emphasised the need for a society where kindred minds could meet in suitable surroundings and discuss the problems of the day in an atmosphere of decorum and good fellowship.

Thus the Chemical and Metallurgical Society of South Africa, the forerunner of this Institute, came into being. It soon established itself as a valuable forum where existing practice could be surveyed and new ideas on technical development could be propounded for their worth, to be tested by well-informed and constructive criticism. The records of the Society's proceedings in representing a summation of what was then known, led to the wider dissemination of that knowledge and stimulated active thought and contribution to the store. In fact, these same circumstances obtain today for it is part of the nature of the technologist in any progressive nation to advance his knowledge and skill to meet the ever-repeating challenges that life presents, and the pursuit of an elusive answer often demands the communion of many minds.

Let it not be thought, however, that in coming into being the Chemical and Metallurgical Society sprang spontaneously into life and emerged forthwith in full perfection of form like Venus arising from the waves! In fact, its origin and subsequent growth are in no small measure due to the enthusiasm of the small body of men that comprised its founders. These men were rightly concerned that technological thought be directed on its most constructive course and that the community should recognise the quality of the technologist's services to society and accord to the technologist the status he deserves.

The founders of the Society applied themselves accordingly and, as we have seen, to good effect.

I am informed that at the inaugural meeting of the Society 14 were present. In that era of our mining history the problems associated with the recovery of gold

overshadowed the scene, so it is not surprising that of the faithful 14 the majority were men whose primary concern was the chemistry and metallurgy of that metal.

Ons het natuurlik nog ons probleme met goud maar miskien nie soveel vanuit die metallurgiese oogpunt gesien nie. Op die oomblik is die samestelling van bevredigende internasionale monetêre orderlikheid van die uiterste belang en daarin speel goud 'n onontbeerlike rol as katalisator. In hierdie situasie is dit egter die ekonoom en nie die laboratorium nie, wat die las moet dra.

Die stigters van die Vereniging het mnr William Bettel, 'n vooraanstaande metallurgiese skeikundige, as hulle eerste president gekies. Dit was 'n gelukkige keuse aangesien mnr Bettel by sy tegniese vaardigheid oor daardie besondere gawes van 'n geniale persoonlikheid gekoppel met organisatoriese vermoëns, beskik het. Sedertdien het mnr Bettel 71 titelopvolgers gehad, onder wie se geleedere mnr J. R. Williams was, wat die eer gehad het om die amp van President vir vier jaar te beklee. As 'n mens jou oog oor hierdie lys van presidente laat gaan, is dit interessant en verblydend dat dit as getuieis staan van die noue samewerking tussen die Instituut en my Departement van Mynwese. In die naamlys tref 'n mens die name aan van mnr C. J. Gray, Sir Robert Kotze, Dr Hans Pirow en mnr E. H. A. Joseph, wat almal senior betrekkings in die Departement van Mynwese beklee het—Sir Robert Kotze en Dr Hans Pirow natuurlik as Staatsmyningenieurs.

Sir Robert Kotze het natuurlik blywende bekendheid verwerf met sy ontwerp van die konimeter, die instrument waarmee stoflesings geneem word en wat vandag nog in gebruik is, asook vir baie van die vroeë werk in verband met die bekamping van die gevare van silikose. Mnr Joseph weer, word onthou vir sy bydrae tot die kennis van die oorsake van rotsbarstings en metodes van voorkoming.

Alhoewel hierdie Instituut sy lewe begin het as die Skeikundige en Metallurgiese Vereniging, het die mynbousektor, wat maar altyd op die uitkyk is vir 'n goeie belegging, heel gou die poorte van die Vereniging betree en saam met hom gelukkig nie net sy eie soortige probleme gebring nie, maar ook aktiewe ondersteuning van die doelstellings van die Vereniging. Die woord 'mynbou' is in 1903 tot die naam van die Vereniging toegevoeg en sedertdien het die Vereniging net een verandering in naam ondergaan, naamlik in 1956 toe dit Die Suid-Afrikaanse Instituut vir Mynbou en Metallurgie geword het.

In the course of its years the catalogue of papers presented to the Institute runs into many hundreds and covers an almost bewildering variety of subject matter. Diamonds had been on the scene for some time, but as mining horizons broadened and coal, iron, copper, manganese, chrome and other base minerals, as well as platinum, entered ever more boldly on the economic scene, the Institute kept pace in the sense that the papers that were presented and discussed were milestones marking the successful surmounting of many of the problems that arose from the growing complexity of the mining and metallurgical industry.

The standard of the papers has been extremely high and in originality of thought and in opening new fields for fruitful investigation, they have commanded the respect of the technical world and have added lustre to the picture of confidence and competence that our growing country presents.

As each new development creates new problems one can foresee that the Institute will not lack for material on which to sustain itself and that in the next 75 years it will have even better opportunity to give good account of itself.

I have no doubt that it will indeed go from strength to strength for there is every indication that minerals will continue to play a most significant part in the economic growth of South Africa far into the future.

Mynbou het in Suid-Afrika ontstaan nog lank voor die aankoms van die eerste blankes in hierdie land. Hiervan getuig die ou werkplekke in Noord- en Oos-Transvaal, waar goud, koper, tin en ystererts ontgin en gesmelt is deur mense wat 'n eenvoudige bedrewendheid aangeleer het om met metale te werk. Soos tans nog die geval is, was dit in daardie dae 'n lonende tydverdryf om metale te verkry. Eerstens het die mans daarmee vir hulle primitiewe wapens vervaardig om hulle self te verdedig en tweedens is ornamente gemaak om die vroue-geslag te bekoor.

Toe die Nederlandse Oos-Indiese Kompanje in 1652 'n verversingspos aan die Kaap gestig het, was die maatskappy se beamptes, soos ons weet, hoofsaaklik gemoeid met die voorsiening van vars groente en vleis. Die eerste stap tot die ontginning van mineralebronne was toe van Riebeeck verplig was om seeskulpe te brand ten einde kalk vir messeldoelindes te verkry.

Die legende van die ryk land Monomopata het in daardie dae baie aandag geniet en dit word vertel dat 'n geselskap van dertien vrywilligers in 1660 uit die fort in Kaapstad vertrek het onder leiding van Jan Danckert om te soek na die enorme hoeveelhede minerale skatte wat na bewering bestaan het. Hulle het 'n noordelike rigting ingeslaan, maar het later met leë hande teruggekeer. Hulle het tog vertel van 'n rivier wat weswaarts na die Atlantiese oseaan vloei en dat hulle groot troppe olifante daar aangetref het.

Ander prospekteertogte het gevolg wat na verloop van tyd uitgeloop het op die ontdekking van koper in Namakwaland. Die voorkomste wat van der Stel naby Springbok opgemerk het, is egter eers twee eeue daarna daadwerklik ontgin. Behalwe dat sout van panne geraap is en dat loodglans af en toe vanaf 'n paar geïsoleerde en onvermelde plekke herwin is om tot lood verwerk te word, het daar in werklikheid geen mynbedrywighede plaasgevind nie totdat diamante in 1867 in die Oranjerivier ontdek is. Die eerste was nogal 'n diamant wat $21\frac{3}{4}$ karaat geweeg het. Hierdie diamant is later aan die Goewerneur van die Kaap vir R1,000 verkoop. Twee jaar daarna is 'n 'n diamant wat $82\frac{1}{2}$ karaat geweeg het, die 'Ster van Afrika', deur 'n Griekwa-veewagter opgetel en hy is ryklik beloon met 500 skape, 10 osse en 'n perd! Hoe hy sy beloning aangewend het, is nie bekend nie—heel waarskynlik het hy dit in 'n groter gesin belê—maar wat wel waar is, is dat Suid-Afrika toe sy heel eerste koorsagtige stormloop van fortuinsoekers ondervind het. Sedert daardie jare het die waarde van diamante wat in die Republiek ontgin is, aansienlik meer as eenduisend-vierhonderd miljoen Rand beloop.

Dit is paslik dat spesiale melding hiervan gemaak word by hierdie vyf-en-sewentigste jaarsdag van die Instituut, want, ofskoon die Instituut sy ontstaan te danke gehad het aan die ontginning aan die Witwatersrand, het die vroeë goud-ontginning aan die Witwatersrand en die daaropvolgende totstandkoming van myne in die Oranje-Vrystaat, baie finansiële steun ontvang as gevolg van die beslaagde ontginning van diamante, sowel as van entrepreneurs wat in die loop van bedrywighede in verband met diamante te voorskyn getree het.

Die vroeëre geskiedenis in verband met die ontginning van goud in Transvaal het ook 'n aansienlik invloed op latere verwickelinge gehad. Vroeg in die jaar 1870 het die Regering van Transvaal in finansiële moeilikhede verkeer omdat daar min bronne van inkomste was en geen geleentheid om handel te dryf nie. In 'n poging om die finansiële toestand te verbeter, het die Volksraad besluit om 'n soektog na edelgesteentes en edelmetale aan te moedig deur 'n beloning aan die ontdekker daarvan aan te bied. In 1873 het hierdie besluit die eerste vrugte afgewerp met die ontdekking van alluviale goud naby Sabie. Hierdie nuwe vonds het wyd en syd bekend geword en avonturiers van haas elke nasie in die wêreld het weereens die

land ingestroom, sommige met vorige kennis van mynbou, maar baie het slegs die hoopvolle vertroue gekoester dat hulle 'n groot mate van geluk sou hê. Soos dit maar gewoonlik met hierdie dinge gaan, was daar in die meeste gevalle nie aan die verwagtings voldoen nie, ofskoon prospekterwerk in die gebiede Sabie en Pelgrimsrus die rif ontbloot het wat die Transvaal Gold Mining Estates Company in staat gestel het om vir meer as 80 jaar goud te lewer.

Die lesse wat geleer is met hierdie eerste kennismaking met goudontginning in Transvaal, het waardevol geblyk te wees toe die myne die Witwatersrand later tot stand gekom het.

The discovery, in 1886, that certain of the conglomerates of the Witwatersrand contained gold in payable quantities was the start of the most significant chapter of mining in this country. In a brief review it is impossible and indeed unnecessary in the light of well-documented history, to give an account of how the discovery came about, but after the proclamation of the Witwatersrand as a public diggings had been made the tapestry began to unroll in earnest.

The earlier experiences at Sabie and Barberton caused many a doubtful eye to be cast on the possibility of gold persisting in depth in the reefs. This doubt was dispelled when a momentous borehole was drilled in 1892. The drill hole probed deeper than any of the existing shafts and pierced the Main Reef Leader and the Main Reef at a depth of about 2,400 ft below surface. The assays of the core indicated the future of deep level mining and meant that the skill and resources of the mining engineer would be extended to the full in meeting the problems of rock-breaking, hoisting, pumping, ventilation and rock pressures that lay ahead. The magnitude that these problems would assume was little realised at the time, especially in the light of the fact that depths have now extended to below 11,000 ft, but nevertheless it soon became apparent that successful mining was beyond the capability of the individual digger and that only companies with considerable financial and technical resources could hope to undertake the work. The growth of companies, their affiliation into mining houses and the establishment of the Chamber of Mines to serve their common interests came about in logical sequence.

By the end of this year the total output of gold since 1884 will have amounted to over nine hundred million ounces with a value approaching seventeen thousand million rand—astronomical figures which cannot easily be visualized and a value which is fantastic by any standards.

The Witwatersrand can truly be regarded as the pivot on which the economy of the country has turned from agriculture to industry.

A study of the Government Mining Engineer's statistical report will reveal the range of South Africa's present mineral production and its value. If I were to indulge in further historical discourse on each mineral in turn, I fear that not only would you be obliged to remain here all night, but also that I would never be invited to another banquet! However, I would like to mention that the value of our mineral production last year exceeded one thousand three hundred and sixty million rand.

Ons sonnige land het sy dae van vertroebeling beleef, maar juis in die aangesig van hierdie verontrustende tye het ons in onself 'n wonderlike bron van natuurlike rykdom en die onpeilbare vermoë van ons mense tot selfstandigheid en voorsiening uit eie bron gevind. Die Eerste Wêreldoorlog het veral baie sterk beklemtoon in watter mate Suid-Afrika in sy alledaagse bestaan van invoere afhanklik was. Hierdie toestand het 'n belangrike uitwerking gehad op die ontwikkeling van ons onedel-mineraalpotensiaal en die totstandkoming van 'n eie yster- en staalfabriek was verantwoordelik vir die belangrike deurbraak na die veld van 'n eie swaarnywerheid.

In ander opsigte het ons egter nog sterk gesteun op die invoer van artikels vervaardig van ertse wat ons uitgevoer het. Die Tweede Wêreldoorlog het verdere klem gelê op die moeilikhede wat 'n land beleef indien hy te afhanklik is van die industrieë van andere. Hierdie prent het egter drasties verander; die mars van die jare bring voortdurend vir ons die bewyse van groter benuttig van ons grondstowwe op eie bodem. Die gebruik van plaaslikgeproduseerde metale en veredelde minerale in ons vervaardigingsnywerheid is hoegenaamd nie meer 'n seldsaamheid nie! Dit het aanvaarde prosedure geword! Dit is natuurlik so dat geen land al sy behoeftes uit eie bron kan voorsien nie, maar Suid-Afrika is in dié gelukkige posisie dat dit steeds 'n verskeidenheid van ru-minerale aan wêreldmarkte kan aanbied as 'n bydrae tot harmonieuse internasionale handel.

In die afgelope dekade het die jaarlikse plaaslike verkope van minerale bykans vyfvoudig toegeneem, naamlik van 18 miljoen rand tot 89 miljoen rand. By hierdie berekening is edelmetale, diamante, uraan en steenkool buite rekening gelaat. Dit is 'n dramatiese illustrasie van die groei van ons ekonomie en ons vervaardigingsnywerhede. Hierdie syfers is egter nie ten koste van uitvoere bereik nie, want uitvoersyfers van die betrokke minerale het gedurende dieselfde tydperk van 27 miljoen rand tot 168 miljoen rand per jaar gestyg.

It is fitting to glance a look into the future, and certainly it is most appropriate to use this opportunity to express the hope and conviction that the Institute will continue to make a major contribution to South Africa. I cannot help but make a comparison with other toasts, for example, that to a young man who, on reaching the age of twenty-one, has become an adult, is setting out on a career, and is poised to make a major contribution to the community.

There is a slight discrepancy in my comparison, in that your Institute is celebrating its 75th Anniversary, not its 21st birthday, but I think you will agree with me that 75 years in the life of an Institute such as yours is only the beginning of its history, and that in centuries to come our future generations might look back on this occasion as only the start of a great and glorious history.

On such an occasion it is commonly accepted that some fatherly advice to the young man on the formula for future success and happiness is very much called for. My advice on this occasion would be very similar to that of a very proud uncle to a young man who has received from his parents as good and as rich a start in life as anyone could hope for. I should say: 'Young man, you have been born with a golden spoon in your mouth; you have received from your parents more than any other child I know. You have worked hard and have achieved much, and you deserve to be the person you are. But do not imagine that such good luck can go on forever. You will have to earn your living in a harsh world by your own effort'.

So it is, I believe, with the mining and metallurgical industry in this country, with which your Institute is so proudly associated. It is difficult to imagine any industry in the world which has been so richly endowed with good things by its fatherland. While we have made good use of these gifts, it would be unwise to expect that they will be made available as readily as in the past. There are a few easy pickings left in the mineral wealth of this country, but our future will depend on hard work and wisdom to fully develop those legacies that we have inherited.

Also, we cannot expect to be spoonfed in the sense that we can continue to rely on the knowledge and technology imported from others. Not only must we be prepared to improve our expert knowledge, but also to an increasing degree we must be prepared to impart such knowledge to others who are at an earlier stage in their development, and I sincerely hope that your institute will increase its activities in promoting such an outlook.

We in Government circles are fully aware of the importance of this factor and, in spite of many problems and difficulties that make progress somewhat slow, we are attempting to develop and expand the national research bodies, such as the National Institute for Metallurgy, to a state where their contribution can be appropriate to the magnitude of the problems that lie ahead. It is gratifying, indeed, to observe the close collaboration that exists between your Institute and our research organisations since, without your support and guidance, these organisations cannot make the contribution expected of them.

Research and development work must be carefully planned and executed with positive objectives in view. Research carried out in isolation and without proper attention to the problems of the country is unlikely to make an impact or a contribution commensurate with the expenditure incurred. It is not sufficient to develop, by way of research, new methods for converting our mineral resources into more valuable processed products. Such processes must be economically competitive with those used in other countries and must be converted into practical reality in the form of adequately financed plants that operate efficiently under proper managements. Finally, the products have to be sold to the best advantage.

All these steps require close collaboration between the research scientists in their laboratories and the industrialists with their commercial outlook and incentives. Such collaboration requires a meeting place and forum for contact between research scientist and industrialist. Your Institute has provided this facility in the past and will, I hope, continue and expand in this direction.

The economic status of the Republic and the comfort and security of its citizens depend basically on the use we make of our mineral resources and our manpower. The maintenance of our material standards and the realization of material progress is in the hands of our technologists. In the interests of our culture it is to be expected that the technologist be imbued with vision ranging beyond the immediate and material results of his work and that, more than others, he can influence the course of civilization.

This Institute and the Associated Scientific and Technical Societies can be proud of the men of vision and men of action it has attracted and helped to create. In giving you the toast of the South African Institute of Mining and Metallurgy I do so in the confidence that in its ideals and aspirations it will continue to serve this country nobly.

Hierdie Instituut en die Geaffilieerde Wetenskaplike en Tegniese Verenigings kan trots wees op die manne van visie en van durf wat dit in hom saamgetrek en help vorm het. Waar ek dan die heildronk instel op die Suid-Afrikaanse Instituut vir Mynbou en Metallurgie, doen ek dit in die vaste wete dat dit in sy ideale en strewe steeds voort sal gaan om hierdie land op voortreflike wyse te dien.

Reply to the Toast to the Institute

R. C. J. Goode (President): The Honorable Dr de Wet, ladies and gentlemen. May I on behalf of the Institute thank your, Sir, most sincerely for your very interesting and stimulating address. We are all aware that at this time of the year you are a particularly busy man and we are indeed thankful that you and your charming lady managed to break away from the affairs of State to join our celebrations tonight. In describing the history of our mining and metallurgical industry and its close association with our Institute you have sent many thoughts running through our minds. First and foremost, of course, is the pride that we in this industry and in this Institute feel in the part that we have played in developing this country.



75th Anniversary Banquet—The President, Mr R. C. J. Goode replies to the toast to the Institute

If one of those much publicised modern management consultants were to ask me what the objective of our Institute is, I would define it briefly as 'to further the exploitation of minerals and metals'. Our activities extend from the discovery of a potential orebody to the profitable production of its contents. In the early days this was fairly simple—that early hunter, Marais, who found alluvial gold in the Jukskei River in 1854, recognised, as the early Bantu had done, that he was finding little nuggets or flakes of gold and if he could only find enough he could hammer it and beat it into a brooch or bracelet and earn the gratitude of his wife or girl friend. You, sir, made reference to that early diamond, the 'Star of Affica'—it was obvious that this was something of great value and on seeing it in 1869 the Governor of the Cape Colony, Sir Richard Southey, told the House of Assembly 'the diamond is the rock on which the future success of South Africa will be built'. How true this statement was; the discovery of diamonds drew a new and vital population to the country. It led to the construction of a railway to Kimberley, it encouraged further search for minerals and metals, and all and sundry looked north to Monomotopa, the land of King Solomon's mines. Gold in economic quantity was first found at Eersteling, near Nylstroom in 1870. Further discoveries followed quickly at Pilgrim's Rest and at Zeerust; diggers' cities, ten thousand strong, sprang up in no time. This was before the days of planning and before George Walker and the Struben brothers had found their gold on the Witwatersrand. By the turn of the century gold had taken over from diamonds and the annual intake of immigrants into the country rose from the odd hundred to between 20 and 30 thousand, overtaking the flow into Canada and Australia.

Now, as we celebrate our 75th Anniversary, the golden age is waning and other minerals and metals are taking over. These may well be more difficult to exploit, greater expertise will be needed to find them, more scientific skills will be needed to evaluate them and considerable business acumen will be required to exploit and sell the products. Perhaps a little more persuasiveness may be necessary to guide the benevolent hands of the Ministers of Planning and Railways and Harbours. Fortunately our Institute is well placed to serve; we have members from many walks of life. We start with the geologists, those modern explorers with little reverence for romance other than what they can find tramping over desert sands, frozen wastes or through tropical jungle; then the mining engineers, with little regard for the past but always planning for the future and, thirdly, the metallurgist, who is more of a scientist and as Sir William Bragg once said 'scientists are always optimists, they see the wonders of this world before them and they feel in the words of Robert Louis Stevenson—

'The earth is full of beautiful things

I am sure we shall all be happy as Kings.'

Fourthly, we have many of the leaders of the industry, some, possibly glib of tongue, though nowadays we lack politicians in our midst; momentarily, I do not think we have one! We will also have the help, as you have said, of the various research and development bodies such as the N.I.M., the C.S.I.R., the A.E.B., the Chamber of Mines and, last but certainly not least, the Department of Mines. I would like to pay tribute to the excellent work done by these organisations. Most of them work behind the scenes unheralded and unsung, but we in this Institute know much of their activities. Several of our members have been privileged to serve on advisory councils, and in reverse most of the leaders of the research teams, in the disciplines associated with mining and metallurgy, are members of our Institute. They take an active part in our discussions, they keep us up to date, and several have served on Council and

have risen to high office. In the future we will be even more dependent on their advice and their knowledge.

Let us now look back on the changes that have taken place in the 75 years since our Institute was founded. Johannesburg, we are told, was at that time a primitive place, the female sex was notably absent, it was beautiful without and rotten within, it was no place for a young man in which to grow up, its prize ring was the most famous in the world. There were no streets, no cars—we read an advertisement that the first car, a Benz, was presented to President Paul Kruger in 1896. Now, in 1969, we are choked with cars and, judging by the galaxy of gorgeous girls here this evening, there is an ample selection of the female sex! What will be the future—in 25 years' time our population will nearly have doubled, we miners may, with the help of benevolent ministers, have completed an underground railway between Johannesburg and Pretoria, our geologists may be spending weeks on the moon and our metallurgists may be under the sea recovering metals! Who knows, but what we do know is that most of the facts learnt at university will be out of date within ten years. Rather must we train our minds to move with the times to accept new ideas and to seek new applications. And I believe the place where we can best do this is in an institution such as ours where engineers and scientists can meet in friendly surroundings and discuss these great technological developments.

Ladies and gentlemen, I am particularly proud to be president of this Institution on the occasion of its 75th Anniversary. If one looks around this gathering tonight, one realises what a noble institution it is and one can appreciate how many of our members have risen to positions of great eminence, not only in this country but in the world. When our Institute was born in 1894 it was known as the 'Gold and Cyanide Club' and restricted its discussions to the extraction of gold. It was mainly composed of 'uitlanders', specialists who had come from America, Australia, Great Britain and, more particularly, from Germany and central Europe; we are told there was a motly of languages at the earlier meetings. Our present members are now practically all true South Africans, and it is now our turn for our members to go overseas to give specialist advice. Many of these may not be quite so well known on television as Professor Chris Barnard, but I assure you that amongst the engineers of the world there is the highest admiration for this country's engineers with their skills capable of accomplishing the four-minute mile in shaft sinking, who can mine at depths more than two miles below the surface, who can plan and successfully operate some of the biggest and deepest open pit operations in the world, who recover the smallest amounts of gold, uranium and diamonds from low grade deposits, who can make artificial diamonds and, last but not least, who can successfully control inrushes of water exceeding 100 million gallons per day. Is it surprising that members of our Institute are now scattered throughout the world! What a future exists for the younger generation joining us now and inheriting this fund of knowledge. But as engineers we know this is not the end, Sir Isaac Newton, towards the end of his great and wonderful life, declared 'we know little and have much to learn'.

And in this vein may I, like earlier presidents of our sister institution, the I.M.M. in London, quote Kipling—

'Go to your work and be strong, halting not in your ways,
Baulking the end half-won for an instant dole of praise.
Stand to your work and be wise—certain of sword and pen,
Who are neither children nor Gods, but men in a world of men'."

Toast to our Guests

D. G. Maxwell (Past President): Mr President, Mr Minister, distinguished guests, ladies and gentlemen. If I were to follow the example of many speakers on such an occasion I could start off by telling you that I am in no way fitted for my task this evening and that I approach it in trepidation and fear. This however, is not the case at all. Firstly, I should be insulting the Council if I were to suggest that they had picked someone unfitted for the job, and secondly, I have been looking forward to this evening with keen anticipation.

You will, now, undoubtedly be convinced that I am suffering from a swollen head and this reminds me of a story concerning medical matters that were being discussed in parliament, but I must emphasise that it has no connection with anyone who might be here present tonight. A debate had reached the point where tempers were a little frayed. One speaker who was very angry, but was also at pains to avoid using un-Parliamentary language, said 'The Hon. member for Blikkiesdorp is obviously suffering from an attack of beri-beri, the main sign of that disease being a swollen head'. In a flash the member referred to jumped to his feet and retorted: 'The Hon. member for Johnstown clearly knows very little of medicine. The symptoms of beri-beri are not a swollen head, but swollen feet'. Back came the reply: 'It makes no difference. All I intended to convey was that you were getting too big for your boots'.

Meneer die President, dit is vir my 'n besondere plesier en voorreg om vanaand al ons vooraanstande gaste welkom te heet. En ek wil nou, voordat ek voortgaan, die feit beklemtoon dat hulle nie net gaste is nie. Hulle is almal ons vriende. In hierdie verband wil ek graag u herinner aan wat Shakespeare van goeie vriende sê, in hierdie geval deur D. P. de Klerk vertaal: 'die vriende wat jy het, beproef en trou, klem hul met stale bande aan jou hart'. Dit is presies wat ons vanaand doen. Ek wil net seker maak dat almal daarvan bewus is dat die bande wat ons gebruik, van staal gemaak is: staal wat deur die metallurgiese lede van ons instituut vervaardig is uit ystererts wat deur ons myningeniurslede ontgin is.

Ek sou graag 'n ieder en 'n elk van ons gaste met name noem, maar u sal seker besef dat dit 'n onbegonne taak sou wees. Aan die ander kant sou dit onvergeeflik wees ek uit so 'n uitgelese byeenkoms nie enkele name sou uitsonder nie. Ek vra net om u simpatie omdat dit so moeilik was om te weet waar om die grens te trek.

Dit is in sy hoedanigheid as Minister van Mynwese dat ons 'n spesiale woord van verwelkoming aan sy edele Dr Carel de Wet heet. Waar hy is natuurlik ook Minister van Beplanning en van Gesondheid. Miskien het u self ook al gevra, soos ek dit gedoen het, hoe dit gekom het dat hierdie drie portefeuljes saamgaan. Tussen Mynwese en Beplanning kan mens redelik maklik 'n verband sien, omdat deeglike beplanning nog altyd 'n kenmerk van die mynbedryf was. Dit is egter enigszins moeiliker om die verband tussen mynwese en gesondheid in te sien. Maar as u slegs 'n oomblik daaroor nadink, sal u gou besef hoe nou die verband tog is. Afgesien van myningeniurs en metallurge is daar natuurlik ook talle geoloë in die mynbedryf doenig, en u weet seker dat 'n ander naam vir 'n geoloog 'n klipdokter is. U het sekerlik ook gehoor van die onlangse prestasie van myningeniurs, wat daarin geslaag het om erts uit die rots te sny sonder om gebruik van springstowwe te maak. Hulle kwalifiseer dus om snydokters genoem te word. Miskien die belangrikste verband is die tussen die myningenieur en die snydokter, wat albei goed vertrouwd is met uitgrawings. Dan is die verband tussen Gesondheid en die Mynwese ook duidelik as mens aan metallurge dink—manne wat skrikwekkende medisyne soos sianied en swawelsuur voorskrywe, of die siekte van die metale onder die mikroskoop vasstel. Dit is dus duidelik dames en here, dat ons vername gas die Minister in al sy hoedanighede hom heeltemal tuis



Mr D. G. Maxwell proposes the toast to the guests
at the 75th Anniversary Banquet

hier behoort te voel, en ek wil hom in genoemde hoedanighede, maar ook as Ere Vice-President van ons Instituut, en natuurlik in sy persoonlike hoedanigheid, van harte welkom heet.

We have two other Honorary Vice Presidents with us tonight in the persons of the Administrator of the Transvaal the honourable Mr Sybrand van Niekerk, and the Administrator of the Orange Free State, the honourable Mr Sand du Plessis. The big majority of our members are resident in these two Provinces and, apart from our headquarters, which, of course, is here in Johannesburg, we have one branch in each Province. We therefore appreciate the interest of our Vice-Presidents and we are very pleased to be able to welcome them to our celebrations.

It is a great pleasure to be able to welcome His Worship the Mayor Councillor Patrick Lewis to this banquet. We have close ties with Johannesburg, and our professions are represented in the city's coat of arms. We will unavoidably be a few

years behind the city in celebrating our important anniversaries (eight years to be exact) but we hope we will always be able to have the first citizen with us on such occasions.

We are indeed delighted to see Dr Tom Muller with us. We have a very special relationship with the Chamber of Mines of South Africa. The phrase is so hackneyed that I hesitate to repeat it, but fairy godmother does describe that relationship very well. So we welcome Dr Muller as President of the Chamber but we also welcome him as Honorary President of the Institute and as an old member in his own right.

I should like to say a special welcome to Mr Tommy Gibbs, the Government Mining Engineer, who has for many years been a staunch supporter of the Institute. He is also an Honorary Vice-President of the Institute. You will by now have realised that we have with us tonight our Honorary President and all four of our Honorary Vice-Presidents. This is a record that, I am sure, will not be easily equalled.

We are very fortunate to have with us Dr G. R. Bozzoli the Vice-Chancellor and Principal of the University of the Witwatersrand. This University has the oldest faculties of mining and metallurgy in this country and we enjoy very close and cordial relations with them. To our welcome to Dr Bozzoli I would like to add our congratulations on his very popular appointment and our good wishes for the future.

Ons is baie bly om Dr H. J. van Eck, Voorsitter van die N.O.K. en van Yskor, en Dr S. M. Naudé, President van die W.N.N.R. te verwelkom. Hulle is altwee ou vriende van ons.

Ek wil graag 'n spesiale verwelkoming aan Dr Hans Nel rig. Dr Nel is President van die Geassosieerde Wetenskaplike en Tegniese Vereenigings, en 'n voormalige President van die Geologiese Vereniging van Suid Afrika. Hy is ook lid en 'n ou vriend van ons Instituut. Dr Nel was so vriendelik om ons uitnodiging te aanvaar om die heildronk van 'ons' gaste te beantwoord.

We also have with us the representatives of our sister societies and also many important mining and metallurgical companies. It is satisfying to us that our specialist institute is able to draw together people from so many varied occupations, and we are very pleased to be able to welcome them here tonight.

We have as our guests tonight a number of Honorary Life Members of the Institute. Life Membership is an honour which is not lightly bestowed by the Institute and I can assure you they have all earned it. I am happy to be able to extend a very special welcome to Mr F. G. Hill, Dr P. N. Lategan, Mr C. S. McLean, Dr A. J. Orenstein and Mr T. K. Prentice, as well as once again Dr H. J. van Eck. Incidentally these members have between them clocked up a total of 266 years' membership of the Institute.

We are of course, delighted to have the ladies with us tonight in spite of the fact that they render the problem of selecting a suitable joke much more difficult. I believe that it is important for the well being of a predominantly male association such as our Institute to bring the ladies into things at regular intervals. They lend grace and elegance to any function they attend, as witness our sparkling gathering tonight, and also thereby feel sufficiently part of the association not to resent the demands that it regularly makes on their husbands' time.

As an institute we enjoy very good relations with the press and I am pleased to see them well represented here tonight. Most of us as engineers or scientists are used to having to produce reports under the pressure of an impatient management, but this is absolute leisure compared with the circumstances under which the average

journalist must write. I am sure that most of us sympathise with them and are very pleased that our own reports are not normally subjected to the critical scrutiny of a fickle public with a thousand different points of view.

Finally I would also like to extend a welcome to the private guests of individual members and to say that we hope to see them regularly with us in the future.

Ons gaste vanaand sal seker letterlik 'n duisend of meer rade, komitees, verenigings en so meer verteenwoordig. Hulle is almal baie besige mense wat geen moeilikheid daarmee sou vind om van al die 365 dae van die jaar volle gebruik te maak. Baie van hulle het ook lang afstande gereis. Ons waardeer dit baie dat hulle vanaand saam met ons by ons feesmaal kon wees.

Dames en here, ek nooi al die lede van ons Instituut om op te staan, en dit gee my 'n groot plesier om die heildronk in te stel: Ons Gaste. Ladies and gentlemen, I have much pleasure in proposing the toast of our guests.

Reply on Behalf of the Guests

Dr H. J. Nel (President, Associated Scientific and Technical Societies of South Africa): "Quite a number of us present here tonight, Mr President, ladies and gentlemen, attended a State banquet in Australia some years ago and we heard a very eminent Australian scientist introduce his after dinner speech by saying in his inimical Australian accent: 'Ladies and gentlemen, making a speech is very much like having a baby—rather pleasant to conceive but somewhat difficult to deliver.'

It is indeed a pleasure and a privilege, Mr President, to reply, on behalf of your guests, to the most gracious toast so eloquently proposed by Mr Maxwell. I greatly appreciate the compliment you have paid the Associated Scientific and Technical Societies of South Africa in asking me to speak and I shall treasure this occasion as one of the highlights of my year of office.

It might interest you to know that 40 years ago my predecessors in office were actually licensed to speak. This privilege was theirs by virtue of the fact that the very first broadcasting licence awarded in the country was issued, by the Postmaster General, to the Associated Societies in 1924. The S.A.B.C. had not yet come into existence—in fact, it was not even a twinkle in the responsible Minister's eye. Needless to say, we did not have this licence for long—no doubt for very cogent reasons—and I would not be surprised if, in addition, we did not even have the money to renew it. We gracefully withdrew in favour of what is today the South African Broadcasting Corporation and thereby lost forever, except by kind invitation, the opportunity to do some broadcasting in the interests of science and technology in this country.

Perhaps I should illustrate, Mr President, what I mean by the term 'broadcasting'. During the last war, a church service was broadcast one Sunday morning by the B.B.C. The parson took as his text: 'Cast your bread upon the waters and it shall be returned unto you sevenfold'. The church service ended with appropriate organ music and then the listeners heard the usual announcement: 'Ladies and gentlemen, that concludes the service which was relayed from St. Mary's Cathedral and we are now returning you to the studio'. There was a pause and then came the announcement from the station announcer: 'Ladies and gentlemen, this is the British Broadcasting Corporation'. I think this very clearly illustrates the point I wanted to make.

You mentioned, Mr President, the developments which could quite conceivably take place in 25 years' time, with geologists on the moon, mining engineers in the moon and metallurgists under the sea. The trouble is Sir, that I have a suspicion that this is precisely where our managements sometimes wish we were and I would



Dr H. J. Nel replies to the toast to the guests

therefore be inclined to view any substantial financial support, by the industry, on lunar research and sea-bed mining with the gravest suspicion! Furthermore, consider the risks to our professional status: the adjectives 'lunatic' and 'moonstruck' would be applied even more frequently to geologists than is the case today—if this were at all possible—and a mining engineer can hardly be expected to take kindly to the appellation 'our man in the moon'. As far as the metallurgists on the ocean floor are concerned, well, theirs has always been considered the most romantic of the three professions and one can well imagine the girls in Cape Town singing:

'Of all the experts in the seas
We much prefer the metallurgists—
They climb up on the seaweed trees
And slide down on their hands and knees.'

(with apologies to Ogden Nash)

I have been asked to quote the original published version—it goes like this:

‘Of all the fishes in the seas
I much prefer the bass—
I climbs up on the seaweed trees
And slides down on its hands and knees.’

We should therefore propagate the notion, Sir, that the moon is made of cheese, and first-grade South African Cheddar cheese at that. This would ensure that nobody would really want to go there and the mining engineers and geologists would at least have the more acceptable alternative of only being able to be sent to Coventry. I have no solution for the metallurgists, but, as they are experts in extraction, they will no doubt be able to design a more acceptable flow-sheet for themselves!

Om vanaand die geleentheid te gehad het om saam met u hierdie belangrike mylpaal in die roemryke geskiedenis van die Instituut te vier, Meneer die President, dames en here, was vir ons 'n voorreg en 'n besondere plesier. Ons wil graag baie dankie sê vir u gasvryheid, vir die aangename en boeiende geselskap en, les bes, vir die voorreg om 'n insig te gekry het in die gees van toewyding en entoesiasme waarmee die lede van die Instituut so klaarblyklik besiel is. Namens u gaste, Meneer die President, wil ek ten slotte die Instituut gelukwens met sy prestasies, en die innige hoop uitspreek dat die toekomstige bydraes tot die ontwikkeling van die natuurlike hulpbronne van hierdie mooi en ryk-bedeelde land van ons, net soos in die verlede met sukses en met roem bekroon sal word. Die slagspreuk van die Instituut, in Afrikaans vertaal, is: ‘Aan die bekwame, die geleentheid’. So sal dit sekerlik wees.

Nogmaals baie dankie.”