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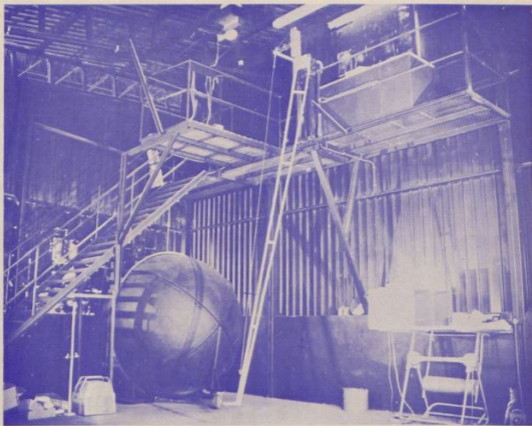
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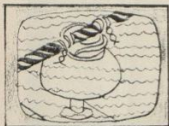
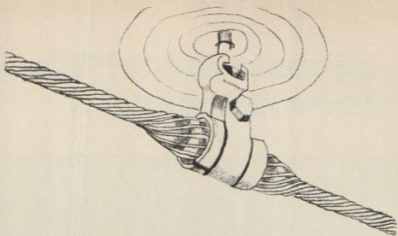
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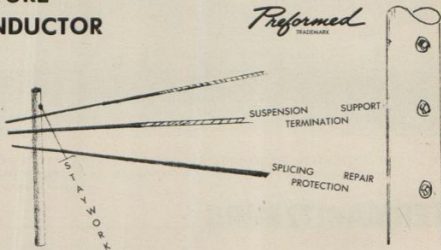
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1973/1975
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	E. de C. Pretorius	–	Aangewese President (Potchefstroom)
	J.K. von Ahlften	–	Springs
	D.C. Plowden	–	Johannesburg
Rdl.	C. de Kock	–	Potchefstroom
Clr.	M.R. Woollam	–	Pieternaritzburg

MEMBERS – LEDE

	R.W. Barton	–	Welkom
	P.J. Botes	–	Rooedeport
	E.E. de Villiers	–	Rustenburg
	H.C. Dreyer	–	Paarl
	D.H. Fraser	–	Durban
	K.G. Robson	–	East London
Clr.	B.D. Eagar	–	Johannesburg
Clr. Dr.	D. Frost	–	Welkom
Clr.	N. Grimwood	–	Durban
Rdl.	H.J. Hugo	–	Rooedeport
Clr.	H.G. Kipling	–	East London
Rdl.	M.P. Kotzé	–	Springs
Rdl.	C.A. Meter	–	Paarl
Rdl.	J.F. van Zyl	–	Rustenburg

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	I. Hess	–	Good Hope/Goeie Hoop
	A.J. van den Berg	–	Higheld/Hoëveld
	E. Trautman	–	Natal
	D. Haig-Smith	–	Eastern Cape/Oostelike Kaap

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Contents

Inhoudsopgawe

	ITEM
Attendance - Bywoning	1
Opening Prayer - Openingsgebed	2
Welcome by President - Verwelkoming deur President	3
Welcome by the Mayor - Verwelkoming deur die Burgemeester	4
Opening Address - Openingsrede Mr./Mnr. Percy Fowle M.E.C./L.U.K.	5
Thanks - Bedankings	6
Election of President - Verkiesing van President	7
Greetings - Boodskappe	8
Escom Tariffs - Evkom Tariewe	9
Election of President Elect - Verkiesing van Aangewese President	10
Presidential Address - Presidentsrede	11
Technical Meeting 1974 Tegniese Vergadering	12
Convention 1975 Konvensie	13
Election of Executive Council - Verkiesing van Uitvoerende Raad	14
Secretarial Report - Sekretariële verslag	15
Reports of Sub-Committees and Representatives - Verslae van Onderkomitees en Verteenwoordigers	16
Generation and Transmission in the Escom System by H.B. Norman	17
Die Elektrisiteitswysigingswet 1971 en die voortspruitende veranderings in Evkom se Organisasie deur T.C. Stoffberg	18
Industrial Accident Prevention/Nywerheidsongeluksvorkoming deur G.S. Strydom	19
Underground Power Distribution Cables by D.H. Booth	20
Live Line Maintenance by Richard J. Bright	21
Members Forum/Ledeforum	22
Honorary Membership/Erelidmaatskap	23
Acknowledgements/Erkennings	24
Social Functions/Sosiale Byeenkomste	25
Membership Roll/Ledelys	26

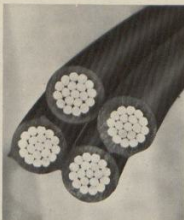
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The Association of Municipal Electricity Undertakings of South Africa

Proceedings of the 43rd CONVENTION held in Pietermaritzburg 30th April to 3rd May, 1973

Die Vereniging van Munisipale Elektrisiteitsondernemings van Suid-Afrika

Verrigtinge van 43ste KONVENSIË te Pietermaritzburg 30 April tot 3 Mei 1973

MONDAY

30 APRIL 1973

MAANDAG

FIRST SESSION DAY – EERSTE SITTINGSDAG

1

ATTENDANCE

According to the official attendance register the following attended the Convention of 1973 at Pietermaritzburg from 30th April to 3rd May, 1973, viz:

96 Local Authorities represented by Councillors and Engineers	162
49 Affiliate Organisations	87
Ladies	144
Officials	4
Total Persons	442

Apologies were tendered for

Guests	10
Local Authorities	7
Affiliate Member	1
Other Members	4
Total Apologies	22

BYWONING

Volgens die amptelike teenwoordigheidsregister het die volgende die Kongres van 1973 te Pietermaritzburg vanaf 30 April tot 3 Mei 1973 bygewoon, naamlik:

96 Plaaslike Besture verteenwoordig deur Stadsraadslede en Ingenieurs	49 Geaffilieerde Organisasies
Dames	Amptenare

Totale Persone

Verkonings is aangebied vir

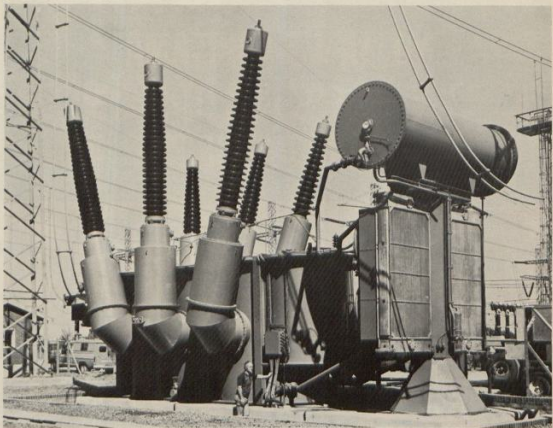
Guests	10
Plaaslike Besture	7
Geaffilieerde Lid	1
Ander Lede	4
Totale verkonings	22

2. OPENING PRAYER – OPENINGSGEBED

DS. A. J. VAN WYK open die verrigtinge met skriflesing en gebed.

3. WELCOME BY THE PRESIDENT – VERWELKOMING DEUR DIE PRESIDENT

MR. J. K. VON AHLFEN, President of the A.M.E.U. for the period 1971 - 1973 extended a hearty welcome to all delegates and in particular those persons from Rhodesia, Mocambique and Swaziland.



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4. WELCOME BY THE MAYOR VERWELKOMING DEUR DIE BURGEMEESTER

COUNCILLOR C.W. WOOD, His Worship the Mayor of Pietermaritzburg:

Mr. President, Mrs. van Ahlften, Mr. Fowle, ladies and gentlemen, I believe it is as much as 23 years since your Association of Municipal Electricity Undertakings last came to Pietermaritzburg and it therefore gives me great pleasure today to welcome you all to this city.

Ons is bly dat u hierdie stad vir u vergadering gekies het en ek vertrou u sal 'n baie nuttige en aangename kongres hê, en dat u tyd sal kan bestee om die stad te besigtig.

Suddenly we here seem to have become very electricity-conscious and, after the very illuminating conference (SANCI I refer to) that was held here last week, I find myself looking at all our street-lighting, our flood-lighting and other electrical devices to see if I can pick out your President-Elect: after all he is our City Electrical Engineer and we look upon it as a great honour for Pietermaritzburg that you have decided to make Mr. Jack Waddy your new President.

I must say it is a great privilege to be able to act as host to such a large and important gathering of experts from other centres in South Africa and even further afield; not only municipal councillors and engineers, but also representatives of numerous public bodies and associations and of commercial and industrial enterprises.

Ours is a very rapidly-developing and, I think, beautiful city. From being largely an educational centre we have, in the last ten years, seen enormous expansion in the industrial field and we already have a very wide variety of industries, including some in the electrical field. This expansion has brought with it very great financial, housing, transport and servicing problems

but we have weathered the storm so far. We are, of course, looking to your organisation for tips as to how to overcome our problems in the future. We are very proud of our housing development for all races although that for the Africans, especially on our borders, should be speeded up as we have an enormous population, inadequately housed, just outside the city boundary.

I cannot stress too strongly that the finding of employment for the younger people of all races is of paramount importance and for this reason we welcome the influx of industry, always providing that it is of the 'clean' variety. Expansion such as this will bring with it a commercial upsurge.

My Council and I are well aware of the great importance of electricity supplies and of the extent to which we all depend upon them, although perhaps without realising it until they are interrupted, due no doubt to causes beyond the control of our electrical engineers. I find that when the lights go off the ratepayers are apt to think that the Mayor is responsible and demand that he should put matters right straightaway. This is when I find it hard to believe the slogan on the back of our electricity vehicles: "Electricity is Your Matchless Servant!"

I am also well aware of the good work being done by your Association and I trust that your deliberations here will be of value to you in the management of your undertakings, and thereby enable you to contribute even more to the relief of the hard-pressed ratepayer!

Mr President, thank you very much indeed for giving me the opportunity to welcome your delegates and, of course, their wives to Pietermaritzburg, and I trust that your stay here will be thoroughly enjoyable and worth-while. The Mayoress and I look forward to meeting you all socially this evening.

5. Official Opening Amptelike Opening

MR PERCY FOWLE (M.E.C.): Mnr. die President, graag wil ek my dank uitspreek vir u uitnodiging om u lede by hierdie openingsplegtigheid van u Konvensie toe te spreek. Ek is maar 'n leek in elektriese sake en my toespraak sal dus nie lank wees nie.

It is said, Mr President, that 'brevity is the soul of wit', but if I reduce that a half-it shall not go into the subject of electricity in any great detail in my introduction as I see from the Agenda that you are to have some splendid papers delivered here by experts in the field.

I note with interest, Mr President, that your membership consists of those engaged in all aspects of electrical supply and electrical undertakings — professional engineers, technicians, town councillors and lay-folk — all concerned in providing the public with a service so essential to our wellbeing and our economy.

Collaboration, I believe, will result in a healthy appreciation of the many problems which face both you and all those responsible for local and provincial government, and I wish publicly to acknowledge the importance of co-operation between our many sections of the public endeavour.

I personally know little or nothing of what lies behind the magic word "electricity" and that vast enterprise, the electrical industry, which is now a major, breath-taking science. I see massive pylons striding over the hills into the distance, supporting the cables which transmit the energy to wherever it is needed. I hear of 'alternating and direct current', kilowatts and kvat and I ask myself, "What do they mean to me and to the community that I seek to serve?"

It seems to me to be of importance to understand the meaning and extent of modern electrical development. Die geweldige en aansienlik vinniger ontwikkeling in Natal — 10% vinniger as in enige ander deel van die Republiek — het baie beplannings-, administratiewe en geldelike probleme geskep. Ons ops verskillende terreine is almal daarin betrokke, en ons moet ons daaroor instel om die werk van die elektrotegniese ingenieur te vergemaklik.

One direction, Mr President, as I see it, is the timely warning to electricity suppliers of advance planning of townships, and development of industry and the like. It is up to the various government, provincial and municipal departments to provide the needed advance information and I shall endeavour to see that this is done in our category.

On another plane, I make the plea as a humble consumer on behalf of John and Jan Citizen, that you make strenuous efforts and careful planning in order to keep our costs at the lowest level. It is for you to study where overhead costs can be minimised by joint effort and centralisation as against diversification of basic supply.

In these times when we're all very pollution-conscious and are seeking ways and means of preventing and/or overcoming atmospheric as well as other forms of pollution, electricity provides the cleanest form of heat and power for many things, and every effort should be made by those responsible for its provision to do so as economically and in as widespread a manner as possible. The more electricity can be made available for industrial purposes and to the poorer sections of the community at reasonable rates, the more will atmospheric pollution

be brought under control. I notice that you are to discuss the very point as to whether or not that which you use to generate your electricity itself must be looked into so as to minimise the danger of pollution from that quarter.

I would also earnestly suggest, Mr President, that you train non-whites as technicians to serve in their own rapidly-advancing local autonomy. We have 20 Local Affairs Committees in Natal, 2 of which have achieved autonomous township status and others are approaching this stage. We must therefore see that their own people are adequately trained so as to be able to take over responsibility in their respective areas in these technical matters.

It is good that you have planned a wide spectrum of papers by competent experts so as to ensure that this Convention is a time of cheerful review and a means of increasing your know-

ledge in your own interest and in the interest of the public you serve.

As iemand wat vir dertig jaar op provinsiale vlak met die vraagstukke en voorregte van plaaslike bestuur gemeed is, verwelkom ek die samewerking wat die Provinsie op munisipale en nywerheidsvlak gekry het.

The old adage, "What you put in, you get out" is particularly applicable to electricity - its generation and distribution. I should like to appeal to your members at this point, Mr President, to bear this in mind for your sake and the sake of your Executive, that they put all they can into the work of their Association.

In conclusion, I sincerely wish you well in your deliberations and commend to you the beauty and friendliness of our capital city.

6. Thanks by the retiring President Bedankings deur die uittredende President

DIE PRESIDENT Mnr. J.K. van Ahlften bedank mnr. Fowle en gaan voort deur te sê: dames en here, in die afgelope twee jaar van my ampstermyn was daar twee belangrike gebeurtenisse in die geskiedenis van die Vereniging. Die eerste een was die Grandwet wat verander is en in 1971 in Kaapstad aanvaar was; waardeur ons Vereniging 'n gedaantewisseling ondergaan het maar dit het geensins die doelstellings van ons Vereniging geëffekteer nie. Intendeel ek dink dit het ons in die posisie geplaas om op nasionale vlak, en selfs internasionale vlak, ons invloed meer te laat geld. Wat die nasionale vlak betref is dit my eie mening, volgens die afgelope twee jaar se bedrywighede, dat ons meer ons stem moet laat geld daar en steeds groter bydrae moet lewer om ons probleme gesamentlik te kan oplos. Op internasionale vlak het die Vereniging alreeds bewys dat hy sy plig doen deur die afgelope twee internasionale kongresse van die IEK by te woon. Myns insiens is dit op sigself 'n stap in die regte rigting.

The second major change that has occurred in our Association, ladies and gentlemen, has been a change of Secretary. Here I must take the opportunity of thanking Dick Ewing in his absence for the 18 years of service he has rendered to this Association and for the valuable work he has done for us. However, I must, unfortunately, refer to the paragraph in his Secretarial Report where he mentions that due to "circumstances within the Association" he reluctantly had to lay down the services as Secretary.

Ladies and gentlemen, we have come a long way with this

Association, representing as it does a large cross-section of our community. Various problems did arise but these were mainly of an administrative nature. Miss Brewin manned our Johannesburg office and gave us excellent service, but the fact that Dick was situated in East London did bring about certain difficulties. Unfortunately the administration of an Association such as this does need special attention.

Then, too, our Constitution quite plainly states that the official languages of the Association shall be both Afrikaans and English and we know that Mr Ewing was encountering problems in this regard. We did our best to try and resolve this by appointing an official translator in Lorenzo Marques in 1967 but due to the decentralisation of the administration things became extremely difficult.

These were the factors I think which eventually led up to the point where Dick felt it would probably be best to lay down the service of this Association. I don't think that any particular problem or circumstance made it impossible for him to carry on. In fact, I'm sure that Dick would be the first person to appreciate the fact that our Association has certain needs which have to be met.

Dan, dames en here, wil ek graag van die geleentheid gebruik maak om ons nuwe Sekretaris, mnr. Bennie van der Walt, te verwelkom. Ek wil die vertroue uitspreek dat hy 'n lang en gelukkige verbintenis met die Vereniging sal geniet. Ek is seker dat hy te alle tye op die ondersteuning van die Uitvoerende Raad van die Vereniging sal kan staatmaak.

7. Election of President Verkieping van President

I come now, ladies and gentlemen, to the last, but by no means the least pleasant, task as President of the AMEU, and that is to introduce to you your new President, Mr Jack Waddy. We all know of the difficult time Jack has been through lately and I personally am very happy that he is in a position to accept this high honour here this morning. I am sure that Jack will be a worthy successor to the illustrious President in 1950/51, Charles Hallé. On paging through the 1951 Proceedings, I see that only a few of his colleagues present at that Convention are here today, notably Koos Gericke of Klerksdorp, Harvey Theron of Vanderbijlpark, Bob Barton of Welkom, J.I. Inglis of Pietersburg and A.F. Turnbull of Vereeniging. This just goes to show how the Association changes over the years.

As you know Jack has been a member of this Association since 1954. He needs no further introduction as he has done his job well. To me, as President, he has been a tower of strength,

and this Association can be proud to have as its President a man of the calibre of Jack Waddy.

With those words, I would like to ask him to come forward and accept this chain of office with its accompanying pleasures and burdens and I shall be the first to congratulate him on achieving this high honour.

THE NEW PRESIDENT, Mr J.C. Waddy: Thanked the immediate Past President for investing him with the chain of office, particularly since it had been Jules van Ahlften who had persuaded him to accept nomination as President-Elect in the first place.

I shall shortly be delivering my Presidential Address, ladies and gentlemen, but I would at this stage like to pay tribute to Jules van Ahlften, our immediate Past President. He has not by any means had an easy passage. In fact, when he first took office two years ago in Cape Town he had just undergone a

major operation and literally got up from his sick-bed to do so. He has nevertheless carried on in his calm, firm way and has succeeded admirably in piloting the Association into the calmer waters in which he is now able to hand over the helm.

Hy is 'n man wat nog jonk is en ek hoop dat die Vereniging die voordeel van sy lidmaatskap nog baie jare sal geniet.

I would now like to present him with his Past-President's certificate and badge.

8. Greetings Boodskappe

Boodskappe van gelukwensinge en groete asook verzonnes vir afwesigheid van verskeie instansies word aan die Konvensie oorgedra.

Greetings and felicitations, as well as apologies for absence, were tendered by various bodies to the Convention.

9. Escom Tariffs Evkom Tariewe

DR. R.L. STRASZACKER (Chairman of Escom) explained the reasons behind the unprecedented sudden increase of tariffs recently announced by Escom. These had been precipitated by the upward surge in the rapidly-changing cost structure experienced in the country, and would have been considerably higher had they been deferred to 1st July, 1973 in order to

accommodate the customary minimum 3 month warning period. The lower increases implemented prematurely from 1st April, 1973 were in the best interests of all concerned but he undertook to see that ample warning was given of any future changes in tariffs.

10. President Elect Aangewese President

MNR. P.J. BOTES (ROODEPOORT): Dit is vir my 'n baie groot voorreg om my ou vriend en mede-oud-Matjie, mnr. Eugene de Coligny Pretorius van Potchefstroom, voor te stel as Aangewese President vir die tydperk 1973/1975.

Eugene is in 1927 in die O.V.S. gebore en hy het op sy geboorteplek, Brandfort, gematrikuleer in 1943. In 1946 het hy sy B.Sc. graad aan die Universiteit van Stellenbosch behaal, en in 1948, sy B.Sc. Ingenieursgraad in die rigting Elektrotegniese Swaarstroom. Hier het hy onder dr. Straszacker en prof. Heydon gestudeer. Na verkryging van sy graad het hy 'n goeie praktiese opleiding geniet en wel by Evkom Natal Onderrig.

Eugene was sedertdien Elektrotegniese Stadsingenieur van Stellenbosch; Senior Ingenieur en later Adjunk van Klerksdorp onder Koos Gerieke, en vanaf 1960, Elektrotegniese Stadsingenieur van Potchefstroom.

Hy is sedert 1952 ingenieurlik van hierdie Vereniging d.w.s. hy word vanjaar mondig in die Vereniging. By verskeie geleenthede het hy op die Uitvoerende Raad gedien en die afgelope twee jaar as lid van die Dogbestuur.

Eugene is geregistreer as 'n professionele ingenieur en is genoot van die Suid-Afrikaanse Instituut van Elektrotegniese Ingenieurs. Hy is ook assessorlid van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns. Daarby is hy ook 'n gediplomeerde Elektrotegniese en Werktuigkundige Ingenieur.

Hy is in 1952 getroud met Toepie Zietsman van Vrede. Ek was saam met Toepie op skool op Vrede en saam met Eugene op Stellenbosch alhoewel hulle my in senioriteit oorskadu het.

Nou wil ek egter vir u 'n paar geheime van Eugene vertel; eerstens, hy speel viool en is konsertmeester van die Potchefstroomse simfonie-orkes. Voorwaar 'n eienaardige belangstelling vir 'n praktiese mens soos 'n ingenieur.

Nou die tweede skakel: as gevolg van die baie professore op sy Raad beskik hy oor 'n goeie kennis van die regte en as sulks het hy reeds baie goeie werk vir hierdie Vereniging gedoen.

Derdens, het Eugene natuurlik 'n baie groot belangstelling in tale — Afrikaans en Engels. Hy was nog altyd vir hierdie Vereniging van onskatbare waarde gewees vir sy vertalings van die Grondwet en ander stukke. Daar word gesê dat hy sekere

professore wat Afrikaans doseer, lelik op hulle neus laat kyk.

'n Meer bekwame persoon as Aangewese President kan ek my nie voorstel nie, en as getuie hiervan is hy eenparig deur die Uitvoerende Raad as sodanig benoem. Dit doen my dus groot goed om mnr. Eugene de Coligny Pretorius voor te stel as Aangewese President vir die tydperk 1973/1975.

Die voorstel word gesekondeer deur Rdl. C. de Kock van Potchefstroom, en aangesien daar geen verdere nominasies was nie, is mnr. E. de C. Pretorius eenparig tot Aangewese President verkies.

DIEN NUWE AANGEWESSE PRESIDENT spreek die Konvensie soos volg toe:

Mr Fowle's comments on brevity this morning put me in mind of the old saying:

"If you want to be seen, stand up;

If you want to be heard, speak up;

If you want to be appreciated, shut up!"

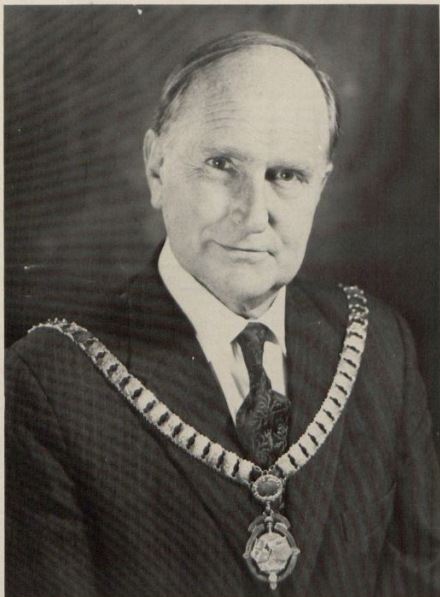
Nevertheless, I do want to take this opportunity of congratulating you, Mr President, on achieving this high office and pledging you my loyal support during your term of office.

Dames en here, woorde ontbreek my om vir u te sê hoe geëerd ek vandag voel. Dit is werklik vir my 'n hoogtepunt van my professionele lewe en ek wil my voorsteller en sekondant hartlik bedank. Verskoon my ook om te noem dat die Uitvoerende Raad het geen geringe aandeel gehad in my nominasie nie, en vir hulle eenparige stem is ek baie dankbaar. Ek moet veral om uit te sonder my goeie vriend, Jules van Ahlten, die vorige President.

Dit is om baie redes vir my 'n besondere groot eer om vandag hier te wees, want ek verteenwoordig in die hoedanigheid wat ek vandag hier staan, die kleinste elektrisiteitsonderneming in die Republiek wat nog ooit die voorreg gehad het om 'n Aangewese President in sy diens te hê.

Dit is vir my verder 'n groot eer om in hierdie ou Voortrekkerstad van Pietermaritzburg verkies te word as Aangewese President, komende ook van die ou Voortrekkerdorp van Potchefstroom. Ons het so baie in gemeen — beide is opvoedkundige sentra en Potchefstroom was eens op 'n tyd ook die hoofstad

1973 – 1975
PRESIDENT



MR./MNR. JACK C. WADDY

van die Transvaal gewees voordat Pretoria dit van ons gesteel het! Verder, Potchefstroom was een van die stigterlede gewees van die Vereniging in 1915. So ons kom al 'n ver pad met hierdie Vereniging.

Ten laaste, maar nie die minste nie, is dit vir my 'n werklike besondere eer dat twee van my oud-leermeesters vandag in die gehoor is — ek verwys na dr. Straszacker en mnr. J.F. Uys wat die Stadsraad van Stellenbosch hier verteenwoordig.

deur by

J.C. WADDY

J.C. WADDY

ELEKTROTEGNIËSE STADSINGENIEUR,

CITY ELECTRICAL ENGINEER,

PIETERMARITZBURG.

PIETERMARITZBURG.

Heel aan die begin wil ek sê dat ek die eer baie waardeer wat die lede van hierdie Vereniging my aangedoen het deur my tot President vir die tydperk van twee jaar van 1973 tot 1975 te kies want ek glo dat dit die hoogste eer is wat enige munisipale elektrotegniese ingenieur in hierdie land te beurt kan val. Dit is my innige hoop dat ek in staat sal wees om die vertroue te regverdig wat u in my gestel het en ek wil u verseker dat ek te alle tye sal poog om dit te doen.

Ek en my raad waardeer ook die voorreg van hierdie 43ste Konvensie hier in Pietermaritzburg te kan laat plaasvind. Ek dink dit is die derde geleentheid waarby ons so geëer is, die ander was in 1935 en 1950. Oor 'n paar weke sal Pietermaritzburg die 75ste verjaarsdag van die totstandkoming van sy elektrisiteitsonderneming in die jaar 1898 vier en dit is derhalwe besonder verblydend dat hierdie konvensie vanjaar alhier gehou word. Ek kan ook daarop wys dat ons maksimum stelselvraag na veragting die 100 MVA-merk oor 'n paar weke sal bereik en gevolglik is dit werklik 'n belangrike jaar vir ons elektrisiteitsonderneming.

In die drie-en-twintig jaar sedert 'n konvensie van hierdie vereniging in Pietermaritzburg gehou is, het die stad byna 'n metamorfose van 'n stil opvoedkundige sentrum tot 'n vinnig ontwikkelende nywerheidsgreupint ondergaan en ek is seker dat diegene van u wat-by die laaste geleentheid hier was, baie veranderinge sal opmerk. Dit doen my egter genoë om te verklaar dat ons hier vandag een skakel met die konvensie van 1950 het in die persoon van mnr. Charles Hallé, wat by daardie geleentheid u President was. Ek is seker dat diegene van u wat hom onthou baie bly sal wees om hom weer te sien, en hom saam met my sal verwelkom.

Ongelukkig was dit een van ons groeipyne dat die verskaffing van hotellekkommodasie ietwat by ander ontwikkelings agterweë gebly het en ek wil derhalwe verskoning maak by diegene van u wat in hierdie opsig moeilikheid ondervind het.

Die kragstasie wat in 1898 hier tot stand gekom het, het alleen vir sowat dertig jaar bestaan want in 1927 is 'n voorsiening van Ekvöm verkry en Pietermaritzburg het sodoennde waarsynlik die eerste stad geword wat so 'n voorsiening geneem het. Dit moes met gemengde gevoelens gebeur het want uit die oorkondes blyk dit dat dit die eerste handeling van Ekvöm was om die korporasie se grootste verbruiker, die S.A.S.-werkinkels weg te neem en sodoennde het hy waarsynlik veroorsaak dat hierdie onderneming die eerste was wat in 'n geskil oor voorsieningsregte betrokke geraak het. Alles is egter sedert lankal vergewe, indien nie vergeet nie, en ek is nou bly om hierdie geleentheid te kan hê om Ekvöm geluk te wens met die bereiking van sy goue jubileum hierdie jaar.

Wyle mnr. George Swingler het in sy Presidentsrede te

At the outset I would like to say that I greatly appreciate the honour that the members of this Association have conferred upon me by electing me President for the two-year period from 1973 to 1975 because I think that this is the highest honour that can come to any municipal electrical engineer in this country. It is my sincere hope that I will be able to justify the trust that you have reposed in me and I assure you that I shall at all times endeavour to do so.

My Council and I are also most appreciative of the privilege of having this 43rd Convention held here in Pietermaritzburg. This is, I think, the third occasion on which we have been so honoured, the others being in 1935 and 1950. In a few weeks' time Pietermaritzburg will celebrate the 75th anniversary of the establishment of its electricity undertaking in the year 1898 and it is therefore particularly pleasing that this Convention is being held here this year. I might also mention that our maximum system demand is expected to attain the 100 MVA mark within the next few weeks so that this is indeed an important year for our electricity undertaking.

In the twenty-three years since a convention of this Association was held in Pietermaritzburg, the city has undergone almost a metamorphosis from a quiet educational centre to a rapidly-developing industrial growth point and I am sure that those of you who were here on the last occasion will notice many changes. I am pleased, however, to be able to say that we have one link with the 1950 Convention here today in the person of Mr. Charles Hallé who was your President on that occasion. I am sure that those of you who remember him will be very pleased to see him again and will join me in welcoming him.

Unfortunately one of our growth pains has been that the provision of hotel accommodation has lagged somewhat behind other developments and I would therefore like to apologise to those of you who have experienced difficulty in that respect.

The Power Station which was established here in 1898 remained in existence for only about thirty years because in 1927 a supply was taken from Escom and Pietermaritzburg thus probably became the first city to take such a supply. It must have done so with mixed feelings because the records show that Escom's first action was to take away the Corporation's biggest consumer, the S.A.R. Workshops, thereby probably causing this undertaking to become the first to be involved in a rights of supply dispute. However, all that has long since been forgiven, if not forgotten, and I am now very pleased to have the opportunity, on behalf of this Association, to congratulate Escom on the attainment of its Golden Jubilee during this year.

The late Mr. George Swingler, in his Presidential Address at

Kaapstad in 1922 opgemerk dat daardie jaar die begin beleef het van 'n nuwe era in die opwekking en voorsiening van elektrisiteit in hierdie land. Hy het dit gesê want dit was in 1922 wat die Elektrisiteitswet aangeneem is, en, soos u weet, het daardie wet aanleiding gegee tot die instelling van die Elektrisiteitsbeheerraad en die Elektrisiteitsvoorsieningskommissie. In die halfeeu sedert daardie jaar het Evkom geweldige vordering gemaak en ek dink daar kan verklaar word dat ons onlangs die begin van nog 'n nuwe era beleef het toe die Wysigingswet op Elektrisiteitsvoorsiening van 1971 aangeneem is. U onderkomitee vir referate het dit gepas beskou om Evkom se jubileum en die inwerkingtreding van die Wet van 1971 te gedenk deur vir twee lede van die Kommissie se personeel te reël om referate op hierdie konvensie te lewer wat Evkom se nuwe opwekking, transmissie en organisasieaspekte sal beskryf. Daar word gehoop dat hierdie referate raadslede sowel as ingenieurs sal help om 'n duidelike begrip te vorm van die groot onderneming wat nou meer as tagtig persent van die elektrisiteit opwek en versprei wat in hierdie land geproduseer word. Graag wil ek ook die hoop uitspreek dat die lewering van hierdie referate die verhouding tussen munisipale elektrisiteitsondernemings en die Kommissie nog verder sal verbeter.

As hierdie konvensie beskou kan word 'n tema te hê, kan hy miskien „na buite kyk“ want die referate wat hier gelewer sal word, handel oor aangeleenthede wat nie tot munisipale elektrisiteitsondernemings beperk is nie, maar wat tog vir hulle belangrik is. Gevolglik is daar, soos reeds genoem, twee Evkom-referate; ook 'n oorsig deur mnr. D.H. Booth van die veranderinge wat in kabeltegnologie deur die hele wêreld plaasvind; 'n geïllustreerde toespraak deur mnr. R.J. Bright wat hoofsaaklik handel oor die ontwikkeling van onderhouds-prosedures in die V.S.A. van lewendige lugkraglyne, en daar is 'n referaat deur mnr. G.S. Strydom wat gehoop word die opwaartse neiging in angelukke by plaaslike besture sal omkeer deur die toepassing van beginsels waardeur 'n vermindering bewerkstellig kan word in die voorkoms van ongelukke wat in ander nywerhede plaasvind. U onderkomitee vir referate hoop dat al hierdie referate vir raadslede en ander nie-tegniese afgevaardigdes sowel as vir munisipale elektrotegniese ingenieurs van belang sal wees.

Ons is dank verskuldig aan die outeurs wat so hard gewerk het om die referate voor te berei en wat in die meeste gevalle aansienlike afstande moes reis om hulle te lewer.

U Uitvoerende Raad het gehoop om vier sessies van hierdie konvensie aan 'n ledeforum te bestee, dit wil sê, vrae wat lede deur hul streekstakke geopper het, en dit was bedoel dat elke tak een van die sessies sou reël. Vrae moes teen die 31ste Januarie ingedien gewees het, maar ongelukkig was daar teen daardie datum baie min ontvang en om derhalwe 'n gaping in die program te voorkom, is 'n bykomstige referaat gereël. Daar is egter twee periodes van 'n uur en 'n half elk vir die forum op Donderdag afgesonder en elke tak sal derhalwe in staat wees om besprekings vir ongeveer 'n driekwartier te voer.

In hierdie rede is ek voornemens om kommentaar te lewer oor enkele aangeleenthede wat, myns insiens, van besondere belang vir munisipale elektrisiteitsondernemings op die huidige tydstip is eerder as om op 'n meer abstrakte of algemene wys te filosofeer.

Een van die grootste moeilikhede wat ons baie jare ondervind, en waarvan die erns in die toekoms skyn toe te neem, is die tekort aan geskoolde arbeid. Die uitwerking hiervan word nie alleen regstreeks in ons ondernemings gevoel deur ons onvermoë om ons departementale werk gedoen te kry nie, maar ook onregstreeks deur die onvermoë van sommige kontrakteurs om die gehalte van hul vakmanskap te handhaaf en om hul kontrakwerke teen die beloofde datums af te handel. Dit is nie meer maontlik om al die nodige onderhoudswerk aan bestaande toerusting op 'n behoorlike ingelyste manier te doen of om die installering van nuwe masjienerie te onderneem sodra beswarings- en ekonomiese oorwegings dit nodig maak dat dit gedoen moet word nie. Hierdie vertragsings lei ondermydelik tot

Cape Town in 1922, remarked that that year was one which marked the commencement of a new era in the generation and supply of electricity in this country. He said that because it was in 1922 that the Electricity Act was passed and that Act, as you all know, led to the establishment of the Electricity Control Board and the Electricity Supply Commission. In the half-century since then Escom has made tremendous progress and I think it can be said that we have recently seen the commencement of another new era by the passing of the Electricity Amendment Act of 1971. Your Papers Sub-Committee thought it fitting to mark Escom's Jubilee and the coming into effect of the 1971 Act by arranging for two members of the Commission's staff to present papers at this Convention describing the new generation, transmission and organisational arrangements of Escom. It is hoped that these papers will help councillors as well as engineers to form a clear understanding of the great enterprise which now generates and transmits more than 80% of the electricity produced in this country. I would also express the hope that the presentation of these papers will improve still further the relationship between municipal electricity undertakings and the Commission.

If this Convention can be considered to have a theme, it can perhaps be "Looking Outwards" because the papers to be read here deal with matters which are not parochial to municipal electricity undertakings but which are nevertheless of importance to them. Thus, as already mentioned, we have the two Escom papers; also a review by Mr. D.H. Booth of the changes which are taking place in cable technology throughout the world; an illustrated address by Mr. R.J. Bright dealing mainly with the development in the U.S.A. of maintenance procedures on live overhead power lines, and there is also a paper by Mr. G.S. Strydom which it is hoped will be of assistance in reversing the upward trend in local authority accidents by the application of principles which have enabled a reduction to be brought about in the frequency of accidents occurring in other industries. Your Papers Sub-Committee hopes that all these papers will be of interest to councillors and other non-technical delegates as well as to municipal electrical engineers.

Our thanks are due to the authors who have put so much work into the preparation of the papers and, in most cases, have travelled a considerable distance to present them.

Your Executive Council had hoped to devote four sessions of this Convention to Members' Forum, i.e. the discussion of questions put forward by members through their regional branches, and it was intended that each branch would arrange one of the sessions. Questions were to be submitted by the 31st January but, unfortunately, by that date very few had been received so, to avoid having a gap in the programme, an additional paper was arranged. However, two periods of 1½ hours each have been reserved for the Forum on Thursday and each branch will therefore be able to conduct discussions for about three-quarters of an hour.

In this address I propose to comment upon some matters which I think are of particular concern to municipal electricity undertakings at the present time rather than to try to philosophise in a more abstract or general way.

One of the greatest difficulties which has been with us for many years and which seems likely to increase in seriousness in the future is the shortage of skilled labour. The effect of this is being felt not only directly in our own undertakings by our inability to get our departmental work done but also indirectly through the inability of some contractors to maintain the quality of their workmanship and to complete their contract works by promised dates. It is no longer possible to carry out all necessary maintenance operations on existing equipment in a properly scheduled way or to undertake the installation of new plant as soon as loading and economic considerations require that it should be done. These delays inevitably lead to increased operating and capital costs all round and in this way our

groter bedryfs- en kapitaalkoste oor die algemeen en op hierdie wyse lewer ons nywerheid sy bydrae, hoewel dit miskien 'n betekelik klein is, tot die inflasie wat tans 'n uitwerking op die hele land het.

Daar is op talle maniere gepoog om hierdie vraagstuk van geskoolde arbeid op te los, byvoorbeeld: deur die voorwaardes van vakleerlingskap te verbeter en die tydperk van vakleerlingskap te verkort; deur beter opleiding en hoër loontariewe; deur die aanvaarding van arbeidsbesparende praktyke en meganisering sowel as die benutting van halfgeskoolde arbeid vir werk wat tradisioneel deur geskoolde persone gedoen is, maar wat nie werklik enige gespesialiseerde bedreweheid of tegniese kennis verg nie.

Die immigrasie van geskoolde werkers was tot 'n mate van hulp om te voorkom dat die vraagstuk meer akut is as wat dit nuw is, maar dit was eintlik net 'n versagting. Basies kom ons natuurlik voor die feit te staan dat die oerheersing in getalle van die Nie-Blanke bevolking oor die Blankes vinnig toeneem, terwyl die lewensstandaard van alle dele van die bevolking aan die styg is en derhalwe 'n toenemende vraag na kommoditeite en dienste van alle soorte lei. Die geskoolde werk wat nodig is om daardie dienste te lewer en daardie kommoditeite te produseer moet deur 'n betekelik dalende deel van die bevolking gedoen word. Dit lyk derhalwe duidelik dat alle dele van die bevolking opgelei en die geleentheid gebied moet word om soveel as moontlik van die geskoolde werk te onderneem wat nodig is om in hulle behoeftes te voorsien, regstreeks sowel as onregstreeks. Daar was onlangs tekens van vooruitgang in hierdie rigting, maar dit is noodsaaklik dat alle aspekte van die saak op 'n moedige en dringende wyse behandel moet word.

Tot dusver het ek gewag gemaak van die tekort aan vakman-arbeid, maar ons nywerheid moet ook worstel met 'n tekort aan tegnisi, ingenieursassistent en ingenieurs. Hierdie Vereniging het vir 'n lang tyd gepoog om verbeterings te weeg te bring in die tegniese opleiding van personeel, en groot vordering is gemaak, maar daar moet nog baie gedoen word en die Vereniging gaan met sy pogings voort om die posisie te verbeter.

Sommige ondernemings het probeer om die personeeltekort in hierdie hoëre kategorieë te bowe te kom deur hoër loontariewe aan te bied en ander toestande te verbeter, maar soms wil dit my voorkom of daar te veel op kwantiteit gekonsentreer word en te min op kwaliteit. Dit is noodsaaklik om aansporings te verskaf, in plaas van punte-aanslae van net die poste alleen, moet punte-aanslae van die individue wat hulle vul ook aandag kry ten einde behoorlike erkenning vir inisiatief, ywer, ondernemingsgees, dinamiek, 'n positiewe benadering en ander eienskappe te gee wat sommige werknemers waardevoller as ander maak.

Daar is geen verslapping in die stygingstempo van die vraag na elektrisiteit nie. Intendeel, dit lyk waarskynlik of die verwagte groter tempo van nywerheidsaktiwiteite en die voortspuitende ontwikkelings op ander terreine, tesame met stygende lewensstandaarde, die besoedelingsbestrydingsveldtog en die instelling van televisie sowel as groter meganisering en outomatiesering minstens die huidige tempo van die toename in die vraag sal laat voortduur. Hierdie neiging sal nie alleen neig om die arbeidstekort te laat toeneem nie, maar sal ook, wat miskien meer betekenisvol is, die volk se afhanklikheid van die instandhouding van elektrisiteitsvoorsienings laat toeneem. Met dit voor oë, moet die belangrikheid van die onlangse arbeidsonrus en die moontlikhede van sabotasie ernstige oorweging geniet.

Die onlangse stakings deur Bantowerkers is as die „Ontwakende Reus" beskryf. Vir sommige van ons was die ontaking nie onverwags nie; weliswaar wonder mens dikwels waarom die sluimering so lank geduur het. Meer as een elektrisiteitsonderneming in hierdie gebied is deur die stakings geraak, maar gelukkig is die voorsiening van elektrisiteit nie onderbreek nie. Die moontlike verlamende uitwerking van wydverspreide onderbrekings van elektrisiteitsvoorsienings op nywerheidswerk-

industry makes its contribution, although perhaps a relatively small one, towards the inflation which is affecting the whole country at the present time.

In numerous ways attempts have been made to solve this skilled labour problem, for example: by improving apprenticeship conditions and shortening the period of apprenticeship; by improved training and higher rates of pay; by the adoption of labour-saving practices and mechanisation as well as by the utilisation of semi-skilled labour for work which has traditionally been done by skilled persons but does not really require any special skill or technical knowledge.

Immigration of skilled workers has been of some help in preventing the problem from being more acute than it is but it has only been a palliative. Basically, of course, we are up against the fact that the preponderance in numbers of the Non-White population over the White is increasing rapidly while the standard of living of all sections of the population is rising and thereby leading to an increasing demand for services and commodities of all kinds. The skilled work necessary for providing these services and producing these commodities has to be done by a relatively diminishing section of the population. It is therefore obvious that all sections of the population must be trained and given the opportunity to undertake as much as possible of the skilled work necessary to provide for their needs, both directly and indirectly. There have recently been some signs of progress in this direction but it is essential that all aspects of the matter be dealt with boldly and urgently.

So far I have only touched on the shortage of artisan labour but our industry also has to contend with a lack of technicians, engineering assistants and engineers. This Association has for a long time been endeavouring to bring about improvements in the technical training of staff and much progress has been made but a great deal still remains to be done and the Association is continuing its efforts to improve the position.

Some undertakings have tried to overcome the shortage of staff in these higher categories by offering enhanced rates of pay and by improving other conditions but it sometimes seems to me that there is too much concentration on quantity and too little on quality. It is essential to provide incentives; instead of point-rating only the posts, point-rating of the individuals who fill them should also receive attention so as to give proper recognition to initiative, zeal, industriousness, dynamism, a positive approach and other attributes which make some employees more valuable than others.

There is no let-up in the rate of increase in the demand for electricity. On the contrary, it seems likely that the expected increased tempo of industrial activity and the consequent developments in other fields, together with rising standards of living, the anti-pollution drive and the advent of television, as well as increased mechanisation and automation, will at least sustain the present rate of increase in the demand. This trend will not only tend to increase the labour shortage but will also, and perhaps more significantly, increase the nation's dependence upon the maintenance of electricity supplies. With this in mind, the importance of the recent labour unrest and the possibilities of sabotage must receive serious consideration.

The recent strikes by Bantu workers have been described as "The Awakening Giant". To some of us the awakening was not unexpected and, in fact, one often wondered why the slumber was lasting so long. More than one electricity undertaking in this area was affected by strikes but fortunately supplies of electricity were not interrupted. The possible paralysing effects of widespread interruptions of electricity supplies on industrial activity, home life, food supplies, transport, hospital services,

samenhede, die huislike lewe, voedselvoorraad, vervoer, hospitaaldienste, brandstofvoorraad en welliswaar, byna elke aspek van ons lewens verg baie ernstige aandag. Nie alleen moet ons verseker dat ons arbeidsmag toereikend besoldig word nie, maar ook dat hy nie tot 'n stokingsaksie moet oorgaan ten einde aandag op sy griewe te vestig nie. Met ander woorde, loontariewe moet dikwels in hersiening geneem word en kommunikasiewe tussen werkers en die bestuur moet verskaf word.

Die konsentrasie van opwekkingstasies op die steenkoolvelde en hul aansluitings by die stede en dorpe honderde kilometer daarvandaan deur middel van hoogspanning-transmissielyns wat oor die ope veld loop het aansienlike ekonomiese voordele, maar dit verhoog die kwesbaarheid van elektrisiteitsvoorsiening 'n maontlike skyf vir saboteurs, selfs binne die dorpe en siening 'n maontlike skyf vir saboteurs, selfs binne die dorpe en stede. Ten tye van die onluste en sabotasieopgaves ongeveer tien jaar gelede is 'n Direktoraat van Noodbeplanning ingestel, maar daar skyn nou baie weinig, indien enige teken daarvan te wees. Dit skyn vir my uiters belangrik te wies dat hy funksionierend gehou moet word en dat die beskerming van elektrisiteitsvoorsiening die hoogste prioriteit in sy beplanningsreëlings moet kry.

Binne min of meer die afgelope jaar is die algemene styging in kostepele onvermydelik in elektrisiteitsvorderings weerspieël en daar is waarskynlik min, indien enige, ondernemings wat nie hul tariewe moes verhoog nie. Baie ondernemings moet nie alleen stygings in hul bedryfsuitgawe dek as gevolg van die hoër koste van opwekking en/of grootmaatvoorsiening en distribusie nie, maar moes ook groter bydraes aan belasting en ander algemene munisipale fondse maak. Hierdie laasgenoemde bydraes word geag 'n middel te wies om die bedryfskoste van 'n munisipaliteit tussen soveel as maontlik te verdeel van diegene wat voordeel trek uit die geriewe wat hy verskaf en derhalwe die noodsaaklikheid te voorkom om die las alleen op die belastingbetalers te lê. Dit is egter twyfelagtig of baie verbruikers wanneer hulle hul elektrisiteitsrekening betaal, beseft dat hulle ook onregstreeks belasting betaal. Gevolglik word die bestuur van munisipale elektrisiteitsondernemings dikwels onregmatig vir tariefverhogings geblameer terwyl, soos u uitdrende president in sy presidentsrede daarop gewys het, 'n munisipale elektrisiteitsonderneming wat sy elektrisiteit by die grootmaat verkry alleen 'n betreklike klein gedeelte van sy totale bedryfskoste kan beïnvloed.

Maontlik is die ongelukkigste uitwerking van hierdie bydraes aan belasting en ander algemene fondse op elektrisiteitsondernemings dat die tariewe in munisipale gebiede gewoonlik hoër is as in aanliggende gebiede wat deur Evkom voorsien word. Dit veroorsaak ontevredenheid en klages veral in gebiede wat kragtens permit voorsien word en dit kan veroorsaak dat voornemende nywerheidsverbruikers hul fabriek in ander gebiede vestig wat deur Evkom voorsien word eerder as in dié wat deur die munisipaliteite voorsien word.

Die steds toenemende beseft wat aan plaaslike besture vir die verskaffing van meer en beter dienste gestel word, verplig hulle om elektrisiteitsvoorsiening as 'n middel tot onregstreekse belasting te gebruik want daar is weinig ander inkomstebronne vir hulle beskikbaar. Sommige van hierdie dienste moet verskaf word om aan die nasionale beleid en beplanningsbegrippe te voldoen, maar sodanige subsidies wat ontvang word het nie al die onregstreekse koste wat daarby betrokke is nie en die tekort moet uit munisipale fondse vergoed word.

Hoër subsidies sal waarskynlik van minder autonomie vergesel gaan met die gevolg dat die een of ander regstreekse vorm van breed verdeelde plaaslike belasting skynbaar uit die oogpunt van plaaslike besture verkieslik is. Daar kan weinig twyfel bestaan dat dit deur hul elektrisiteitsondernemings verkies sal word wat dan tot 'n groter mate self-finansierend sal word en hul tariewe op peile kan hou wat gunstiger kan vergelyk met dié in aanliggende gebiede wat deur Evkom voorsien word.

fuel supplies and, in fact, almost every aspect of our lives call for very serious attention. Not only must we ensure that our labour force is adequately remunerated but also that it does not have to resort to strike action in order to draw attention to its grievances. In other words, wage rates must frequently be reviewed and lines of communication must be provided between workers and managements.

The concentration of generating stations on the coal fields and their connections to cities and towns hundreds of kilometres away by means of high-voltage transmission lines running across open country has considerable economic advantages but it increases the vulnerability of electricity supplies to sabotage. Also, electricity supply installations are a likely target for saboteurs even within the towns and cities. At the time of the disturbances and sabotage attempts about ten years ago a Directorate of Emergency Planning was set up but there now appears to be very little, if any, sign of it. It seems to me most important that it should be kept in being and that the protection of electricity supplies should receive high priority in its planning arrangements.

Within the last year or so the general rise in cost levels has inevitably been reflected in electricity charges and there are probably few, if any, undertakings that have not had to increase their tariffs. Many undertakings have not only had to meet increases in their operating expenditure due to increased generating and/or bulk supply and distribution costs but also to make greater contributions to rates and other general municipal funds. These latter contributions are considered to be a means of spreading the costs of running a municipality over as many as possible of those who benefit from the facilities which it provides, thereby avoiding the necessity to load the burden only on to the ratepayers. It is doubtful, however, whether many consumers realise when they pay their electricity accounts that they are indirectly paying rates as well. Consequently managements of municipal electricity undertakings are often unfairly blamed for tariff increases whereas, as pointed out by your immediate past president in his presidential address, a municipal electricity undertaking obtaining its electricity in bulk can influence only a fairly small proportion of its total operating costs.

Possibly the most unfortunate effect on municipal electricity undertakings of these contributions to rates and other general funds is that the tariffs in municipal areas are usually higher than those in neighbouring areas supplied by Escom. This causes dissatisfaction and complaints, particularly in areas which are supplied under permits, and it can cause prospective industrial consumers to locate their factories in areas supplied by Escom rather than in those supplied by municipalities.

The ever-increasing demand on local authorities for the provision of more and improved services compels them to use electricity supply as a means of indirect taxation because there are so few other sources of revenue available to them. Some of these services have to be provided in order to comply with national policies and planning concepts but such subsidies as are received do not cover all the indirect costs involved and the shortfall has to be made up from municipal funds.

Higher subsidies would probably be accompanied by reduced autonomy so that some direct form of widely-spread local taxation would appear to be preferable from the point of view of local authorities. There can be little doubt that it would be preferred by their electricity undertakings, which could then become self-financing to a greater extent and could keep their tariffs down to levels which would compare more favourably with those in neighbouring areas supplied by Escom.

I would now like to say a little about our Association.

All lede is verlede jaar in September in kennis gestel dat mnr. Davidson en Ewing (Edms) Bpk. besluit het om hul pligte as sekretarisse met ingang van 28 Februarie 1973 neer te lê. Dit doen my egter genoë om te kan verklaar dat hulle ingestem het om vir 'n effens langer tydperk te help, veral met die reëlings vir hierdie konvensie.

Die Uitvoerende Raad en die Dagbestuur moes toe reëlings tref vir die aanstelling van 'n ander firma en soos alle lede verlede maand in kennis gestel is, het mnr. Van der Walt en Kie van Johannesburg die sekretariaat oorgeneem.

Davidson en Ewing het as sekretarisse vir agtien jaar gedien en ek wil hierdie geleentheid te baat neem om die waardering van hierdie Vereniging teenoor hulle uit te spreek, en veral aan mnr. Ewing vir hul uitstekende werk gedurende daardie lang tydperk. U Uitvoerende Raad het eenparig besluit om by hierdie Konvensie aan te beveel dat mnr. Ewing as 'n erelid gekies word en hierdie aanbeveling sal Donderdag aan u voorgelê word.

Soos baie van u bewus is, het Dick Ewing 'n groot persoonlike belang in die V.M.E.O. gestel en hom op talle wyses gehelp wat verder gegaan het as wat van hom in sy amptelike hoedanigheid verwag kon word. Sy opgewekte persoonlikheid sal by ons konvensies en ander vergaderings gemis word, soos ook die aanwesigheid van sy sjarmante eggenote, Joyce, by ons sosiale funksies en in die verskillende werksaamhede van ons dames.

Ek wil ook namens al die lede van die Vereniging mnr. Bennie van der Walt en sy firma mnr. Van der Walt en Kie by hierdie eerste Konvensie verwelkom en hulle welsloe toeien met die pligte wat hulle onderneem het. Ek is seker dat u sal beseft dat 'n verandering van die sekretariaat, veral wanneer dit kort voor 'n konvensie voorkom, onvermydelik moeilikhede moet veroorsaak, maar ek vertrou dat u in hierdie opsig verdraagsaam sal wees en dat u mnr. Van der Walt sal help om die draad so gou as moontlik op te tel.

Diegene van u wat die tweejaarlikse konvensies van hierdie Vereniging bywoon, sien alleen die kruin van die ysberg en mag nie baie van die geweldige hoeveelheid werk weet wat deur tegniese vergaderings, die streekstakke, die Uitvoerende Raad en Dagbestuur, die verteenwoordigers op talle nasionale en internasionale rade en komitees en lede gedoen word wat ander kongresse as verteenwoordigers van die V.M.E.O. bywoon nie.

Kort versloe oor sommige van hierdie werksaamhede is in die verrigtinge gedruk, maar die hou van konferensies alleen elke tweede jaar maak dit moeilik om lede ten volle op hoogte en ingelig te hou of om toereikende geleentheid vir besprekings te verskaf.

Die Vereniging gaan voort om in nou samewerking met die Verenigde Munisipale Hoofbestuur en die verskillende provinsiale en munisipale verenigings te werk sowel as met die S.A.B.S., die W.N.N.R. en baie ander liggame. Ek wil my waardering uitspreek vir die hulp wat ons van hulle ontvang.

Ten slotte vertrou ek dat u hierdie konvensie interessant soos al genotvol sal vind. Ek sê genotvol sonder enige voorbehoude want ek dink daar moet in gedagte gehou word dat die waarde van hierdie geleentheid nie alleen in hul ernstige aspekte lê nie, maar ook in die kontakte en vriendskappe wat oor alle sektore van die elektrisiteitsvoorsieningswereld daargestel word sowel as met diegene wat op die een of ander wyse daarmee gemoed is. Hierdie verhouding kweek samewerking, begrip en onderlinge vertrou en daardeur word ons werk van dag tot dag vergemaklik om 'n noodsaaklike openbare diens te voorsien.

MNR. J.K. VON AHLFEN (Springs). Reiterated several important points made by the President, stressing particularly the value of the Members' Forum as a means of discussing and resolving mutual problems. He appealed to members to submit their questions timeously though, in future. He pointed out that the use of skilled labour was limited by present legislation but in

All members were notified in September last year that Messrs. Davidson & Ewing (Pty.) Ltd. had decided to relinquish their duties as Secretaries with effect on 28th February, 1973. I am glad to say, however, that they agreed to assist, particularly with the arrangements for this Convention, for a slightly extended period.

The Executive Council and the Standing Committee then had to arrange for the appointment of another firm and, as all members were advised last month, Messrs. Van der Walt & Co. of Johannesburg have taken over the secretariat.

Davidson & Ewing served as Secretaries for eighteen years and I take this opportunity of expressing the appreciation of the Association to them, and particularly to Mr. Ewing, for their excellent work during that long period. Your Executive decided unanimously to recommend to this Convention that Mr. Ewing be elected an Honorary Member and this recommendation will be put to you on Thursday.

As many of you are aware, Dick Ewing took a great personal interest in the A.M.E.U. and assisted it in numerous ways that went beyond what could be expected of him in his official capacity. His cheerful personality will be missed at our conventions and other meetings, as also will the presence of his charming wife, Joyce, at our social functions and in the various activities of our ladies.

I would also like, on behalf of all the members of the Association, to welcome Mr. Bennie van der Walt and his firm, Messrs. Van der Walt & Co., to this their first Convention and to wish them success with the duties that they have undertaken. I am sure you will appreciate that a change of secretariat, particularly when it occurs shortly before a convention, must inevitably cause some difficulties but I trust that you will be tolerant in this respect and that you will assist Mr. Van der Walt to pick up the threads as quickly as possible.

Those of you who only attend the biennial Conventions of this Association merely see the tip of the iceberg and may not know much of the tremendous amount of work done by the Technical Meetings, the Regional Branches, the Executive Council and Standing Committee, the representatives on numerous national and international Boards and Committees and the members who attend other congresses as representatives of the A.M.E.U.

Brief reports on some of these activities are printed in the Proceedings but the holding of Conventions only every second year makes it impossible to keep members fully informed and up-to-date or to provide sufficient opportunity for discussion.

The Association continues to work in close collaboration with the United Municipal Executive and the various provincial and municipal Associations as well as with the S.A.B.S., the C.S.I.R. and many other bodies. I would like to express appreciation of the assistance which we receive from them.

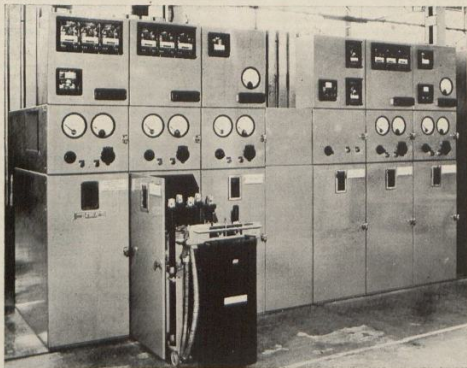
In conclusion, I trust that you will find this Convention to be both interesting and enjoyable. I say enjoyable without any reservations because I think it should be borne in mind that the value of these occasions lies not only in their more serious aspects but also in the contacts and friendships which are established across all sectors of the electricity supply industry as well as with those who are in one way or another concerned with it. These relationships engender co-operation, understanding and mutual trust, thereby greatly facilitating our day to day business of providing an essential public service.

view of the acute shortage of such labour serious consideration might have to be given to making use of available labour. He also made an urgent appeal to contractors to take definite steps towards remedying the now chronic situation ensuing from their inability to meet promised dates.

His personal opinion of the recent unrest amongst Bantu

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workers was that it was a localised rather than a national situation and was therefore something to be resolved by the individual companies and organisations concerned.

As a matter of interest he pointed out that in his own area in the Transvaal the Department of Emergency Planning did exist, consisting of the various heads of departments under the directorship of the Town Clerk.

Referring to the contributions towards rate funds, Mr van Ahlften suggested that since administration and meter reading costs etc., were rising particularly steeply, the AMEU might give more active attention to this matter.

His final point was that the Association as a whole seriously review the past decision to hold conventions only every second

year because, although the technical meetings served a very useful purpose, they did not really cover the full activities of the Association and resulted in a break in continuity.

CLR. H.G. KIPLING (East London): Formally seconded the vote of thanks. After commenting on various points made, he added the earnest plea that, in view of the considerable expense involved in having to provide the necessary connection to the national grid, Eskom introduce a more uniform energy charge, in this way providing some tangible benefit to those municipalities located long distances from the grid's generating stations.

12. Technical Meeting 1974 Tegniese Vergadering

RAADSLID H.J. HUGO (Roodepoort): Rig namens sy stad 'n uitnodiging aan die Vereniging om die 1974-Tegniese Ver-

gadering in Roodepoort te hou. Die uitnodiging word met genoeë aanvaar. Die bepalings van die datums word aan die Uitvoerende Raad oorgelaat.

13. Convention 1975 Konvensie

COUNCILLOR C. DE KOCK (POTCHEFSTROOM): Read a decision taken by the Town Council of Potchefstroom to act as hosts to the Association in the event of Mr. E. de C. Pretorius

being elected President-Elect. His formal invitation that the 1975 Convention be held at Skukuza in the Kruger National Park was enthusiastically and unanimously accepted.

The Executive Council will fix the dates.

14. Election of Executive Council Verkieping van Uitvoerende Raad

The Election of the Executive Council ensued. As President and President-Elect respectively, Messrs. J.C. Waddy and E. de C. Pretorius automatically became members of the Executive; as also Messrs. D.H. Fraser (Durban) and K.G. Robson (East London) since they were the only nominees for the Eastern and the Southern Regions respectively.

Die volgende addisionele Ingenieurslede is verkies as lede van die Uitvoerende Raad:

R.W. Barton, Welkom	: Sentrale Streek/Central Region
P.J. Botes, Roodepoort	: Noordelike Streek/Northern Region
E.E. de Villiers, Rustenburg	: Noordelike Streek/Northern Region
H.C. Dreyer, Paarl	: Westelike Streek/Western Region
D.C. Plowden, Johannesburg	: Sentrale Streek/Central Region
J.K. von Ahlften, Springs	: Sentrale Streek/Central Region
Messrs. E.B. Martin and J.A. Morrison (Affiliate Members) together with the Secretary acted as scrutineers.	

EXECUTIVE COUNCIL
1973 - 1975
UITVOERENDE RAAD



Sittende/Seated: Bennie van der Walt (Sekretaris/Secretary), E.E. de Villiers (Rustenburg), R.W. Barton (Welkom), Cnr. M.R. Woolam (Pietermaritzburg), J.C. Waddy (President) (Pietermaritzburg), E. de C. Pretorius (Aangewese President/President Elect) (Potchefstroom), Rdt. C. de Kock (Potchefstroom), Rdt. M.P. Kotzé (Springs), J.K. van Ahlften (Springs), and/en D.C. Plowden (Johannesburg). Staande/Standing: Rdt. J.F. van Zyl (Rustenburg), H.C. Dreyer (Paarl), P.J. Botes (Roodepoort), Rdt. C.A. Meter (Paarl), K.G. Robson (East/Oos-London), Cnr. H.G. Kipling (East/Oos-London), Rdt. H.J. Hugo (Roodepoort), D.H. Fraser (Durban), Cnr. B.D. Eagar (Johannesburg), en/and Cnr. N. Grimwood (Durban). Afwesig/Absent: Cnr. Dr. D. Frost.

15. Secretarial Report Sekretariële verslag

The Annual Report of the Secretaries, published in Volume 1 of the 1973 Proceedings Page 6 was next dealt with.

Mr. K.G. ROBSON (East London). As a member of the Finance Subcommittee of the Executive Council, it is my privilege to move the adoption of the Report of the Secretaries. I would like to make special mention of some of the more important points in this Report. Firstly, I think, a special word of congratulation is due to Jules van Ahlften for the very high standard of both the Cape Town Convention and the 1972 Technical Meeting which are reported on by the Secretaries.

The second point is that we are now in the process of making the new Constitution work and I believe that I am right in saying that the varied membership which makes up the body of this Association would wish it to be used in the true spirit which was intended.

In analysing the membership figures it is striking to note the effect of the adjustments arising from the new Constitution. The Engineer members have decreased from 139 to 94 and it appears to me to be essential that the Executive Council give further attention to this category of membership.

You will note that the Secretaries have recorded that Mr V.E.O. Barratt had become a Past Member and I'm quite sure that his many friends in this Association will be saddened to hear that he passed away a few weeks ago.

Dealing very briefly with finance: I think it should be underlined that the Association continues to experience the effects of increasing costs and I feel I should draw attention to the amount of the loss on the printing of the Proceedings. It is obvious that these printing costs are going to continue to escalate in the future. It must be remembered also that during the current year the expenses of the two-year convention will have to be met.

Your Executive Council very rightly resolved that the Association be represented at the IEC Conferences and it is considered to be essential that such international technical links be maintained at all costs and therefore adequate financial provision must continue to be made. Taking this into account, the excess of income over expenditure of R3 656-00 is therefore not such a great amount.

The change of Secretariat will inevitably result in higher costs of administration. It has been my privilege to have been able to work closely with Dick Ewing for some years and I know something of the quality of the service he gave freely in the interests

of the Association because of his special concern for its well-being. And it is fitting, I think, that in moving the adoption of the Report by the Secretaries, I propose that this Association place on record its sincere appreciation for the singular contributions made over a period of 18 years by Dick and Jay Ewing, Miss Brewin and Messrs. Davidson & Ewing (Pty) Ltd.

Mr J.K. VON AHLFTEN (immediate Past President) in seconding this proposal, said: there appears to be some slight discrepancy in the figures given on page 10 of the Proceedings Volume 1, i.e. Undertaking Members 133, Engineer Members 94 from which it would seem that there are 39 undertakings with no Engineers.

As regards the financial side, Mr Robson is quite right in saying that we will have to watch our expenditure.

The attendance of members at IEC meetings, as reported in the Proceedings, will depend in future on whether the items to be discussed there are of interest to the AMEU, especially to the consumers.

Lastly I should just like to point out that the present Proceedings Volume 1 and the other material issued at this Convention were done so under the Secretaryship of Messrs Davidson &



Mnr. en Mev. Bennie van der Walt

U eerste kennismaking met mnr. Bennie van der Walt, ons Vereniging se nuwe sekretaris, het reeds gedurende die Konvensie van 1973 te Pietermaritzburg plaasgevind. Sedertdien gee hy onverpoosd aandag aan die Vereniging se aktiwiteite.

Mnr. Van der Walt is gebore en het groot geword in die Goudstad.

Nadat hy gematrikuleer het, het hy as 'n kantoorklerk begin werk in 1946. Oor 'n tydperk van 7 jaar behaal hy deur middel van korrespondensiestudies die Nasionale Diploma in Handel; die Sekretariële Diploma van die Instituut van Administrasie en Handel van S.A.; die Sekretariële Diploma van die Fakulteit van Geïnkorporeerde Sekretarisse en later ook nog die Diploma van die S.A. Instituut van Bestuurswese.

In 1955 stig hy 'n sekretariële praktyk onder die naam van Van der Walt & Kie., en lewer dienste as administrateurs, beedigde taksateurs, belastingadviseurs, boekhouders en sekretarisse.

Hy is 'n stigterslid van die Klub RSA en na 'n termyn van 15 jaar as sekretaris van die Johannesburgse Afrikaanse Sakekamer dien hy op die organisasie se bestuur. Hy is tans voorsitter van die gesamentlike stadsakekomitee, bestaande uit verteenwoordigers van die Johannesburgse Kamer van Koophandel en Johannesburgse Afrikaanse Sakekamer. Hy is ook lid van die Nasionale Paskantoor Beraadslagingskomitee, verteenwoordigend van die nasionale georganiseerde handel en nywerheid.

Sy sjarmente vroultjie is Annetjie Bezuidenhout wat afkomstig is van Boksburg. Die egpaar het 'n gesin van 3 seuns en 2 dogters. Hul liefhebberij is hoofsaaklik gekonsentreer op hul landbouhoeve in die distrik Krugersdorp, waar tuinbou baie aandag verg. Annetjie hou haar besig met sang en musiek, terwyl operas hul eerste teaterliefde is.



Ewing and not that of our new Secretaries, so we must expect some problems in the transition period.

With those few words I have great pleasure in seconding the adoption of the Report of the Secretaries.

Die Jaarverslag van die Sekretariaat word eenparig aanvaar en 'n mosie van deelname met die afsterwe van die volgende persone word staande aanvaar:—

V.E.O. Barratt, Queenstown	: Voormalige lid
F. de Wit, Adelaide	: Assosiaat-lid
V.G. Flint, Hennenman	: Assosiaat-lid
H. Fohren, Eshowe	: Ingenieurlid
N.M. Kriberger, Bethal	: Ingenieurlid
D. Lees	: Erelid
J. Wilson	: Erelid

16. Reports of Sub-Committees and Representatives Verslae van Onderkomitees en Verteenwoordigers

16.1. VERSLAG VAN DIE SUID-AFRIKAANSE BURO VIR STANDAARDE

MNR. P.J. BOTES (Koördinerende Verteenwoordiger): Soos gemeld in die verslag het ek en mnr. van Ahlften mnr. Middlecote gaan spreek oor sekere klagtes van die Hoëveldtak soos o.a. die oorwig van verteenwoordigers van vervaardigers op subkomitees; die toekenning van die SABS-merk op goedere wat nie die merk waardig is nie, ens. Mnr. Middlecote het ons verseker dat die SABS-Raad saamgestel is en verteenwoordigend is van al die belanghebbende organisasies. Dit staan ons egter vry om soveel verteenwoordigers soos wat ons nodig mag ag, te kan benoem.

Met die toekenning van die SABS-merk egter, het die SABS heelwat probleme. Sekere belangrike produkte is van swak gehalte en beantwoord nie aan die spesifikasie nie maar die merk word nie weggeëem nie aangesien die bedrywe gebuk gaan aan 'n tekort van toesighoudende personeel. In 'n sekere bedryf word beweer dat hierdie personeel jaarliks 'n omset het van 200%

Hierdie aangeleentheid is by die Hoëveldtak weer bespreek en daar is op gewys dat volgens die Plaaslike Bestuursordonnasie van Transvaal, munisipaliteite 2½% voorkeur moet gee aan plaaslik vervaardigde produkte wat oor die SABS-merk beskik. Nou word gevra of dit gereverdig is om hierdie voorkeur toe te ken op minderwaardige produkte. Ek sal dit waardeer indien die SABS verteenwoordiger hierop 'n antwoord sal verskaf.

Ek moet verskoning maak dat in my lys sekere kommentare nie ingevul is nie, maar dit is as gevolg van die vroeë datum waarop die kommentare moes daargestuur word na die Sekretaris. Ek het almal se verslae en indien iemand enige vordering van 'n spesifikasie wil hê, sal ek dit met graagte verskaf.

Certain specifications of major importance to us all were prepared and issued for comment. Amongst these are Project 15/14/44; Distribution Transformers up to 2 000 kva and up to 36 000 volts. Amendment No. 2 was approved by the Council of the SABS on 12th March 1973 and dealt with:

- power ratings which were brought in line with the IEC approach;
- standard losses which were revised to provide for normal and low loss transformers;
- constructional details and fittings which were specified for various ratings.

Our thanks go to Mr Boyack of Pretoria for all the hard work he has put in on this committee.

With regard to the "Compact transformer substations for use in public areas", the closing date has been extended to 1st July, 1973 to permit the various branches of our Association to discuss this specification. I'm afraid we won't have the time to do so now. I have already received comments from the Cape of Good Hope Branch which I have duly passed on to the SABS.

Mr Pretorius and I are the representatives on this specification and I foresee that we will come in for a lot of criticism on various aspects of the specification: for instance, why the insistence on 100, 200 and 315 kva. ratings, rather than 500 kva. and higher? It is our personal opinion that a 500 kva. unit no longer constitutes a compact substation.

I must urge this Association, however, to arrange symposiums

on items such as mini-substation reticulation. This will be of far more value to further standardisation than the putting together of a specification which is the work of a very few select members who must inevitably enforce their own opinions on the specification.

MNR. E. de C. PRETORIUS: In verband met SABS Verwys Nr. 15/14/64/1: Standaard spannings en strome vry elektriese kroegvoorsiening: 'n konsep-spesifikasie is uitgereik vir kommentaar en die kommentaar sluit 16 Mei 1973. So dit lyk of al taamlik gevorder is met hierdie spesifieke spesifikasie.

In verband met die standaard spesifikasie vir „Kompakte Transformatorsustasies” is daar net een ding wat my bekommer en dit is dat die jongste wysigings in die Regulasies van die Wet op Fabriek, Masjinerie en Bouwerk wat 26 April 1973 in werking getree het, verwys na „mini-sustasies” (miniatur-sustasies). Ek dink darem die Regulasie sal moet reggestel word in die lig van die konsep-spesifikasie vir kompakte transformatorsustasies.

MNR. H. BARNARD (Brakpan): Spreek sy bekommernis uit oor die feit dat so baie van die spesifikasie-komitees volgens die verslag blykbaar geen vordering gemaak het nie. Hy vra dat die SABS tog hulle voorkeure moet regkry in hierdie opsig en stel voor dat samesprekings op hooë vlak hopelik so 'n toestand aan sake in die vervolg sou voorkom.

MNR. G.C. THERON (Vanderbijlpark): Bedank mnr. Botes (sy opvolger as Koördinerende Verteenwoordiger op die SABS-komitee) vir die harde werk wat hy in die afgelope twee jaar ingestit het: asook vir mnr. Middlecote dat die SABS op kort-kennisgewing mnr. Bennett van hulle kantoor na Zurich toe gestuur het om die vergadering van TK 61 by te woon.

MR. A.A. MIDDLECOTE (SABS, Pretoria): Handled the points raised by Mr Barnard, pointing out that the projects listed in the Report were but 59 out of a total of 110 current projects; quite apart from the increasingly important IEC work involving a further 220 projects. The ramifications of the Bureau involving as it did so many different spheres of specialisation, made the establishing of priorities somewhat involved but they were nevertheless fully aware of the importance of these priorities. He urged members of the AMEU to be selective about serving on those committees where they could be of maximum assistance both in their own interests and those of the country as a whole.

He stressed the growing importance of international work, particularly with regard to the power groups now developing and wanting their share of the export market. The Common Market was well-known but there existed others such as the Pan American Standards Market (consisting of Canada and the Americas) which had now expanded into the Pacific to include Australia, New Zealand and Japan; and also the Asiatic League. This left South Africa a little out on a limb but participation in such a scheme was essential for the future economy.

He cited as an example a recent instance when the Common Market had decided to establish a certification scheme on electronic components, the most important of international commodities and therefore big business. America and Japan, quick to realise that this would virtually mean the underwriting of the performance of such commodities and the advantages this would entail, were not to be excluded. As a result discus-

sions at international level on the establishment of a mark scheme to embrace the whole world were to be held in Munich the next month.

A basic essential to international standardisation was uniformity of technical nomenclature and he called on Mr Prins to address the Convention on this subject.

MNR. F.J. PRINS (SABS, Pretoria): Ons besef almal terdê hoe belangrik dit is dat ons almal dieselfde taal praat en dieselfde betekenis aan 'n besondere woord heg. Daar is bv. gevalle bekend veral op die gebied van ontplofingsgevaare, waar dieselfde woord verskillende betekenisse in Engeland en Amerika het.

Die IEK het al vroeg in sy bestaan besef dat iets omtrent hierdie aspek gedoen moet word en een van sy heel eerste komitees was die komitee wat belas is met die daarstelling van 'n standaard nomenklatuur. Die Buro, as lid van die IEK is ook by die werksaamhede betrokke en, op versoek van 'n deputasie van die Universiteit van die Witwatersrand onder Prof. Cormack, is 'n vergadering gedurende 1949 belê om hierdie deelname van die Buro op 'n gesonde groter skaal te plaas, met spesiale verwysing na die opstel van 'n gestandaardiseerde nomenklatuur in Engels en Afrikaans, die opstel van 'n handleiding oor die MKS-stelsel en die daarstelling van gestandaardiseerde letter-simbole, afkortings en grafiese simbole.

Toevallig het die Hoofbestuurder van die Spoorweë nie lank daarna nie die Buro skriftelik versoek om 'n standaard nomenklatuur in Afrikaans en Engels op te stel. Die destydse Standaarderaad het die projek goedgekeur en 'n komitee benoem. Op die eerste vergadering van die komitee ongeveer 1952 het die destydse Direkteur van die Vertaalburo, dr. S.P.E. Boshoff sy steun toegesê aan die onderneming en die Buro is gevra om die Afrikaanse deel hiervan te behartig.

Na vele beraadslagings is daar deur die Engelse Subkomitee besluit om die IEK-dokumente te aanvaar as die Engelse standaard nomenklatuur vir Suid-Afrika, en om hierdie dokumente dan te gebruik as grondslag vir die Afrikaanse nomenklatuur. Die komitee het deurgaans gepoeg om nie slaafse vertalings van die Engelse terme te gee nie, maar om dié terme slegs as 'n leidraad te gebruik in die daarstelling van Afrikaanse terme. Onder andere was die Vaktaalburo en die Akademie op die komitee verteenwoordig en die werk van die komitee was dus taalkundig deur die twee mees gesaghebbende liggame op hierdie gebied geborg.

Weens die dringende tekort aan terme in Afrikaans het die komitee hom in die begin slegs daarop toegelê om woordelyste te voorsien. Eers later is daar oorgegaan om hierdie lysste in verklarende woordelyste te omskep en nuwes by te voeg. Tot op datum is 14 verklarende lysste voltooi:

NOMENKLATUURLYSTE

SABS 042 - 05 Grondterme

- 07 Elektronika
 - 08 Elektroakoestika
 - 10 Masjiene en Transformatore
 - 11 Stasiese Omsetters
 - 12 Transduktors
 - 15 Skakelbode en Apparaat vir Aansluiting en Regulering
 - 16 Beveiligingsreëls
 - 20 Wetenskaplike en Industriële Meetinstrumente
 - 25 Ontwikkeling, Transmissie en Distribusie van Elektriese Energie
 - 35 Elektromeganiese Toepassing
 - 40 Toepassing van Elektrisiteit by Verhitting
- 45A Verligting
62 Golfleiers

L.W. Nr. 45A is so genommer omdat ons die IEK-dokument nie daar as basis gebruik het nie, maar wel die sogenoemde CIE-dokument van die Komitee van Verligting wat meer volledig was.

Tans word die aandag daarop toegespits om die taalgebruik in die Bedradingsregulasies aan te pas by die aanvaarde terme soos in die hierb genoemde dokumente opgeneem. Waar daar

onsekerheid oor 'n woord of taalgebruik opduik, sal sulke gevalle aan die komitee voorgelê word vir 'n finale beslissing. Indien enigeen van u meer besonderhede verlang hieromtrent, is u welkom om met my te skakel.

16.2 REPORT ON THE INTERNATIONAL ELECTRO-TECHNICAL COMMISSION

MR. P.J. BOTES (Roodepoort): Took this opportunity of congratulating Mr Middlecote on his election as Chairman of TC 64 — a very high honour indeed for a South African.

16.3. GENERAL CONDITIONS OF CONTRACT FOR ELECTRICAL ENGINEERING

In response to a question from **MR E.E. DE VILLIERS** eliciting information, **MR D.A. ROBB** replied that it was hoped that a considerable amount of progress would be made in this regard during the current year.

16.4 KOMITEE INSAKE BEDRADINGSREGULASIES

MNR. E.E. DE VILLIERS (Rustenburg): Op 17 April 1973 is daar 'n gesamentlike vergadering gehou van die lede van Werkgroepe 3 en 4 van die SABS-komitee insake die Bedradingsregulasies en dit is daar bevestig dat Werkgroep 4 onmiddellik sal voortgaan met die redigering van die bestaande Bedradingsregulasies. Daarby ingesluit is al die wysigings wat tot op datum voorgestel is asook alle nuwe rigtings wat deur die Internasionale Tegiese Kommissie aanvaar is mits dit alles ingepas kan word by ons huidige Regulasies sonder om die samstelling en formaat daarvan as sodanig grondig te wysig; m.a.w. die gedagte is dat Werkgroep 4 so gou as moontlik ons nuwe stel gewysigde Regulasies vir ons beskikbaar sal hê.

Working Group 3 has not actually met since the last meeting of the International Technical Commission in Athens but we have been studying a number of documents received from overseas and we are due to hold our first meeting shortly. In the meantime this Working Group will continue to work on replies to the questionnaires received from the IEC and to make recommendations to Working Group 4 as to possible incorporations into the Regulations.

Dit is in vooruitsig gestel dat die nuwe Regulasies voltooi behoort te wees in Engels teen September vanjaar. Mnr Prins-hulle spring al dadelik aan die werk intussydig met die vertaling van die Afrikaanse terme en dit sal 'n taamlike faktor wees om die Regulasies vroeëtydig te kan uitbring in beide amptelike tale, vermoedelik baie vroeg in die nuwe jaar (1974).

He concluded by thanking the Executive Council for having made it possible for him to attend the IEC meetings in Athens in 1972 and mentioned in passing that, in the absence of Mr. Bennett of the SABS, he had attended a few of the meetings of TC61 and would duly pass the information on to him.

MR. A. A. MIDDLECOTE (SABS, Pretoria):

One must realise the enormous amount of rationalisation that has to be done and it is worth our while to wait for co-ordinated results which should be forthcoming within the next year and a half.

There are now 10 Working Groups dealing with the following:-

- i) Definitions
- ii) Current Ratings of Cables — the international figures now proposed are practically those we had decided on
- iii) Environmental Conditions
- iv) Effects of Current passing through a Body — the criterion selected as being safe for all practical purposes is 20 ma. with a time differential, as already selected in South Africa.
- v) Voltage Bands
- vi) Heating of Buildings
- vii) Built-in Heating
- viii) Caravans and Yachting Basins
- ix) Data Processing Equipment — the latest equipment does require a certain amount of earth leakage
- x) Disconnecting Times

And, finally, after they've agreed technically and all the

The Electrical Contractors' Association

(SOUTH AFRICA)



IS PROUD TO BE ASSOCIATED WITH THE ASSOCIATION OF
MUNICIPAL ELECTRICITY UNDERTAKINGS OF SOUTH
AFRICA.

PRESIDENT: E.V. BURTON (NATAL MIDLANDS)
VICE-PRESIDENT: B. GILBERT (WITWATERSRAND)
HON. TREASURER: B. WLDRIK (PORT ELIZABETH)
GENERAL SECRETARY: P. v. E. RAUTENBACH

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necessary work has been done, a more logical and practical format will be produced.

THE PRESIDENT: I am glad to hear of the proposed new form of the Regulations and hope there will be no undue delay in its publication.

MNR. P. J. BOTES (Roodepoort): Gaan die nuwe Bedieningsregulasies eers uitgestuur word vir kommentaar voor finale publikasie?

MNR. E. E. DE VILLIERS (Rustenburg): Die Hoof SABS-Komitee is saamgestel uit verskeie liggame insluitend ook verteenwoordigers van ons Vereniging. Voor enige iets vernaaft aanvaar word, sal dit eers gesirkuleer word tussen die verskillende streekstakke van hierdie Komitee vir kommentaar. Maar wanneer die finale aanbevelings van die werkgroep na die Hoofkomitee gaan, en daar deur hulle aanvaar is, dan is dit eintlik gefinaliseer. Die normale prosedure sal dan nie verander word deur dit weereens aan die onderskeie liggame te sirkuleer nie.

16.5. JAARVERSLAG OOR DIE WNNR SE ADVIESKOMITEE INSAKE ELEKTROTEGNIESE INGENIEURSEWE:

MNR. J. H. VAN WYK (WNNR, Pretoria): U weet die woord „nywerheid“ in die titel van die WNNR het wel deeglik betekenis en soos u in ons verslag gesien het, gaan sowat 35% van ons man-ure reeds in kontrakwerk. Vir die huidige boekjaar is dit 44% van ons begroting wat aan direkte kontrakte sal gaan. Ek proef hier namens my eie Instituut, nie van die WNNR as 'n geheel nie. As u dan dink dat die groeikoers van hierdie kontrakwerk van ons op die oomblik omtrent 16% per jaar toeneem, dan kan u sien dat ons al meer en meer betrokke raak in nywerheidsnavorsing. Dit is dan ook om hierdie rede vir ons baie belangrik om kontak met organisasies soos u eie toe om sodoenste te verseker dat die navorsing wat ons wel doen vir die land as geheel van belang is.

As ons kyk na ons meer fundamentele navorsing, m.a.w. dié wat nie direk op kontrak-basis gedoen word nie, dan vind u as ons die twee bymekaar tel, dat ongeveer 86% van ons aktiwiteit op 'n gebied is wat ons vol op een of ander manier die vorkgebied van die land kan bevorder.

Ek mag net verduidelik dat die WNNR se biblioteek eintlik daargestel is nie net om ons te dien nie, maar ook die land in sy geheel, en dat enige iemand of 'n tydskrif of 'n boek op lening kan kry indien hy dit nie andersins kan kry nie. Verder het ons ook skakelkantore in die buiteland in Washington, Londen, Parys en Keulen. Hierdie opgeleide wetenskaplikes hou kontak met ontwikkeling en navorsing in die buiteland en verskaf ook ons enige inligting wat ons nie makliker hier kan bekom nie.

16.6 ANNUAL REPORT OF THE ELECTRICAL WIREMEN'S REGISTRATION BOARD (1972)

MR J.K. VON AHLTFEN (Springs): Remarked on the poor results obtained in the practical tests for permanent registration and suggested Mr J.G. Wannenburg might like to comment on the two points under revision for the proposed amendment to the Act, viz. the right of a wireman to inspect his own wiring work and the inspection of the re-filing of roofs.

MR J.G. WANNENBURG (Department of Labour, Pretoria): Assured the Convention that all suggestions received from the various organisations had been submitted to the Parliamentary Clerk but that the complete amendment of the Act could not be expected until the following year.

MR E.V. BURTON (Electrical Contractors' Association of South Africa, Pietermaritzburg): Raised the vexed subject of the issuing of registration certificates to electrical contractors on a national basis by means of the establishment of a National Contractors' Registration Board. He referred to the earlier support of both the AMEU and the South African Electrical Workers' Association for such a proposed amendment to the Act but that when submitted to the Department of Labour in 1954 it had not found favour with the Government Departments concerned. However, he pointed out that the industry had since become so exceedingly complex and sophisticated that the implementation of such an amendment was now essential.

The industry had developed into a highly mobile one and the activities of the electrical contractor were now rarely confined to a single geographical area but spread out over vast territories in some instances. This meant that a single contractor might have to have as many as 20 contractor's licenses each with their different requirements. Some members were in fact spending up to a month of each year in obtaining the necessary registration. Since this was hardly conducive to increased productivity, he made an earnest appeal to the AMEU as a body to support such an amendment to the Act, and to member undertakings to streamline their individual requirements for registration in the meantime.

MR A.J. VAN DEN BERG (Krugersdorp): Proposed that it be referred to the Executive Council of the AMEU for full investigation. This was duly accepted.

MR E.E. TRAUTMAN (Ladysmith): Disputed the statement that about 20 registrations might be required by an electrical contractor. This was certainly not the case in Natal.

MR P. VAN E. RAUTENBACH (Electrical Contractors' Association, Johannesburg): Maintained from his own experience that this certainly was the case on the Reef where the contractors worked an area from Carletonville in the West to Nigel in the East as well as the Vaal Triangle.

A further problem was created in that some local supply authorities rejected out of hand photostat copies of a contractor's own licence and would insist that the contractor present himself in person to receive a local contractor's licence.

MR J.A. LOUBSER (Benoni): Asked whether it was really necessary for electrical contractors wishing to establish a business within municipal limits to advertise their intention to do so in the press as was customary in Benoni and Johannesburg?

MR J.G. WANNENBURG (Department of Labour, Pretoria): Stated that it was a purely a domestic affair. The Act merely stipulated that such a licence or certificate must be issued by the local authority.

He went on to point out very strongly that the Department would not amend the Electrical Wiremen's and Contractors' Act of its own accord unless suggestions were forthcoming from those who were subject to the Act. So far he had received very little in the way of such suggestions from members and he reminded the Convention that they had but one more year in which to submit these.

KAPT. P.G. JOYNT (Tzaneen): Verduidelik dat in alle plaaslike gebiede onder die Transvaalse Ordonnansie 'n kontrakteur wel 'n besigheid mag doen in 'n opgeboude gebied wat daarvoor gesoneer is mits hy 'n lisensie daarvoor bekom.

Hy lê klem daarop dat die Vereniging egter behoort daarop aan te dring dat dit 'n man wat gekwalifiseer is en aan die vereistes wat gevra word deur wetgewing voldoen, vrystaan om so 'n besigheid te bedryf in enige plek in die Republiek van Suid-Afrika; dat hy dan, soos 'n dokter, nie nodig het om homself te gaan toon en te sê waar hy praktiseer nie.

As hy wel so 'n besigheid dryf buite die munisipale gebied, dan moet hy notgans by die plaaslike hooflanddrog gaan aansoek doen om 'n lisensie.

THE PRESIDENT: Stated that as far as registration was concerned the Executive Council could deal with the matter but that it might well be necessary to refer the matter of licensing to the Provincial Associations or ultimately, to the UME.

MNR. P. J. BOTES (Roodepoort): Deel mee dat in die nuwe Standaard Elektrisiteitsverordeninge van die Transvaal staan dit baie duidelik dat 'n persoon hoef nie meer in die koerant te adverteer wanneer hy 'n lisensie moet bekom nie. Dit is heeltemal iets anders as die verkryging van 'n normale handels-lisensie.

MNR. M.V. ODENDAAL (Alberton): Verwys na die groot verskil tussen die gegewens van registrasie-sertifikate en voorlopige registrasie-sertifikate wat uitgereik is gedurende die jaar 1971 en 1972.

Na sy mening is daar nie een kontrakteur wat nie daaglikens eend of ander wet of regulasie oortree nie. Ook die registrasie-prosedure van kontrakteurs spesifiek op die Witwatersrand, is gehanteer deur sekretarisses wat aan die begin van die jaar

doodeenvoudig die aansoekvorms uitstuur aan die verskillende plaaslike besture tesame met fotostatiese afdrukke van die kontraktrou se aanvanklike lisensie.

Verder het hy daarop gewys dat die uitreiking van hierdie registrasie-sertifikate darem vir die betrokke plaaslike bestuur geld as 'n klein houvas op die kontraktrou self.

MR P. VAN E. RAUTENBACH (Electrical Contractors' Association of South Africa, Johannesburg): Then proceeded to give details of a training scheme instituted recently by his Association in conjunction with the Department of National Education and funded entirely by the former. He explained that the course was open to any electrical artisans wishing to sit for the Board's practical examination, and said that it was being run very successfully at the training colleges, one in Smit Street, Johannesburg and the other in Benoni.

He stressed the point that although theirs was the only industry in the country requiring licensed artisans, the basic principle behind the running of such courses was not primarily a selfish one, but rather one which looked upon any licensed artisan as an asset to the country as a whole, as well as being a potential employer in the industry itself.

Not only was the Act itself completely outdated, and therefore onerous to the contractors and discriminatory, but what was even more serious was the fact that certain interpretations of definitions contained in the Act were found to be incompatible with the traditional interpretations or delimitations contained in the various certificates of registration in terms of the Industrial Conciliation Act and other industrial legislation.

MNR. J.G. WANNENBURG (Departement van Arbeid, Pretoria): Beklemtoon weer die feit dat alhoewel dit taamlik eenvoudig is om 'n regulasie gewysig te kry, dit 'n volle sitting van die Parlement neem om een enkele komma uit 'n wet te haal, of een woord daarvan te verander.

Aangesien die sprake nou is dat die Wet geheel en al oorgeskryf gaan word binne die eersvolgende twee of drie jaar, het dit nou noodsaaklik geword dat voorstelle hiervoor so gou as moontlik na die Departement deurgestuur word.

MR L.H. HARE (Central Organisation for Trade Testing): During the last year the Organisation which I represent arranged a total of 3 124 practical tests. These are conducted every alternate working day throughout the week and on every Saturday except over a long weekend.

Written examinations are conducted three times a year when the apprentice block examinations are written. In the case of a person not able to sit the examination at one of these times we can arrange to have such a person tested within 48 hours of having been advised of the circumstances, if this is warranted. Normally no candidate waits longer than 40 days for examination after such an application and we very often do test emergency cases immediately to avoid any possible hardships which might occur as a result of postponement.

16.7. REPORT ON THE TECHNICAL TRAINING OF STAFF

MR D.C. PLOWDEN (Convenor, Technical Training Sub-Committee): Reported that the outcome of the investigations of the Sub-Committee appointed by the Highveld Branch to collaborate with Mr I.R.G. Stephen, the Deputy Director (Technology) Witwatersrand College of Advanced Technical Education, in researching the establishment of a pilot training scheme, was that the College would not offer adequate facilities for the training of apprentices. This Sub-Committee was therefore going to propose to the Executive Council that a basic training centre be established on the Reef, possibly at Rooodepoort.

The difficulties involved in this were manifold, the main one being that of finance. To train 10 apprentice electricians one would have to spend in the region of R7 000,00 on equipment: to train an equal number of fitters and turners, in the region of R18 000,00 to R20 000,00.

Another important factor not to be overlooked was the

enlisting of the support of the other departments in a local authority also using artisans, who would want some kind of say in any type of basic training centre as well.

THE PRESIDENT-ELECT: Took the opportunity here of paying tribute to Mr. D.C. Plowden for his sterling work as Convenor of the Technical Training Sub-Committee. He remarked further that the extremely poor response to the questionnaire sent out by Mr. Plowden was disquieting to say the least, as members appeared quite unaware of the gravity of the situation as regards the future source and training of artisans. Already one of the largest undertakings had been forbidden by the Department of Labour to indenture apprentices under the Apprentice Act because of the bad examination record of their apprentices.

MR. J.K. VON AHLFTEN: Stated that a full report of recent discussions with the Professional Engineers Council was to be submitted at the Executive Council Meeting. One disturbing factor to emerge from these conversations, however, was the shockingly poor standard of applications for registration received by this Council from members of the AMEU. To overcome the problems of evaluating these very unprofessional applications, the Council had designed a new Form. This was to be submitted to the Executive and would duly be issued to the various branches for comment.

16.8 REPORT OF THE CO-ORDINATING COMMITTEE FOR HIGH-VOLTAGE RESEARCH AND TESTING FACILITIES

The report was accepted without any comments.

16.9 REPORT OF THE SOUTH AFRICAN ELECTROLYTIC CORROSION COMMITTEE

The report was accepted without any comments.

The following Reports were discussed on Wednesday morning; Report Nos. 10, 12, 13 and 14 being tabled in the circular issued by the Secretaries dated 5/4/73.

16.10 REPORT OF THE NATAL ELECTROLYTIC CORROSION REGIONAL FIELD COMMITTEE

MR. D.H. FRASER (Representative): Laid emphasis on the value of holding forums on a local or regional basis at which those participating in putting metallic surfaces underground could discuss common electrolytic corrosion problems. It was important, too, to publicise the existence of these committees so that the various authorities could work together in harmony for the common good.

16.11 REPORT ON THE IEC MEETING - ATHENS 1972

Both the AMEU delegates, Messrs. J.K. VON AHLFTEN and E.E. DE VILLIERS, expressed gratitude at having been able to attend this meeting, and stressed the importance of continuity on these committees, especially TC 61 and TC 64 which were of particular interest to the AMEU.

16.12 REPORT OF THE SOUTH AFRICAN NATIONAL COMMITTEE ON ILLUMINATION: NINETEENTH ANNUAL GENERAL MEETING

MNR. P.J. BOTES: Wys daarop dat die Vereniging geneig is om straatbeligting en verwante werk oor verligting net oor te laat aan SANCI, terwyl minder as 10% van die munisipaliteite lede is van SANCI. Hy meld ook aan dat SANCI onlangs 'n baie geslaagde simposium gehou het oor straatverligting, maar hy voel persoonlik dit is die funksie van die VMEU om soortgelyke simposiums aan te bied.

16.13 REPORT ON THE WORLD ENERGY CONFERENCE

Accepted without any comments.

16.14 REPORT OF THE RECOMMENDATIONS COMMITTEE FOR NEW ELECTRICAL COMMODITIES.

Accepted without any comments.

16.15 SUB-COMMITTEE FOR THE CO-ORDINATION OF SERVICES

MR. G.C. THERON (Vanderbijlpark): Stated that although this Committee had actually completed its work the previous year and submitted its final report at Kempton Park, it had been suggested by Mr. A.F.W.H. Eggers of the Post Office that this Committee be re-formed to consider the various problems arising from the application of the Code submitted at the Cape Town Convention.

16.16 STANDING ADVISORY COMMITTEE ON ELECTRICAL SAFETY

MR. D.H. FRASER: Announced that as no meetings had been called of this particular body there was regrettably no activity to report on.

16.17 PUBLICATION OF PROCEEDINGS:

MR. H. BARNARD (Brakpan): Raised the issue of the "Late Publication of Proceedings Volume 1 - 1973 and Volume 2 - 1972" as mentioned in the circular sent out by the Secretaries dated 5/4/73. He quoted his previous comments at the Technical Meeting at Kempton Park as well as the explanation

given by the then Secretary, Mr. R.G. Ewing, but stated that this had been to no avail since he had only received his copy of the Proceedings Volume 2 - 1972 three weeks previously; and his Agenda, the very day before the start of the Convention. As regards the former, he saw no reason why these Proceedings should have taken close on a year to be completed as there had been no time-consuming translation involved in this issue. In conclusion he earnestly requested the new Secretaries to see that members receive the Proceedings Volume 2 - 1973 as soon as possible after the present Convention.

MNR. J.K. VON AHLTEN: Verduidelik dat die Uitvoerende Raad eers op sy Novembermaandvergadering goedkeuring verleen het aan Sonex Recording Studio om die Tegniese Verrigtinge Deel 2 - 1972 in hierdie besondere formaat te druk. Volgens sy mening was hierdie nuwe prosedure 'n groot sukses. Hy spreek verder die hoop uit dat die verrigtinge in die toekoms belyds gepubliseer sal word.

THE PRESIDENT: Assured the Convention that the Executive was giving very careful consideration to ways and means of speeding up the process and appealed to them to give the new Secretary a chance to take the matter in hand.

ACTIVITIES SUSPENDED 4.00 PM - WERKSAAMHEDE OPGESKORT 4.00 NM.

TUESDAY

1 MAY/MEI 1973

DINSDAG

SECOND SESSION DAY/TWEDE SITTINGSDAG

17. GENERATION AND TRANSMISSION IN THE ESCOM SYSTEM

MR. H.B. NORMAN (Escom): Presented an illustrated version of his paper entitled **GENERATION AND TRANSMISSION IN THE ESCOM SYSTEM**, published in the Proceedings Volume 1 - 1973, page 13.

Referring to Table III on page 20 of the published Proceedings, he explained that the figure 46 given for the Total Number of Interruptions was incorrect as this referred to the number of incidents whereas the actual interruptions that occurred only numbered 29; the other cases being immediately auto-reclosed so that there was no permanent interruption.

He added that the up-to-date figures showed that there had been only 8 such faults in 1973; the total outage time amounting to less than an hour (0,85 hour) for the three interruptions involved. The one significant factor, he remarked, about these 1973 figures was that although the faults had occurred on all sections of the system, interruptions had only resulted where such a fault had occurred on one of the single-line sections. In the case of Natal, for instance, where they had been running on duplicate lines for the last 6 months, there had been 8 faults but no outage time at all. Escom was thus confident that once the lines had been duplicated to the Western Cape there would be no further outage time.

In conclusion he mentioned that Table IV on page 23 of the published address might be of some assistance in answering the first question posed by the Highveld Branch for their Forum Session.

THE PRESIDENT: Stated that in view of the fact that so many municipal undertakings were dependent on Escom for supply and would become increasingly so, this paper would serve as an important source of reference for many years to come.

MR. M.J.W. CHAPPEL (Port Elizabeth): It is now accepted policy that Escom should eventually become the sole generating authority in the Republic and it is unlikely that any municipality will again install steam driven generating plant. Existing municipal plant will gradually become obsolete and be shut down.

The course of the transition from local generation to full Escom supply may be sudden or it may extend over a considerable period of time depending upon the economics of local generation compared with the cost of Escom power. A local authority might have a considerable amount of capital expenditure outstanding on its existing generating plant and these loan charges would have to be met even if the plant were to be shut down.

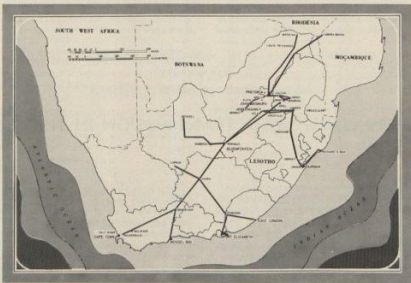
Where power is transmitted over long distances, the possibility of an extended interruption of supply has to be borne in mind and consideration given to a possible need for the installation of a gas turbine plant for emergency use, or the use of such plant or old steam plant for peak lopping to reduce kva. charges.

Mr Norman has indicated the adequacy of the Escom generating capacity, at least for the next few years, and assured us of the high reliability of the Escom high-voltage transmission system, and the justification for gas turbine emergency generation for peak lopping will have to be determined by the engineers of each individual undertaking.

I have listened particularly attentively to the statistical evidence of the high order of reliability achieved by Escom's high-voltage transmission since the Port Elizabeth Undertaking is intending to commence taking a partial bulk supply from Escom within the next few months. In linking up our 250 MW undertaking (small by Escom standards) we have naturally given considerable attention to protection schemes and think we have covered all eventualities. However, we wonder whether we may not perhaps encounter stability problems under heavy system fault conditions due to the relatively thin connecting link with Escom's heavy, concentrated generating capacity.

Mr. Norman has confined his remarks, wisely perhaps, to engineering and has refrained from comment on the financing of the Commission and the basis of its structure. Suffice it then to say that, as I see it, Escom is not a truly national organisation but rather a group of regional organisations linked by an extensive HV transmission system known now as the national grid. I feel consideration should now be given to bringing about

ESCOM'S NATIONAL GRID MAKES ELECTRICAL COMMON SENSE



Escom's 50th anniversary this year will also mark the completion of its national grid, interconnecting all South Africa's main growth centres.

There are technically and financially very sound reasons for building this vast network:

- The grid system makes it possible to have our power stations right on the coal fields of the Eastern Transvaal (thus saving enormous cost of coal transportation) and still provide cheap and abundant electricity throughout the country.

- Lower capital cost. Increasing the unit capacity reduces cost per kW.

- Manpower. Operating and maintaining large sets require less

personnel than smaller units with equal total capacity.

- Higher efficiency. Large sets operate at higher pressure and temperatures with reheat facilities, and are therefore more efficient. With a country-wide power network all power sources in the country can be operated as an integrated system.

Which all adds up to the consumer paying less for electricity.

That's why we say: Escom's national grid makes electrical common sense.



VZ 73-0136/3

some change in its structure so as to make it more truly a national supply undertaking.

In conclusion I would ask Mr Norman's opinion on the following points:-

(1) Whether in his opinion, in the event of a system disturbance, there is any real hazard of instability of power swing conditions arising between the incoming Escom supply and, in the case of Port Elizabeth, the local power station? This would apply equally to a nuclear power station established in the Western Cape.

(2) The reasons for the decision to transmit power from Cabora Bassa as DC rather than using for instance the 400 kva.-AC system.

MR H.B. NORMAN (Escom): Suggested that the AMEU seriously following the example of Sweden by taking out a study on the actual cost to the community brought about by the loss to industry of a kilowatt or a kilowatt-hour. He commented that since any assessment of system reliability must inevitably be based on economics to some degree, once this figure had been arrived at one could then realistically calculate what one could reasonably spend to achieve this degree of reliability.

CURRICULUM VITAE

Mr. Norman was born in 1925, matriculated at KES in 1940, and first worked for Escom as a learner draughtsman in 1941. He studied at the University of the Witwatersrand in 1942 and 1943, served with the SAAF in 1944 and 1945 and finally graduated with a B Sc(Eng) degree in 1947. He rejoined Escom in 1948 and was sent for post graduate training to Westinghouse in America for three years. During this period he obtained his M Sc degree from the University of Pittsburgh. Returning in 1952 he worked for two years on system planning and then became regional engineer for Natal. In this capacity he was responsible for the planning, design and construction of all system extensions in the Natal Undertaking. In 1966 he became Senior Systems Engineer and assumed responsibility for planning transmission system extensions in all of Escom's Undertakings and specifying the major parameters of all electrical equipment involved. When Escom was reorganized in 1972 his title was changed to Principal Engineer (Transmission Planning) and in 1973 he assumed his present position of Chief Engineer (System Planning). In this position he is responsible for planning and specifying the major parameters for all generation and transmission system extensions for the Escom system.

Mr. Norman is a Fellow and member of the Council of the SAIEE and a member of the IEEE, and has written papers for these Institutes as well as for CIGRE, the World Energy Conference and various periodicals. He is the South African representative on CIGRE Study Committee No. 31 - Transmission Systems - and a past member of Study Committee No. 14 - AC/DC Conversion Plant. He was closely involved in the planning of the Cabora Bassa project and the detailed studies of the 400 kV System.



MR. H.B. NORMAN M.Sc., Pr. Eng., Chief Engineer (System Planning of Escom).

On the subject of stability, he reported that they had made considerable studies of this nature of their station at West Bank in the Border Undertaking. These had revealed that with single-pole reclosing there were no stability problems up to a power transfer equal to the limit of the 220 Kv scheme which coupled the 400 Kv line to the East London network.

Without therefore having done studies for Port Elizabeth he was confident that the situation would, in fact, be somewhat better there because they had more plant and a shorter 220 Kv link.

He stated further that in the case of a nuclear station being established in the Western Cape the effect of the addition of more generation here would be to strengthen the 400 Kv system and thus make the stability problem less acute.

The choice of DC for the link between Cabora Bassa and the Republic, he explained, was governed by the following reasons:-

- 1) It constituted a saving on a long point-to-point transmission with nothing topped off en route because only two conductors instead of three were used;
- 2) the terminal equipment although very expensive, was offset on such a long line by the reduced cost of the transmission line itself;
- 3) tenders received at the time for DC had been less than those for AC;
- 4) DC would mean that the supply would come direct from Cabora Bassa to the Republic and practically precluded tapping of the line anywhere and the complications of T-lines or faults other than on the main transmission link itself.

A further advantage of DC was that the loss of one pole did not mean loss of half the supply since as much as 80% of the maximum demand could be pushed down the remaining line with earth return.

He added that DC would have been an alternative for the lines to the Western Cape had it been a direct, single-step transmission, but because of the need to tap the line along its length AC was definitely a more economic proposition. Regarding security of lines and step-down stations, he admitted that these were vulnerable to sabotage. He explained that while the patrolling of the 800 mile long line was not feasible, they were spaced a mile apart, mainly to prevent simultaneous damage to both lines by such things as aircraft, freak storms and bush fires.

In the case of substations security measures had in fact been requested by the Government in the form of special passes for entry and special security lighting.

Replying to a plaintiff remark by **MR R.W. BARTON** (Welkom) regarding the absence of standards for 6,6 Kv, **MR NORMAN** explained that these standards had not been drawn up because this voltage was no longer recommended by the IEC. However, he hastened to assure Mr Barton that Welkom would not be plunged into darkness as 6,6 Kv would certainly continue to be supplied to those consumers already taking it; but that Escom would do their best to dissuade any more consumers from taking it.

PROFESSOR R.A. HELLAWELL (University of Natal):

Expressed shock that no real sabotage precautions had been taken on a line as vulnerable as that from Cabora Bassa.

He then raised the point as to whether or not the very rapid growth of the use of air-conditioning in the country would considerably alter Escom's yearly load curve from that illustrated by Mr Norman.

Having received estimates varying by as much as a ratio of 10:1 on the predicted life of coal internationally and in South Africa, he asked Mr Norman what values were being used in South Africa; and also what attempts, if any, were being made to reclaim the valuable by-products of coal.

MR H.B. NORMAN: Stressed that one of the fundamental concepts involved in negotiating the agreement to take power from Cabora Bassa was that this be carefully limited so as not to exceed the available reserve. This meant that even were the

system to be entirely sabotaged Escom would still be able to meet the demand.

He quoted the year 2030 as being a previously published figure for the life of coal in South Africa but warned that this was governed by the exponential growth curve of the demand for electricity; a growth curve which doubled every 10 years.

A recent investigation into the cheap coal available in the Eastern Transvaal, he said, had led to the conclusion that the addition of 30 000 MW of plant would by no means exhaust these resources.

As regards nuclear power, he stated emphatically that he personally was all for it but that it was strictly a matter of economics. A nuclear station cost twice as much as a coal-fired station while the operating costs were more or less on a par. He explained that any decision to use nuclear power generally in order to conserve coal or to utilise it for some other purpose would have to be made at Governmental level only because Escom was committed to provide power in the most economic way.

The utilisation of the by-products of coal was something outside the sphere of Escom.

Justifying the use of thyristor valves rather than mercury arc valves in the AC - DC conversion equipment at the terminal stations on the Cabora Bassa transmission, he explained that although proved reliability and performance standards had not been available for an HV/DC installation using thyristor equipment when the order was placed, the alternative mercury arc valves had a proved unreliability record. Also, despite only 6 months experience of a practical HV/DC operating system in America, countries throughout the world were now giving preference to thyristor valves because they were not subject to the consequential arc backs of the mercury arc valves causing a flash-over on the pole, and they were so manufactured that a thyristor failure within the valve did not result in a loss of supply. Final proving tests were due to be carried out on the Cabora Bassa valves in June and Escom representatives would be present.

He concluded by saying that these thyristor valves had proved themselves very well indeed at low voltages and that only very minor "teething" troubles were anticipated when using them in series at high voltages.

Mr D.H. FRASER (Durban): Asked how South African performance figures for 400 Kv circuits compared with overseas experience and whether the causes of the faults in general had been determined or whether these had been too transitory to locate.

Commenting on double circuit outages, he quoted their own experience on 132 Kv circuits where they had double-circuit towers but had nevertheless had several cases where both circuits had been affected simultaneously.

He made the point that although Escom standard transformers had presumably been set to the requirements of the Escom system, taking into account the load densities and other system considerations, some restraint should be exercised in adopting them generally, particularly in a high load density area where there was a shortage of available land for accommodating the transformers. He suggested it might be better in such cases to think of a lesser number with a higher kva. rating; circuit lengths were generally shorter which enabled the use of a bigger concentration of load at a lower voltage.

Mr H.B. NORMAN (Escom): Regarding overseas experience with 400 Kv circuits as compared with that in South Africa he referred Mr Fraser to the particulars of a similar Swedish system published in a CIGRE paper. He pointed out, though, that a greater number of faults were to be expected on the South African system because the isokeraunic level was so much higher here than in Sweden.

He commented further that it had been found in general that the faults on extra high voltage systems such as 400 Kv occurred more often on equipment, such as shunt reactors, than on the lines themselves. Auto-reclosing and other such measures greatly minimised outages caused by faults along the line length. He was convinced that at least 90% of the faults experienced

on the Escom 410 Kv system constituted "teething" troubles and that now that they had emerged from this stage, he was confident that these would not recur.

He admitted Escom had been fortunate in being able to space their lines a mile apart but that even they were now running into trouble with servitudes and would probably have to resort shortly to using double circuit lines. This was something they had avoided for years but in the light of overseas practice South Africa was shown to be conservative in the extreme. He had personally seen as many as 8 circuits on a single tower in Japan and there was apparently one in France with 16 circuits!

Regarding the use of standard transformers, he explained that there were special ways of putting lots of power into high load density areas. In order to give supply at 11 Kv Escom would put in no more than four 10 MVA transformers or two 20 MVA transformers, giving a total capacity connected to the bar of 40 MVA. However, in a high load density area such as Johannesburg or Durban the thing to do would be to put three 40 MVA transformers onto 2 separate busbars - 40 MVA on one, 40 MVA on the other with a spare 40 MVA. This would still amount to abiding by Escom's standards - that of having only 40 MVA on 1 bus - and it would keep the switchgear ratings reasonable.

He concluded that Escom thought in terms of four 10 MVA transformers because their normal application was to start with two 10 MVA transformers and then to add a third and a fourth and so on. Naturally the philosophy would be somewhat different in the case of injecting 40 MVA, 80 MVA or 120 MVA into say the centre of Durban or Johannesburg. An important point to be borne in mind, though, was that to keep the switchgear reasonable the connected transformer capacity on one busbar must be about the same.

MR. L. LEWIS (Windhoek): What is the possibility of incorporating the available power sources of the Kunene River to augment the 400 Kv system?

MR H.B. NORMAN (Escom): Explained that there was a long-range plan to develop the Kunene; the Ruacana Hydroelectric Station under construction being but the first of about 5 stages. The load factor was limited to that of South West Africa since the long distances involved precluded the viability of an interconnection between South West Africa and the Republic at present.

MR E.C. LYNCH (Salisbury): Asked how it was proposed to solve the problem of the integration of municipal thermal power stations into the overall national operating programme. In Rhodesia where municipal undertakings were allocated a proportion of the generated load such violent fluctuations had been experienced that in Salisbury, for instance, they had practically had to close down the power station for five years and then suddenly bring it up to full capacity again.

In Rhodesia too all the costs were pooled under CAPCOR who paid all the generating costs and had the right to allocate the load to the various power stations according to merit, whereas in the Republic municipal undertakings had their own power stations and purchased their excess power requirements under a tariff from Escom. This tariff was probably so framed as to discourage as far as possible the running of individual power stations and this might not always be in the national interest.

As regards the promotion of nuclear power generation for economic reasons, he pointed out that as was the case with all sources of fuel, when first used they were extremely cheap and then as the demand increased so the price escalated accordingly. This was bound to happen with uranium, the basic fuel for nuclear power stations. Also, uranium was a by-product of the gold-mining industry and already there had been gloomy prognostications about the collapse of gold-mining even before the year 2030.

He raised one encouraging point with regard to the question of sabotage; that even during the very intensive bombing in Europe during the last war the electrical systems had been kept working under the most adverse of conditions. Even in recent times one rarely heard of successful interference with the

electricity supply in troubled areas; in fact, if it happened at all it was usually of very short duration.

Experience in Rhodesia indicated that bush-fires constituted a far more serious threat to overhead lines than sabotage as such, and he enquired how it was proposed to protect these long lines in a country such as Mocambique, prone as it was to bush-fires.

His last question was why more use was not made of sea-freight in the transport of coal as this was considerably cheaper than rail-freight on a ton/mile basis in Britain.

MR H.B. NORMAN (Escom): Agreed that the fluctuating generation requirements occurring with small stations connected to a large grid was indeed a problem. He expressed the hope, however, that this would be a transient situation and said that Mr Stafford would elaborate on this point later.

As far as the life of nuclear fuel (uranium) was concerned as compared with that of coal, all he could say was that an extremely large proportion of the world's uranium reserves was located in South Africa and was recoverable at very reasonable rates. Naturally the price would vary according to the demand and if there were to be a general change to nuclear power the price of coal would obviously change drastically.

With the bush-fire problem in mind, the main design concept on the Cabora Bassa scheme was not to use a single bipolar DC line but 2 monopolar lines spaced some distance apart on the same principle as that adopted with the AC lines. Electrical "protection" on these lines was very rapid in the sense that it would shut down the power supply immediately and try and reclose: failing which it would stay out. The convertor groups on the system would then be changed over at each end so as to send 80% of the total power down the remaining monopolar line hopefully not affected by the fire.

He explained that although the transport of coal by sea might well be an economic proposition in England where the coal-mines were inevitably situated pretty near to the coast, this was not the case in South Africa where the coal would first have to be railed some distance to the coast.

The alternative of installing a coal slurry pipeline had been

considered but it was found to be cheaper to transmit the energy by means of electricity.

MR. M.J.W. CHAPPEL (Port Elizabeth): Confirmed the fact that coal was in fact transported by ship to both Port Elizabeth and Cape Town but stated that the cost of sea freight was the same as that of rail freight.

MR. T.C. STOFFBERG (Escom): Mr. Lynch pointed out that in Rhodesia all the power resources are controlled by their equivalent of our Central Generating Undertaking but that in South Africa only the Escom power stations are administered directly by this Undertaking. The municipal power stations taking Escom bulk supplies are then free to use their power stations to their own best advantage.

This is not the impediment to overall optimisation that it might at first seem but serves perhaps to emphasise the importance of the correct tariff structure. For instance, if the Escom tariff charges are correctly framed as being closely related to costs, the power stations of the municipal undertakings would be operated in a manner responsive to these costs.

Owing to different circumstances the fuel costs of the Johannesburg power stations are low in relation to many other centres. It is expected, therefore, that when the supply comes to be taken it will be taken in the peak load of their load duration curve; whereas the coastal municipalities take the Escom supply in base load.

We think we are achieving the same optimising effect without having direct control of the municipal power stations.

MR. L.O. FORSTER (SANCI): Posed a final question as to what the effect would be of the discovery of other energy sources such as oil or gas?

MR. H.B. NORMAN (Escom): Replied that just as they had researched the possibility of running a power station at Plettenberg Bay on natural gas should this be discovered there, so any other possible energy source would be investigated.

This concluded the discussion on the paper by Mr. H.B. Norman.

REFRESHMENT ADJOURNMENT 10.30 A.M./V.M. VERDAGING VIR VERVERSINGS

18 "DIE ELEKTRISITEITSWYSIGINGSWET VAN 1971 EN DIE VOORTSPRUITENDE VERANDERING IN EVKOM SE ORGANISASIE"

MNR. T.C. STOFFBERG (Hoofbeplanningsbeampte van Evkom) lewer sy referaat oor hierdie onderwerp soos gepubliseer in Deel 1 van die 1973 Konvensie Verrigtinge bladsy 24, waarna die volgende bespreking volg.

MNR. H.C. DREYER (Paarl): Die referaat van mnr. T.C. Stoffberg oor die Elektrisiteitswysigingswet van 1971 kom op 'n tydskrif wat getuig van akkurate tydsberekening. Hier het ons nou die antwoorde op meeste van die vrae wat vir ons veral in die swakker bedeelde tuitoeke van ons land gekwel het. Die inhoud van die referaat is in meeste opsigte bemoedigend en mnr. Stoffberg kan gekomplimenteer word vir die insig wat hy aan die dag gelê het om ons vroe so akkuraat te antiseip.

Ek het gesê „meeste vrae“ want daar bly tog 'n paar uiters belangrike vrae oor wat beantwoord moet word, en dié wil ek graag hiermee aan mnr. Stoffberg stel. Miskien sou sy antwoorde meer volledig gewees het indien hy gaan haal het by die voorloper van die 1971 Elektrisiteitswetgewing, naamlik die verslag wat ubring is deur die Borckenhagen-kommisie.

Die toepaslike aanbeveling van die Borckenhagen-kommisie wat ook in 'n Witskrif van die Regering aanvaar is, kan opgesom word in die volgende hoofbeginsels:

1. Die hoofsaak om te voorsien in die land se elektrisiteits-behoefte, moet deur Evkom onderneem word en die verdere uitbreiding van munisipale opwekkingstasies ... moet ontmoedig word.

2. Evkom moet sy werksaamhede sover moontlik beperk tot dié van produsent en groothandelaar in elektriese krag, en kleinhandelsverspreiding aan plaaslike owerhede en soortgelyke liggame oorlaat.

3. Die wins op krag vir industriële gebruik moet beperk word.

Dit wil voorkom asof daar goed gesorg is om die eerste en die laaste beginsel hierbo genoem in die praktyk uit te voer. So maak die Elektrisiteitswysigingswet van 1971 dan voorsiening daarvoor dat Evkom 'n Sentrale Kragontwikkelingsonderneming kon stig, soos mnr. Stoffberg vir ons in sy verhandeling beskryf het. Die beginsel dat industrieë teen woekerwinste beskermt word, is in die praktyk uitgevoer deur (a) Die behoud van die Elektrisiteitsbeheerraad as 'n tribunaal en (b) deur die verskansing van Evkom se regte om in sekere omstandighede krag te voorsien selfs binne die reggebied van 'n plaaslike owerheid.

Die beginsel dat die kleinhandel-verspreiding aan plaaslike owerhede oorgelaat moet word is wel deur die Regering aanvaar in die Witskrif, en word wel deur Evkom aanvaar – vante-

vore al het dr. Straszacker dit namens Evkom aanvaar. Maar ons moet die vraag vra hoe word dit in die praktyk uitgevoer? Waarom behandel Evkom die plaaslike owerhede wat self voorsieningsowerhede is, asof hulle gewone gebruikers is? Ek dink hier aan veral twee dinge: Eerstens die feit dat Evkom nie 'n groothandelaar het vir die kleinhandelaar nie – hier beskou ek as kleinhandelaars die munisipale en ander voorsienings-owerhede wat hulle krag nou noodgedwonge by Evkom moet ontvang – en tweedens die feit dat Evkom sy kleinhandelaars ignoreer t.o.v. vooraf kennisgewing en vooraf beraadslaging veral wanneer tariefwysigings toegepas word. Die kleinhandelaar kry dieselfde dag en op dieselfde wyse hiervan kennis as wat Evkom se gewone verbruikers kennis daarvan kry.

Ek voel dat die sogenaamde oormatige winsneming deur plaaslike owerhede op industrieel oorbeklemtoon word. Hier moet ek terugverwys na 'n ander gedeelte van die aanbevelings van die Borckenhagen kommissie wat as volg lui: „Die behoeftes van die Borckenhagen-kommissie wat as volg lui: „Die behoeftes van die verskaffing van handels- en nutsdienste soos elektrisiteit, ens., neem eweredig met die groei van stedelike sentrums toe. Die koste van die verskaffing van hierdie dienste kan en moet bestry word uit heffings en tariewe wat die gebruikers moet betaal en redelike surplusse behoort beskikbaar te wees vir oordrag op algemene inkomste ter verligting van belasting.“ In die Witskrif aanvaar die Regering hierdie belangrike beginsel as volg: „Die Regering aanvaar die bevindings van die komitee met die voorbehoud dat oorskotte nie op handels- en nutsdienste aangeteken behoort te word nie indien dit die lewenskoste aanmerklik sou verhoog of die mededingende vermoë van uitbedrywe sou benadeel.“

Daar die beginsel word blykbaar alleenlik op die munisipale voorsiener afgewing. 'n Munisipaliteit gebruik die wins wat hy maak uit sy elektrisiteitsverkope tog maar vir die verbetering van sy eie dorp. Geen ander persone of gemeenskap kry enige voordeel uit die winste nie. Dit is teweens 'n stelsel waarvolgens die persone en instansies wat voordeel trek uit die geriewe wat die dorp of gemeenskap bied dan help om te betaal vir daardie geriewe, sodat die las nie op die skouers van die belastingbetaler alleen rus nie.

Evkom self verdeel nie sy koste tussen sy verbruikers op 'n geografiese basis in sy eie ondernemings nie. Een tarief is van toepassing op almal en die wins wat gemaak word op verbruikers in die digbewoonde gebiede help om die verbruikers in die ylbewoonde gebiede te subsidieer. Toevallig is die verbruikers in die digbewoonde gebiede gewoonlik ook die munisipaliteite. Die munisipale verbruiker moet dus help om die verafgeleë verbruiker te subsidieer.

Is dit nou korrek dat 'n gemeenskap soos sê die Kaapse Skierland en omgewing, wat reeds verafgeleë is van die land se natuurlike kragbronne, nou dat Evkom die monopolie oor kragopwekking verkry het, finansiële opgesaal moet sit met die kostes en stelselverliese verbonde aan 'n groot uitgestrekte ylbewolkte plattelandse gebied soos dié van die Wes-Kaaplandse Evkom-onderneming?

Lê die fout nie daarin dat Evkom vir die munisipale voorsieningsowerheid dieselfde tarief vra as vir sy eie gebruikers nie?

Te veel word gemaak van die sogenaamde wins wat spruit uit diversiteit tussen verbruikers. Industriële verbruikers wat 'n seisoen- of klimaatinslag het soos dié verbonde aan Wes-Kaapland se landboubedryf se verbruik-patroon verskil so weinig onderling dat daar maar min sprake kan wees van wins uit diversiteit.

Die feit dat die munisipale voorsieningsowerheid wat nou vir sy kragoanpake onherroeplik aan Evkom gekoppel is, sy eie stelselverliese het en sy eie bedryfskoste, word deur Evkom in sy tariewebeleid nie in ag geneem nie. Die munisipale voorsieningsowerheid word dieselfde behandel as 'n groot fabriek wat sy krag van Evkom ontvang, maar dit slegs op 'n baie klein geografiese area gebruik sonder noemenswaardige verspreidingskoste van sy eie. Waar 'n munisipaliteit dus verspreiding doen van krag wat hy van Evkom ontvang dan neem hy die finansiële las van verspreiding van Evkom se skouers

maar ontvang geen erkenning daarvoor nie.

Is dit nou korrek om aan die een kant baie sorgvuldig boek te hou om te verseker dat elke onderneming sy eie koste dra soos deur die Wet bepaal, maar aan die ander kant terugveer om ons maar van die groot verskil tussen die koste om 'n verbruiker sê in Kaapstad en 'n verbruiker sê in Lambertsoort te voorsien? Ons weet dat sogenaamde uitbreidingsgelde gevra word, maar ons weet ook dat as dit nie gesubsidieer word nie, dan sou die verafgeleë verbruiker nie die krag kon bekostig het nie.

Dit op sigself is in beginsel tog nie verkeerd nie, trouens dit is prysenswaardig. Ons behoort almal by te dra tot die ontwikkeling van ons land.

Waarnee daar wel fout te vinde is, is die feit dat een groep verbruikers swaarder moet dra as 'n ander aan sodanige subsidies. Die mededingingsvermoë van Wes-Kaaplandse uitvoerbedrywe, wat veral bestaan uit 'n intensief ontwikkelde landboubedryf met gepaardgaande innaaktrikeite en kelders en dus tot groot mate afhanklik is van elektrisiteit word grootliks hierdeur benadeel (cf. my derde punt uit die Borckenhagen-kommissie)

Mnr. Stoffberg het melding gemaak van die finansiële voordeel wat spruit uit die groter opwekkers wat gebruik kan word in die tweede geslag kragstasies. Ook het hy melding gemaak van voordele van die diversiteit tussen die laste in die verskillende ondernemings. Alle verbruikers kry dus die voordeel verbonde aan die kraglyne wat die onderskeie ondernemings aan mekaar verbind en nie net die verbruikers aan die punt van die lyn nie.

Het die tyd dus nie aangebreek dat die Sentrale Kragontwikkelingsonderneming dieselfde beginsel toepas wat binne elk van Evkom se ondernemings toegepas word, naamlik dat dieselfde tarief van toepassing gemaak word op al sy ondernemings nie?

Soos reeds gesê word daar veel bemoedigende vooruitsigte gestel vir die toekoms, veral ten opsigte van die bestryding van die hoë koste van kraglewering in die gebiede wat ver van die kragbronne geleë is. 'n Mens wonder egter net of die beeld nie dalk eendag omgekeer sal word wanneer Suid-Afrika dalk hoofsaaklik op kernkragstasies by die kus toegewys sal wees vir sy kraglewering nie.

Ons steenkoolveld is nasionale bates waarvan die waarde met tyd steeds sal vermeerder. Ek hoor daar word gepraat van die uitvoer van steenkool maar ons moet waak daarteen om dit nie te gou en te kwistig te eksploteer nie. Die wêreld se olie- en vloeibare brandstofvoorraad is nie onbeprek nie en sal weldra misbruik word as 'n politieke wapen. Indien Suid-Afrika nie sy eie oliebronne vind nie, sal hy verplig word om meer en meer gebruik te maak van steenkool om vloeibare brandstof te vervaardig.

Inflasie veroorsaak nog steeds stygende pryse en 'n mens wonder of dit wys was van Evkom om die datum vir die oprig van die beoogde Koeberg Kernkragstasie met 'n paar jaar uit te stel.

Kernkragentrales vereis buitengewone hoë kapitale besteding. Dit mag dus nodig wees om na die gebied van kernkragentrales te kyk, nie net uit die oogpunt van kraglewering-finansies nie, maar ook as 'n hulpmiddel om ander probleme van ons land te help oplos. In hierdie verband dink ons aan die waterrektor in sekere binnelandse gebiede. Kernkragentrales kan hier 'n enorme rol speel. Daar word gewoonlik gedink aan die ontsouting van seewater wat dan na die binneland gepomp word.

Ons wonder egter of daar nie liever navorsing gedoen moet word op die moontlikheid om elektrisiteit van seewater vir dieselfde doel in te span nie. Sou dit nie beter wees nie as die gasse waterstof en suurstof na die binnelandse metropolitaanse gebiede geyp word nie, waar dit dan vir kragopwekking gebruik kan word. Die enigste neweproduk hiervan is die kosmopolitaanse gebied sou dan wees suiver skoon water.

Ten slotte wil ek vir mnr. Stoffberg bedank vir 'n insiggewende referaat en die hoop uitspreek dat nadat die tweede 400 Kv-kraglyn na Wes-Kaapland in gebruik geneem word, die

verbruikers daar nie meer na Evkomkrag hoef te verwys as „Black Power“ nie!

MR. T.C. STOFFBERG (Escom): Said that Mr Norman was the person to handle the remark on "Black Power" since he had spoken so convincingly of the end of the "Black Power Era" once the duplicate transmission lines had been completed!

Hy beskou die beginsel dat 'n munisipale onderneming sy elektrisiteitsbedryf gebruik as 'n middel om sy baie beperkte belastingsbronne aan te vul as heeltemal regverdig en dat Evkom hoegenaamd hierdie punt nie betwis nie.

Mnr. Dreyer het miskien ooreenkomstig. Binne 'n Evkom-onderneming is daar die uitbreidingsfooi wat glad nie negeerbaar is nie. Mnr. Chappel se uitbreidingsfooi sal die grootste bedrag wees van sy rekening en mnr. du Toit van Bloemfontein betaal heelwat meer vir sy elektrisiteit as mnr. Plowden van Johannesburg alhoewel hulle al twee bedien word deur dieselfde Randse onderneming.

Evkom probeer so presies soos hy kan die beginsel deurvoer dat die elektrisiteitsrekening moet verband hou met die koste wat aangegaan word om die betrokke toevoer te lewer. Ons dink dit is dus 'n onderneming wat hiervoor doelgerig daargestel is.

Mnr. Dreyer het voorgestel dat daar 'n landswyse tarief moet wees soortgelyk aan dié van die posdiens. So 'n dramatiese verandering sou egter groot eensgesindheid vereis in gelede soos dié van die VMEQ, want die gekykte denkwysie by Evkom is dat die kostes akkuraat moet toegedeel word en dat een groep nie 'n ander moet subsidieer nie. Ek maak eintlik verskoning dat ons so maak net omdat ons 'n opdrag het wat in die Wet so geskrywe is.

Ek glo nie ek het al mnr. Dreyer se punte beantwoord nie maar as hy nie tevrede is nie, kan hy op 'n later geleentheid my weer tel. Die Kommerisie Bestuurder van Evkom, mnr. A.J. Levy, is in elk geval van plan om die vraag oor die noodigheid vir 'n besondere tarief aan munisipaliteite as kleinhandelsverkopery in die Forum te beantwoord.

Evkom maak wel verskil tussen groot verbruikers en klein verbruikers en mens kan amper sê dié voor die hand liggend dat in 'n munisipaliteit die munisipaliteit self die grootste verbruiker is, en die tariewe is daarop gemik om groot verbruikers laer koste toe te deel as kleiner verbruikers omdat hulle inderdaad minder koste meebring per eenheid.

MNR. E.E. TRAUTMAN (Ladysmith): Ek kan nie sien hoe die Regeringsbeleid om nywerheidsontwikkeling in die tuislande en grensgebiede te skuif aangemoedig kan word as hulle daar meer vir krag moet betaal as op die Rand nie.

MNR. T.C. STOFFBERG (Escom): Dit is natuurlik so dat daar tarief-verskille deur die land is. Die trotsse aankondiging van Evkom is eintlik dat hierdie verskille nou gaan verminder, en dit nie deur 'n subsidie van een gebied na die ander nie maar deur die natuurlike proses van ontwikkeling van die elektrisiteits-leweringsbedryf in die land.

Mens kan oortuigend argumenteer dat so 'n beleid wat elektrisiteit aanmoedig om gebruik te word waar dit duur is deur dit artfisiel goedkoop te maak, 'n baie skadelike effek op die landseconomie kan hê. Ons sien nie die elektrisiteit as duur in Natal nie; ons sien dit net as goedkoop in die Transvaal en heeltemaal goedkoop in Natal! Ek dink u stem met my saam dat ons in 'n land van baie goedkoop elektrisiteit woon. Die nywerheidsgebiede soos dié van die Richardsbaai-geweste was 'n relatief ontwikkelde wêreld voordat die belangrike nuwe verbruikers o.a. „Alusaf“ daartoe gekom het. Aanvanklik was daar hierdie uitbreidingsfooi wat mnr. Dreyer nie benodruk het nie, maar weens die groot uitbreiding in daardie gebied is daar nou goedkoop elektrisiteit in Richardsbaai en die nywerheidsontwikkeling is lenend. Die grensgebiede van die Transvaal ontwikkel ook goed en ons hoop om ook dieselfde te sien in die Oos-Landengebied en ook, as die tyd kom, in die Transkei.

As daar moet gesubsidieer word dan sou dit vir Evkom voorgeskryf moet word want Evkom is tot so ver nog nie aandadig aan so iets nie en sou ook nie die beleidmaker wees vir so 'n skema nie.

KAPT. P.G. JOYNT (Tzaneen): Ek wil my ook aansluit by mnr. Dreyer se betoeg wat hy gelewer het namens plaaslike owerhede. Ek beter maar hier sê dat ek Tzaneen se munisipaliteit verteenwoordig as die Voorster van die Bestuurskomitee en daarty is ek ook Voorster van die Transvaalse Landbou-Unie Elektrisiteitskomitee.

Ek is nie bereid om Evkom aan te val as 'n kollega op hierdie gebied nie, maar ek wil ewe-eens erken dat hy 'n groothandelaar is met kleinhandelprys aan die munisipaliteite wat hulle distribusie en agenskap is. Sonder hulle sal dit ook maar baie moeilik gaan vir ons.

Daar is 'n paar opmerkings wat mnr. Stoffberg gemaak het wat ek dink 'n mens 'n vraagteken by moet sit. Die aftapping na die Kaapland affekteer natuurlik die kostestruktuur by die kleiner eenhede, d.i. deur die munisipaliteit waar jy landbou-distribusie het. Van die 20 118 landbou-eenhede wat aangesluit is by Evkom is 1 100 in ons distrik, Letaba, aangesluit en ons maak daar geweldige gebruik van krag veral omdat ons nou meganiseer. Ek wil net hê mnr. Stoffberg moet kennis hiervan neem voordat hy weer so maklik sê dat die meeste krag word verbruik binne 'n munisipale gebied. Van die 15 000+ Kva wat Tzaneen gebruik, gaan 75% aan die landbou-eenhede maar hulle kry daarvoor geen afslag nie.

Ons werk natuurlik in Suid-Afrika vir 'n eventuele mikpunt vir ons landseconomie en struktuur so dit kan so maklik gesê word dat ons is 'n land wat swak beedeel is met water. Die landbouers gebruik 85% van die land se water en 14% word gebruik deur munisipaliteite, nywerhede, myne ens. Wat elektrisiteit betref gebruik die landbouers maar amper 0,5% en dit word beskou as so gering dat hulle nie eers uitbreidingskoste hoef te betaal nie. Ons wil darem ons regmatige deel daarvoor wel betaal. Al wat ons vra is dat hierdie aspek in die globale ontwikkeling in die ekonomiese struktuur van die volkshuishouding besigtig moet word en nie fragmentaries nie.

Die plattelandse bevolking wat verrys het in die laaste 15 jaar van 110 000 tot bykans 280 000 het alreeds met die herverming van landbou verminder met 30 000, eenhede wat nou onekonomies is.

Ons is bewus daarvan dat dit 'n baie duur kragbron is om van steenkool krag te maak en dit dan te lewer aan die kus. Die enigste struikelblok van kernkrag aan die kus is dat die uraan van die Transvaal af gekry moet word net soos met die steenkool, en die kernkrag sal miskien net so goedkoop uitwerk as wat dit sou wees met eweredige verdeling.

Die Kapenaars kan per slot van rekening nie kla oor die Kva wat hulle van ons in die Transvaal af 'n bietjie duurder kry nie, want ons betaal vir ons K.W.V. wat van hulle afkom ook duurder bo in die Transvaal!

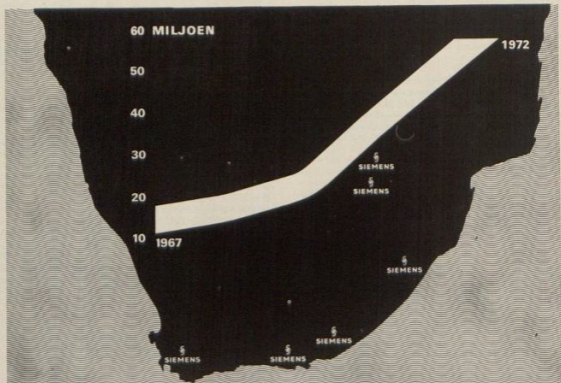
MNR. T.C. STOFFBERG (Evkom): Kapt. Joynt verteenwoordig in een enkele man die belangrikste twee groepe van elektrisiteitsverbruikers in die praktyk, so 'n mens moet darem baie versigtig wees hoe sy vrae hanteer word. Gewoonlik ken 'n mens vir 'n gehoor soos hierdie laat verstaan dat daar spesiaal gesorg word vir die munisipaliteit maar as kapt. Joynt by is moet ons voorgee dat ons spesiaal sorg vir die boere!

Dit illustreer eintlik net die groot gevaar wat daar kom as jy probeer om teen die ekonomiese beginsels in 'n tariefstruktuur daar te stel wat weens ideologiese oorwegings nie strook met die waarheid nie.

MR. K.G. ROBSON (East London): I'd like to quote from page 30 of the published Proceedings: "The establishment of the Central Generating Undertaking will lead to a reduction of the regional differences in electricity costs, but the change will be evolutionary rather than revolutionary. The progressive closing of the gap between inland and coastal electricity costs will arise, not from a less precise allocation of generating costs or from an arbitrary averaging of transmission cost which favours one undertaking at the expense of another, but from actual savings which will benefit especially those undertakings where generating costs are at present high".

My question to Mr Stoffberg is therefore whether an undertaking such as East London which is due to be connected to the

Siemens in die jare sewentig



Die grafiek verteenwoordig die totale beleggings in miljoene rand deur Siemens in Suid-Afrika vir die tydperk 1967 tot 1972.

Waar u ook al gaan in Suid-Afrika – of in Suidelike Afrika wat dit betref – is Siemens nooit ver weg nie. Die krag wat u gebruik, het bes moontlik deur Siemens-transformators of elektriese skakeltoeg gegaan. Siemens het 'n aandeel gehad in die telefoonoproep of teleks wat u sitplek op die trein of vliegtuig bespreek het. En as die verkeer besonder vlot beweeg, het Siemens se gekoppelde rekenaar miskien ook daarin 'n rol vervul. In drie fabriekke en ses kantore oral in Suid-Afrika is byna 4 000 Siemens-werknemers – die meeste van hulle Suid-Afrikaners – fluks aan die werk om Suid-Afrika te help uitbou. Hulle vervaardig klein transformators of telekommunikasiesistelsels of groot en klein kraginge-

nieurstoerusting en bied u diens in alle vertakkinge van die elektrotegniese ingenieurswese – of u nou ook al 'n klein eenheid uit ons voorraad of 'n omvattende installasie of stelsel nodig het.

Siemens (Suid-Afrika) het amper R60 miljoen in Suid-Afrika belê, en hierdie syfer sal na verwagting tot meer as R70 miljoen in 1975 styg.

Waar kom al hierdie geld vandaan? Siemens se ontwikkeling in die verlede en in die toekoms is en word gerugsteun deur Suid-Afrikaanse aandeelhouers – die Nywerheid-ontwikkelingskorporasie, Federale Volksbeleggings en die Ou Mutual, wat 'n aansienlike deel van die maatskappy se uitgereikte kapitaal besit.

Vervul 'n hoofrol in Suid-Afrika

400 kv system in mid-1973, can expect that when this connection is made the process of such evolution will then be set in motion immediately?

MR. T.C. STOFFBERG (Escom): Mr Robson, the word "evolutionary" implies 'change' and not 'price-reduction'. A good illustration of this is that despite the transmission network which is now completed to the Western Cape the Cape Western tariffs did not go down but, in fact, went up rather modestly. However, we must in all fairness consider this fact in relation to what would have happened in the absence of the transmission system. The cost of the railage of coal to the Western Cape has increased by something like R1-60 a ton. If one were to multiply the number of units sold in the Cape Western Undertaking last year by this figure it would amount to something like R3 million in additional railage charges. This in itself constitutes about 5% or 6% on the electricity tariffs of the Western Cape quite apart from any other price increases. We think, therefore, that the tariff increases that East London will encounter in 1974 will be immeasurably more modest than they would have been!

MNR. H.C. DREYER (Paarl): Ek glo nie mnr. Stoffberg het my vroeë baie mooi verstaan nie en daarom wil ek 'n paar van hulle net kortliks herhaal.

My bedoeling was nooit gewees dat Evkom suiver op basis van emosionele oorweginge toriewe-strukture moet verander van een verbruiker teenoor 'n ander nie. Wat ek wel beklemtoon het was, eerstens, dat dit nie regverdig is dat die lynstrukture-koste om die verskillende ondernemings aanmekeer te verbind toegewys word aan die onderneming waarheen die krag gevoer word nie; dit omrede daardie lynne die voordele gee vir al die verbruikers wat mnr. Stoffberg genoem het in sy referaat, nl. die diversiteit tussen ondernemings wat jou algehele kostestruktuur dus verminder. Tweedens is die feit dat die groter opwekkers wat jy nou kan gebruik die kapitaalkoste verminder maar daardie kapitaalkoste wat bestee is om dit te bekom, dié word ten laaste geleë van net een of twee ondernemings.

Wat betref my tweede punt aangaande die verskil in koste tussen plekke soos Kaapstad en Lambertsbaai se verbruikers, ek aanvaar dat hulle, soos mnr. Stoffberg gesê het, die volle kapitaalkoste by wyse van uitbreidingsfaosie van die manne in Lambertsbaai verhaal; al is dit 'n bietjie moeilik om te glo.

Wat dan van die lynverliese? Die maak tog ook 'n verskil en waar die munisipaliteit daardie lynverliese en daardie stelselverliese self absorbeer kry hy nie erkenning daarvoor nie. Dit is my stelling gewees tesame met die feit dat jy jou kapitaalbesteding het waarop jy nie 'n rendement kry nie.

En van die punte wat ons as groot elektrisiteitsvoorsiensers hinder is die feit dat ons 'n fabriek van 3 MW het naby ons grens en Evkom wat net oorkant die grens is, gee krag aan presies daardie selfde verbruiker teen 'n tarief 10% minder as wat ons kan bekostig om dit aan hulle te gee. Dit is 'n beginsel wat wel oorweg moet word in Evkom se toriewe-beleid.

Ek herhaal net weer dat ons die distribusiekoste van Evkom se skouers aafhaal en ons verag erkenning daarvoor.

MNR. T.C. STOFFBERG (Evkom): Mnr. Dreyer het gepraat van die verdeling van die voordele van die landswyse net en hy het tereg daarop gewys dat daar wel voordele is vanweë die ekonomie van skaal en ander redes. Hierdie voordele word nou proporsioneel tussen die vennootskap verdeel, maar ek kan argumenteer dat mnr. Dreyer wil eintlik hê dat die voordele almal net moet gaan na daardie kusondernemings wat vir hulle transmissiekoste moet betaal. Dit is ook 'n geldige ander standpunt.

Mnr. Dreyer vra nie vir 'n grootmaat-tarief nie; hy vra vir 'n spesiale tarief vir iemand wat herverkoop, maak nie saak of hy groot of klein is nie. Die Randse en Oranje-Vrystaatse Onderneming het veral 'n maklik verstaanbare grootmaat-tarief. Daar is eenvoudig 'n diskonto van 20% op daardie deel van die rekening wat R1 000-00 van die rekening oorskry. Ek weet dat mnr. Lombard al baie jare die spoggerige stelling kan handhaaf dat hy met gebruik van die diversiteit wat hy bekom en met gebruik van die voordeel wat hy as 'n groot-verbruiker bekom, kan bekostig om elektrisiteit aan sy nywerhede te lewer

teen die Evkom-tarief. Die moerklikheid ontstaan dus nie by 'n groothandelerverbruiker nie maar dit ontstaan as daar gevra word vir 'n spesiale vergunning vir 'n klein munisipaliteit omdat hy herverkoop. Die vergunning moet deur iemand gedra word, en Kaapstad sal dus moet besluit of hy wil help dra aan die subsidie wat mnr. Dreyer vir Paarl wil hê.

Die tariefstruktuur is egter buigsaam en kan verander word op aanvraag en druk van 'n vereniging soos dié van die VAEO met behoud van die beginsels dat die kostes reg toegedeel moet word.

I think Mr Levy would be the best person to defend this idea of a retailers' tariff, insofar as it does the illogical principle that a corner Greek grocery shop should not pay more to the wholesaler than the O.K. Bazaars chain!

MR.D.C. PLOWDEN (Johannesburg): This new Electricity Amendment Act establishes in law a principle which is most important to the user of electricity, namely that where power generating and transmission facilities have been provided for the specific benefit of a certain group of consumers, that group shall bear the expenditure involved. Thus, for example, Natal and Transvaal consumers are not asked to share the cost of power transmission to the Western Cape, which would be inequitable.

It is to the credit of Escom that it has set down this basis for calculating the charges to be made to its distribution undertakings for power taken from the Central Generating Undertaking. However, it is difficult to understand how the annual charges for the whole 400 kv transmission system represent only 3% of the total cost; whereas the share for the relatively small number of new inland power stations is 62,8% which is over 20 times the transmission cost.

It's interesting to compare the rates charged by the Central Generating Undertaking to the rate charged by Escom's other undertakings to their consumers. For example, the Rand and Orange Free State Undertaking purchases power at a demand charge of R1-58 per kilowatt per month, and units at 0,113c. It sells power (including the 12½% surcharge and the average coal price adjustment which applied during 1972) at a charge for demand of R1-59 per kilowatt per month, and units at 0,281c. Both the demand and unit charges are subject to a 20% discount for bills in excess of R1 000-00. This applies to probably all municipalities; thus power was actually sold at a demand rate of R1-27 per kilowatt per month and a unit charge of 0,225c.

Municipalities, of course, cannot purchase power directly from the Central Generating Undertaking. If Johannesburg were able to do so the present anomalous position would be avoided where, due to the high cost of purchasing units from Escom's Rand and O.F.S. Undertaking, it is more economical for Johannesburg's power stations to provide base load and for Escom to supply the peaks. It seems, therefore, that the Rand and O.F.S. Undertaking should re-examine its charges for supplies to municipalities, particularly those which operate their own power stations.

MR. T.C. STOFFBERG (Escom): It was of particular embarrassment to us, Mr Plowden, that the Rand Undertaking unit rate was lower than your coal cost. With the passage of time the Rand tariff has become biased in relation to the cost it represents — biased in the proportion between demand-related and unit-related charges. However, this tariff is now in the process of being restructured to bring about a decrease in the unit charge and an increase in the demand charge so as to more accurately reflect the proportion of costs incurred.

One can see how this sort of thing can happen over the years: the unit rate is adjusted periodically by the coal price adjustment, and over and above that we have a decrease of the discount or an increase in the surcharge, which applies to both elements of the tariff. This will now be corrected. The revision of the Rand tariff is but the first step of a general review of the tariff structure of all of Escom's undertakings; the Rand one being considered to be the most urgently required.

The accounts for 1972 have now been finalised and of the total C.G.U. costs amounting to some R190 million, R5 million



Foto: Publikasie- en Kredietdepartement, Suid-Afrikaanse Spoorwee.

Ons bou ook vyfster-treine



king en verspreiding van olie. Die verwerking van asbes en sement. Skeepsbou en -herstelwerk. En ons jongste spog-produk: die nuwe Bloutrein.

En dié lys sal bly rek, want ons rus nie op ons louere nie. Elke dag is ons besig om nuwe tegnieke te ontwikkel. Ontgin ons nuwe moontlikhede. Skep ons nuwe geleenthede.

Maar ons is nog altyd in die eerste

Benewens die groot rol wat ons in die Suid-Afrikaanse mynbou vervul, is ons ook baie bedrywig in verskeie nywerhede. Vandag strek ons belange oor 'n wye terrein. Van grassnyers tot vragmotors. Van staal tot sout. Van plase tot fabriekke. Die verwer-

instansie wat ons naam sê. 'n Dinamiese mynhuis.

Die Federale Mynbou/General Mining-groep beheer myne wat 'n aansienlike persentasie van Suid-Afrika se goud lewer, 35% van die uraan, 35% van die asbes. Ook koper, chroom, vloeispaat (die grootste vloeispaatmyn ter wêreld) en elektrolitiese mangaan.

Die jongste van ons 12 produiserende steenkoolmyne — die Optimum-myn naby Hendrina in Oos-Transvaal — is die eerste in Suid-Afrika waar die dagboumetode toegepas word. Daar gebruik ons 'n sleepskrop wat R3,6-miljoen kos: in een enkele 8-uur-skof kan hy 'n stuk grond so groot soos 'n rugbyveld tot 3,7 meter diep afskil om die steenkool bloot te lê.



Ons by die Federale Mynbou/General Mining-groep dink groot. Doen groot. Ons werk is van vyfster-gehalte.

was reflected as transmission costs. It is a small part of the total C.G.U. costs but the allocation of this small part to the relatively small coastal undertakings is an important debit to the small undertakings. The 60% was, of course, a percentage of the costs of the coastal undertakings concerned; and the 5% is the same amount as the percentage of a very much larger globular C.G.U. cost.

MR. M.P.P. CLARKE (Newcastle): We're obviously not going to get very far on the subject of whether or not to subsidise electricity tariffs as those of us in municipal circles all have conflicting interests. However, in view of the evident goodwill displayed here today, I would like to suggest that the Executive of the AAEU seriously consider putting forward an amendment to the Electricity Act along the lines of a guarantee or safeguard that the licensed supply authority in any given area be the sole supply authority.

MNR. P.J. BOTES (Roodepoort): Ek wil net aansluit by mnr. Clarke maar ek wil ook graag hê dat die ewolusie-proses verder geneem moet word, dat ook die Spoorweë aan die plaaslike owerheid toegeken moet word. Jare gelede het Evkom in Roodepoort 'n destydse pragtige grondreëls lyn kragtoevoerpunt verskat aan die Spoorweë. Vandag loop daardie kragtoevoerpunt feitlik deur die middestad van Roodepoort en dit ontier die hele dorp. As ons nou self die krag kon verskat sou ons dit ondergronds gehad het en dit sou baie mooier gelyk het.

MR. J.S. GAMBLE (Oudtshoorn): I thought of offering the following bargain to Escom: could we at times of light load feed back into Escom and give them a discount of 5% on what they charge us?

MR. T.C. STOFFBERG (Escom): I'll answer Mr Gamble first because his is the easiest question! Although Mr Plowden has indicated to you that the unit rate at which we sell electricity is in the order of 0,2c per unit, we have managed to persuade ourselves that the incremental cost of units to Escom is of the order of 0,04c only. We have also decided that we must bear the establishment costs of the pithead collieries whether or not there is output. When we then have units thrust upon us and virtually become purchasers rather than sellers of units, they appear to us of very little value since we could have produced them incrementally with available capacity and especially also available colliery capacity, at a ridiculously low cost. This is convincing only because it's true.

Mr Clarke and Mr Botes both underlined something which Dr Straszacker said at the last Convention: that there are three fields of activity — the generation of electricity; its transmission and large-scale bulk supply and the reticulation and distribution to consumers. This latter activity is recognised in the Borckenhagen Commission and indeed by us all as an activity which can best be carried out by the municipalities because they are in closer touch with the consumers themselves and are greater experts in this field than anyone at Escom. I entirely agree, therefore, with Mr Clarke and Mr Botes, and Escom has I think publicly proclaimed this as a field for municipal endeavour.

MNR. H.A. VAN ZYL (Brakpan): Ek moet sê dat nadat ek gehoor het die wyse waarop mnr. Stoffberg die metode van kragontwikkeling verdedig en die opspiralering van koste voel ek darem bra moedeloos. Ek dog die tyd het noual aangebreek dat ons maar net 'n klippe hoef in te gooi om genoeg krag te ontwikkel vir die behoeftes van die hele Suid-Afrika.

MR. A.J. LEVY (Commercial Manager, Escom): One of the first things to recognise is that Escom has only 2 sources of income — it borrows money for its capital requirements and it gets revenue from its consumers to meet its operating costs including its capital charges. It therefore has no means whatsoever of subsidy.

Over the course of the last two months we have been inundated with a large number of conflicting requests such as special tariffs for local authorities as retailers of electricity; a request for a standard tariff throughout the country; a plea for reduced tariffs for the farmers and a special electricity tariff for exporters. It simply is not possible to meet these requests without means of subsidy.

Another important point that must be recognised is that the Electricity Act right from its inception had as one of its prime principles that electricity should be supplied at cost. One of the main benefits resulting from this is that it does mean that industries which are largely dependent on electricity will be sited economically, which would not be the case were there to be a uniform tariff throughout the country. There is definite merit in this principle of the Act and it has been implemented by dividing Escom's organisation into separate undertakings within which extension charges and minimum charges serve to differentiate between the different types of consumers.

The point that was made was that there should be a special tariff for local authorities because they are retailers. One must, however, be careful to distinguish whether this is being requested merely because they are retailers or because of their size. Since this question comes from those posed by the Cape of Good Hope Forum I have done a very rough analysis of the position in the Cape. If we were to increase the tariff for all consumers below 500 kva by 20%, this would only bring about a 3% reduction to consumers above 500 kva. However, of the local authorities supplied in bulk in the Cape rather more than one-third fall into the former category. If this adjustment were to be made purely on the basis of size, these small consumers would be penalised to the extent of 20% and I very much doubt if that would be satisfactory.

In his Presidential Address the President drew attention to the effect brought about by contributions to the relief of rates. Unfortunately this is something which applies purely to local authorities as Escom has no need for such a contribution. I don't know what the answer to this is but it does bring about this difference.

Reference has also been made to the fact that the local authority gets the benefit of the diversity of its own undertaking. As Mr Stoffberg has pointed out our present tariffs are rather out of step with fact but we are correcting this so that the cost of demand will be increased and thus also enhance the value of the internal diversity. This will I think help in some measure to improve the position.

The suggestion was also made that unless there was some equalisation of tariffs it would not be possible to follow out the Government policy of encouraging border industries. The position there is that electricity charges to these areas are in fact subsidised but by the Government itself and not by Escom. This is possibly one of the ways out of this dilemma.

Mr Botes mentioned the fact that local authorities are restricted from supplying the Railways. This is written into the Electricity Act but it is becoming a problem particularly in a place like Durban which has a very large area of supply but where Escom has its own system supplying the Railways. This is something we will have to sort out and I agree with Mr Clarke that it is possibly something which could be taken up by this Association.

MNR. C. LOMBARD (Germiston): Mnr. Stoffberg het ons amper oortuig dat daar baie moeite gedoen word om die tariewe wat van toepassing is in die verskillende ondernemings so te bereken dat die verbruiker die werklike koste van lewering moet betaal. Daar is iets egter wat ek nog nie kan verstaan nie, nl. dat elektrisiteit aan die mynbedryf gelewer word teen tariewe wat baie laer is as dié wat van toepassing is op nywerheids en ander verbruikers soos plaaslike owerhede. Kan mnr. Stoffberg vir ons enige verduideliking hieromtrent gee?

MNR. T.C. STOFFBERG (Evkom): Die mynbedryf het eintlik dieselfde klage gehad: hulle was oortuig die munisipale tarief is laer as die tarief wat op hulle van toepassing is. Eintlik was die idee miskien 'n oordrewe strewing om elke groep presies te laat betaal die kostes wat hy meebring. In die nuwe Randse tarief wat nou in die finale stadiums van sy goedkeuring is en wat hopelik vanaf 1 Januarie 1974 van toepassing sal word, is daar nie meer onderskeid gemaak tussen mynverbruik en ander grootmaat verbruikers nie; dié dieselfde tarief.

MR. K.J. MURPHY (Somerset West): I would like to second the proposal made earlier by Mr Clarke.

MR. E.E. TRAUTMAN (Ladysmith): We have heard from

Mr Levy that electricity tariffs to border industries are subsidised by the Government, but apparently only to the same level as the surrounding areas. This means that there will still be a difference in tariffs between, for instance, the Rand and Natal. I think this is grossly unfair since the border industries have virtually been fastidied upon us and we are committed to supply them at a considerable burden to our own consumers. The excessive tariffs they may have to face may serve to repel future industrialists. I, therefore, wholeheartedly support the motion that we go into this whole matter again very thoroughly.

THE PRESIDENT: This matter will be referred to the Executive Council for consideration.

MR. A.J. LEVY (Escom): As far as Escom is concerned the local authorities are the sole distributors of electricity in their areas. In fact, I am under continual pressure from our Board to try and persuade those local authorities where we still do reticulation and distribution to become bulk supply consumers. This is Escom's policy and we are trying to get rid of these reticulation systems wherever possible.

I must reiterate that the subsidisation of border industries has nothing whatever to do with Escom; it is Government policy and we just happen to know about it. We help where we can but only in the way in which we render the accounts, i.e. we render the account directly to the consumer on the basis of the standard tariff applicable in the area, and any additional charges that are required (minimum charges or extension charges) are recovered from some Government authority.

MNR. H.C. DREYER (Paarl): Ek is bly om te hoor dat dit Ekom se beleid is om die distribusie aan die munisipaliteite te oorhandig. Ek wil net graag vir hom iets aan die hand gee: ek dink die maklikste manier om dit te bewerkstellig is om vir die munisipaliteite 'n groothandelartef te gee. Dan sal die publiek baie eerder wil oorkom na die munisipaliteite.

MR. D.S. VAN DER MERWE (Witbank): As regards the taking over of the reticulation of electrical energy by the municipalities within their areas, I think that in certain cases this would be rather difficult. In Witbank, for instance, there are heavy industrial undertakings which take power totalling up to 100 MVA. It is not the amount of power that causes the problem here but the fact of it being a 24-hour load requiring a very firm supply; as well as presenting certain metering problems. Quite frankly, I can't see our Council undertaking to supply power at the same tariff rate at which they are now being supplied. Coupled to that the Council would have to commit themselves to tremendous extension charges. I suggest, therefore, that when the Executive Council considers this matter that they define the type of load to be taken over.

MNR. E.E. DE VILLIERS (Rustenburg): Verskeie persone het dit genoem dat daar moontlike diskriminasie is tussen ander groot verbruikers en munisipaliteite. Ek het self so 'n voorbeeld teëgekom toe ek vroeër ingenieur was op Carletonville. Daar het ons 'n tweede toevoerpunt bekom by Evkom vir verafgeleë toevoere en ons sou nog 'n gedeelte verspreiding van Evkom oorneem indien ons dan vir die drie toevoerpunte gesamentlike metering kon kry en die voordele van die verskeidenheid van vrag. Evkom egter wou dit glad nie vir ons gee nie: al drie punte sou behandel word as onafhanklike toevoere wat die metering betref. Ek was tog bewus daarvan dat Evkom nietermin verskeie onafhanklike meterpunte vir die myne verskat het vir verskeie skagte verafgeleë van mekaar en tog gesamentlike metering gegee het. Indien die omstandighede vandag nog so is wil ek darem graag weet waarom moet daar diskriminasie van die aard wees?

MNR. T.C. STOFFBERG (Evkom): Ek kan die vrag antwoord deur te sê dat in die nuwe tarief wat op myne sowel as ander grootverbruikers van toepassing sal wees, almal dieselfde voorwaardes het ten opsigte van meervoudige leweringspunte en die verbruiker het die voordeel van die diversiteit wat daar is tussen die vrag wat by die verskillende leweringspunte geneem word.

Hierdie vergunning bring eintlik 'n verdere komplikasie in die tarief mee: ons onderskei tussen die gesamentlike maksimum

aanvraag op die verskillende toevoerpunte en ook die verskil tussen hierdie gesamentlike maksimum aanvraag en die som van die individuele maksimum aanvraag, die individuele punte, en dan kom 'n verdere heffing van omtrent 20c per kilowatt op hierdie verskil. Die meriete daarvan is miskien dat dit dieselfde tarief is op die mynbedryf, en industrieel en op die munisipaliteite.

Om die veriede te verdedig moet mens eintlik verduidelik hoekom daar oorspronklike oorweging geskenk was aan 'n spesiale tarief vir die myne. Die mynbedryf het geen seisoen-skommeling in sy vrag nie, m.a.w. die twaalf maande van die jaar bring almal 'n vergelykbare maandelikse vraag mee. U weet die aanvraagheffing wat in die Rand op kilowatt-aanvraag gebaseer is, is eintlik 'n jaarlikse koste wat deur 12 maandelikse posiemente gedeel word. Daar is dus 'n verskil tussen verbruikers se bydraes as daar 'n seisoen-verskil is in die aanvraag wat hulle meebring. Hierdie verskil het egter nou kleiner geword en die behoefte aan twee aparte tariewe bestaan nie meer nie. Die nuwe tarief sal in alle opsigte presies geklmatig toegepas word; daar is geen onderskeid tussen die klas verbruiker nie, net die grootte van die verbruiker.

Natuurlik hierdie toestand wat mnr. Lombard sal verby word nou sterk in gevaar gestel deur mnr. Dreyer wat nou al weer opnuut 'n nuwe tarief wil hê vir 'n spesiale soort verbruiker!

MR. W. F. CRONJE (Peri-Urban Areas): I'm very pleased to hear that Escom is wanting to sell these variant distribution systems to the local authorities but if this is going to mean that thereby the cost of electricity to the consumers is going to be doubled, it's simply not going to be worthwhile. My question, therefore, is twofold: firstly, when Escom decides to sell a distribution system to a local authority on what basis will the price be determined? and, secondly, will there be any consideration in these special cases for a tariff that will ensure that the consumers will not have to pay more?

MR. T.C. STOFFBERG (Escom): As I understand it Escom sells too cheaply and this is a difficult problem to overcome. In the number of cases so far where local authorities have taken over Escom reticulation systems the arrangement arrived at was that the local authority would take over the existing financial obligations; in other words, the existing loans with the existing contributions to the Redemption Fund, so that the loan charges would be identical to the ones that still remained outstanding in respect of the Escom loans. This has been attractive because some of these loans are old and at favourable interest rates (about 5%), and the local authority taking over the reticulation system has the benefit of the extent to which the loans have already been redeemed.

How to ensure that the take-over by the municipalities will not result in an increase in the charges paid by the consumers? This again emphasises the important responsibility which rests upon Escom to see to it that its tariffs correctly reflect costs. This is in the balance between large and small consumers. The local authority's burden on taking over becomes more onerous if the Escom tariff to the small consumers is less than it should be in terms of costs. This factor needs to be very carefully and continuously watched because since the small consumers constitute only a very small part of Escom's total sales, this is something that can happen. This is being gone into very very carefully in the new tariff structure. There may well be a larger increase in the tariffs applicable to small consumers in certain areas of the country than the average tariff change generally. This is a serious problem.

As members have pointed out, municipal tariffs necessarily have to include a contribution towards rates. This is something we can't anticipate in any Escom tariff because we are in the fortunate position of being able to devote ourselves exclusively to the supply of electricity and are not therefore involved in any type of subsidising. There is no solution to this problem.

MR. H.C. DREYER (Paarl): It seems to me that Mr Stoffberg himself has more or less touched upon the possible solution to our problem. If Escom were to readjust the balance between their large consumers and the smaller consumers most supply

undertakings would then fall within the large consumer category and the smaller consumers, constituting the bulk of consumers presently being supplied by the supply authority, would then be adjusted upward, thereby practically solving the entire problem.

MR. E. TRAUTMAN (Ladysmith): I feel that the principle contained in the Act that every consumer should pay for their own costs and that the tariffs be designed accordingly, is one which should be applied to Escom tariffs as well. We cannot then make differentiations within our own municipalities as Escom seems to do now, but we must ensure that the different consumer groups are paying their fair share towards their costs. I should like to know further, if when these new tariffs come into

operation, they will apply to all provinces, besides the difference in the basic unit price as mentioned?

In regard to the possibility of having different tariffs of different sizes: I think if this could be done it would be the solution to our problem.

MR. T.C. STOFFBERG (Escom): The undertakings will, of course, continue to maintain their own independent tariff structures although the design of these tariffs is being standardised as far as possible within the different undertakings in different parts of the country.

Well, now that we understand each other, this vexed problem of a municipal tariff appears to have resolved itself. This is very gratifying.

ADJOURNMENT FOR LUNCH 12.45 P.M. - 2.15 P.M./VERDAGING VIR MIDDAGETE 12.45 NM. - 2.15 NM.

19. Industrial Accident Prevention Nywerheidsongeluksvorkoming

MNR. G.S. STRYDOM, B.Sc. (Ing.) (Bedryfsbestuurder, NOSA):

Hierdie onderwerp vind ons in NOSA is baie afgeskeep en word baie misken. Soos almal weet is die jaar 1973 tot dusver een wat geken word deur stakings en eise vir hoer lone en baie van ons nywerhede (Pietermaritzburg inbegrepe) was genoodsaak om aan hierdie eise te voldoen. Onmiddellik wanneer so 'n verhoging in lone toegestaan word het dit natuurlik die effek dat die koste van dienste verhoog moet word, wat dadelik gevolg word deur die onafwendbare teenkreet van owerheidsweë vir hoer produktiwiteit.

Hierdie woord 'produktiwiteit', soos die Engelse woord 'management' word geweldig misbruik en verkrag. Ek dink as 'n mens praat van produktiwiteit dan bedoel 'n mens die beter benutting van ons arbeidskrag, veral ons geskoolde arbeidskrag. Laasgenoemde is 'n kommoditeit wat al hoe skaarser en al hoe duurder word en, soos dr. Tom Muller, voorsitter van Yskor, in Bulowayo gesê het tydens die Rhodesiese skou wat hy daar geopen het, die ekonomiese groei van beide Rhodesië en van die Republiek word gestrem as gevolg van hierdie tekort. Daarom is dit van die uiterste belang dat ons wel daardie geskoolde arbeiders wat ons het moet preserveer en van hulle beter gebruik maak.

Whilst you might all agree with this statement, what is actually being done about this? Lately there had been great emphasis laid on training, particularly managerial training but, praiseworthy as this might be, the training in this fairly young industrial country of ours is fast becoming a bit too sophisticated. One of the after-effects of this over-sophistication is that professional managers and leaders are tending to lose touch with basics, one of which is the preservation of our skilled labour force and the application of an active organised accident-prevention programme.

I use the word "professional" manager quite deliberately because the word "manager" is banded about in a meaningless fashion. By professional manager I refer to the professional engineer and not a house-wirer who might set himself up as such.

We find when we approach such professional managers both in industry and in local authorities that we have to sell them this idea of an active, organised accident-prevention programme and this I think is really shocking. A typical reaction is that they are too busy to devote their personal time and their personal efforts to such a programme and yet this is one of the very finest aids to productivity. This is because in accident-prevention we simply do not allow deviations from plan; such deviations constituting as they do the primary cause of decreased production. The only difference lies in the terminology used: whereas you might term the problems and their solution

problem-solving, we use the terms 'accident' and 'accident-prevention'.

Soos ek verlede week gesê het by die tegniese byeenkoms van u kolleges, die Stadsingenieurs, daar is nie 'n towerformule vir ongeluksvorkoming nie maar dit berus op sekere basiese en baie logiese beginsels wat indien hulle toegepas word, ongelukke met welslae sal bestry.

Mr Strydom then proceeded to outline the contents of his paper as published in the Proceedings 1973 - Volume 1 Page 36 at the conclusion of which he referred to the "Integrated Accident Prevention Programme", originally the brainchild of the Chief Instrument Engineer of Sasolburg and which he had subsequently modified and simplified himself - (NOSA Pamphlet 973).

THE PRESIDENT: Mr Strydom, you have obviously put a great amount of work into this paper and all the annexures and I assure you that our Association greatly appreciates this. I know that the object of this paper is to attempt to reverse the present trend of the rising rate of accidents in local authorities and I trust that the authorities represented here will both study your paper carefully and apply it in such a way as to achieve your objective. I shall now call on Clr. I.H.M. Balfour to initiate the discussion.

CLR. I.H.M. BALFOUR (Pietermaritzburg): As Chairman of our Council's Central Safety Committee, I have become increasingly worried about many aspects of safety. Some of these factors have been dealt with by Mr Strydom but there are just a few comments I would like to make.

I was rather concerned about his remarks concerning professional managers being inclined to get a little out of touch with the actual safety of men and machines and often being content simply to have the former sign for a book of safety rules. Then, too, the remark about their being too busy to attend to these matters put me in mind of the old saying: "If you want anything done, go to a busy man!" It would seem to indicate then that our professional managers are not the busy men they make themselves out to be.

Quite honestly I don't think we make nearly enough use of the services of NOSA. We may read the circulars received from them but that's as far as it goes. We should make far more use of the many representatives throughout the country who are only too willing to help and advise individuals and industries alike as regards accident prevention.

Finally, the last figures we appear to have received from the Workmen's Compensation Commissioner were those in 1968. These figures are rather inclined to read like a history book and we then tend to jump to the conclusion that the position must

have improved by now, although we have no reason for thinking so. However, I do feel that these figures would have far more impact if they were to be brought up to date.

MR. R.W. BARTON (Welkom): As lid van NOSA oor baie jare is ek trots dat een van ons mense so 'n belangrike referaat aan ons Konsensie kan lewer.

Mr Strydom has certainly given us an extremely comprehensive paper and it must be about the longest one ever printed in our Proceedings. However, any expense which might have been incurred is certainly well worth it in view of the great deal of research and experience contained in it.

It is rather difficult to discuss such a paper as it is so comprehensive and the philosophy contained in it is so very clear and logical. However, there is one respect in which it appears to be somewhat lacking and that is what, for want of a better word, I call "damn-fool accidents!"

To illustrate this point Mr Barton quoted an instance of an experienced man who, while supervising the casting of a concrete base for a mini-substation, had put his little finger down through the hole in the steel base of the mini-substation into the hole in the concrete to ensure that it was correctly lined up. Before he could remove his finger, however, one of his Bantu assistants had moved a pinch-bar thus moving the whole mini-substation and in doing so shearing off the top half of his little finger. This had subsequently resulted in the removal of the remainder of the finger and in the Department being deprived of his services for three months.

A further, rather more personal instance had occurred when he himself while attempting to put something in a wastepaper basket, had rammed his head with such force against the wall that he was still suffering from a headache!

On reading through the paper I was struck by the large number of regulations. It was certainly very interesting reading the regulations and codes or practice of other authorities, but although we can't do without such regulations they are not the be-all and end-all of accident prevention. To me supervision is still the most important facet of management; you can't just tell people what to do, you have to see to it that they do it.

This also applies to forms which I find to be as self-propagating as rabbits. For every problem that occurs somebody devises another form. A case in point is that of the O.K. Bazaars who, when they discovered recently that their profits were going down instead of up, appointed a new Chief Executive Officer. He went through the organisation like a hurricane eliminating 3 000 forms which were having to be filled in regularly week by week; thereby also terminating the endless weekly meetings being held to discuss the information on these forms which was of no value whatsoever. The result is that the O.K. Bazaars profits are now on the up and up again. Now if a profit-orientated and highly businesslike concern like the O.K. Bazaars can fall into that sort of trap, how much easier is it for a municipality to do the same thing?

MR. G.S. STRYDOM (NOSA): My apologies for the length of the paper but I've tried to give you as much food for thought as possible and I'm sure you can afford the expense of publication.

In my opinion there is no such thing as a "damn-fool accident", only a damn fool!

I agree that supervision is certainly very important but the question of paper management is a little more complicated. It is said that any top executive in industry today becomes obsolete after 5 years and I can assure you that in 5 years' time those 3 000 forms will all be back in use and the executive officer concerned will either have been fired or will have resigned.

MNR. A.J. VAN DEN BERG (Krugersdorp): Hierdie referaat is 'n groot bate vir ons elektriese en werktuigkundige ingenieurs want dit is baie volledig opgestel en kan dus dien as handleiding vir die daarstelling van 'n veiligheidsprogram of 'n totale verliesbeheerprogram.

Vir my is die totale verliesbeheerbegrip eintlik omvattend omdat dit in werklikheid die kern van die saak van ongeluks-

voorkoming insluit, nl. die sleutel tot groter winste. Aangesien die klem desdae sterk op moderne bestuurstechnieke gefokus is en dit die enigste sleutel is tot hoër produktiwiteit en om verlies te beheer, het die Stadsraad van Krugersdorp besluit om die beginsel van totale verliesbeheer toe te pas; en word daar tans ondersoek ingestel om die Doeltreffendheidsdepartement van die Stadsraad te betrek by ongeluksvoorkoming en die gepaardgaande voordele. Nadat ons die syfers van die Ongevalle-Kommissaris gekry het, en ek dit voor my Raad gelê het vir oorweging, het ons gevoel dat ons definitief iets aan die saak moet doen.

Mr Van den Berg then related several incidents which had occurred in Krugersdorp during the previous three weeks involving damage of thousands upon thousands of rands to vehicles and machinery; all of which involved varying degrees of negligence and thus served to indicate the extreme importance of scrupulous attention to detail in all spheres of activity.

I've tried for quite a while to keep active a Departmental Safety Committee under the Chairmanship of my Assistant. He tended his resignation a year later stating that there just wasn't sufficient interest. Lately, however, I've incorporated our Safety Meeting agenda and minutes into our monthly Departmental meeting for outstanding work as a priority item and by means of this back-room psychology, we are now gaining momentum again.

MNR. P.J. BOTES (Roodepoort): Ek wil graag van hierdie geleentheid gebruik maak om my buurdorp, Krugersdorp, geluk te wens dat hulle die NOSA-kompetisie hierdie jaar gewen het. Maar ek kan net nie verstaan hoe hulle die prestasie behaal het nie al die stories wat hulle vandag hier vertel het nie.

CAPT. P.G. JOYNT (Tzaneen): I just want to refer to two aspects that I think are important as far as this meeting is concerned. The first is the lack of co-ordination evident between State departments.

To illustrate this point Mr. Joynt gave a graphic description of a tragic accident which had occurred with a concrete mixer.

The second point he raised concerned the fact that the overhead cables crossing farm-lands were not sufficiently high in relation to the spray irrigation plant used in the cultivated fields beneath these lines, and that this constituted a great potential danger.

MR. G.S. STRYDOM (NOSA): I would like to point out at this stage that NOSA is not a State body and it cannot enforce any legal requirement. In point of fact we have no connection with any State body. We neither consult the inspectors of factories, nor do we work in co-operation with them. We are purely and simply a body which gives advice.

MNR. P.J. BOTES (Roodepoort): Vertel die staaltjie van 'n man wat oorspronklik as 'n vrugtoerbestuurer werksaam by hulle was. Na 'n aantal spoedoorredings egter, asook die feit dat hy aanhoudend met sy wipwagwa sommer net Bantoes en grond deurmeekaar afgelaai het, het hulle hom medies laat ondersoek en het dit gebleek dat hy verstandelik vertraag was. Hy was toe nie afgedank nie maar het 'n handlager geword in die swaiswinkel. Hy was baie gewillig en het daar goed gevorder, en mits hy net die werk gegee is wat hy ken, was hy een van die beste werkmense wat hulle daar gehad het.

Ek beklemtoon net weer die uiters belangrikheid van opleiding en die basiese gebruik van handaareedskap.

MNR. D.S. VAN DER MERWE (Witbank): As gevolg van my jarelange ondervinding in die swaarnywerheid was dit my voorreg om baie naby die NOSA-organisasie te werk. Eintlik is ek hulle in die geheel baie dank skuldig omrede die feit dat een van ons Bantoes op 'n dag my lewe gered het as gevolg van die veiligheidsopleiding wat ons ons Bantoes gegee het onder leiding van NOSA.

Sooos ek die saak sien, as ons net daadwerklik oorgaan met 'n

veiligheidsprogram in 'n plaaslike bestuur gaan ons opgeskep sit met sekere probleme, veral wat betref die baie verskillende departemente wat in enige werksaamheid betrokke is. Ongelukkig gaan die een departement van so 'n veiligheidskomitee die ander ene oorleef in so 'n mate dat die een hoof van 'n departement miskien sal reken dat die ander hoof besig is om hom met sy werk te bemoei. Ons het dit op verskeie kere ondervind. Ek word byvoorbeeld verantwoordelik gehou vir die veiligheid van opgrawings maar ander departemente wat nooit onder my aandag kom nie dink niks daarvan om 'n kabel in te kap nie.

Dit is dus vir my moeilik om die verband te sien tussen die funksie van so 'n veiligheidskomitee en dié van die man wat die werk moet doen en ek sal dit waardeer as iemand vir my lig daarop kan werp.

MNR. J.A. LOUBSER (Benoni): Ek wil net graag vir mnr. Strydom vra of hy glo dat daar so iets soos 'n ongeluksvoël is; of soos hulle in Engels sê iemand wat „accident-prone” is?

Byvoorbeeld 'n man wat slegs 2½ jaar in Benoni gewerk het en gedurende hierdie periode eerstens die helfte van sy maag mees laat verwyder weens 'n maagseer; sy knieskyf moes laat verwyder omdat hy dit teen 'n lewendige geleistam gedruk het, verslaaf geraak het aan die dwelmiddels wat aan hom gegee is vir die pyn en toe uiteindelik in so 'n ernstige ongeluk met sy motorcar betrokke geraak het dat sy een arm as gevolg daarvan heeltemal verlam is en hy tans maar metertoetse moet doen — en dit 'n gekwalifiseerde elektriesien.

Hy meld verder dat die voorbeelde wat mnr. Van den Berg genoem het net so maklik uit Benoni se annale kon gekom het want presies dieselfde ongelukke het daar gebeur. Hy verwys na 'n ingevoerde skakeltuig wat 'n ontsaglike som geld gekos het en tot nie gemaak is deur die loutere bemoeiing van 'n buitestaander.

Die grootste aantal ongelukke wat ons in Benoni kry is nie dié wat mees seermaak as sodanig nie, maar wat beskadiging van eiendom veroorsaak, en die grootste sondebokke hier is die Stadsingenieursdepartement wat verantwoordelik is in Benoni vir 90% van die beskadiging van kables. Dit help nie eers om vir hulle te sê waar die kabel loop nie; hulle wil gaan kyk met die meganiese graaf of dit wel daar lê!

MNR. G.S. STRYDOM (NOSA): Ek moet net sê dat ek nie glo aan 'n ongeluksvoël nie. In die begin toe daardie man geëmplojeer is, het hy sekere tekortkominge gehad en daarom is dit van die grootste belang dat 'n mens voor-indiensneming-ondersoeke deeglik moet doen en dan die man reg plaas. Ek

dink as daardie man die hulp en die leiding en die opleiding gekry het wat hy nodig gehad het, sou hy nie 'n „ongeluksvoël” gewees het nie.

RDL. J.E. DU PLESSIS (Krugersdorp): Daar stem ek saam met mnr. Botes dat mense moet geskool word om instrumente en masjiene te gebruik. Die werkmans van vandag het te lui geword om sy eie werk te doen en ons wilmense steun vandag glad te veel op die nie-blanke. Statistieke dui aan dat Bantoes in baie van die ongelukke wat plaasvind betrokke is en dit is omrede hulle werk gegee is waartoe hulle nie opgelei is nie.

Indien die persone wat toesig moet hou oor sekere werke, ordentlik toesig hou en nie die werk sommer vir Bantoes of onopgeleide of ongeskoolde persone gee nie, dan sal die wit ambagsman baie beter oor die weg kom; hy sal leer om weer te werk en om nie so baie staat te maak op die nie-blanke nie.

MR. K.J. MURPHY (Somerset West): I should like to express our appreciation to the municipalities of East London, Kempton Park, Krugersdorp, Benoni and Roodepoort for the other publications that have been included in the Proceedings 1973 — Volume 1. There is a time and place for these regulations and you will recall that we requested a draft of a similar type of safety standing order at the Kempton Park meeting. These published papers I think admirably fill this gap.

MR. G.S. STRYDOM (NOSA): I should also like to thank personally Messrs. Loubser, Robson, Fletcher, Van den Berg, Botes and the gentlemen from Escom for the help that they have given me and for permitting me to use the information published in the Proceedings 1973 — Volume 1.

Ek wil graag 'n uitdaging aan almal rig om te gaan kyk hoe hulle te werk gaan dat u dan 'n voorbeeld by hulle kan neem. By die mense bestaan daar nie so 'n ding as krap in 'n ander man se slaai nie. Hulle sit nie met hierdie probleem opgeskep nie omdat hulle kennis het van mekaar se probleme.

There is just one thing that I would like to stress and that is the use of the word "safety". I defy anyone to give me a definition of this word, so let us rather use a definable term like "accident-prevention". Whereas "safety" is an abstract state of mind, accident-prevention is a technique which we can apply and apply it we must.

In conclusion I must say that I have been most heartened by the reaction to my paper and the very good contributions made here!

Activities suspended at 4.00 p.m. Werksaamhede opgeskort om 4.00 nm.

WEDNESDAY

2 MAY/MEI 1973

WOENSDAG

THIRD SESSION DAY/DERDE SITTINGS DAG

20. "UNDERGROUND POWER DISTRIBUTION CABLES — A REVIEW OF A CHANGING TECHNOLOGY"



MR. D.H. BOOTH, B.Sc. (Eng.), C.Eng., F.I.E.E. (Managing Director of Scottish Cables):

I must apologise that you are again having a paper on this subject thrust upon you. As I see it, the reason for this is twofold: firstly there is the fact that an increasingly high proportion of the expenditure in a municipal electricity undertaking is involved with underground rather than overhead cables, and therefore any economies that can be made in this regard are of great importance to us all. Secondly, although you have had papers on cables at previous meetings, these have tended to concentrate on specific parts of the system such as the conductors or the insulant, whereas I have tried to give a more general view of the complete distribution system.

Following a few general, philosophical observations fundamental to the approach taken in his paper, Mr Booth then

illustrated by means of slides several of the cable types mentioned in the published paper.

A study of international trends in power cable technology over the last century has shown a consistency of movement which, with the benefit of hindsight, has dealt adequately with spasms of activity that have not been based on sound engineering logic. This does not mean that there has been a consistency in a development pattern across the international scene, but it does mean that in the long-term local development has been consistent with the local environment, and areas of similar environment have tended to follow a very similar pattern of development.

In South Africa in fact we have a number of unique local factors which need to be superimposed on these issues. One of the most important of these is the high price of many raw materials

compared with those in the rest of the world. Also, it is not only a question of their absolute price but the fact that there are important differences in the relationships between certain materials and possible substitutes. E.g. whereas copper rod here has a similar price to that in the rest of the world, aluminium rod is 30% more expensive, and solid aluminium conductor is about 50% more expensive than elsewhere. This has had the inevitable result that aluminium conductors are not as attractively priced as their copper conductor equivalents in say Europe for example.

With regard to the insulant, local PVC compound purchased from the local chemical manufacturer is 50% more expensive though this is partly counteracted by the fact that most cable manufacturers carry out their own compounding. In contrast, XLPE, being at the moment an imported material, is available in this country at more or less the world level, and we have therefore a closer cost relationship between PVC and XLPE than occurs anywhere else in the world. I can't help wondering what will happen to this situation, though, when XLPE is produced locally.

As far as plant availability is concerned, the industry is geared to paper lead, PVC and the new polymeric. The gap of course is aluminium sheathing which is not available primarily because pressures of the interest in the new polymeric indicated that this was the direction most favoured by the industry's customers.

At low voltage with such an established and generally satisfactory use of PVC it is difficult to see any reason for change. There is no low voltage design that can be produced in XLPE which cannot be produced cheaper in PVC, even taking into consideration South African material costs.

There are those, however, who have not considered PVC thermally tolerant enough and have therefore stuck to impregnated paper even for low voltage mains. However, with the more thermally tolerant new polymeric, they may yet be persuaded to make more use of the synthetics.

At 11 kv the problem of choice may well be bound up with the question of the required level of fault carrying capacity. Those who require the levels obtained with lead sheath steel wire armour are not likely to find a more economic design using the new insulations and would probably have to use them in association with steel wire armour. Those, however, who agree that these levels have been unnecessarily high in the past will probably be attracted to the new materials which certainly give greater scope for flexibility of design.

The design of 11 kv may well settle the pattern for 33 kv and possibly 66 kv, but one would expect somewhat more caution as the voltages increase, for it would certainly be a brave man who would suggest that we understand all the potential problems of the operation of the new materials at these very high voltages.

The published paper has indicated the very wide range of designs available. One can only hope that the experience of others will guide our choice in the right direction, and that it will not be too long before a reasonable degree of rationalisation is possible. By restricting the breadth of range of manufacture both the manufacturer and user can then enjoy the advantages of both cost and quality.

THE PRESIDENT: Thank you, Mr Booth. We are very fortunate indeed to have the benefit of your world-wide knowledge and experience in this field. I will now call on Mr Fraser to open the discussion on this paper.

MR. D. H. FRASER (Durban): This very comprehensive review is particularly valuable at this present time in South Africa when we are at a relatively early stage in introducing synthetic insulating materials. It has given us the opportunity of seeing just what is being done in other parts of the world and the problems which have arisen.

There seems to me to be a bewildering range of system and cable designs and it is difficult to see the justification for some of these. While I support the need to encourage new developments and research, I cannot help feeling that there is a tendency in some quarters to rush in blindly in the belief in progress at any price. For this reason I would make an earnest

plea that we in South Africa heed Mr Booth's timely advice and by discussion evolve a rational range of cable designs based on our local conditions and sound technical and economic considerations.

I should like further clarification on one or two points in the paper. Mr Booth has stated that impregnated paper cables have given sterling service and in consequence many utilities are sceptical about the wisdom of changing to XLPE or EPR. I, too, find it very difficult to discard as reliable and proven a piece of equipment as a paper insulated cable in favour of an alternative which at present seems to offer no economical advantage and considerable uncertainty as to its life expectancy. We know quite definitely that paper cable will continue in service for 30 years or more, but experience with high voltage synthetic insulated cables in America and Japan does not inspire such confidence.

Members may be interested in the sample of paper insulated cable which we recently reclaimed in Durban after approximately 50 years of service. It was reclaimed from the Point area which is not exactly a home from home for underground cables since the soil consists of old sand-dune deposit and therefore has a fairly high content of salt. However, as can be observed the cable is still in excellent condition and I would say that it's good for another 50 years if left undisturbed. Of course, this isn't always the case because obsolescence does change the situation.

The author referred to certain installations of low voltage cables in South Africa which do not have an outer earth or neutral sheath or armouring. Considering the incidence of mechanical damage to underground cables in Durban, I was rather horrified, and in my view this practice could be considered as contrary to the requirements of the Factories Act (Section C. 61).

Of the 52 underground cable failures which we analysed over a recent 7½ week period this year, no fewer than 39 (75%) of these resulted from mechanical damage; 9 of which were caused by hand tools. All 39 could have given rise to dangerous situations but for the provision of an earthed shield around the live insulated conductors. I should be very interested to hear more views on this safety aspect particularly in respect of overseas experience.

We have used the split concentric design of low voltage cable very extensively in Durban on 16 sq. mm and 25 sq. mm sizes mainly for services and street-lighting circuits. It is undoubtedly a less robust cable requiring greater care in installation and is more subject to mechanical damage. Of the 52 cable failures mentioned earlier, 24 (46%) were on this type of cable. However, many of these would have occurred even had a conventional cable been used as mechanical excavating plant was involved; and the substantial cost advantage makes the cable attractive in spite of its limitations. I'm surprised that it is not used more extensively in South Africa and wonder if Mr Booth could tell us to what extent it is used elsewhere.

MR. D. H. BOOTH (Scottish Cables): Mr Fraser mentioned that he found difficulty in understanding why some people pressed for PVC. It seems I did not emphasise sufficiently the fact that there are sometimes political or local pressures which determine this. India was a case in point, where the Indian Government insisted on the use of indigenous materials wherever possible, and ruled that PVC was to be used since someone had agreed to put up a PVC plant there. The Calcutta, Bombay and Madras Supply Corporations, however, refused to accept this and continued with their own standard practice.

It is an interesting point, though, that people sometimes quote cost rather out of sequence. In India, for example, the Government did not take into account the fact that although the material might be made in the country, the basic materials required to do so had to be imported. This led to the ludicrous situation where the cost of the materials which had to be imported to make the so-called 'indigenous' material cost more than the alternative material which could have been imported!

Mr Fraser came out fairly firmly in support of paper cables. Here I must let it be understood that from a manufacturer's point of view we are trying to offer as objectively as possible

the advantages and disadvantages of the two systems. In this country we are not really concerned with which way the pendulum swings as we are equipped to deal with either alternative. However, it is important to realise that both systems have both their advantages and their disadvantages.

In the case of paper cable the question of the use of the non-draining form of dielectric is a significant factor which should not be overlooked. An interesting example occurred when we were doing a vertical installation in Taiwan where the Japanese who were expecting to get in XLPE, had never heard of the possibility of using a non-draining dielectric in this situation. When this was pointed out the installation cost significantly less money.

We can supply the unshielded design if you want it but this is a highly emotional and controversial subject. In my experience those who are installing it, particularly in Germany, Ireland and the U.K., are doing so with the reluctant knowledge of the authorities concerned. I should be interested to hear from the Department of Labour on this subject.

On the question of the split or even straight concentric design of cable, I can say little more than I said at Kempton Park last year. Mechanically this cable is generally somewhat more hazardous but it does have the considerable advantage of cost. These two aspects have to be weighed up very carefully, as is the case with all cables.

MR. F. J. PRINS (SABS, Pretoria): As a cable maker Mr Booth I think is hiding his talents under a bushel. He appears to have the makings of a top-line diplomat since he's managed to give us a very comprehensive paper without in the process releasing any crucial secrets! What I want to know is: who is the pace-maker? who plays the tune? who decides the changes in the technology of underground power distribution cables?

As I see it, if a certain cable design has proved itself such as the famous 10 kv FERRANTI cable installed at Deptford Power Station in England in 1890, then the only probable reasons for changing such a design are:

- i) to produce a better cable at the same price;
- ii) to produce an equivalent cable at a cheaper price;
- iii) to produce a cable that is simpler and easier to install;
- iv) to meet the requirements of a special situation which cannot be done with an existing design e.g. the proposed cable route between the Swedish mainland and the island of Aland, 60 km. away.

Economists would probably add the following two reasons:
a) planned obsolescence, i.e. the North American approach where the economy dictates a short-term life and where some manufacturers are working to a 15-year life expectancy;
b) vested interest — e.g. an aggressive industry such as the chemical and petro-chemical industries, developing markets for new products, is probably one of the most powerful activating forces here.

In South Africa the average distribution engineer is governed by two factors when deciding on the type of cable to be installed, viz. primary cost and the type of labour available.

Mr Booth's remark on the wide use of PVC in Germany for service cables raises the important aspect of the influence of politics (and if carried to extremes — war) on the development of an industry. In Germany it was a case of either making do with PVC or simply doing without, and this has resulted in the firmly established use of PVC even at voltages considered by other countries to be too high because of dielectric losses.

Although PVC can take a lot of punishment in many ways, it nevertheless has certain basic characteristics which cannot be ignored. One of these is its propensity to flow under pressure and, of course, being a thermoplastic, the higher the temperature the greater the propensity to flow. This has been demonstrated in its use for service cables of the split concentric construction. If care is not taken during installation to avoid pressure points such as those caused by stones, hard objects or sharp bends, failure will occur due to plastic flow. This may mean that any initial price advantage over a conventional armoured cable is more than offset by having to sift the back-fill or to import suitable back-fill. Mr Booth mentions that PVC has given good service performance except where attempts were made to use it on coarsely

protected and heavily loaded circuits.

We have been informed that certain countries — amongst them Australia — are claiming that PVC can be used under fault conditions at conductor temperatures of 120°C for periods equivalent to the operating time characteristic of the protecting circuit-breaker: which implies 1½ to 2 hours, provided the material is not under any mechanical stress. Regarding the last proviso, I would like to mention the instance of an underfelt carpet heater based on 95°C but actually operating at a maximum conductor temperature of 50°C. This failed after one season only, due to pressure points where the legs of furniture had rested on certain parts of the conductor thereby causing plastic flow of the PVC.

Regarding service experience on paper insulated cables, we believe that if such a cable is made and installed with reasonable care and due cognisance is taken of the topography — using M.I.N.D. or pre-impregnated dielectric where there is a chance of compound migration — it will give trouble-free service for as long as it is left undisturbed. Of the many failures we have examined, especially on 11 kv, I can only recall three instances where the cable was at fault; and by that I don't mean the design of the cable but carelessness in manufacture. In the one case on a 22 kv cable, a core had turned over 180°; in the second, the registration of the paper tapes was at fault (riding papers); and in the third case, a flaw in the lead sheath had led to the ingress of moisture.

Most of the newer materials like EPR (now called EPM), EPDM, XLPE and straight polyethylene have not, of course, been in use long enough to allow a fair comparison with the older materials; and unfortunately, as Mr Booth pointed out, errors of judgement during the initial periods of use have led to failures and doubt has been expressed as to the suitability of these materials on a long-term basis. We know at present that we have to watch resistance to discharges and contamination and, in the case of elastomers, the effects of voltage spikes; but by the time we have the same order of experience with the newer materials as we have with the old, they will already be obsolete as a result of technical advances.

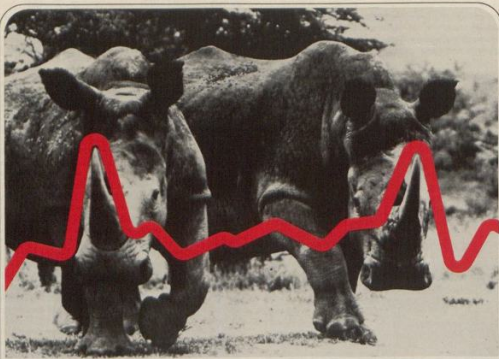
With reference to the thermal performance of cables, I wonder if when people talk about operating temperatures of the order of 90°C, they ever stop to think what kind of answers they would get if they were to capitalise their cable losses at such temperatures. Under the same heading Mr Booth also mentions the possible softening and thermal degradation of non-metallic sheaths. From personal experience I would say that metallic damage of the sheath poses a greater hazard. Electrolysis is fast becoming a greater and greater problem and this not only in the vicinity of electrified railway lines. I have seen two textbook examples of electrolysis which occurred in areas completely isolated from all possible sources of stray d.c. currents. Today most engineers rely on an outer PVC sheath for protection against electrolysis. These sheaths, however, are very easily damaged mechanically even by such things as the hobnails on the boots of a labourer; not to talk of back-filling with such things as okulip or soil containing stones or shale.

In conclusion, I must candidly admit that some of the new jointing systems which "demand less manual skill" that I have seen have firmly convinced me to back the traditionally made paper joint any day!

MR. D.H. BOOTH (Scottish Cables): Mr Prins asked who plays the tune. Well, as far as the manufacturer is concerned, there is only one person who plays the tune and that is the customer; our job is simply to supply the customer with what he wants. It is, however, of vital importance that the customer has all the facts before him before he makes the decisions and puts the pressure on us. One of the main objectives of writing papers of this type is to present these facts. We are in the very fortunate position in making important judgements about changes in the new technology, of having plenty of facts of our fingertips.

I was glad Mr Prins emphasised the question of the philosophy of obsolescence in American practice. This is one of the facts which is often overlooked, yet this very point has been emphasised time and time again to me on the many visits which I've made to the United States. I'm not talking here merely

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about the association with XLPE, but about many other factors in the consumer market, in the design of transformers, in their whole general way of life.

This is quite an acceptable alternative philosophy of life; if one wants to make certain judgements to attain economies or technical advantages, one is entitled to do so. In fact, many people would say one should be encouraged to do this provided it is set in the correct context. What one must not do, however, is to take facets from one philosophical approach and apply it to another. If one has the theory of long-term life one must view the activities of those who believe in the short-term philosophy with due care.

Mr Prins also mentioned the fact of how politics can affect the situation, as happened with PVC in Germany due to wartime conditions. This was followed by an extremely laudable but fairly aggressive marketing of PVC cables by German cable companies particularly in underdeveloped countries such as India. This was very similar to General Electric's aggressive marketing of the other synthetics in such countries as Japan.

As I mentioned, it's very important to have the system design correctly attuned to your design of cable. This fact was very forcibly illustrated by the very important World Bank judgement recently made in Teheran. Such a state of confusion ensued at one stage due to sub-consultants giving alternative views, that a three-day seminar was called at which world experts debated this question of the preferred cable for Teheran before the equivalent of the Teheran Municipality. An additional problem had been created by the fact that the previous Government had indicated to the cable industry that the trend would be towards PVC. Basically, however, it boiled down to a question of fundamental distribution circuit design and, as a leading German cable company pointed out, unless the utility was prepared to change its basic method of protection, they would have to install paper cables. The World Bank then ruled a favour of paper cables since the alternative would prove a far greater expense. However, had the circuit been designed as circuits are generally designed in this country, PVC would have been quite acceptable.

MR. W.M. RANDELL (African Cables Limited, Vereeniging): I want to take this opportunity of saying that we are in full agreement with the manner in which Mr Booth has set out the various points in his paper. This is undoubtedly the beginning of a new era in this country in terms of cable designs and system designs and it is therefore very opportune that the various pros and cons should at this early stage have been put to a meeting of this nature in order to underline the fact that basic decisions have to be taken. These decisions in turn will affect the sort of investment which manufacturers will have to undertake in order to provide the designs of any new type of cable which may be required. Already there has been a quite substantial investment to cater in some degree for the new polymeric type cable.

The author has also quite rightly drawn attention to the various philosophies involved, and here I get the feeling that we are perhaps going to be a meeting point of these two philosophies. Some people will be trying to marry the two but with some rather disastrous results, I fear, from the manufacturer's point of view, since he will be involved in requirements which could well become grossly uneconomic. This adverse effect would be felt in the industry as a whole and would ultimately also affect the user as well.

As regards the issue of avoiding a "plethora of designs": even with the relatively limited range of insulants in which we are at present involved, there is already a considerable plethora of design being sought on many occasions and this involves sometimes quite uneconomic use being made of very scarce technical personnel. This illustrates the sort of thing that can happen when fashions change unnecessarily rapidly and in too wide an area, and is something which must be born in mind by everyone involved. On this score it must be remembered that certain designs in America were not developed by way of deliberate, technical, scientific design, but out of sheer expediency, and very careful consideration must therefore be given before adopting in toto the sort of design situation evolved there.

Admittedly mistakes have been made in the past but these can be of obvious benefit to us all in that we will not make the same mistakes again in the development of local designs.

The emotional situation which exists regarding safety factors makes it very difficult for manufacturers to give their views on the subject since these are often then taken as recommendations. It is necessary to stress that the responsibility here lies with the user since he is the one who must take the decisions; we can only help with necessary comments when approached.

One final point on the question of investment: Mr Booth has quite rightly drawn attention to the proven economy of the CONSAC type cable. If this were to be married to the range of constructions to be supplied by local industry a very considerable investment would become necessary, since the aluminium extrusion presses involved would in themselves be something of the order of R1½ million.

MR. D.H. BOOTH (Scottish Cables): It is encouraging to me to know that I am not quite a lone voice as far as the cable making fraternity is concerned. On this question of investment we in the cable making industry have entered an era of unprecedentedly high investment for new and more sophisticated designs. This has the inevitable effect though that depreciation carries a very much larger part of the cable selling price than it has tended to do in the past; added to which is the fact that much cable making plant has depreciated to a very low level. For this reason unimformed pressure to manufacture a certain type of design particularly for a relatively small market, can completely upset the price relationship between the different designs. What may therefore be a very attractive design in one country because plant investments have so ranged themselves, could well prove to be just the opposite in another.

I have already mentioned that sufficient pressure has been exerted in this country to indicate that the municipalities are wanting to go in the direction of the new synthetics, over and above their continued use of impregnated paper and lead sheathing. If these pressures were to change and this involved a large investment, the whole economic picture would be completely altered.

Now that the major decision has been made that we're going to have impregnated paper/lead sheathing, PVC and the new polymers and virtually exclude aluminium sheathing, there is the need for further discussion and rationalisation within these limitations as regards the preferred cable designs.

MR. A.H.I. FORTMAN (Boksburg): There are just one or two comments I'd like to make. First of all, both Mr Booth and Mr Fraser have referred to this tried and proven horse what we're flogging such a lot. But what I want to know is just what period of time constitutes a "trial period"? After all, someone has to try these new cables or new types of installations, and, as users, we are surely the ones to do so. The Ferranti cable referred to by Mr Prins was installed in the 1890's; at which time it was no doubt a brand-new cable and had not yet been tried and proven.

It must be understood that paper insulated cable is far from perfect. Paper draws in moisture, the paper insulation is very delicate and thus very easily damaged and the lead sheath which is commonly used is also easily punctured. One of the reasons Mr Prins gave for changing a cable was in order to have a better cable and possibly a cheaper one. Since paper cable isn't perfect, surely we should be prepared to try out a cable which might prove to be better.

In regard to the armouring on cable, I would say that the XLPE insulation on say an 11 kv cable is a far tougher insulation than paper. Whereas armouring is perhaps essential for paper insulated cable with a relatively weak lead sheath and a very weak paper insulation, it is of less importance when it comes to the tougher XLPE insulation.

MR. D.H. BOOTH (Scottish Cables): Quite frankly I don't believe in trial installations because you really never know at what point you make a decision as to whether your trial has been successful or not. Particularly in this country where we

work on a long-term economy basis, it is not possible to have the long-term field trials. What is even more important is that even on cable systems which have given trouble in the past and have perhaps been condemned as hopeless, the percentage of failures that have occurred, taken overall, has still been remarkably low, although of course a very serious problem nonetheless.

The chance of finding out one's troubles from a trial installation is therefore very remote. I can only re-emphasise the fact that one has to analyse all the facts of the situation and then have the courage of one's convictions to make judgements which one is prepared to stand by. All systems have their strengths and weaknesses; some of which are applicable to certain types of installation, some to others.

Although we may not be in the fortunate position of being able to put in a cable for a few months and then decide whether we're on to a certainty or not, we nevertheless have the advantage of 10 years of experience in the rest of the world on all the cable designs we are likely to use in this country. In the case of XLPe this may have illustrated many of the mistakes, but at least it ensures that we shall not be making the same mistakes; and one has a very real reason for supposing that one can now design to a reasonably satisfactory experience.

Mr Fortman is quite correct in stating that the toughness of XLPe means that there is not such a need for armouring as there is in the case of the weak lead sheath of the paper cable. However, this is not quite the point. The case for armouring or not armouring in respect of XLPe cable is tied up very much more with this question of fault carrying capacity than with the mechanical side. This is a method of providing this fault current carrying conductor. If, however, you were to decide that you did not need such a low conductivity path as that provided by steel wire armour, there are definitely cheaper ways of doing it than by armour; in which case I would certainly support Mr Fortman in saying that in those conditions armour is not necessary. Personally, though, I would still like to see a circumferential metallic tape of some sort included, but not primarily for current carrying capacity reasons.

DR R.B. ANDERSON (National Institute for Electrical Research, Pretoria): Mr Booth did touch on the thermal rating of cables. It would appear in this regard that more account should be taken in this country of the thermal conductivity of soils. Accordingly the CSIR has developed an instrument for measuring thermal resistivity on sites. The measurement takes about a quarter of an hour and the instrument is relatively inexpensive. Cable routes are able to be surveyed by this method and thermal conditions ascertained, as has already been done by the Bureau of Standards as well as ourselves. We are furthermore quite prepared to let anybody have the design of this instrument and even make it for a start, until somebody is prepared to take it up on a commercial scale.

The second point is this question of the life of new cables and the question of trials. I think perhaps the answer to this is more or less as has been stated, that one can't have a trial as such, but one does have statistical data regarding cable failures. This is the only means we have of ascertaining the performance of cables and my plea therefore, both from the research point of view and that of our own efforts, would be to keep very good records of cable installations and cable fault statistics.

One other point which wasn't mentioned is the over-voltages due to lightning. The tendency these days is to think of aesthetic considerations of power systems and cables are being laid in areas which are exposed to lightning; which fact will no doubt increase the possibility of lightning over-voltages. This may have some relevance in regard to whether or not to use a screened cable because of the relative velocities of surges in these cables in the sheath or the screen as compared with the conductors.

A new condition in South Africa which affects the newer type of cables occurs where voltage levels on systems are not particularly carefully controlled and spikes or surges arising out of the use of thyristor drives have been known to damage semi-conductor equipment. This could also be relevant in regard to the choice of cables for these systems.

All in all, it is important that this whole matter be kept under

strict observation so that we can be sure of having facts and figures to show how various cables perform under various conditions.

MR. D.H. BOOTH (Scottish Cables): Dr Anderson has introduced into the discussion three of the most important factors, each of which is probably entitled to a paper on its own. However, it does give me an excuse for enlarging a little on each of them.

The question of the thermal conductivity of the soil is of extreme importance in interconnectors and particularly on circuits which are going to be run continuously, whatever maximum temperature you are aiming for. This becomes even more important if one is trying to justify very high temperatures such as 90°C on the conductor but even at lower temperatures (65°C - 80°C) the conductivity of the soil or the conductivity to which it will change when heated is of critical importance. This is, of course, if you're really going to run at these temperatures and not merely use them as a hypothetical basis for design. I can't stress too strongly that if one is genuinely going to rate cables up to their full conductor temperatures you must have a very comprehensive knowledge of the thermal characteristics of the soil in the dried-out condition. Soils can have thermal resistivities varying by a factor of 3:1, depending on their nature. If you are involved with the type of soil which goes up in dried-out conditions something like 3 times that which is being used for normal rating, you will then have to de-rate down to 50% or even more.

I'm so glad the second point has been raised since this is surely highly relevant to this gathering, and that is the need in any country for a properly controlled fault reporting programme. Dr Anderson mentioned cables specifically but a report on all outages of plant is very essential both to the user and to the manufacturer. A lot of work is being done on this in the United States, and about 3 or 4 years ago the Area Boards in the United Kingdom put out a very comprehensive and already very valuable scheme for the detailed reporting of all faults and the statistical analysis of these. I can only commend this practice to the meeting.

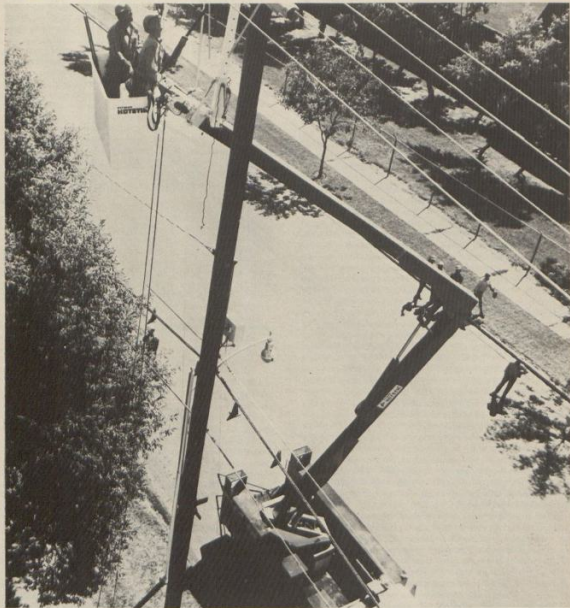
The question of over-voltages is very much one of the areas of doubt which we have with the new designs. I recall, for example the attempt to introduce sulphahexafluoride as the filling of gas-filled cables. We found this material eminently satisfactory when tested under all normal conventional methods but microsecond voltage spikes caused very minute apparent changes and the release of unfortunate agents, and this completely killed that particular line of development. All I can say is that this is an area of which we have less understanding than others and it is one which should be taken into consideration in the making of any decisions.

MR. A.A. MIDDLECOTE (SABS, Pretoria): I wasn't intending to comment on this paper because I'm not a cable expert but I would just like to stress what I consider to be the main point arising out of this paper, and that is the need to establish codes of general practice or declared principles for any product. Until you have these you cannot eliminate a lot of the factors which, in a dynamic technology, might increase the necessary calculated risk which the consumer must take when trying out a new product. By declaring these principles we have Step 1 to rationalisation.

Mr Norman illustrated this very point that no one gets down to declaring principles as such. Had the IEC fifty years ago declared standard voltages, Mr Norman's work would have been so much easier than trying to rationalise an existing bad system with too many voltages. Had the IEC also done the Electrical Installation Rules, the common earthing requirements and other simple requirements would have meant that the product approaches such as in switchgear, cables and other equipment committees would not have varied as they do today, thus making the whole situation at present much more difficult to rationalise.

Once these general codes of practice have been drawn up, we can then get down to leaving a small element of calculated

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considered as long-term investments and not short-term ones. It is for this reason the municipality must do the best it can to get cables that will last at least as long as the life of the loan, preferably a good deal more.

The second point in dealing with the cost of cable is that the installation costs have to include the cost of excavation and reinstatement, which in many cases is actually higher than the cost of the cable itself. This is an extremely important factor because, generally speaking, these cables are installed in built-up areas where the costs of excavation are high, and it is therefore advisable to have reliable cable.

I also feel that Mr Booth tended just to give a general picture of cable technology. I do feel, though, that the cable manufacturers should be prepared to give a lead to the engineer because they have considerable research facilities not available to the engineer.

Finally, a comment on losses: we're quite happy normally to have about 5%–6% loss on the distributions system (i.e. including transformer and I²R losses) but, as the working temperature of the cable goes up, so this percentage increases and the I²R loss is quite considerable. We are inclined to concentrate on the fact that our transformers are low loss while overlooking the loss in the cables if operated at high temperatures.

MR. D. H. BOOTH (Scottish Cables): The question of delivery is obviously a critical one and one which is recognised by all cable makers. Something I must point out, though, is that there is at the moment a phenomenon occurring which, for want of a

better word, I can only call 'panic buying'. This is illustrated by the fact that the output of cables in the first quarter of 1973 was about 35% more than the equivalent output for the first quarter of last year. This may serve to give you some idea of what demands we are having to meet, but I do not believe that we are really putting in cables to that extent; rather that there is some degree of over-purchasing going on because people are frightened of losing their place in the queue as it were.

As Mr Chappel emphasised, our economy in this country is based on long-term and not on short-term philosophy and therefore one must make one's judgements with this in mind.

Cost of installation is certainly very critical. At best the cost of installation equates to the cost of the cable. This means of course that some of these savings that you have quoted immediately have to be halved, and with some of the cheaper designs, this becomes even more of a problem.

On the question of research facilities, we certainly pride ourselves in this country on having some of the best research facilities in the world.

We do try to talk to engineers in as objective a manner as possible. I would also encourage any engineers who may wish to do so, to come and talk to us and I assure you that our answers will be technically objective ones and not commercially biased.

THE PRESIDENT: As Mr Fraser said in his opening remarks, we are faced with a bewildering array of cable types and the record of this paper and the contributions made to it will be extremely useful to supply engineers for a long time to come.

ACTIVITIES SUSPENDED 12.45 p.m. — WERKSAAHDEDE OPGESKORT 12.45 nm.

THURSDAY

3 MAY/MEI 1973

DONDERDAG

FOURTH SESSION DAY — VIERDE SITTINGS DAG

21. "LIVE-LINE MAINTENANCE ON OVERHEAD LINES" by RICHARD J. BRIGHT

Mnr. die President en Mede-Lede,

Ons dank u vir die geleentheid om hierdie praatjie aan u voor te lê. Ons is daarvan oortuig dat almal teenwoordig met tegniese ondervinding, asook alle belanghebbendes, dit omvattend en interessant sal vind.

A short paper on Live Line Maintenance and a series of 30 mm. films will be the feature on the subject. The films that will be viewed will be the insulator changes using individual hot stocks on 12-kv which can be expressed as our 11-kv pin insulator arrangement, followed by the film using boom mounted auxiliary arm to modernise hot line maintenance plus a few 35 mm. slides on live line maintenance used outside the United States of America.

It will be asked, what is the necessity of live line working, a term used by the British, phrased 'Hot Line Working' where it originated by the Americans in 1937.

We then come across another term, that of 'Bare Handwork' which must be differentiated from the two terms previously used. 'Live Line' or 'Hot Line' work is where a linesman is working a transmission line from a safe distance with Epoxiglas poles, distances are maintained through the various voltages, that on 3-kv to 11-kv phase to phase is 2 ft. From 11-kv to 33-kv, 2 ft. 4 in. Voltages from 33-kv to 88-kv; 3 ft. 4 in., one 32-kv; 3 ft. 6 in. and the 400-kv systems as used by Escom; 7 ft.

The Epoxiglas link sticks which you see viewed in front of me are rated at 100-kv per ft.

We now go on to the term of 'Bare Handwork'. This is when a linesman is subjected to direct contact onto the conductor, using a nylonsuit silver threaded which have two tails which are

attached to the conductor, bringing the linesman into the field potential, eliminating arc during retraction.

We gather the necessity for hot line work the purpose for keeping the kilowatts at work. Three of the most significant factors in the outstanding safety of hot line crew are:-

1. A high degree of manual skill
2. First rate co-ordination
3. Calm and even temperament of most men performing this work.

As the use of electrical power increases, power loads increase and consequently the power supplies responsible for continuous service also increases. Interruptions are costly to the user as well as the supplier. Many double circuits built for the purpose of switching the load while repairs are being made have been put into continuous use to take the load expansion, therefore, line repairs mean shutdowns unless hot line tools and experienced hot line crews are readily available to maintain the hot line.

Referring to a safety poster you have seen repeated many times, 'if you cannot see both ends it's hot'.

During demonstrations held in the latter part of last year at Klip Power Station, it was expressed by Escom and Johannesburg City Council that it takes between 4 to 6 hours to de-energise a line, sign the dead order papers, go through grounding procedures and then only may an insulator or string of insulators be removed and procedure reversed to energise the line again. It was noted that the lower the voltage, the longer it would take to work the line since on 11-kv system the whole procedure took a mere 40 minutes and on the 88-kv suspension set only 28 minutes. These figures should be of

considerable interest to the members attending this Convention.

Other factors to take into account are that should lightning strike the line or any misfortune take place, influence on human lives can well occur. An interesting point that I should mention is the ease that Escom linesman adapted themselves to the tools working an 11-kV pin insulator at the training centre de-energised and also working on a fully energised 11-kV pin insulator arrangement and the 88-kV suspension. It took two linesman plus a crew of 3 boys, 1½ days at a training centre outside Johannesburg.

A set of safety regulations as drafted by the United States Occupation Safety and Health Standards have been approved in the States and are now in effect, which will be used as a guide by our own power utilities.

The need for live line maintenance revolves from the realisation that electric power must be maintained without interruption. Two major reasons for this conclusion were continuous process in factories had to be maintained and the desire of the people for no inconvenience had to be satisfied. Since duplicate circuits for this service were too costly, another method was to be developed.

The first live line tool in the United States of America was in 1913 and was called a disconnect stick and used to open energise switching. This simple operation was proof of the safety of live line maintenance.

In 1916 a tool known as an electrical hook was introduced, then handles were made of Oak and the fittings were bronze making the tools heavy and clumsy to the use.

It was 1918 before a company went into full-time manufacture of insulator tools for live line maintenance. These were universal hand sticks with interchangeable tools on the end. American home and industry had the desire by 1935 for continuous uninterrupted electrical service, and it became the desire of the electric utility industry to get into this position as quickly as possible.

In 1937 the A.B. Chance Company, already successful in anchoring systems for the electric utilities, decided upon vertical expansion in the industry and purchased the unsurpassed technical knowledge and manufacturing facilities of the Tips Tool Company.

In 1947 voltages had grown so that the length of the insulated tool handle had to be lengthened for safety to the linesman. The Chance Company switched from heavy oak handles to lighter, Sitka spruce, and from bronze fittings to aluminium alloy. This solution was only intermediate, however, the search had already begun for the 'ultimate' insulation between the linesman and the energised conductors; eight years later a combination of chemicals and the application to one another was settled upon through initial tests, and the laborious field testing and building of machinery to manufacture the new Epoxiglas began. Three years later, in the fall of 1958, the first Epoxiglas live line tools were manufactured on a production-line basis.

Every Chance live line tool is subject to every type of electrical and mechanical test necessary to ensure the high degree of



Mr. Richard J. Bright, Senior Technical Representative Power Systems Division of Hindacotec (Pty) Ltd.

safety required in the daily use of this equipment. The Epoxiglas poles are 100% electronically tested to 100-kV per ft. The mechanical safety factors vary from 2½ to 1, to 5 to 1.

Gentlemen, I would like to stress a word of thanks to Mr. Wannenburg, Inspector of Works and Machinery for the valued assistance received from himself and his department in this new field of live line maintenance.

In conclusion, I thank you all for the keen interest shown in this paper.

Mr Bright then showed 2 feature films, the one demonstrating insulator changes using individual hot sticks on 13 kv (comparable with our 11 kv) and the other, the use of a boom-mounted auxiliary arm to modernise hot line maintenance. This was followed by a series of 35 mm slides on live line maintenance outside the United States of America, and a manual demonstration of the tools themselves.

THE PRESIDENT: I should like to thank Mr Bright and his two colleagues, Mr Baker and Mr Stevens, very much indeed for this most impressive glimpse into the not-too-distant-future. My only regret is that there is not enough time for discussion on this paper, much as we should all have liked to participate in one.

22. MEMBER'S FORUM — LEDEFORUM

22.1 NATAL BRANCH/NATALTAK

MR. E. TRAUTMAN — CHAIRMAN: WHAT METHODS ARE ADOPTED BY MEMBERS IN THE WIRING AT CARAVAN PARKS WHERE SUPPLY IS GIVEN TO CARAVANS AND TENTS?

In Ladysmith the Municipal Caravan Park was equipped with weather-proof boxes containing 5-amp plugs, backed up by earth-leakage protection. The installation up to the plugs was in good order but the conditions at the user side were shocking. Flexes taken from these supply points wound their way around barbed-wire fences and across roads and lawns etc., and the installations in the caravans and tents themselves resembled spider-webs!

I agree wholeheartedly with a letter received from the Divisional Inspector of Labour who writes: "With regard to the electricity supply at the Municipal Caravan Park, it is the writer's opinion that the Borough has allowed a very dangerous situation to develop there. The Standard Wiring Regulations are only concerned with wiring work up to any socket outlet. The implication here is that any domestic appliance will be plugged into this outlet. Supplies of energy to caravans can never be regarded as 'domestic appliances', but are dwellings and must be treated as such. It must be realised that through the doctrine of vicarious responsibility the Borough and the Mayor and/or Town Clerk may also be held responsible in the event of any accident here in terms of Section 381 of Act 56 of 1955 and Section 40 of Act 22 of 1941. The Department is advised to immediately take steps to rectify the dangerous state of affairs at this Park."

Naturally I immediately disconnected the supply to caravans. I may add that there is an SABS specification 092/1971 calling for a 32 volt DC supply, which I feel should be made compulsory in view of the foregoing.

MR. R.W. BARTON (Welkom): I think the answer is simply not to give electricity supplies to caravan parks! The Highveld Branch went into this a long time ago and decided that caravanners could use a 32 volt supply for little else than lighting and that a 220V supply would be highly dangerous. In any case, most caravans these days are supplied either with gas lighting or with electric lighting in the form of battery supplies.

THE CHAIRMAN: In this case the supply was not only used for lighting, but also for fridges, radios and even small stoves; and there was a continuous fight going on in the Park as to who was tripping who by using more power than he should!

MR. A.A. MIDDLECOTE (SABS, Pretoria): I don't think one should allow fears to set back progress. Obviously caravanners are the thing of the future and it is very short-sighted not to take advantage of what electricity can offer them as an amenity.

There is a very active Working Group on the IEC busy on this at the moment and we should have their recommendations within a year or two as to good guiding principles. These may not necessarily be for 32V and one can consider the higher voltages provided we draw up certain standards. One would undoubtedly have to have a special waterproof plug and socket but the real difficulty would be with the caravan itself since this would have to be wired to some standard and somebody would have to be responsible for checking this. Possibly some local authority or Government department, or even the Bureau could certify that they comply with certain standards.

Lastly, if you back up sound practice with a good earth-leakage system you need have no fears. It is certainly possible to give supply to caravans but it won't be a cheap supply because it will have to comply with very high standards.

MR. T.D.H. CATCHPOLE (Howick): I subscribe fully to Mr Middlecote's opinion. We did discuss this at some length at the Natal Branch meeting and although certain members had the

view that caravans should not be supplied and that it was highly dangerous, it was pointed out that electricity is an amenity and that caravanners should not be denied the use of it at normal voltages for purposes of refrigeration, heating etc.

I'm very glad to hear that the SABS are working on this and I definitely feel that we must take the broad-minded view that we are here to distribute electricity and provided reasonable steps can be taken for its safe distribution, we should make every endeavour to supply caravanners with electricity.

RING PRICE TENDERING — THE CASE FOR AND AGAINST.

MR. D.H. FRASER (Durban): I thought this would be an excellent opportunity to discuss this point since we have several representatives of the commercial sphere here present. This is an issue that has been raised fairly recently within the Durban Council circles. It arose over the question of the acceptance of tenders for meters. Where traditionally all the tenderers submitted the same price and we had had some difficulty in securing assured supplies, we thought a division of the contract between more than one supplier would assist. However, the Council took the view that in principle ring price tendering should be discouraged and the contract was awarded to a single supplier.

This doesn't only apply to this particular commodity of course, and I'm not prepared to say that it doesn't have some justification or advantage. As I see it, one of the advantages, certainly in the case of meters, is that you get an article which represents reasonably good value for money; whereas if the competition were entirely free, there might be a tendency to cut on standards which, in the long run, could cost supply authorities more than the fixed profit margin that applies on the ring price basis.

On the other hand, as normal commercial practice one does like to feel that there is a reasonable measure of free competition from the point of view of keeping prices at a reasonably low level. That, as I see it, is the case against ring price tendering.

MR. P.J. BOTES (Roodepoort): There is a solution and a very good one too — don't call for tenders; you get your meters much cheaper!

THERE IS SOME CONFUSION BETWEEN THE ELECTRICAL WIRING AND CONTRACTORS' ACT AND THE FACTORIES ACT IN REGARD TO RESPONSIBILITIES OF THE SUPPLIER TO WIRING IN FACTORIES.

THE CHAIRMAN: This is an old problem which I don't think has been completely solved yet. According to the Electrical Contractors' Act Section 19 1(b) no supply may be given unless the supplier has inspected, tested and approved the wiring work. At the building stage of the Dunlop Factory in Ladysmith no certificated engineer or responsible person was available at the future factory and when the management applied for certain sections to be connected to a temporary supply, our Wiring Inspector took over. However, this was impossible for the whole factory complex and the problem was later solved by the signing of indemnity forms by the Manager of Dunlop. He, in turn, got similar indemnity forms from his contractor, and the contractor from his subcontractors.

The question is thus: who is responsible for the testing of electrical installations in large factory complexes at the building stage when no certificated factory engineer is employed? If the manager, site engineer or contractor is responsible, is he responsible in terms of the Factory Act as well as the Contractors' Act?

Since it is impracticable to expect a small municipality to employ 20 inspectors for the supervision of wiring work in such a large complex and subsequent testing for the construction period alone, the term 'wiring work' should exclude wiring work

in a factory when mentioned in the Electrical Wiring and Contractors' Act.

MR. J.G. WANNENBURG (Department of Labour, Pretoria): I first started talking about Section 19 and Regulation C.61 in 1965 in Bloemfontein and I've been doing so ever since. I thought at least we had seen the last of it last year.

If you refer to the Government Gazette 3771 of January 26th you will find on page 11 that C.61 has now been changed so that no person can ever again think that he has the right to go and inspect anything in a factory. Please remember, though, that C.61 deals with earthing and earthing only and nothing else but earthing! Section 19 of the Act deals with installation and nothing else but installation; and this, too, is being changed in Parliament at the moment to fall in line with C.61. There has never been a conflict between these two sections of the Act and we have just rewritten these to make it absolutely clear.

MR. A.F. TURNBULL (Vereeniging): The Regulation states: "... provided that these requirements shall not apply to buildings on premises where machinery is used and where a responsible person has been or is required to be appointed under the regulations". The point at issue is, how do we ascertain if this person is appointed? We might be told by an industrialist that he has a responsible person, only to find later that such a person hasn't been appointed in terms of the Act. How then do we establish this?

THE CHAIRMAN: I stated fairly clearly that there was no responsible person available, and I take it now from Mr Wannenburg that we are just not to worry about it at all!

MR. J.G. WANNENBURG (Department of Labour): You cannot have a user until such time as you have machinery which is in production, by virtue of the fact that a 'user' is defined as the person who benefits from the use of machinery and (towards the end of the definition) includes the person in charge who — if you read it correctly — is the engineer. However, you can't have an engineer appointed in charge of machinery which is non-existent, which is why the Regulation reads as it does, "where an engineer has been or is required to be appointed".

THE CHAIRMAN: But in a case such as this where there is a whole complex of activities going on including the wiring of machinery, surely this is our concern. Are we responsible for it or not?

MR. J.G. WANNENBURG (Department of Labour): It still comes back to exactly the same thing: the machinery which is being spoken of when you erect it, is not the machinery which is referred to under the D Regulations; and whilst you are working on machinery, and erecting machinery you are actually working under the D and not the C Regulations. That is what you've got to remember.

It says under D.3 that the machinery that is used must be properly supervised by the person who has been appointed and that person is the contractor. The machinery spoken of there is not the machinery which is being erected, but that which is used in connection with that erection of machinery.

THE CHAIRMAN: It appears then that we were quite right in getting those indemnity forms from the manager of that firm right down the line to the sub-contractor; all of whom had their respective responsible persons employed to supervise their own work.

On the other hand, according to the Wiring Act we must then employ about 20 inspectors to inspect the wiring of the installation of this factory before supply is taken.

MR. J.G. WANNENBURG (Department of Labour): The new, amended Regulation D.3 clearly answers this question. You appoint a contractor who in turn must appoint a competent person; the contractor can appoint a sub-contractor who must then also appoint a competent person and so on. Each person at every level must appoint a competent person at every place where he works to be in charge of the workers under him.

THE CHAIRMAN: I understood that point quite clearly, but according to the Wiring Act we can only connect the supply to any installation once we have inspected and tested it.

MR. J.G. WANNENBURG (Department of Labour): As I

promised you at Umali, the Wiring Act is in the process of being changed to read exactly the same.

THE CHAIRMAN: That really puts my mind at rest. We come now to the question concerning the **SABS MARK ON FLUORESCENT LAMP BALLASTS**.

MR. W.B. BOZYCZKO (Estcourt): This question arose from the fact that we received a note from the Bureau of Standards advising that we should in all instances use the approved ballasts. Accordingly we ordered some of these SABS ballasts only to find that about 20% of those installed just melted. We sent 2 of these back to the Bureau of Standards requesting information as to the cause of failure. We received a letter from them stating that they had been so badly burnt that it was impossible to tell, but that they were sending them back to the factory in the hopes that they might be able to solve the problem. I am still waiting for a response from that quarter.

THE CHAIRMAN: If there is no further comment on this issue we will leave it pending for the time being.

THE PROFESSIONAL ENGINEERS' ACT.

THE CHAIRMAN: At Branch meetings concern is being expressed by members about the effects of the implementation of the Act. This does not concern the 'big brass' among us, but rather the 'small coppers', under which category I suppose most of our active members belong. The security of the electrical engineer (or must I now say the electrical technician) in charge of an undertaking is at stake.

I would like to raise the following points: must every certificated town electrical engineer in South Africa be replaced by a professional engineer, or supervised by one, to comply with the Act? Will the responsible person, according to the Factories Act, in charge of the reticulation of a small place also be supervised accordingly? Are limitations of activities and the design of municipal power reticulation and equipment to be expected? If so, where is the line to be drawn between the design of a major switch house or transformer substation, an industrial or domestic substation, a transformer room in a block of flats, distribution pillarbox or a meter box at a domestic house?

The history of South African engineering points to the certificated engineer being the back-bone of the engineering pioneer work. If the certificated engineers are to become technicians, surely those in responsible positions should be confirmed until they retire. How is it that they have been quite acceptable in the past and are now perhaps to be restricted? Restriction of any kind will result in financial losses to those who will not be able to advance due to the implementation of the Act. In these instances testcourt cases should be initiated by the AMEU to protect the interests of the majority of their members.

I propose therefore that the Executive Council be authorised to clarify the position once and for all.

MR. J.G. WANNENBURG (Department of Labour): This issue of the professional engineer ruling, supplanting or replacing the certificated engineer has been handled at great length by the Institute of Mechanical and Electrical Engineers. I want to make it very clear to you all that a professional engineer can not and will not replace a certificated engineer. The Regulations promulgated under the Professional Engineers' Act state very clearly and distinctly that the Professional Engineers' Act will not change anything which is called for under the Mines and Works Act or the Factories, Machinery and Building Work Act. So no professional engineer is going to replace a certificated engineer; and no professional engineer can take over a certificated engineer's job unless he can show the Certificate of Competency.

MR. A.J. VAN DEN BERG (Krugersdorp): I would like to quote from a directive addressed to all local authorities in the Cape Province by the Director of Local Government, dated 26/6/1972:

"The Professional Engineers' Act 81 of 1968

1) One of the main objectives of the above-mentioned Act is the protection of the community against the actions of incompetent persons. If, for example, buildings to which the public has access, towers, bridges, electrical installations etc., are designed by persons who do not have the necessary qualifications and

experience, these works or services are likely to be inferior to requirements and may even endanger the public.

2) Local authorities should therefore note the importance of ensuring that all engineering drawings, plans and specifications submitted for approval are prepared and signed by registered professional engineers with experience in the type of work concerned, and that all major engineering works of this nature are supervised by registered professional engineers."

In the advertisement in question the qualifications of the Electrical Engineer are given, but not those of the Town Civil Engineer. I suppose this will satisfy the Department of Labour.

Are local authorities not under the impression that they need a certificated engineer as laid down by the Department of Labour, and in many cases still have consulting engineers to comply with these requirements of the Act? So why pay the Town Electrical Engineer the same as the Town Civil Engineer?

THE CHAIRMAN: I think we need to put more emphasis on this question of the designing work, rather than on the replacement of the certificated engineer by a professional engineer. Mr Wannenburg has assured us that nobody will replace us as such, but what we must now guard against is the possibility of only being able to do design work under supervision.

MR. W.B. BOZYCZO (Estcourt): This is rather an interesting point that has been raised in that the Professional Engineers' Act clearly defines the type of work that has to be done by such a person. There does seem to be some overlap between this Act and the Factories Act since Regulation C.1 states that the operation, installation and supervision has to be by a certificated engineer, whereas the Professional Engineers' Act covers all this including design.

MR. J.R.N. MACKAY (Cape Provincial Administration, Cape Town): This matter referred to originally came from the Institutions and was merely transferred to municipalities for their information. The intention is that municipalities should make sure that drawings submitted to them are submitted and designed by professional engineers. The reason for this is that if a drawing or design that has not been prepared by a professional engineer should fail, the ruling is that the professional engineer who has had a look at it is then held responsible for that failure.

This might be a hard ruling but the intention of passing this on to municipalities was not necessarily to make the municipalities bring forward all their drawings and designs etc. by professional engineers, but merely to protect themselves against the above eventuality.

At the time we discussed this matter we realised that a certain amount of misunderstanding might possibly arise and it appears that this in fact has happened. However, let me assure you that it is not meant to be a restrictive measure but rather one of assistance to municipalities.

THE CHAIRMAN: I can't agree with you completely there, Mr Mackay, because this would mean that engineers in charge of an electrical undertaking would have to employ consultants although they may be able to do the work themselves, and this means additional costs.

MR. J.G. WANNENBURG (Department of Labour): As far as I know most municipalities, mines and factories have consulting engineers, and have had them in the past. The fact of the matter is that the consulting engineer didn't like to be called a consulting engineer as such, but rather a professional engineer; but they are one and the same person.

In my opinion, there's nothing stopping any certificated engineer from being accepted as a professional engineer provided he has the necessary qualifications or years of experience. I myself haven't applied to become one as I simply don't see the necessity for it.

As regards the particular section quoted which referred to the various types of work which have to be done by professional engineers, it is necessary to read right down to sub-section D where it states quite clearly that it does not alter one iota of the Factories, Machinery and Building Work Act or the Mines and Works Act: whatever is called for under these two Acts remains as it is.

MNR. J.K. VON AHLFTEN (Springs): Die gedagte hier was maar net om dit onder die aandag van die vergadering te bring dat dit wel 'n verskil gaan maak tussen die salarisse van stadsingenieurs en elektriese ingenieurs. Moontlik is die fout dat ons persone aanstel om meer as 2 of 3 dorpe te beheer en dat die een dorp dan voel dat hi is nie 'n volwaardige ingenieur nodig het nie. Ek voel egter dit is iets wat die Uitvoerende Raad meer aandag aan moet gee en ek neem aan dat ons die saak sal bespreek tesame met die kwessie van die registrasie van Professionele Ingenieurs. Daarna sal ons weer verslag uitbring aan die verskillende takke.

THE TAKE-OVER OF SUPPLY AREAS FROM ESCOM.

THE CHAIRMAN: Due to the extension of our municipal supply area, certain old Escom consumers will have to be connected to the municipal supply. Difficulties have been experienced in persuading these consumers to apply for a connection, especially since the cost of some lines is high and the tariffs are higher than those of Escom. Consumers often do not appreciate the extension costs involved.

Although I believe that the problem rests with Escom, I suggest that the Act be amended in such a way that the consumers be compelled to take supply from the legal supplier of the area in which he wants the supply. Without such a law Escom will be compelled to supply these old consumers indefinitely - even when rural areas become developed into townships or industrial areas and municipal as well as Escom reticulation will be supplying one and the same area.

MR. K.J. MURPHY (Somerset West): Mr Chairman, I may just remind you that we have adopted a proposal that the Executive consider this matter, which they will probably do tomorrow.

THE CHAIRMAN: That of course was in regard to the larger aspect, but we are more concerned with the smaller issues which concern us all personally. There is no law to force the consumer to withdraw from his old agreement with the result that in Lady-smith, for instance, we are now saddled with 2 consumers who refuse point-blank to be connected to us. I can foresee a lot of trouble for both Escom and the township developer in the future because, for one thing, they will not be able to build under a line.

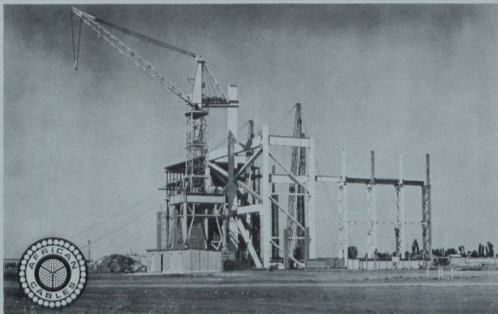
MNR. P.J. BOTES (Roodepoort): As jy 'n voorsieningsgebied het en jou grense brei uit, dan is dit nie sommer dadelik aanvaarbaar dat jou voorsieningsgebied ook uitbrei nie. Jy moet eers aansoek doen by die Elektriesiteitsbeheerder. Eers wanneer dit geskied het kan jy daardie verbruiker oorneem; jy reël net met Evkom op watter datum neem jy oor en jy gee die verbruiker kennis daarvan en dan neem jy oor! Altans so doen ons in Roodepoort en ek ondervind geen probleme in die verband nie.

DIE VOORSITTER: U is gelukkig, mnr. Botes. Toe ons dieselfde probeer het, het ons dit ook reggekry dat alles wettiglik oorgedra was aan die munisipaliteit om die gebied te voaiesen. Toe Evkom egter die mense aanspreek het hulle bloot geweier en hulle bly maar nog aansakel by Evkom, en ek glo nie Evkom is in staat om hulle of te sny nie.

MNR. E.E. DE VILLIERS (Rustenburg): Ek kan u nou glad nie verstaan nie, mnr. die Voorsitter. Ek moet aanvaar dat u Raad het ooreenkomste met al u verbruikers, en ek moet aanvaar dat Evkom het ooreenkomste met hulle verbruikers. Nou in die gewone gang van sake sal daardie ooreenkomste voorsiening maak dat enige een van die twee partye 'n redelike kennis aan die ander kan gee om die diens te staak, d.w.s. die ooreenkoms tot niet te maak. Ek is oortuig dit moet bestaan, maar ek sal baie bly wees as een van Evkom se mense miskien vir ons die versekering kan gee dat dit wel so is. As dit die geval is, gee hulle blootweg die nodige kennis aan daardie verbruikers en u neem hulle oor.

MR. G.C. MARTIN (Escom): This is a tricky problem for Escom. It is true, as Mr Botes said, that this problem only really arises where a municipality extends its area of jurisdiction. Escom's licenses do make provision that where this happens, on an application from the municipality concerned to the Electricity Control Board, the Control Board - after consultation with

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Escom to see whether in fact there is any reason it should not be done — can agree that the extended area of jurisdiction of the municipality can be regarded as having been part of that municipal area from the time when Escom's license was originally granted. All that means really is that from that time on Escom has no further right in that area to supply beyond what it might have had when its license was first granted.

Naturally too, Escom in considering the application to the Control Board from the municipality in question, must also take into account what would be in the best interests of the consumers to be affected.

Where the extension is more of a residential nature there has generally been no real problem. Escom has simply been able to inform the consumers of the impending change-over by means of a few months' notice.

However, to ensure that this goes smoothly from the point of view of the small user, we have fairly recently changed the terms of our conditions of supply for small consumers to say that in the event of the area being taken over and the responsibility being taken over by a local authority, then Escom's contracts will terminate and they will have to make further arrangements with the municipality concerned.

This takes care of the small consumer, but in the case of the larger consumers it is quite different because here we have the question of the economics of supply. Escom has a responsibility, which responsibility is defined in terms of its licence, and it cannot contract out of such obligations. As long as the consumer is happy to continue with the contract, Escom has no reason for trying to get out of this. In cases of that nature it boils down to a matter of negotiation; whether in fact the municipality can convince the consumers in question that they can give them as good a contract as they had with Escom. To date I know of no legal pressure that can be brought to bear on a consumer to force him to terminate his contract with Escom and to take supply from a municipality. Basically, negotiations and pressure, and the question of the tariff and terms offered by the municipality are what decide the issue.

THE CHAIRMAN: It appears, however, that the problems of the small consumer are solved for the future and those concerning the larger consumer will be handled by the Executive Council at their next meeting.

22.2 CAPE EASTERN BRANCH/OOSTELIKE-KAAP-TAK

MR. D. HAIG-SMITH — CHAIRMAN:
FUSED PLUG TOPS.

This question was submitted by Mr Chappel of Port Elizabeth who feels that a plug top should be provided with some form of fuse to protect flexibles supplying portable equipment. I think we all will have seen what happens when some of these light cards do fuse and I personally know of several instances where they have definitely caused fires.

I understand that Mr Hain has stated in the paper which he handed out that it is possible to give protection by installing an MCB in the socket outlet. I now throw this question open for discussion.

MR. M.J.W. CHAPPEL (Port Elizabeth): My reason for putting this forward was not that it should be made compulsory but that this should be a facility available to the consumer if he wants to protect himself. This is something that must be watched all the way along the line. The consumer has certain responsibilities and it should be possible for him to get equipment that has the adequate protection in it.

While the commercial fused socket outlet (i.e. the one with the MCB in it) is possibly quite a useful device for a lot of purposes, to install these in an ordinary house in something like 20 socket outlets would involve considerable expense.

The danger comes about when a consumer has only 1 plug in a room and small pieces of equipment such as clocks, radios and lamps are then plugged in by means of trailing flexes. The impedance of these flexes is fairly high so that in the event of a fault the fault power is not enough to trip a 30 amp circuit-breaker fast; a 12 amp circuit-breaker might just do.

The suggestion is therefore that the AMEU should use its influence with plug top manufacturers to try and get a South

African plug top with this facility, so that the consumer could buy a 1 amp or 2 amp fuse to put into this plug top if required.

MR. C.L. COSSER (Bulawayo): In Rhodesia our Central African Standard is the 13 amp fused plug. We were having so much trouble with this that I recently approached the Standards Committee in this regard. We discussed the matter and we now have dispensation to use the South African 15 amp round-pin plug in Bulawayo.

The reason for the trouble experienced is that although there is a fuse rated either at 13 amp or 3 amp in the plug top, when this fuse goes no-one can find the replacement fuse and they simply put in hairpins and bits of silver-paper. We've had endless trouble too in the African areas where we supply a lot of electricity and have been replacing these plugs at the rate of 40 a month. There have even been one or two deaths due to these plug tops being over-fused and burning up the flexes.

I must therefore warn you that the fused plug top is not all that it might seem to be and we are now going over to the MCB-protected socket outlet. As Mr Hain has pointed out you can get ratings from the lowest currents up to the full rating of the plug and we hope that these will prove to be far better than the fused plug top.

Another important factor is that the correct plug must be put onto the correct appliance or lead, and unless you have a regulation stipulating that only registered wiremen are permitted to attach such plugs (as is done in New Zealand and other countries) the whole thing is obviated again.

MR. F.J. PRINS (SABS, Pretoria): We have an open mind on the whole subject and there are just a few thoughts I'd like to put to you.

Firstly, we must decide whether we are going to protect for safety or to protect the appliance and flex to be used on the socket outlet. If for safety, then there are three possible courses open to us:

- 1) reduce the size of the circuit-breaker on the board; (as it is the opinion is held overseas that no socket outlet should be protected by a circuit-breaker larger than 16 amps)
- 2) protect each individual socket outlet with a 15 amp circuit-breaker in the case of a round-pin plug;
- 3) use a fused plug in the case of a flat-pin plug.

Method (1) would probably not give the same protection as Methods (2) and (3). Methods (2) and (3) could possibly be used in parallel until such time as a world-wide plug and socket is introduced. Methods (1) and (2) should give acceptable protection to larger appliances and reasonable protection to flexible cords.

If a fused round-pin plug is introduced it will of course be more expensive than a non-fused plug and it will have to be made mandatory otherwise people will simply go for the cheapest article.

Another aspect which has gained considerable ground overseas is the case of the moulded-on plug which cannot be fused. This must also be kept sight of.

We've had reports from territories other than Rhodesia of the difficulties with these fused plug resulting from replacing the fuse with such things as silver-paper. In fact, apparently Great Britain is having second thoughts about the fused plug.

MR. J.J. INGLIS (Pietersburg): I don't think that the fusing of plugs is going to solve our problem, particularly when it comes to the fire hazard with regard to flexes. The only answer here is compulsory 3-core flexibles. The third core need not be so heavy as to push up the cost of the flexible to any great extent. Coupled with suitable earth leakage protection, this will be the answer; because even should the impedance be that high that the circuit-breaker does not trip, the earth leakage device will come into action at this point and save the situation.

MR. M.J.W. CHAPPEL (Port Elizabeth): As I see it, it is the responsibility of the consumer himself to take steps to keep himself alive. My suggestion was merely that suitably protected plugs should be made available to the consumer to use or abuse at his own discretion.

THE CHAIRMAN: Before I left home I made sure that all my extensions were unplugged and all my plugs off! I see Mr Chappel's point though, in that if there is a fire and they come

back at you, there is no form of protection. However, if there is a fused plug available and the consumer does not make use of this, then this is his problem.

MR. M.P.P. CLARKE (Newcastle): This issue is so complicated and involved that I doubt that we will find any easy solution. I'd be very interested to know, though, if there is any statistical information available to give us some idea of how serious this problem really is. There is always the danger that in trying to make it so safe, we will price the whole thing completely out of the market.

RELIABILITY OF SUPPLY.

MR. K.G. ROBSON (East London): We find now with the introduction of computerised supervisory control in a number of municipalities, the thought of possibly a TV visual-type of control system, particularly since a number of municipalities are now to be connected to the national grid with all the attendant problems that can be expected in terms of interruptions of supply which there will inevitably be.

Then, of course, there is the well-proven system of manual operation within a certain time-limit based on a load/time factor which has worked very satisfactorily even up to very large loads in very big municipalities.

British practice has also laid down a very useful set of rules in terms of time related to load and it has occurred to us in East London that the time has come for us in South Africa to put our attention on this particular problem to ascertain where we're going. I think the unknown factors in the computerised system will obviously be answered in the course of time. By holding symposiums on this subject the smaller municipalities will be able to derive benefit from the experience of others and, with the assistance of Escom, we in South Africa might be able to lay down some sort of South African rule with regard to the restoration of supply based on a load/time basis. The proposal is therefore that the Executive Council might possibly arrange a 1 or 2 day symposium on this particular subject sometime in the future.

THE CHAIRMAN: In Queenstown while we ran our own power station we had a very high reliability factor. We are soon, however, to get Escom supply and we can expect outages although we know that Escom will do all it can to keep these to a minimum. The power is going to come all the way down from the Transvaal, down to Cookhouse, down to Port Elizabeth and then back up to Queenstown. We were hoping that there would be single phase re-closing on the line because we will be running in parallel with Escom. Most of the faults occur on one phase and we don't want to lose synchronism.

PROBLEMS ENCOUNTERED WITH PRESSURE-TESTING OF LENGTHS OF XLPe CABLE

MR. K.H.D. McMILLAN (Umtata): We tested a short length of this cable satisfactorily at 40 kv, but the longer length wouldn't even stand up to 8 or 9 kv.

Have any other municipalities experienced this? I was wondering whether we should completely ignore high-pressure tests on this XLPe cable or whether we should stick to convention and put the normal voltage on.

MR. E.E. DE VILLIERS (Rustenburg): The paper presented at the Technical Meeting clearly stated that we should not put any over-voltage tests on these XLPe cables. You're just looking for trouble in doing so because you get this deterioration and tracking inside the cable.

MR. C.L. COSSER (Bulawayo): We have some 30 miles of this cable now in use, all of which has been DC pressure tested, and we've had no troubles with it and neither do we expect to have any tracking due to putting the over-voltage on. However, we certainly don't put AC testing on it; we haven't got a set that would give the capacity for the cable.

MR. F.J. PRINS (SABS, Pretoria): This definitely does not tie up with what we know of XLPe, since it is known to have an excellent insulation/resistance value. It has been known for people to use semi-conductive tape instead of insulating tape by mistake; or there may have been something wrong with the tester.

MR. H.C. DREYER (Paarl): We have virtually standardised on XLPe cable in Paarl now and in the 3 years we've had it in

use we have not encountered anything like this. I must therefore agree with Mr Prins in that there is something which has not been accounted for in the experience of Mr McMillan.

THE CHAIRMAN: That concludes the Cape Eastern Branch session.

22.3 HIGHVELD BRANCH/HOEVELDTAK

MNR. A.J. VAN DEN BERG - VOORSITTER.
**DIE NOODSAKLIKHEID VIR DIE AARDING VAN METAAL-
DAKKE, GEUTE, AFLEIPPE, ens.**

This question has also been discussed at great length in the past and I think that we must just decide that we're going to earth any existing metal roofs, gutters and downpipes in accordance with the Factories Act and the Wiring Regulations. As Dr Anderson pointed out at the Technical Meeting at Kempton Park, it might be dangerous not to earth a metal roof from a lightning point of view in that these roofs rise in potential with the change of the electric field. If they are not earthed a flash-over can occur and set the house alight or kill somebody.

Mr Grant of the SABS said that if an earth leakage relay is to be made compulsory it may no longer be necessary to earth roofs. Mr Plowden of Johannesburg, however, warned against this as earth leakage relays have been known to fail.

I should welcome comments on this issue.

MR. J.K. VON AHLFTEN (Springs): Before Mr Wannenburg has his say, allow me to get a word in. This issue has arisen literally dozens of times and at Kempton Park Mr Wannenburg stated that the Department would welcome suggestions put forward by the AMEU either directly to them or to the Bureau of Standards, to enable some sort of agreement to be reached on this point.

As far as I'm concerned the earthing of a roof for lightning hazards has nothing whatever to do with electricity, but is something which can possibly be taken up in the building by-laws. We are only concerned with the earthing which has to do with the safety of the electricity supply to the building.

We simply must come to some sort of decision on this matter as we are wasting time and money. The Executive must give this matter very serious thought so that we can dispose of this question once and for all.

MNR. J.G. WANNENBURG (Departement van Arbeid, Pretoria): Ek stem volkome saam met mnr. Von Ahlften.

Hedendaags gaan die municipaliteit nie meer vir inleiding by die huis van bokant die dak of nie; dit kom ondergronds. Waar daar 'n metaaldak is en dit kom nog bogronds kan ek die nodigheid van aarding heeltemal insien, maar waarvoor moet 'n mens aard as dit 'n pandak of 'n nie-geleideende dak is? Dit is 'n onnodige onkosse en myns insiens kan mens miskien 'n groter gevaar skep deur dakke en geute te aard as wat andersins die geval sou wees.

MNR. E.E. DE VILLIERS (Rustenburg): Dis nou vir my baie interessant, die aarding van plastiese dakke en geute en afleippe. Ek wonder of 'n mens dit nie moet aard met 'n plastiese draad aan 'n plastiese rioolpyp nie!

MR. A.F.W.H. EGGERS (Department of Posts and Telegraphs, Pretoria): It might be of interest to note that we have had quite a lot of trouble with unearthed roofs flashing over to telephone feeds into buildings.

MR. H.B. NORMAN (Escom): There are some cases where external influences are permanent, such as when you have an unearthed roof next to a power line. In these cases I think one must take some care to earth the roof because it can pick up a voltage capacitively. This would be continuous and would constitute a danger. Apart from this I think it could be left unearthed.

MR. M.P.P. CLARKE (Newcastle): I just want to utter a word of warning: we're almost suggesting that the civil engineers will be appointing installation inspectors, and I think we must be very careful about what we decide here.

MR. J.K. VON AHLFTEN (Springs): I don't believe in taking responsibility for something which has nothing to do with me. The power line next to the house doesn't concern me; why then should I earth that roof for somebody else? I supply electricity to that building and I earth for safety as far as the supply is con-

cerned: the power line, the lightning and so forth is a concern out of our jurisdiction. Where are we going to draw the line as far as responsibility is concerned?

I suggest that this question be left to the Executive Council to thrash out and come up with some positive proposal to solve this problem.

MNR. J.G. WANNENBURG (Departement van Arbeid, Pretoria): Omtrent 4 jaar gelede het hierdie saak vir die eerste keer opgekom, en dit nie van my kant af nie. Maar as julle die regulasies wil laat verander is dit uiters noodsaaklik dat julle my laat weet hieromtrent. Dit is nog 4 jaar voor daar weer so 'n geleentheid sal opkom en by daardie tyd is ek al getree. Laat tog eger die volgende persoon weet sodat hy intussen hierdie saak kan regmaak. Ons gaan net die hele tyd hys en weer sonder om ooit tot 'n besluit te kom.

DIE VOORSITTER: Ek dink die voorstel van mnr. van Ahlften is goed: ons verwys dit dus na die Uitvoerende Raad.

NON-AVAILABILITY OF METRIC CRIMPED LUGS AND FERRULES.

MR. F.J. PRINS (SABS, Pretoria): This problem has been discussed in the cable committees for 2 to 3 years. At one stage we actually had a Working Group looking into this and there was a liaison with Alcan drawing the right size tube from which to fabricate etc.

As far as I've been able to ascertain the position at present is that B.I.C.C., Burndy are having the right size lugs and ferrules made and have it available ex local stock. The interesting thing too is that the 25mm², 95mm², 240mm² and 300mm² are practically in line with the lugs used in Britain, and thus these imported sizes will fit.

Then also, Hedge & Spargo who manufacture locally, are apparently re-working lugs to suit our conditions.

MR. H. BARNARD (Brakpan): There seems to be some confusion about this matter. This does not apply only to solid aluminium cables but also to stranded aluminium cables, or any other cable for that matter, especially where a crimping type of tool is used to make these joints or to make the cable off with a ferrule.

The issue at stake is not so much the finding of a ferrule or lug to fit the cables, since metric sizes are reasonably standard and cause few problems, but the fact that you can only use the tools from one manufacturer on his particular lugs and ferrules and on no others. Each manufacturer has his own idea about the wall thicknesses of these ferrules and lugs, and the problem lies in the outside and not the inside diameters.

MR. M.W. ODENDAAL (Alberton): We've been using aluminium conductor exclusively in Alberton for the last 8 years. Once we had decided what equipment to use, we standardised on this and we've had no trouble whatsoever.

When it comes to solid aluminium conductor, be it 3 core or 4 core, in this equipment we have what is called a rounding tool. As a matter of fact, since we've gone metric things have improved since most of the fittings which we import from France are of metric sizes anyway, and we have no trouble with them whatsoever.

MR. H. BARNARD (Brakpan): That is exactly the problem: once you have standardised on any particular equipment then you are virtually stuck with that particular supplier of ferrules and lugs.

A further snag is that various other municipalities may also have standardised on this particular brand of equipment and you may find yourself in short supply when working on a large township. The manufacturer in question then either has to import these for you or make it up which may take a long time. So standardising on one particular brand is not a very good operational method.

GROOTMAATKRAGVOORSIENING BY WOONSTEL- EN ANDER GEBOUE - WAT IS DIE VOOR- EN NADELE VERGELYK MET INDIVIDUELE KRAGMETERS?

THE CHAIRMAN: If I'm not mistaken this question has been discussed previously. In elaboration I'd like to quote the following:

"In cases where supply authorities only provide a bulk meter in say a block of flats and it is left to the landlord to meter his tenants by the installation of his own sub-meter, it has been found that a number of cheap meters of an unapproved type are finding their way on to this market. Supply authorities when purchasing and installing meters, insist that these comply with the latest BSS, whereas the sub-meters referred to are purchased and installed by an electrical contractor without approval being obtained.

Apart from the fact that as some of the cheaper meters are still fitted with metal cases and as such are unsafe, they are also not tested by an approved authority before installation, which makes their compliance with laid-down accuracy requirements suspect, this is of course morally and legally wrong.

Regulations apparently lay down that meters used for sub-metering must meet with the approval of the supply authority concerned. Therefore we would respectfully suggest that this regulation be more stringently enforced."

Adjournment for Lunch 12.45 p.m.-2.00 p.m./Verdagging vir middagete 12.45 nm.-2.00nm.

MNR. A.H.L. FORTMAN (Boksburg): Omdat daar twee partye, naamlik die voorsiener sowel as die verbruiker betrokke is, moet die voordele en nadele van beide partye beskou word. Die kragvoorsiening by grootmaat aan blokke geboue hou eger trager voordele vir die voorsiener as vir die verbruiker in, alhoewel ek die mening toegedaan is dat die eenaar ook hier-by baat.

Die voordele wat die Raad hieruit baat is die volgende:
FINANSIËL:
1. Indien die kragtoevoer aan 'n gebou, bv. 'n blok woonstelle of 'n besigheidsentrum onder een tarief bereken word, is daar net een meter om te lees en een inskrywing om te doen.

Dit sal die lees van meters, in dié geval die enkele meter, in plaas van 'n hele aantal meters wat gewoonlik op verskeie vloere van geboue aangebring word, bespoedig. Die op- en afklim van trappe en die oop- en toesluit van meterkissies word tot 'n absolute minimum beperk.

Ek moet hier byvoeg dat meters in sommige gevalle op 'n sentrale punt aangebring word.

Waar 'n gebou uit 'n samstelling van woonstelle en besighede bestaan sal twee meters aangebring word. Dis natuurlik weens die feit dat daar aparte tariewe vir daardie verskillende besigheid en woonstelle is.

Hierdeur word dus heelwat tyd en arbeid bespaar.
2. Dit is net nodig om een kontrak aan te gaan, net een deposito is betaalbaar en net een rekening, in plaas van 'n groot aantal, word uitgereik. Omdat daar net een rekening is, is die moontlikheid vir wanbetalings baie minder en dit bring 'n besparing in posgeld, uitmaak van rekening en invordering van gelde mee. Dit vermindert navrae in verband met rekening, ens.

3. Die af- en aansit en lees van meters as gevolg van die verhuising van verbruikers word in hierdie gevalle so te sê heeltemal uitgeskakel.

4. Die moeilikheid wat ondervind word waar verbruikers hulle krag onwettig aanskakel nadat hulle as gevolg van wanbetaling afgesluit is, word uitgeskakel.

TECHNICAL:

1. No great stocks of meters and circuit-breakers have to be kept, and routine testing of meters for flats, shops and offices is kept to a minimum as there is only one meter, or two, to take care of instead of the many in one large building complex.

2. Individual circuit-breakers tripping out due to consumer faults and the electricity having to be restored by the Council's electrician, mainly after normal working hours, is considerably reduced. There is thus a saving in both labour and transport.

3. Primarily where blocks of offices and shops are concerned, difficulty is experienced with individual metering and wiring because the units occupied by consumers often change in size to cater for different tenants. As buildings become bigger and bigger these problems also increase.

This is particularly the case in many modern buildings where it is common practice to sub-divide floors by means of easily

removable partitions to suit different tenants. With the change of tenants and possibly the size of the floor area occupied by new tenants, the alterations necessary to the wiring become extremely difficult for the owner of the building to carry out to suit the individual metering.

With the common practice where centralised air-conditioning is applied to buildings, it is not possible to meter the electricity used for this purpose for each tenant anyway.

4. One of the main advantages of installing bulk meters in a block of flats is, of course, the fact that the technical difficulties encountered and the expense involved, especially in large buildings, of having to run long subservice connections from common meter points to individual consumers, is overcome.

At the time when Boksburg was considering changing to the bulk metering system, I came across the annual report for 1969 for the Electricity Undertakings of the City of Cape Town published in the April 1971 issue of the S.A. Electrical Review in which Mr Frantz had this to say about bulk metering in blocks of flats:

"The trend towards larger and taller blocks of flats presented a problem in so far as the metering of the supplies is concerned. Whereas it had been practice for the Council to consider each tenant in a building as an individual consumer with a separately metered supply, it has now become necessary to give supply in bulk to each building to overcome the technical difficulties and the expense of long subservice connections from a common meter room to each flat."

So there you have it. Cape Town also realised the need to change to bulk metering but it does surprise me that they waited so long before they decided to do this.

Daar is sommige ondernemings wat die aanbring van afsonderlike meters op die einaar verpligtend maak. Hiermee kan ek glad nie saamstem nie.

As daar vir die Raad tegniese probleme met die aanbring van afsonderlike meters is, is dit dierhalwe nie billik om die installering van afsonderlike meters op die einaar verpligtend te maak nie. Dit moet die einaar vrystaan of hy afsonderlike meters wil aanbring al dan nie. Ek voel dat die oorbring van meters, hoofsaaklik by woonstelle, ontmoedig behoort te word. Waar afsonderlike meters wel deur eienaars aangebring word, is ek die mening toegedaan dat sulke meters selde of nooit nagesien en getoets sal word nie.

In Transvaal maak die Standaardelektisiteitsverordeninge, artikel 14, die installering van submeters net verpligtend in gevalle waar elektrisiteit herverkoop word. Waar elektrisiteit dus nie herverkoop word nie, kan 'n bedrag wat beraam is om die koste van verbruik te dek, by die maandelikse huur gevoeg word en dan is dit nie nodig om afsonderlike meters aan te bring nie.

The advantages for the owner are as follows:

From the wiring point of view, bulk metering allows much greater flexibility in the method of wiring. The cost of installation is reduced because the long subservice mains are not necessary. Rising busbar mains can be used and the method of wiring is simplified.

Where shop and office space is concerned the obvious advantage is that even if different tenants require larger or smaller space, the partitions can be moved at will without any alteration to the wiring.

The only disadvantage that I can think of from the Council's point of view is that if the tariff is a sliding scale tariff, there will be a loss of income and an amendment to the tariff may therefore be necessary.

There are probably a few more disadvantages for the owner but I consider them not to be of a serious nature.

One problem for the owner if he is not sub-metering would be to keep a regular check on his monthly account to see if the amount on his account is balanced by the amount included in the monthly rental to the tenants.

Another problem could be the complaint by one tenant that he or she is using less electricity than the neighbour. Here I am referring mainly to flat tenants. This, however, might only be a problem at the initial stage of change-over.

With this in mind I would like to make a comparison with

water consumed by tenants in blocks of flats. Water is generally not separately metered and tenants probably seldom, if ever, quibble about possible differences in consumption.

Where rent-controlled flats are concerned, the owner may add an amount of 25c for reading meters in accordance with Section 1 of the Rent Control Act 43 of 1950. We find, however, in Boksburg that tenants living in flats that are not rent-controlled pay anything up to R1-00, possibly more, for meter reading. There is very little that we can do about this and it is up to the tenants themselves to complain.

Ek wil egter die stelling maak dat die voordele die nadele ver oorskry.

MNR. E.E. DE VILLIERS (Rustenburg): Die punt van die valde van meters aan sekere vereistes is vir my redelik eenvoudig. Ek sien dit so, dat waar 'n mens submeters installeer is dit tog seerskerlik deel van die elektriese installasie van die gebou en ons kan dus daarop aandring dat so 'n persoon 'n goeie gehalte meters installeer en dat hy nie enige gevaarlike tipe meter mag installeer nie. U inspekteurs kan dus na daardie sakkie kyk.

MNR. H. BARNARD (Brakpan): Mnr. Fortman het hierdie saak nou baie mooi verduidelik, maar ek wil net vir hom vra wat is die posisie met die ekonomiese sy; is dit werklik soveel beter uit die Raad se oogpunt uit beskou? U weet wanneer daar enkele meters ingesit is vir elke verbruiker dan is daardie koste nie teen die Raad gereken nie; dit word teen die verbruiker gereken. As dit nou bv. 'n blok woonstelle is wat miskien 100 verbruikers het, verloor die Raad 20 x 100 deposito's wat die stadstoesourier in sy skatkis normaal sou insit, asook die rente daarop.

Tweedens, met individuele metering is jou tarief natuurlik duurder want jou eerste 300 eenhede is omtrent 2c per eenheid en daarna word hy op 'n wisselstelsel geleidelik minder. Hierdie saak moet ook oorweeg word.

MNR. C. LOMBARD (Germiston): Ek wil net noem dat mnr. Fortman glo een ander lid wat ook by die saak betrokke is, skoon uitgelaat het — en dit is die huurder. Ek glo nie dat ons kan hierdie saak in behoorlike perspektief sien tensy ons die huurder se belange ook in die oog hou nie.

Die woonstebewoner is een van ons beste verbruikers. Hy moet in die meeste gevalle staatmaak op elektrisiteit vir al sy toestelle in teenstelling met die huisbewoner wat dikwels 'n koolstoot het en dies meer. Verder is die kapitale koste wat aangegaan moet word om 'n woonstel te voorsien baie laer as bv. om 'n huis te voorsien. Is dit dan regverdig om nou die arme woonstebewoner aan die walwe oor te laat?

RDL. C.A. METER (Paarl): Ek weet nie of hierdie aspek van belang hier sal wees nie, maar sal die Wet op Deeltitels nie hierdie saak affekteer nie?

MNR. H.C. DREYER (Paarl): Ek wil graag gepraat het oor die saak van die herverkoop van elektrisiteit deur 'n woonstebewoner. Ek dink dis prinsipieel verkeerd. Ons stig as't ware klein verspreidings- of herverkoophandels binne ons eie distribusiestelsels as ons dit toelaat. Tensy ons baie streng maatreëls tref om te verhoed dat daardie woonstebewoner groot profyte gaan maak soos wat die munisipaliteit maak op die herverkoop van elektrisiteit, dan verkrag ons basiese beginsels.

Die munisipaliteit het aan die een kant die reg om profyt te maak want hy gebruik dit vir publieke voordeel, terwyl die woonstebewoner is 'n entrepreneur vir privaat voordeel. Gevolglik is ons verplig om toe te sien dat die woonstebewoner nie wins maak op sy herverkoop van elektrisiteit nie. As iemand vir my daardie hulpmiddel kan aantoon sal ek meer as bereid wees om die beginsel van 'n massa-aansluiting na 'n woonstelblok te aanvaar.

Ons moet egter ook in gedagte hou dat dit ons eie kostestruktuur geweldig affekteer as ons toelaat dat woonstelle massa-aansluitings kry. Soos mnr. Lombard nou vir ons uitgewys het, jou koste om krag te voorsien per verbruiker is baie geringer wanneer jy 'n woonstebewoner bedien as 'n verbruiker in 'n woongebied met huise. Die gevolg is dat jou kosteverdeling nou daaronder ly. As jy bv. 'n dorpsgebied neem wat 'n klomp woonstelle het, dan is dit goedkoper en jy maak 'n groter wins. Daardie wins is deel van die middel wat jy het om jou tarief laag te hou, terwyl as jy hulle verloor dan gaan jou tarief na die

ander verbruikers noodwendig op; en dit tot voordeel van 'n enkeling wat 'n woonsteleienaar is.

MNR. M.W. ODENDAAL (Alberton): Ek wil net een aspek gesê het oor die tarief: ons gebruik deesdae dieselfde stelsel in Alberton en ek dink nie dat ons woonstelbewoners vir die wolve gegooi het nie. Ons het 'n baie eenvoudige tarief en dis 'n fooi van R1-00 per maand plus 0,8c per eenheid. Dieselfde tarief word toegepas op woonsteleienaars, m.a.w. as daar 100 woonstelle is in 'n sekere gebou, dan betaal die woonsteleienaar R100-00 plus 0,8c vir die verbruik. Dit wil sê, die inkomste wat ons dan uit die woonsteleienaar kry is presies dieselfde as wat ons uit individuele woonstelbewoners sou gekry het.

Al moeilikheid wat daar is, waar die woonstelbewoner nou 'n bietjie meer sal moet betaal is nl. dat hy moet betaal aan die woonsteleienaar om die meters te lees; wat die gewone huis-eienaar nie betaal nie. Ek reken egter dit kan ook sekere tot 'n sekere mate aan bande gelê word met 'n beslissing dat die heffing nie meer as 25c sal wees nie.

Buitendien maak ons verordeninge voorsiening daarvoor dat hy nie teen 'n profyt mag verkoop nie, m.a.w. hy moet aan die woonstelbewoner teen presies gelewerde koste lewer (R1-00 + 0,8c per eenheid); en dat hy dan alleenlik 'n addisionele fooi kan hef vir oorhoofse uitgawes.

MNR. L. FUTCHER (Kempston Park): Ek wil my vereenselwig met mnr. Fortman en mnr. Odendaal. Ons gebruik die stelsel van grootmaatvoorsiening aan woonstelle. Wat mnr. Dreyer se vrees betref; as daar geen submetering is dan word die krag nie deur die woonsteleienaar aan die huurder herverkoop nie want daar is geen metering van die stroom aan daardie mense nie. Hulle betaal hulle huur vir die woonstel saam met alle dienste, d.w.s. vuilnis-verwydering, water en die huur van die woonstel. Derhalwe is daar geen herverkoop van elektriese stroom nie. Daardie probleem word heeltemal uitgeskakel mits jy nie submetering toelaat nie. Ons het geen submetering nie; ons het net een meter wat deur die Raad gelees word en een rekening wat aan die woonsteleienaar uitgemaak word.

Wat die tarief betref is daar ook geen verlies nie aangaande elektrisiteit. Intendeel al staan die helfte van daardie woonstelle leeg, kry die Raad nog die minimum soos uiteengesit deur mnr. Odendaal.

MNR. C. LOMBARD (Germiston): Ons sus net ons gewete met die bepaling dat ons in ons verordeninge het dat elektrisiteit mag nie teen 'n wins verkoop word nie. Hoeveel van ons het egter ooit die rekeninge wat gelewer word aan die huurders asook die lesings nagegaan? Ek kan u sê daár is sommer baie verkeerd.

DIE VOORSITTER: Dit is iets wat my ook kwel. Ek wonder of iemand ons kan toelig oor die vraag van mnr. Meter oor die effek van deeltitels op die idee van massatoevoer aan 'n woonstelblok.

MNR. A.H.L. FORTMAN (Boksburg): As daardie Wet finaal deurgaan en die huurders besit nou daardie woonstelle, dan sal daar 'n sentrale maatskappy of 'n sentrale kantoor moet wees om goed te behartig soos grondbelasting, water, die nasien van die grond, die sny van die gras, die verf van die gebou buite ens. Dit moet alles deur 'n sentrale beheerpunt beheer word en sodanig kan maklik die elektrisiteitrekening ook behartig word sekerlik.

With regard to the deposits: what happens in Boksburg is that they pay these deposits back to the individual tenants and the owner then pays an increased deposit which is approximately equivalent to the total paid by the tenants.

The Standard Electricity Bye-Laws of the Transvaal make provision for a guarantee to be lodged instead of a deposit, provided the estimated amount is above R500-00.

Concerning the sliding scale tariff; in Boksburg we actually changed ours to a flat rate. This simplifies things for us as well as for the flat owner who wishes to re-sell electricity.

There is no problem with rent-controlled flats as regards what is added to the monthly rental because this falls under the jurisdiction of the Rent Control Board who require proof of the consumption of the previous year. The owner may then add only

so much to the monthly rental. With uncontrolled flats, of course, it's different.

DIE VOORSITTER: Die enigste probleme wat ek in Krugersdorp kry is wanneer die Raadslede wat groot woonstelblokke besit, my kom pla of ek nie asseblief aparte meters kan installeer nie want die mense mors die water en hulle verloor geweldig daarby.

RDL. C.A. METER (Paarl): Gewoonlik sou ek sê dat in die geval van deeltitels, soos ons hom nou voorstel, sou jy vind dat die bewoners van die deeltitelwoonstelle waarskynlik 'n groot gedeelte van die ouer tipe mense sou wees wat moontlik nie sou wil deel in die koste van die jonger families wat in so 'n deeltitelwoonstel sou intrek nie. Maar ek is tevrede dat hierdie saak nie van so 'n groot omvang is nie, en ek glo dat daar wel uit die sentrale besittende maatskappy 'n verdeling sou kon gemaak word wat tot tevredeheid sou wees.

MR. D.C. PLOWDEN (Johannesburg): In Johannesburg we have always supplied in bulk to a block of flats for certain very good reasons. There has been the suggestion that an unscrupulous landlord can exploit the tenant. This is certainly true and it depends then very greatly on the structure of your tariff.

Up until June/July of last year we had a tariff where the capital related costs were recovered from a standing charge amounting to 40c per room; and a room was defined. We also laid down that where we supplied in bulk the landlord in selling to his tenants, must sell at the tariff that we would have charged if we had supplied that tenant direct. This meant then that the landlord could not and must recover costs on the room basis and then on the energy charge.

From time to time we did random checks on flat buildings and compared the units consumed for the whole building with the units consumed by the subtenants, obtaining that information from meter-reading agents. We found that on our old tariff a landlord might be recovering from his tenants more than 100% of his total costs where the tenants themselves might be using only 50%, 60%, 70% of the total units in that building. This was possible by a landlord for instance classing a bathroom as a room.

However, in our new tariff we've dropped this room basis of a charge altogether and we now work on a block scale. In order to help recover our capital costs the first 300 units are at 1,6c; the next 1 000 units, at 0,65c and anything above that, at 0,5c. This also acts as an incentive to people to use more electrical appliances.

Since applying the new tariff we have again done these random checks and have found that the landlord has no leeway to exploit his tenant at all. He can only recover from his tenants exactly that amount that they have in fact used. Anything over and above that he has to pay himself; this includes corridor lighting, lifts, servant's quarters and so on. These latter are a service to the tenant and this cost is therefore a rent-orientated one, not a tariff. The landlord is quite at liberty to recover them by means of his rent but not through our tariff. In our new tariff if the demand on these common services exceeds 50 kw, the landlord can then go onto our demand tariff and thereby get this supply at an appreciably lower rate, particularly if his load factor is good. Bulk water heating gives a remarkably good load factor.

All in all, if your tariff is properly structured the landlord simply cannot exploit his tenants.

DIE VOORSITTER: Ek het net gewonder of Evkom enige probleme in hierdie verband het.

MNR. T.C. STOFFBERG (Evkom): In ons nuwe tarief het ons sorgvuldig geanaliseer wat mnr. Plowden doen en ons het hom slaafs gevolg!

MNR. J.A. LOUBSER (Benoni): Wat mnr. Plowden nou net gesê het het my effens geskok. It's obvious that they do now have a sliding scale as well as a maximum demand tariff. This allows the landlord to sell electricity to the consumers at a domestic tariff. Then he really makes a profit which is against the Act. I should welcome some clarification on this point.

MR. D.C. PLOWDEN (Johannesburg): I don't quite get Mr Loubser's point. Certainly it would rarely, if ever, pay the land-

lord of a block of flats to go over wholly on to the demand tariff since the consumption of flat dwellers is not conducive to good load factor. It would only pay him to separate the tenants and charge them on the domestic tariff if he could ensure a very good load factor, such as that provided by bulk water heating.

MR. T. C. STOFFBERG (Escom): I think part of the answer to Mr Loubser's question is this: Mr Plowden's tariff defines a flat as a dwelling unit and for each such dwelling unit the bulk supply account includes an expensive block of units. In other words, the number of units is averaged out over the flats and they are applied as if they were supplied to individual flats; so that the sliding scale is applicable to each flat.

MR. D. H. FRASER (Durban): I don't know whether Johannesburg started distributing electricity before Durban or vice versa, but I should imagine there is very little margin between the two. It just goes to show, however, that there are two different paths which can be taken on this issue since we in Durban have always practised individual metering of what we regard as individual dwelling units.

There are two important principles to be born in mind in considering this issue; the one being the protection of the rights of individuals. This covers the aspects of the accuracy of metering and the honesty of landlords. To my way of thinking the individual would normally have more faith in the honesty of a public authority and the competence of that authority to meter accurately than in a private individual. However, Johannesburg has plenty of experience on this subject, and obviously they do keep a check on what the individual block owners are doing which I think is very essential.

The other principle involved is that there must be some incentive and some restraint in the utilisation of an essential service, which is why I can't go along with the policy apparently adopted by some supply authorities of metering a building in bulk and not insisting that individual users be sub-metered. I feel this is contrary to the necessary incentives and restraints which should be there.

For a long, long time water was unmetered in Durban and there was a great hue and cry when the Government insisted that this policy should be changed in the future, and individual metering carried out. I don't know the reason for the difference in policy between the sale of electricity and that of water in Durban, but I do think that the installation of water metering is in accordance with the principles that I feel should be followed.

The only problem that we have encountered with individual metering is that it does involve some additional administration and possibly quite a lot more meter reading. However, if the authority is geared up to do it, they can recover the costs involved and I think they are the right party to do this.

In cases of short-term occupancy as with the holiday flats in Durban, we do not submeter. These flats are regarded more or less as a hotel and the cost of electricity is recovered by the owner of the building in the form of his charges.

THE CHAIRMAN: This would perhaps be a good subject for a paperette at our next Technical Meeting as there seems to be quite a lot of interest in this matter.

MR. E. E. TRAUTMAN (Ladysmith): We certainly seem to have two schools of thought here, but I would find it difficult to bypass the legal side completely. I feel that the flat owner may have the right to ask for bulk supply, depending on the structure of the company. I may also state that many bye-laws stipulate that there should be only 1 supply to any single lot in town. We have to let well alone as regards the relationship between the landlord and his tenants, as we cannot really interfere there.

I would therefore recommend that our legal advisers first be consulted and the Executive Council then be asked to deal with this matter and advise us on the outcome.

THE CHAIRMAN: We will now conclude the Highveld Branch Session.

22.4 GOOD HOPE BRANCH / GOEIE-HOOPTAK

MNR. H. C. DREYER - VOORSITTER:

THE EXTENSION OF ADULT TRAINING CENTRES TO INCLUDE THE TRAINING OF INDENTURED ELECTRICIAN APPRENTICES FOR MUNICIPALITIES.

This issue has been very much in the limelight lately due to the

problems we have experienced. Perhaps Mr Hare would care to comment on this.

MR. L. H. HARE (Central Organisation for Trade Testing, Olifantsfontein): From the question it would appear that there is some slight misconception. During the war years the COTT training centres were the Central Organisation for Technical Training and were actually commenced to give people who had received a certain amount of technical training in the armed forces the opportunity of becoming more skilled along the lines required by industry. These centres have disappeared completely now.

There is only 1 adult training centre left in the Republic and that is the National Trade School for Artisans at Westlake. It is run by the Department of National Education and its primary purpose is to enable people who are majors (i.e. over the age of 21) to do an intensive training course and thereafter to do a further training course in industry before gaining artisan status. These courses are, at this stage, only open to this type of person and do not cover the indentured apprentice at all.

COTT as it exists at the moment, is the Central Organisation for Trade Testing and we are only an examining body. All tests of apprentices — excluding lady hairdressers — are done at Olifantsfontein; and the apprentice electrical wiremen have to go to Olifantsfontein the same as any other apprentice electrician in the metal industry.

The examination for the Electrical Wiremen's Registration Board is conducted by COTT on behalf of the Board, but it is under the Electrical Wiremen and Contractors' Act and not under the Apprenticeship Act.

As a point of information, COTT runs 12 centres outside of Olifantsfontein for the testing of electrical wiremen who are not apprentices.

QUESTION 3 is also clearly linked with this whole problem of apprenticeship training and I should therefore like to comment on this at this stage as well. Escom has spent a large amount of money on the training of apprentices, including just over R1 million recently on an apprentice training school. They are getting fantastic results there. In fact last year nearly three-quarters of all the apprentices from Escom passed their trade test and I think this figure will rise. This expensive undertaking by Escom has proved to be a tremendous success.

It has been mentioned before that municipal electricians do not do the type of work required of an electrician in the metal industry. This may be so, but it has also been said that if a separate apprenticeship committee for municipal undertakings is drawn up, that it should follow along the same lines as that of Escom. I should like to point out, however, that the schedule of training for apprentice electricians laid down by Escom is an extremely tight one, and any employer who could not train under the existing schedule of training for apprentice electricians in the metal industry will most certainly be unable to adhere to the standards that Escom is setting at the moment.

I would also like to point out that Escom makes use of a large number of people who are not artisans in the strict sense of the word in that they have not completed an apprenticeship in terms of the Apprenticeship Act. I refer here to linemen, cable jointers and the like. These men are very highly specialised workers and their training as such is in a rather narrow field. This, too, should be born in mind.

MR. W. B. BOZYCZKO (Estcourt): I think it is high time that the AMEU under its own auspices had some kind of apprenticeship training centre similar to that of Escom.

MR. P. J. BOTES (Roodepoort): Mr Hare has been of great assistance to the Sub-Committee appointed by the Highveld Branch, consisting of Mr von Ahlften and myself, to investigate the training of apprentices. This question will be discussed further at the Executive Meeting along the lines of the recommendation that we establish our own training centre.

MR. G. AALBERS (Wellington): In the past we have had men starting as linemen and doing their training with us. Just recently, however, we had the opportunity of sending a man to Westlake and he can now take his trade test. I feel that this would make an excellent training centre for the Cape and I would like to know whether we can continue sending men there.

I understand Port Elizabeth also sent a man there when they were forbidden to indenture apprentices under the Metal Industries Act.

THE CHAIRMAN: The training centre at Westlake is of course an adult training centre and Mr Aalber's suggestion now is that this be extended to include indentured apprentices. I presume by this he means that the apprentice is indentured and then sent to the training centre for a certain period.

MR. P.J. BOTES (Roodepoort): The Sub-Committee investigated the possibility of technical colleges giving this training but we came to the conclusion that it is not merely a matter of training an apprentice but it is the basic training.

It was pointed out by Escom that serious difficulties can arise when an apprentice who has done his basic training goes back to his original place of employment. He may only have been in training for a period of 12 weeks and know more about the job than the electrician and this can cause terrific friction between the two. Then, too, his work may deteriorate over this period due to his working with staff of inferior capabilities. Consequently it is very necessary to ensure that the apprentice is well looked after when he returns after his training period.

During the apprenticeship period of an apprentice the training school must keep track of the apprentice, and ensure that just before he goes for his final trade test at COTT, he receives further training.

Another very important aspect involved in training is that the apprentice must be encouraged to mature and to become a better man; something which cannot be imparted simply by attending college a few days a week.

MR. W.P. RATTEY (Strand): We have reached certain conclusions on this issue in the Cape. I think it perhaps a bit premature to put them before you today but there is just one suggestion I would like to make in the light of what has been said here now, and that is that I think it would be a jolly good idea if in association with the Executive, we could come to some conclusion which would be satisfactory to all provinces. It will be of little help to us if we were to develop a school of technical training or basic education in 1 centre only because it would prove far too expensive to send our apprentices across the country to such a school. It would therefore have to be something common to all the provinces.

MR. E.E. TRAUTMAN (Ladysmith): Pending any further development I would suggest that if possible members should pay a visit to the trade testing centre at Olifantsfontein. It was a tremendous eye-opener to me to visit there recently and to see the very fair way in which our electricians are tested there.

In the meantime I would suggest that we follow this example if we have problems and this will be to the benefit even of those who will not participate in any further schemes.

MR. D.C. PLOWDEN (Johannesburg): This scheme was started in the mid-1940's and has thus been in existence for over 30 years; rather longer than any other organisation in this country. We train such people as electricians, motor mechanics and fitters and turners and we've had remarkably good success in getting these youngsters through their trade tests.

Since we've been talking about the costs of training I might mention that in the fifteen year period from 1950 to 1965 it cost us R21 000-00 per apprentice trained and retained in our services. It certainly is an expense, but then again we have had the advantage of artisans who've been trained by other organisations. Statistics can prove whatever you want them to.

Mr Botes referred earlier to the method of training apprentices and the time that they will spend in a training centre. It is our practice to take every apprentice and put him into our basic training centre for the first 6 months of his period of training. Thereafter he goes out into the field for training which is equally essential. We've not experienced conflict between the apprentice and the artisan but then we do make a point of selecting the artisans with whom we will place apprentices; in this way ensuring that the good basis that the apprentice may have had in the training centre is not lost. He is put with a man who is equally good and can really train him.

THE CHAIRMAN: That more or less answers the question that's been worrying me for a long time. Johannesburg is

obviously having such success with the training of apprentices because it is investing such a vast amount of money in this project.

MR. D.H. FRASER (Durban): What happens, though, when you have more apprentices than good electricians? This situation has resulted in our having to go even further in our basic training school than might be required for the purpose of passing the COTT trade test, which incidentally we don't participate in. Because we don't have sufficient reliable artisans in the field to do so, we give specific training in cable jointing and in overhead line work in the training school, although this is probably best done in the field.

MR. K.J. MURPHY (Somerset West): We haven't touched on the subject of the recruitment of apprentices yet. Are we quite satisfied that with the salaries that are paid at the moment, the recruitment of apprentices is easy enough? It was mentioned at Kempton Park that one of the Rand undertakings is now paying its apprentices the equivalent of the starting salary of a bank clerk. Should one not consider this aspect as well?

MR. M.J.W. CHAPPEL (Port Elizabeth): Reference was made earlier to Port Elizabeth regarding Westlake. We have sent a number of young men there for a year's training, after which they are tied up for 3 years. The training they've received has been useful; they've come back reasonably well-trained in the basics, lacking only in experience.

Mention was also made of the fact that we no longer apprentice boys under the Metal Industries Committee but our boys are now apprenticed under the Masters and Servants Act. Our passes at Olifantsfontein from the boys who are still under the Metal Industries Committee have not been very much better recently than they were in the past, but there's no doubt about it that it's relatively easy to school them up towards the end of their period to the particular types of jobs they're set at Olifantsfontein.

We feel, however, that the syllabus of the Metal Industries Committee is not suitable for the electrical industry.

It appears that the Johannesburg Council trains all its apprentices in the one school and this is an obvious advantage. In our case it's only the Electricity Department as the City Engineers Department hasn't taken on any apprentices in the past. I do feel that every undertaking should make some effort to train apprentices to provide the workers that it needs.

We are doing just that and at the moment have approximately 36 apprentices in the Electricity Department serving a four-year period. This means that our intake is 9 per year and although we can't set up very elaborate training facilities for 9 boys, they do serve a period of 6 months under a particular instructor in one of the power stations. From there they go out and serve periods of time in the various sections of the Department and they also have 4 months of the year for block education at the Technical College.

Despite the fact that the majority of our boys can't pass the Olifantsfontein test, they make good artisans and we have the greatest difficulty in retraining them as they are snapped up by other people.

MR. W.B. BOZYCZO (Estcourt): We seem to be talking here about a specific race group but, since various other areas under our control demand possibly another race equally trained in specific fields, I wonder if we could have some information on this.

MR. L.H. HARE (COTT, Olifantsfontein): As a matter of interest, 80% of the apprentice intake to the Simonstown dockyard last year were Coloureds.

As far as the indenturing of apprentices goes, various parts of the country do indenture the different race groups except Bantu; and we test all race groups at Olifantsfontein except Bantu.

MR. J.L. McNEIL (Kokstad): After having experienced considerable difficulty in trying to engage apprentices, I may say that I have very seriously considered taking on a Coloured. Four apprentices came and went in swift succession for various reasons and I now have a fifth in whom I have every hope. This, however, was also the case with the other four who nevertheless disappeared despite all the trouble I had taken to interest them.

Before we closed the power station at Kokstad I took the opportunity of asking the relative principals of the schools in Kokstad to send their senior pupils around so that they could see what a generating station really meant and the part it played in the development of a town. I was hoping that I would at least get one interested boy.

I also told the Council that I felt it was our duty to train some of the youth in the town and accordingly advertised for an apprentice for at least two years; but the response was absolutely nil.

MNR. D.H. FRASER (Durban): There is no doubt that we do have the manpower available to meet the needs of this country. You might be interested to hear of the recent move we made in the training of Indian electricians in Durban. We started in a very small way because we need the co-operation of the white staff to initiate this training and we have to give them certain assurances. However, we called for 6 apprentice electricians from the Indian race group. We had 1 056 applicants including scores of matriculants and even some with university degrees. They have already started on their training and are tremendously enthusiastic. Although it is still a little early to tell, we have every hope that they will make good artisans. We don't necessarily want them with high academic standards to make good artisans but possibly this isn't a disadvantage in this case.

As has been mentioned, the Bantu cannot be indentured as electrical artisans, but we are training them in the full scope of the activities of the electrical artisan under the Bantu Workers' Act. At the moment we have 60 of them in training and they are also making very good progress. Again it remains to be seen just how long it takes for them to master all the aspects of an electrician's training. I certainly don't think there will be any difficulty with such things as line work, cable work and substation work.

VERSLAPPING VAN DIE VEREISTES DAT SLEGS GEREGISTREERDE DRAADWERKERS DRAADWERK MAG DOEN.

DIE VOORSITTER: Die kwessie van die tekort van geskoolde vakmense noop ons dikwels om oë toe te knyp waar ons dit nie moet doen nie. Dan is daar ook die feit dat die hele land nou gedek is onder die Bedringswet as 'n verklore gebied; gevolglik moet alle elektriese kontrakteurs in ons land nou geregistreer word by plaaslike owerhede.

Vroeër in ons sitting was daar gepleit dat hierdie beheer verslap moet word. Ek dink dit is ons vernaamste beheer wat daar is. Het dit miskien tyd geword dat ons liever 'n verslapping toelaat op voorwaarde dat 'n kontrakteur wat self beskik oor 'n behoorlike kwalifikasie, miskien toegelaat kan word om gebruik te maak van draadwerkers al is hulle nie behoorlik gelisensieer nie?

MR. E.V. BURTON (Electrical Contractors' Association, Johannesburg): For the last three years we, as electrical contractors, have been trying very hard indeed to have the word 'conduit' removed from the definitions under the Act. We feel that 'conduit work' comprises roughly 50% of any installation work and that we're training electricians to a fairly high standard only to have them spend most of their time doing work that a pipe-fitter could do.

MNR. J.G. WANNENBURG (Departement van Arbeid, Pretoria): Ek is bevrees dat hierdie versoek dat ons moet toelaat dat kontrakteurs al minder en minder van geregistreerde of gelisensieerde draadwerkers gebruik moet maak, is heeltemal 'n stap in die verkeerde rigting.

Vir twee jaar lank het ons die hekke vir al die mense wavyd opgegooi — enige persoon wat vyf jaar se ondervinding gehad het, nadat hy 'n vakleerlingskap voltooi het, kon gekom het en ons het hom vrygestel van Deel A van die eksamen, en ons

het net verweg dat daardie persoon die praktiese eksamen moes aflê. Ons het verder gegaan en dit so maklik gemaak dat as 'n persoon een vak deurkom in die Deel B gedeelte wat hy moet skrywe, dan kry hy krediet vir daardie gedeelte en hy het nie nodig om dit weer oor te doen nie.

Daardie toegewing was gemaak gewees vir 'n jaar lank en toe het dit geskied dat tot omtrent 'n maand voordat daardie toegewing sou vervel het ons omtrent geen mense gekry wat aansoek gedoen het om die eksamen te doen nie. Toe is daar skielik 'n vloed van aansoeke en ons kan net nie bybly om voorlopige registrasiesertifikate uit te reik dat die mense eksamens kon kom skrywe nie.

Toe het die elektriese kontrakteurs gekom en vir ons gevra of ons nie daardie toegewing vir nog 'n jaar kon maak nie. Dit het ons toe weer gedoen en presies dieselfde ding het weer gebeur. Ons het later gehoor van mond tot mond dat die kontrakteurs vir hulle draadwerkers aangeraai het om nie aansoek te doen nie tot op die heel laaste wint dan het hulle nog 'n ekstra jaar om te werk sonder daardie lisensie.

Na twee jaar was daar wel 'n verbetering in die toedrag van sake en 'n hele klomp mense het gehoor gegee daaraan; maar net onlangs het ons weer 'n man gehad wat in 1945 sy eerste voorlopige registrasiesertifikaat gekry het, en hy het sowaar die vermetelheid om hierdie jaar vir sy eerste hernuwing te vra! Dit is darem 'n bietjie verregaande!

Derhalwe wil ek vra dat hierdie vraag asseblief herformuleer moet word. Het die tyd nou nie aangebreek nie dat alle elektriese kontrakteurs in stede daarvan om te probeer om die Wet verander te kry, nou besluit om hulle mense in te stuur om hulle voorlopige registrasiesertifikate te kry. Ek kan net nie sien hoe om hulle dit nie wil doen nie, want dit is hendaanogs so maklik gemaak.

Om net weer terug te val op vakleerlinge: ek wens net u kon sien die resultate wat ons partykeer kry van eksamens wat afgelê word. Dit dui net op een ding en dit is dat daar sekere groepe mense is wat vakleerlinge aanneem net om vuilwerk te doen, want daardie vakleerlinge kry absoluut geen onderrig nie. Daar reken ek stellig dat daar baie streng opgetree moet word teenoor die mense wat vakleerlinge net wil gebruik vir goedkoop arbeid.

As regards the removal of the word 'conduit': this is a long, long story which has been debated for the past 2½ years. Suffice it to say that were this word to be removed from the definition of wiring work it would virtually be impossible for a person to do the practical examination. How, for instance, would such a person demonstrate his ability to do wiring work when he cannot carry a conductor in conduit?

There are other ways of solving this problem which we are working on at the moment and which might be made available next year. Our legal advisers have told us, though, that we definitely cannot remove the word 'conduit'.

DIE VOORSITTER: Baie dankie dat u so geduldig was by die geleentheid, mnr. Wannenburg. U sal miskien dink ons herhaal net onnodige vrae maar u moet in gedagte hou dat die forumvroe kom dikwels van ander lede wat nie die geleentheid het om hierdie kongresse by te woon nie.

MNR. J.K. VON AHLFTEN (Springs): Ek wil net herhaal wat in my verslag oor die Registrasieraad staan: ons moet toesien dat alle draadwerk gedoen word deur gelisensieerde draadwerkers en niemand anders nie.

DIE VOORSITTER: Daarmee is die Goeie-Hooping nou gesluit.

THE PRESIDENT: That concludes the Forum for this Convention. I should like to thank the 4 Chairmen very much indeed for the very efficient manner in which they have conducted their sessions. They managed to cover a great deal of ground and to finish in good time.

23. HONORARY MEMBERSHIP – ERE-LIDMAATSKAP

MR. J.K. VON AHLFTEN (Springs): Mr Mayor, Mr President, ladies and gentlemen, the fact has been made known to you in the Presidential Address and in the Secretaries' Report that it is the unanimous decision of the Executive Council to award Mr. Dick Ewing Honorary Membership.

Before doing so I think we should also note the fact that Miss Brewin, who for many years manned the Johannesburg office, did a tremendous amount of work and, if it carries the approval of this Association, I would like to recommend that some token be given to her in recognition of her services, and that this be left to the Executive Council.

I'm only very sorry that Mr. Dick Ewing couldn't be here himself. I did phone him and invite him to come even if only for today and for the social this evening, but unfortunately he couldn't see his way clear to do so.

With those few words, Mr President, it gives me great pleasure to put forward the proposal of the Executive Council that Dick Ewing be made an Honorary Member of the Association, and I would ask the Convention's approval for this proposal.

The Convention approved the proposal unanimously and Mr. Robson was invited to receive the honorary certificate on behalf of Mr. Ewing.

MR. K.G. ROBSON (East London): Mr Mayor, Mr President, gentlemen, I've been privileged at the request of Mr Dick Ewing to accept this Certificate of Honorary Membership; and you have kindly permitted me, Mr President, to convey to the Convention this personal message from him:

"Mr President and friends, it is a matter of regret to meet that other commitments have made it impossible for me to be present on this occasion and to accept from you the honour which you have seen fit to bestow on me. In accepting Honorary Membership of the AMEU, I do so on my own behalf as well as that of our firm and those in it who, over the past 18 years, have been responsible for the administration of the Association.

I'm deeply conscious of the honour which has been bestowed on me and will treasure the tokens thereof along with the happy memories of the co-operation with and the friendship of so many members and affiliates of the Association over the years. In particular, to the Past Presidents I would like to recall the many happy years spent together in the interests of the Association.

Mr President, ladies and gentlemen, once again my sincere thanks to you and my very best wishes to each and every one of you from myself and Joy."

24. ACKNOWLEDGEMENTS – ERKENNINGS

THE PRESIDENT: I'm sorry to have to announce that Mr A.Q. Harvey of Louis Trichardt who is 72 years old and has been a member of this Association since 1972, is to retire next month. His membership of the Association totals 46 years and we heartily congratulate him on this terrific achievement.

Then, too, I wish to announce that since the Rhodesian Undertakings no longer belong to our Association, it has been necessary to re-design our coat of arms and the Executive will come to a final conclusion on this issue tomorrow.

HIS WORSHIP THE MAYOR, CLR C.L. WOOD: Mr President, ladies and gentlemen, I know that you have all derived a great deal of benefit by attending this Convention as the papers and discussions have been of a very high standard. I know this to be the case because some of it was a bit above my head! I congratulate you, Mr President, your predecessor and your committee on making this 43rd Convention such a success.

I sincerely hope too that all the delegates and their wives have also enjoyed their time here in Pietermaritzburg. We have done our best as usual to give you variety – even to the weather!

The Mayoress has been delighted to meet so many of the ladies and we only hope they were all found to be present after their visit to the Lion Park!

Ladies, the Mayoress thanks you all very much indeed for collecting for her Rover Scout and Necessities Fund on the bus trip to the Queen Elizabeth Park the other morning. You collected an amount of R22-51 of which R4-00 was paid to the two busdrivers.

On behalf of the City Council I thank you all very much for coming to our city and I hope that you will take away very happy memories of the city. I am convinced that your 1975 Convention will be a great success, taking place as it is in the

new Potchefstroom Game Reserve! I wish you everything of the best in the future.

Dames en here, moet asseblief nie weer 23 jaar wag voordat u ons weer besoek nie, en tussen kongresse maak maar 'n draai-tjie hier op pad na die kus. Totsiens en 'n veilige terugreis aan u almal.

CLR. C. DE KOCK (Potchefstroom): Mr Mayor, Mr President, ladies and gentlemen: I must avail myself of this opportunity of thanking you on behalf of all the delegates, Mr Mayor, for making our stay in this beautiful city of yours such a pleasant one. We must thank you particularly too for leaving on your most attractive illuminations. Coming from the Transvaal we have really found Pietermaritzburg to be "n verligte plek"!

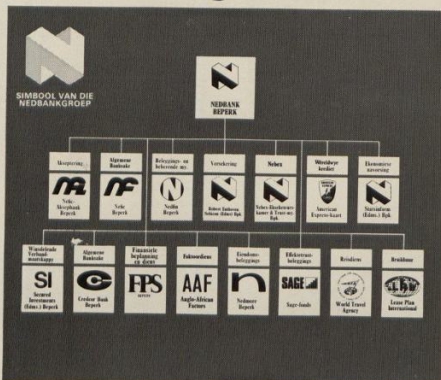
Mr Mayor, you have really excelled yourself of late in that you not only solved the problem of poles for the engineers at the SANCI Convention, but by your reference to the Lion Park, gave us the wonderful idea of holding our next Convention at Skukuza! We hope there to be able to emulate the most excellent facilities enjoyed here.

MR. J.A. MORRISON (Simplex Electric of South Africa (Pty) Ltd., Johannesburg): Mnr. die Burgemeester, mnr. die President, dames en here, toe ons in Pietermaritzburg aangekom het, was die stad verlig, maar sedert mnr. Dreyer se aanmerkings oor "black power", voel ons byna verkrampt!

There's a wise saying that the seeds of knowledge must be planted in solitude. But undoubtedly they must be cultivated in public, and during this Convention we've reaped a wonderful harvest of information communicated to us through the media of excellent papers and thought-out discussions.

I sincerely believe that no organisation can prosper unless it

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promotes the cross-pollination of ideas and I'd like to tell you a story that illustrates this point:

In the mountains of Tibet there lie the ruins of a monastery that was once occupied by a community who were sworn to silence. There the monks would spend their long days sitting cross-legged on the floor of the temple in a state of mental elevation; which condition was achieved by contemplating for hours on end the end of the nose whilst tugging gently on the lobe of the ear!

Now apart from producing a fraternity of cross-eyed, long-eared morons who, when in company, resembled a pack of rather short-sighted basset hounds, the community contributed nothing to the benefit of the human race; and that is why it died and the monks themselves slowly faded into the oblivion of senile decay.

And today, Mr President, I pay tribute to your forefathers and forebears for having established this Convention as a means of verbal communication, thereby forestalling the terrible fate amongst your members of mental sterility.

Therefore, as we approach the end of this Convention, I think we should dwell for a minute on how our various members use this method of communication. Firstly, we have the doyen of our industry — the fountain of power, the very life-blood of our existence — the Electricity Supply Commission! This august body is presently celebrating its 50th anniversary and yet even in the midst of its festive merrymaking, has found the time to think of its poor relations and to communicate with us. This has taken the form of a grand review, giving an exciting prospect of a vast expansion programme. And whilst we've all been elated at the tremendous depth of foresight, somewhere in the unconscious mind there's a timid thought, "I wonder who's going to pay for all this?"

It's rather like the prospective bridegroom weighing up the merits of the promised joys of nuptial bliss against the depleted state of his bank balance!

Fortunately the impact of this obligation in this respect is somewhat softened by the thought that we are investing in the future, and even the most stalwart protagonists of do-it-yourself home generation should accept this obligation. After all, if no one had supported Thomas Edison during his time we might have the prospect of watching our new television by candlelight!

Next we have the City Electrical Engineer who, by virtue of the fact that he's read the latest ideas on public relations, has decided to get with it and establish some means of finally communicating with the revolting ratepayer!

Now you've all read of the "Jan Boets" (?) man — that proverbial paragon of patient patronage! Well our engineer has decided to go a stage further and create the "Jan Boets" woman to deal with complaints. These glamorous damsels with curves in places where some other girls don't even have places, are established in a plush reception area, and it is into this air-conditioned harem that the angry householder is ushered, still brandishing his electricity account. After the preliminary introductions it begins to dawn that even the Darwinian theory is suspect, for whilst the human race through the evolution of time has learnt to walk in the upright position, it is the eyes of the male species that continue to swing from limb to limb! By the time our drooling subject has given the "Jan Boets" woman the once-over twice, he has completely forgotten that he originally came to say he only used gas!

At the other end of the scale we have the dedicated jack-of-all-trades engineer in one of our smaller dorps who by virtue of the spartan accommodation provided, takes a fiendish delight in sharing it with you by holding the interview in what appears to be a reconditioned icebox!

Regrettably the art of communication is not one of his strong points and he approaches the forthcoming Council Meeting just about as nervous as a mother kangaroo in a room full of pick-pockets! As he finishes his presentation it dawns on him that he has failed to notify the meeting exactly where the new lighting scheme is to be located; but as the Councillors without exception automatically assume that it could not possibly be anywhere else except in their own area, expenditure is sanctioned without

further comment. Sadly the subsequent installation is doomed to result in a 90% diversity dissatisfaction factor!

Then, Mr President, lastly we have the communication from the affiliates; and here I would strike a note of warning because there are some of our community whose message is somewhat doubtful. The suave, smooth presentation of what is obviously a very inferior product desecrates the pure and honourable image of this fine body of affiliates here present. At this stage I suppose it would be quite wrong for me to mention names, but I think you may take it, sir, that I refer to all my competitors!

These scurrilous infidels are the exception. The general rule is that the members of commerce take their duties very seriously. We hear of the designers who labour late at the factory giving the ladies what they want; the salesmen who diligently plan their calls to arrive only in times of extreme crisis; and I even recall one managing director who was so dedicated that he kept his secretary by his bedside just in case he had an idea during the night!

As you see, Mr President, it's all a matter of communication and it would be very remiss of me today not to take this opportunity of communicating with you on behalf of the affiliates, and to congratulate you on a really outstanding Convention.

To the Mayor, to the members of the Electricity Department and all those who've done so much to make our stay here so comfortable, our very sincere thanks.

And finally, to the Executive Council of the AAEU and every member, a very big thank you for inviting us to participate and to communicate with you.

THE PRESIDENT: The ladies would also like to have their say and accordingly they've nominated none other than Mr Charles Hallie to do so for them.

Mr Hallie was the President of the last Convention held in Pietermaritzburg in 1950 and has always had a great reputation as a humorist.

MR. C.R. HALLE (Pietermaritzburg): Mr Mayor, I think Jack Waddy has brought me out of the museum just to show you that old electrical engineers never die — they just drop their power factor!

It is my very pleasant duty, Mr Mayor, to thank you and your charming wife, the Mayoress, and the Council for the excellent entertainment you have given to the ladies. You know 'Maritzburg has always had a great admiration for the fair sex, and of course the most admired woman of all was Queen Victoria. Why, at her jubilee in 1897 some citizen proposed that 'Maritzburg should send her an extra big bunch of bananas from the City. Then some clot suggested that they simply send over the whole City Council! Of course I'm not referring to the City Councillors who control my municipal pension!

Anyway 'Maritzburg's admiration meant that they gave her a loyal address and free parking on the Marke Square and they have also named various parts of the city after her: there's Victoria Station, Victoria Road, Victoria Bridge and of course the Victoria Club.

Then, to show their admiration of Queen Alexander, they named a police station and a park after her. Mr Allison's famous house was named after Queen Mary and now they've named another big park after Queen Elizabeth. I can't imagine what's going to happen when our grandchildren find that Pietermaritzburg is inside a republic!

Anyway we do our best to entertain the ladies, and at the last Convention one of the ladies from Durban went round advising all her friends to go to 'Maritzburg for a really good laugh. Durban of course felt a bit superior since she could boast skyscrapers but as you see we too now have skyscrapers. In fact we've adopted President Brand's famous saying: "Alles sal regkom!"

However, I understand the ladies don't really like these tall, flat-chested buildings; they prefer our old Colonial architecture with its curves and balconies and filigree wrought-iron work. They realise of course what a few curves and lace-work can do to improve the front elevation!

Your entertainment of the ladies, Mr Mayor, has gained you a lot of new friends. In this space age scientists are paying more attention to the mysterious force of gravity which holds together

the galaxies and the planets. Perhaps some day we will investigate that equally mysterious form of gravity called friendship which holds together our human society.

So when you're battling with your annual estimates I hope you'll remember the words of a song from the old Scots comedian, Will Fyfe: "If I hae'na got a penny when life ends, thank God I've got a fortune in ma friends!"

THE PRESIDENT: It's very nice to have you with us again, Charles, and to see that you've lost none of your old sparkle. Far from your power factor going down; if anything I think it's gone from about 0,98 lagging to about 0,98 leading!

On my own behalf I should like to say that it's been a very great privilege and pleasure for me to preside over this Convention and I'm most grateful for all the assistance and the co-operation that the delegates have given me in helping things to run smoothly. I've had absolutely no difficulty whatsoever and I'm sure that's entirely due to your willingness and cooperation.

I'd like now to say a few words of thanks to the many people who have assisted in running this Convention. Firstly, to His Worship the Mayor, for coming here and attending our gatherings and generally assisting us all along the line: to the City Council for permitting us to use this hall; and to the Town Clerk, Mr White, and the Mayor's Secretary, Mr Harris, both of whom have done a very great deal for me and have been in the background nearly all the time.

A very special word of thanks, too, to Jules von Ahlften for all the assistance that he gave me before the Convention started and all the encouragement and assistance that I have received from him during the Convention.

To Mr Pretorius, the President-Elect, I wish to say a big thank you as well and wish him good luck in the task that he'll be taking on in 1975.

The members of the Executive have also assisted me considerably and I am most grateful to them.

I should also like to thank Dick Ewing in his absence for the work that he put in during the early stages of organising the Convention; and to Bennie van der Walt for all the work that he did in the latter stages and during the Convention itself.

I think everybody is in agreement that the papers read here were of an extremely high standard and our thanks are due here to Mr Norman, Mr Stoffberg, Mr Booth and Mr Bright; as well as to all those who contributed to the discussions on these papers.

Our thanks too to Mr Botha and Rosemary Kleb of the firm Sonex Recording Studio who provided the sound facilities.

The Total Company has been splendid in that they supplied the folders for our papers and provided the information desk as well as a free telephone service. A particular word of thanks are due here to Mr Noel Reid and Merle du Toit who were on duty throughout the Convention.

Free cigarettes were also provided by the Perilly's Company who were represented here by Mr Denton Goodall.

Other companies who assisted us extensively were the South Wales Group who were responsible for the magnificent braaivleis the other evening; Scottish Cables who organised the tour of their factory and the party afterwards; and Hubert Davies who organised the film and slide show this morning, besides giving us quite a lot of other assistance.

I must also thank all the other affiliates as well for attending the Convention and continuing to support us. We hope this support will be evident in the future not only by the attendance at conventions, but by plenty of advertising in our journals. I know for a fact that Mr Bennie van der Walt will be approaching them a lot in this regard in the coming year!

The ladies of the Women's Institute did a marvellous job in coping with so many people so quickly when they provided the tea and refreshments throughout.

Then there are several members of my staff who have assisted for many weeks in organising the Convention; I would mention particularly Derrick Edwards, Mrs. Marwick and Miss Holder.

Last, but by no means least, I wish to thank my wife, Phyllis, for all that she's done in helping to arrange the visits for the ladies and ensuring that they went off smoothly.

MR. R.W. BARTON (Welkom): Mr President, on behalf of the members I would like to thank you very much indeed for the magnificent job you have done in running this Convention. Those of us who knew of your serious illness not very long ago, were very worried that you wouldn't be able to be present, and we are indeed relieved and very thankful that you have been with us. You have done a jolly fine job of work and we thank you, sir.

THE PRESIDENT: Thank you for those kind words, Mr Barton. It now remains only for me to say that I look forward to seeing you all at the next Convention at Skukuza in 1975, and to wish you a safe journey home.

Finally, I have to declare this 43rd Convention closed at 4.45 p.m. and to say "Baie dankie and totsiens!"

25. SOCIAL FUNCTIONS SOSIALE BYEENKOMSTE

Apart from the value of the papers presented the social contact among members of the profession is of inestimable value.

A civic reception for all the delegates and their wives was provided by the Mayor of Pietermaritzburg, Councillor C.W. Wood, on Monday 30 April 1973.

On the Tuesday evening all delegates and wives were the guests of South Wales Electric (Pty.) Ltd. at a most enjoyable braaivleis at the Midmar Dam.

Interested delegates were given the opportunity of visiting the factory of Scottish Cables Ltd. on Wednesday afternoon and were entertained on refreshments.

On the Thursday evening a dinner/dance was held in the Imperial Hotel attended by 250 members, their wives and guests. This glamorous occasion concluded the activities of the Convention.

Afgesien van die waarde van die referate wat voorgedra is, is die sosiale kontak tussen lede van die profesie van onskatbare betekenis.

'n Burgemeestersonthaal is aan al die afgevaardigdes en hul gades aangebied deur die Burgemeester van Pietermaritzburg, Raadslid C.W. Wood op Maandagaand 30 April 1973. Op die Dinsdagaand was alle afgevaardigdes en hul gades die gaste van South Wales Electrical (Pty.) Ltd. tydens 'n baie gesellige braaivleis by die Midmar Dam.

Belangstellende afgevaardigdes het die geleentheid gehad om 'n besoek aan die fabriek van Scottish Cables Ltd. op Woensdagnmiddag te bring en is getraakteer op versiersings.

'n Dinee/dans is gehou op Donderdagaand in die Imperial Hotel en is bygewoon deur 250 lede, hul gades en gaste. Op hierdie hoë noot is die werksaamhede van die Konvensie afgesluit.

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“D” for discrimination

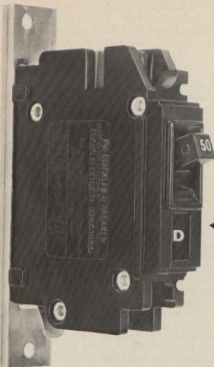
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26

A.M.E.U./V.M.E.O.

MEMBERSHIP ROLL 1973 LEDELYS

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Beesley R.W.
Bradley D.A.
Downie C.G.
Downey J.C.
Eastman H.A.
Ewing R.G.
Faden A.
Frantz A.C.T.
Giles P.A.
Halle C.R.
Jaffray A. Morton.
Kane R.W.
Kinsman C.
Lategan J.F.
Leishman R.
Milton W.H.
Mitchell J.E.
Muller G.J.
Nobbs D. Murray
Rossler W.
Sibson A.R.
Simpson R.M.O.

P.O. Box 65, Lusaka, Zambia.
9 Target Kloof Road, Port Elizabeth, C.P.
25 Rectory Gardens, Broadwater, Worthing, Sussex, England
10 Jessop Road, Selection Park, Springs, Tvl
Tarwood, Paarl Vallei, Somerset West, C.P.
P.O. Box 779, East London, C.P.
4 Hardy Road, Selborne, East London, C.P.
7 New Way, Pinelands, Cape Town
P.O. Box 384, Pretoria, Tvl
22 Connaught Road, Pietermaritzburg, Natal
8 Fairbridge Avenue, Salisbury, Rhodesia
208 Glen Manor, Northfield Avenue, Glenhazel, JHB
7 Highgate Place, Durban North, Durban
Van der Stelstraat 12, Stellenbosch, K.P.
66 Lana Road, Emmarentia Ext., JHB
44 Halford Avenue, Waverley Ext., JHB
1301 Grosvenor Court, Snell Parade, Durban
Wilcocksweg 35, Bloemfontein, OVS
4 Ascoi Road, Kemsley Park, Port Elizabeth, C.P.
109 Amersham Street, Lynnwood Manor, Pretoria
P.O. Box 9074, Hillside, Rhodesia
c/o Ove Arup & Partners, P.O. Box 1348, Durban

Smith E.L.
Stevens F.
Telles J.
Turner H.T.
Van der Walt J.L.

1 Ropley, Ross Street, Amanzimtoti, Natal
c/ Electricity Dept., P.O. Box 29, Ladysmith, Natal
P.O. Box 1861, Lourenco Marques, P.E.A.
Town Electrical Engineer, P.O. Box 121, Umtali, Rhodesia
Postbus 1091, Johannesburg

RETIRED MEMBERS / AFGETREDE LEDE

Andrew W.M.
Atteridge W.H.
Barrie J.J.
Burton C.R.
Campbell A.R.
Clinton J.S.
Coetzee F.J.
Conradie D.J.R.
Dawson C.
Dunstan R.S.
Erikson J.G.F.
Ford W.P.
Harvey A.Q.
Heasman G.G.
Honiball G.T.
Jones J.N.
Liebenberg S.J.
Macques J.A.
Magowan J.M.
Matthews J.A.
McGibbon J.
Mole E.W.
Muller H.M.S.
Nicholas I.J.
Rossler A.
Williams J.T.
Woolridge W.E.L.
Wylie R.J.S.

7 Tainton Avenue, Bonnie Doon, East London, C.P.
P.O. Box 137, Nababeep, C.P.
82 First Avenue, Dunvegan, Edenvale, Tvl
54 Memorial Road, Kimberley, C.P.
P.O. Box 3, Impendle, Natal
P.O. Box 4648, Johannesburg
p/a Elektrise Meganiese Af.d., Postbus 3, Vanderbijlpark
Postbus 1009, Bloemfontein, OVS
Electricity Supply Commission, P.O. Box 2408, Durban
P.O. Box 5001, Walmer, C.P.
P.O. Box 24, Margate, Natal
P.O. Box 423, Maseru, Lesotho
71, Garden Street, Redhouse, Dist. Port Elizabeth
P.O. Box 77, Fort Victoria, Rhodesia
111 Church Street, Kempton Park, Tvl
22 Webner Court, St. George's Street, Somers West, C.P.
Elektrise en Meganiese Ingenieur, Postbus 384, Pretoria,
P.O. Box 378, Stillfontein, Tvl
S.R. Electricity Supply Commission, P.O. Box 377, Salisbury, Rhodesia
c/o De Beers Consolidated Mines Ltd., P.O. Box 616, Kimberley, C.P.
P.O. Box 164, Carletonville, Tvl
P.O. Box 118, Bramley, Tvl
Postbus 112, Upington, K.P.
Healdtown Institution, Via Fort Beaufort, C.P.
3 Greenwood Road, Pietermaritzburg, Natal
P.O. Box 1617, Pretoria
P.O. Box 24, Harding, Natal
P.O. Box 217, Germiston, Tvl

AFFILIATE MEMBERS / GEAFFILIEERDE LEDE

A:

Aberdare Cables (Pty) Ltd
Aberdare Cables Africa Ltd
Adams, Ripley & Dürr
AEG-Telefunken (Pty) Ltd
African Cables Ltd
Alcan Aluminium of S.A. Ltd
Allenwest S.A. (Pty) Ltd
Alucab (Pty) Ltd
Asea Electric (Pty) Ltd
Austevens Enterprises (Pty) Ltd
Aycliffe cables Ltd

P.O. Box 8514, Johannesburg
P.O. Box 494, Port Elizabeth, C.P.
P.O. Box 31126, Braamfontein, Tvl
P.O. Box 10264, Johannesburg
P.O. Box 172, Vereeniging
P.O. Box 2430, Johannesburg
P.O. Box 6168, Johannesburg
P.O. Box 1742, Johannesburg
P.O. Box 691, Pretoria
P.O. Box 172, Florida
P.O. Box 5244, Johannesburg

B:

Ballenden & Robb
Barlow Rand Ltd.
Bowmast (Pty) Ltd
Brian Colquhoun O'Donnell & Partners (Pty) Ltd
Brian Colquhoun O'Donnell & Partners

P.O. Box 4648, Johannesburg
P.O. Box 4862, Johannesburg.
P.O. Box 179, Vereeniging
P.O. Box 31757, Braamfontein
10th Floor, Chelsea House,
Speke Avenue, Salisbury, Rhodesia
P.O. Box 2827, Johannesburg
P.O. Box 10966, Johannesburg

British Ins. Callender's Cables of S.A. Ltd
Brown Boveri Orsol (Pty) Ltd

C:

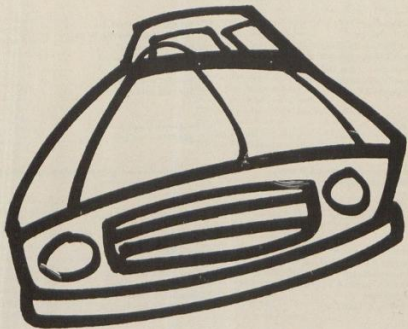
C.C.L. (S.A.) (PTY) Ltd
C.M.B. Engineering Co. (Pty) Ltd
Corst & Walker Chemicals (Pty) Ltd
Chemilite (Pty) Ltd
Chloride Elec. Storage Co. of S.A. Ltd
Conradie D.J.J. & Vennote

Electrical Division, P.O. Box 1386, Johannesburg
P.O. Box 25655, Denver, Tvl
P.O. Box 5500, Johannesburg
P.O. Box 25720, Denver, Tvl
P.O. Box 39264, Bramley, Tvl
Roodgewende Elektriese Ingeneurs, Postbus 17031, Groenkloof,
Pretoria
P.O. Box 10100, Johannesburg
P.O. Box 196, Port Elizabeth, C.P.
P.O. Box 4236, Johannesburg
P.O. Box 228, Dalbridge, Natal

Construction Elec. Co. (Pty) Ltd
Crawford Clinkscapes Maughan-Brown & Partners
Crompton Parkinson S.A. (Pty) Ltd
Cu Al Engineering (Pty) Ltd

- D.**
 Dawson & Dobson Ltd
 Drewett Ian, & Partners
 Dulmison Preformed Line Products S.A. (Pty) Ltd
 Du Toit C.A., & Partners
 P.O. Box 7764, Johannesburg
 P.O. Box 35, Johannesburg
 180 Orman Road, Pietermaritzburg
 P.O. Box 4256, Pretoria
- E.**
 Eberhardt-Martin (Pty) Ltd
 Egatube Plastic Conduits (Pty) Ltd
 Electrical Contractors Assoc. of S.A.
 Electrical Protection Co. (Pty) Ltd
 EMAG Electrical Engineering (Pty) Ltd
 Enfield Cables S.A. (Pty) Ltd
 P.O. Box 128, Roosevelt Park, Tvl
 P.O. Box 140, Rossly, Pretoria
 P.O. Box 5327, Johannesburg
 P.O. Box 570, Benoni, Tvl
 P.O. Box 27129, Benrose, Tvl
 P.O. Box 5289, Johannesburg
- F.**
 Farad (Pty) Ltd
 Fuchs Electrical Industries (Pty) Ltd
 Fuji Appliances S.A. (Pty) Ltd
 P.O. Box 31220, Braamfontein, Tvl
 P.O. Box 758, Alberton, Tvl
 P.O. Box 553, Pinetown
- G.**
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HON. MEMBERS — ERELEDE	27
RETIRED MEMBERS — AFGETREDE LEDE	28
AFFILIATE MEMBERS — GEAFFILIEERDE LEDE	90
PUBLIC AUTHORITIES — PLAASLIKE BESTURE	135
ENGINEER MEMBERS — INGENIEURSLEDE	92
ASSOCIATES — GEASSOSIEERDES	25
ASSOCIATE MEMBERS — ASSOSIAAT LEDE	29
	<hr/>
	426

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