PROCEEDINGS

of the

Twenty-Third Convention

of the

Association of Municipal Electricity Undertakings

of Southern Africa

(Founded 1915)

MUNICIPALITY OF

PORT ELIZABETH

Pge 123

held at

PORT ELIZABETH

From Tuesday, May 17th, to Friday, May 20th,

1949

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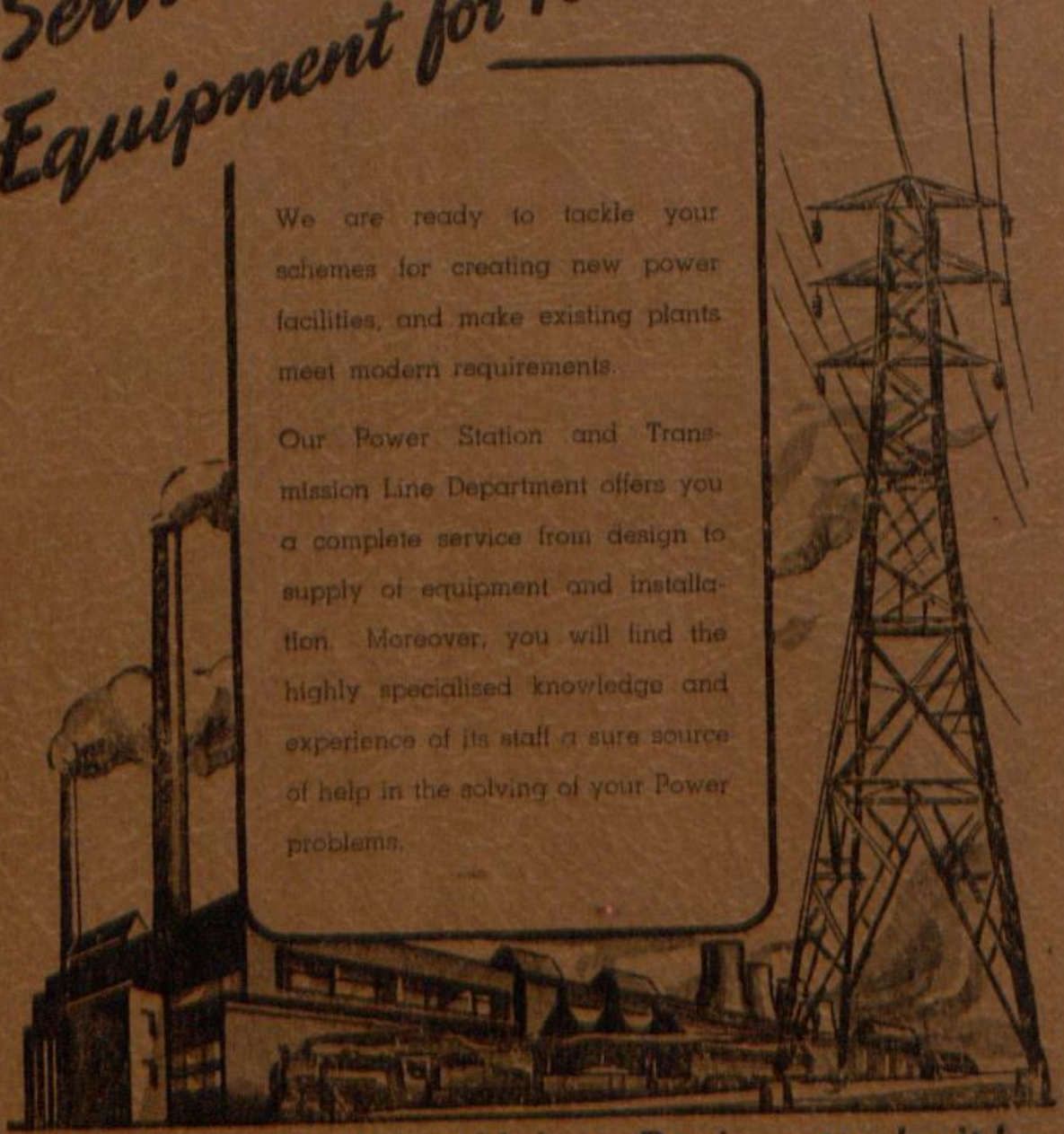

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INDEX TO PROCEEDINGS.

GENERAL.

	Page
Executive Council and Representatives	1
Past Officers and Members of Council	2
Rules and Constitution	5
Members, Delegates and Visitors attending the Convention	8
List of Members as at 31st May, 1949	13
Agenda and Programme	17

PROCEEDINGS.

	Page
Civic Welcome	19
Election of President	20
Obituary	21, 94
Apologies and Greetings, etc.	21, 43
Venue of Next Convention	23
Address by Lt.-Col. J. H. Dobson on "South Africa's Industrial Outlook during the Post-War Years of the Second Great World War, 1939-1945"	24
Election of Vice-President, Executive Council and Committees, etc.	35, 36, 37
Amendment to Constitution	36
Valedictory Address	37
Presidential Address	40
Standard Wiring Regulations	48, 95
Paper on "Efficiency in Municipal Electricity Supply Undertakings" by Mr. H. Jasper Gripper	50 to 81, 102 to 113
Safety Specifications	48
Starters	48, 95, 124
Flame Proof Fittings, etc.	96
Domestic Appliances Mechanic and Refrigeration Mechanic	98
Gas and Electricity Outlets	96, 113
Statistical Tables	114
Auditors (Appointment of)	115
Annual Report	116
Crude Oil	119
Standardisation of Accounts	123
Conditions of Contracts (Purchase and Tendering)	123
Conclusion and Thanks	125
Social Functions	129

REPORTS.

	Page
South African Bureau of Standards (Mr. J. C. Downey)	43
South African Bureau of Standards (Mr. P. N. van der Merwe)	44
Meter Testing Code	48, 49, 81 to 85
World Power Conference	85
C.I.G.R.E., S.A. National Section	87
Electrical Wiremen's Registration Board	90
Safety Precautions Committee	94
Registration of Electrical Contractors	96
Coal Supplies	115
Overhead Lines and Code of Practice	122
S.A. Standards Institution	123

INDEX TO ADVERTISERS.

	Facing Page
Aberdare Cables of S.A. Ltd., Johannesburg	4
African Cables Ltd., Vereeniging	5
Arthur Trevor Williams (Pty.) Ltd., Johannesburg	12
Allen West (S.A.) Ltd., Johannesburg	13
African Electric Ltd., Port Elizabeth	20
Aycliffe Industries Ltd., Johannesburg	21
Automatic Telephones (S.A.) Ltd., Johannesburg	28
Bartle & Co., Johannesburg	29
British Thomson-Houston Coy. (S.A.) (Pty.) Ltd., Johannesburg	36
Babcock & Wilcox of Africa Ltd., Johannesburg	Cover
British Insulated Cables (S.A.) Ltd., Johannesburg	between pages 36 and 37
Brush (S.A.) Ltd., Johannesburg	between pages 36 and 37
British General Electric Coy. Ltd., Johannesburg	Cover
Caltex (South Africa) Ltd., Cape Town	37
Chloride Electric Storage Co. (S.A.) Ltd., Johannesburg	44
Contactor (Pty.) Ltd., Cape Town	between pages 44 and 45
Dowson & Dobson Ltd., Johannesburg	between pages 44 and 45
Electricity Supply Commission, Johannesburg	45
Enfield Cables (S.A.) (Pty.) Ltd., Johannesburg	52
English Electric Co. Ltd., Johannesburg	between pages 52 and 53
First Electric Corporation of S.A. Ltd., Knights	between pages 52 and 53
Fraser & Chalmers, Johannesburg	53
General Motors South Africa Ltd., Port Elizabeth	60
Glamco Ltd., Cape Town	61
Henley's S.A. Telegraph Works Co. Ltd., Johannesburg	68
Hubert Davies & Co. Ltd., Johannesburg	Cover
International Combustion S.A. (Pty.) Ltd., Johannesburg	between pages 68 and 69
Johnson & Phillips S.A. (Pty.) Ltd., Johannesburg	between pages 68 and 69
John England & Fawkes Engineers Ltd., Port Elizabeth	69
Kent, George (S.A.) (Pty.) Ltd., Johannesburg	76
Maxei Oil Refiners, Johannesburg	between pages 76 and 77
Metropolitan-Vickers S.A. (Pty.) Ltd., Johannesburg	between pages 76 and 77
Mitchell Engineering Group	77
North & Robertson (Pty.) Ltd, East London	84
Patrick Murray (Pty.) Ltd., Durban	between pages 84 and 85
Parsons, C. A. & Co. (S.A.) (Pty.) Ltd., Johannesburg	between pages 84 and 85
Power Engineers (Pty.) Ltd., Cape Town	85
Reunert & Lenz Ltd., Johannesburg	92
A. Reyrolle & Co. Ltd., Johannesburg	between pages 92 and 93
Rice & Diethelm Ltd., Johannesburg	between pages 92 and 93
G. S. Rogers (Pty.) Ltd., Johannesburg	93
G. S. Rogers (Pty.) Ltd., Johannesburg	100
Rhodesian Cables Ltd., Johannesburg	between pages 100 and 101
Samuel Osborn (S.A.) Ltd., Johannesburg	between pages 100 and 101
S.A. Cable Makers' Association, Johannesburg	101
S.A. Electrical Review, Johannesburg	108
Siemens Bros. & Co. British Ltd., Johannesburg	between pages 108 and 109
S.A. General Electric Co. Ltd., Johannesburg	between pages 108 and 109
Stamcor (Pty.) Ltd., Johannesburg	109
Standard Telephones & Cables Ltd., Johannesburg	116
Stewarts & Lloyds S.A. Ltd., Vereeniging	between pages 116 and 117
Shell Coy. of S.A. Ltd., Cape Town	between pages 116 and 117
Silent Electric Transport (Pty.) Ltd., Johannesburg	117
Urquhart & Co., R. T., Johannesburg	4
Waygood-Otis (S.A.) Ltd., Cape Town	124
Wilson & Herd Ltd., Johannesburg	125
Wright Distributors (Pty.) Ltd., Johannesburg	125

ASSOCIATION OF MUNICIPAL ELECTRICITY UNDERTAKINGS OF SOUTHERN AFRICA

FOUNDED 1915

EXECUTIVE COUNCIL, 1949/50

President:

D. A. Bradley (Port Elizabeth)

Vice-President:

C. R. Halle (Pietermaritzburg)

Past Presidents:

C. Kinsman (Durban)

A. Foden (East London)

Councillor Members:

Port Elizabeth

Pietermaritzburg

Bloemfontein (Alternate) Bulawayo (Alternate)

NOTE.—The Town is elected and not the individual Councillors.

Other Members:

G. J. Muller (Bloemfontein)
J. C. Fraser (Johannesburg)
A. R. Sibson (Bulawayo)
H. A. Eastman (Cape Town)
J. C. Downey (Springs)
J. L. van der Walt (Krugersdorp)

Secretary and Treasurer:

A. T. Taylor, P.O. Box 7462, Johannesburg.

Representatives:

World Power Conference (Local Committee)	H. A. Eastman (Cape Town).
S.A. Standards Institution	J. C. Downey (Springs) D. J. Hugo, Pretoria (Alternate)
Electrical Wiremen's Registration Board	J. C. Fraser, Johannesburg
Registration of Electrical Wiring Contractors	J. C. Fraser (Johannesburg)
C.I.G.R.E.	A. Foden (East London) and D. J. Hugo (Pretoria)

Sub-Committees:

Table-Statistics General	G. J. Muller, Bloemfontein C. Kinsman, Durban J. C. Fraser, Johannesburg
Coal Supplies	H. A. Eastman, Cape Town (Convener) A. Foden, East London D. A. Bradley, Port Elizabeth G. J. Muller, Bloemfontein
S.A. Bureau of Standards, Safety Specifications and other Committees	J. C. Downey (Springs) D. J. Hugo, Pretoria (Alternate)
Meter Testing Code	J. C. Downey (Springs) D. J. Hugo, Pretoria (Alternate)
Safety Precautions	J. C. Downey (Springs) J. C. Fraser, Johannesburg (Alternate)
Overhead Lines Code of Practice	J. C. Fraser (Johannesburg) G. J. Muller, Bloemfontein (Alternate)

PAST OFFICERS AND MEMBERS OF COUNCIL

Past Presidents:		Secretary and Treasurer:
1915–17	J. H. Dobson, Johannesburg	F. T. Stokes: E. T. Price
1917–19	J. Roberts, Durban	E. Poole
1919–20	B. Sankey, Port Elizabeth	E. Poole
1920–22	T. C. W. Dod, Pretoria	L. L. Horrell
1922–24	G. H. Swingler, Cape Town	H. A. Eastman
1924–26	J. Roberts, Durban	E. Poole
1926–27	B. Sankey, Johannesburg	R. G. Tresise
1927–29	J. M. Lambe, East London	P. Adkins
1929–31	R. Macauley, Bloemfontein	E. Poole
1931–33	L. L. Horrell, Pretoria	E. Poole
1933–34	L. F. Bickell, Port Elizabeth	F. A. P. Perrow
1934–35	A. R. Metelerkamp, Bulawayo	E. Poole
1935–36	G. G. Ewer, Pietermaritzburg	E. Poole
1936–37	A. Rodwell, Johannesburg	E. Poole
1937–38	J. H. Gyles, Durban	E. Poole
1938–39	H. A. Eastman, Cape Town	E. Poole
1939–44	I. J. Nicholas, Umtata	E. Poole until Dec., 1940
		L. L. Horrell, Jan., 1941
1944–45	A. Rodwell, Johannesburg	L. L. Horrell
1945–46	J. S. Clinton, Salisbury	L. L. Horrell to Nov., 1945
	J. W. Phillips, Bulawayo	A. T. Taylor, December, 1945
1946–47	G. J. Muller, Bloemfontein	A. T. Taylor
1947–48	C. Kinsman, Durban	A. T. Taylor
1948–49	A. Foden, East London	A. T. Taylor

PAST ORDINARY MEMBERS OF COUNCIL

1915–17	J. Roberts, W. Bellad-Ellis, B. Sankey
1917–19	W. Bellad-Ellis, G. Stewart, T. C. W. Dod, T. Jagger
1919–20	W. Bellad-Ellis, G. Stewart, E. T. Price, A. S. Munro
1920–22	L. F. Bickell, T. Millar, L. B. Proctor, E. Poole
1921–24	L. F. Bickell, T. Millar, R. W. Fletcher, J. Roberts
1924–26	T. Jagger, A. S. Munro, T. Millar, L. F. Bickell
1926–27	L. F. Bickell, T. C. W. Dod, T. Millar, E. Poole
1927–29	L. F. Bickell, R. A. Young, T. Millar, E. Poole
1929–30	L. F. Bickell, T. Millar, F. C. D. Mann, G. H. Swingler, A. Rodwell
1931–32	T. Millar, F. C. D. Mann, G. H. Swingler, A. Rodwell
1932–34	T. Millar, J. H. Gyles, G. H. Swingler, A. Rodwell
1934–35	T. Millar, J. H. Gyles, G. H. Swingler, A. Rodwell

Councillors:	Alternate Councillors:	Engineers:
	1935–36:	
T. P. Gray, Johannesburg J. McLean, Port Elizabeth	H. W. Dely, Pretoria	G. H. Swingler, Cape Town J. H. Gyles, Durban T. Millar, Harrismith E. H. Behrens, Port Elizabeth
	1936–37:	
H. Middlebrook, Durban T. P. Gray, Johannesburg	F. Morrell, Cape Town J. McLean, Port Elizabeth	G. H. Swingler, Cape Town T. Jagger, Ladysmith E. A. Behrens, Port Elizabeth. G. M. Pirie, Bloemfontein
	1937–38:	
H. G. Capell, Durban W. James, Cape Town	H. Middlebrook, Durban L. Hofmeyr, Stellenbosch	L. L. Horrell, Pretoria J. S. Clinton, Salisbury A. Q. Harvey, Springs G. M. Pirie, Bloemfontein
	1938–39:	
E. Spilkin, Umtata W. James, Cape Town	G. C. Starkey, East London W. Fowkes, Cape Town	D. J. Hugo, Pretoria J. S. Clinton, Salisbury A. Q. Harvey, Springs G. M. Pirie, Bloemfontein.
	1939–44:	
E. Spilkin, Umtata C. Olley, Salisbury	G. C. Starkey, East London W. Fowkes, Cape Town	D. J. Hugo, Pretoria C. Kinsman, Durban A. Q. Harvey, Springs G. M. Pirie, Bloemfontein W. N. Powell, Bloemfontein
	1944–45:	
H. H. Verity, Johannesburg C. Olley, Salisbury	H. E. Gearing, Cape Town R. M. Thomas, Durban	D. J. Hugo, Pretoria C. Kinsman, Durban J. C. Fraser, Johannesburg G. R. E. Wright, Benoni
	1945–46:	
J. Ohlsen, Bulawayo J. W. du Plessis, Bloemfontein	M. Jaffray, Salisbury E. Boylan, M.P.C., Johannesburg	D. J. Hugo, Pretoria C. Kinsman, Durban J. C. Fraser, Johannesburg G. R. E. Wright, Benoni
	1946–47:	
P. J. C. du Plessis, M.P.C. (Bloemfontein) Major J. Raftery, J.P., M.P.C. (Durban)	A. Immink, Johannesburg A. Z. Berman, Cape Town	D. J. Hugo, Pretoria J. C. Fraser, Johannesburg J. C. Downey, Springs D. A. Bradley, Port Elizabeth
	1947–48:	
Major J. Raftery, J.P., M.P.C. (Durban) E. H. Tiddy, East London	J. M. Preller, Pretoria C. G. Thompson, Johannesburg	D. J. Hugo, Pretoria J. C. Fraser, Johannesburg J. C. Downey, Springs H. A. Eastman, Cape Town
	1948–49	
E. H. Tiddy, East London J. C. K. Erasmus, J.P., Port Elizabeth	C. G. Thompson, Johannesburg J. Johnston, Durban	D. J. Hugo, Pretoria J. C. Fraser, Johannesburg J. C. Downey, Springs H. A. Eastman, Cape Town

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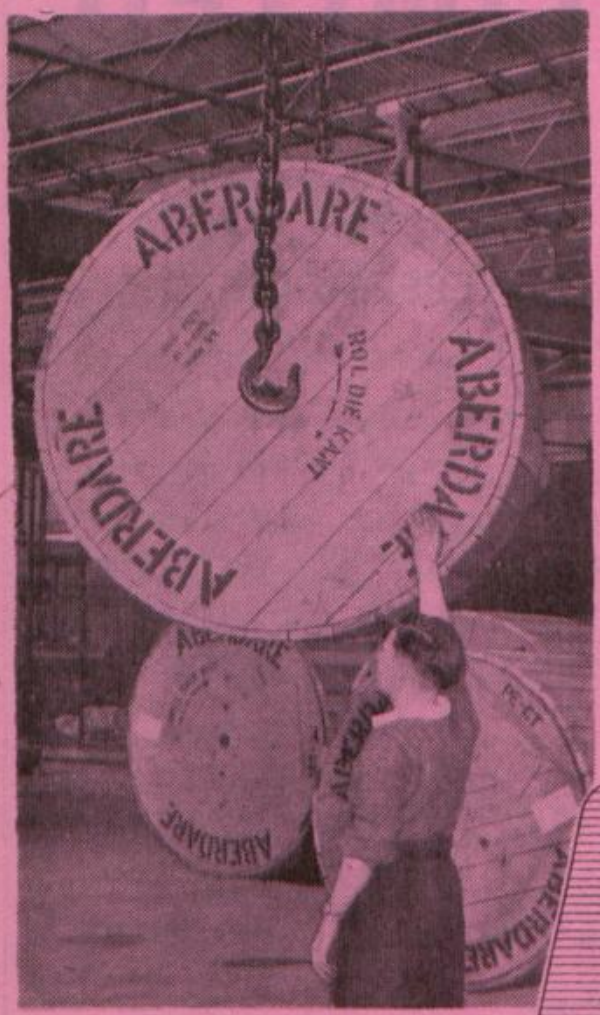

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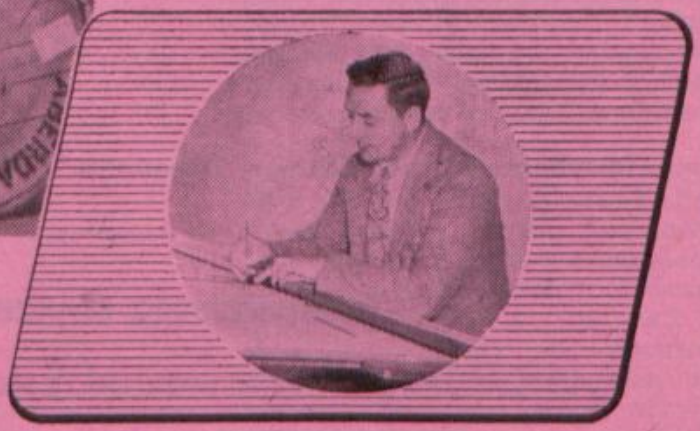

All Aberdare specially designed cables begin on a drawing board. Above, one of the draughtsmen, in the Port Elizabeth Factory, at work on a cable which was required to meet a customer's special application.

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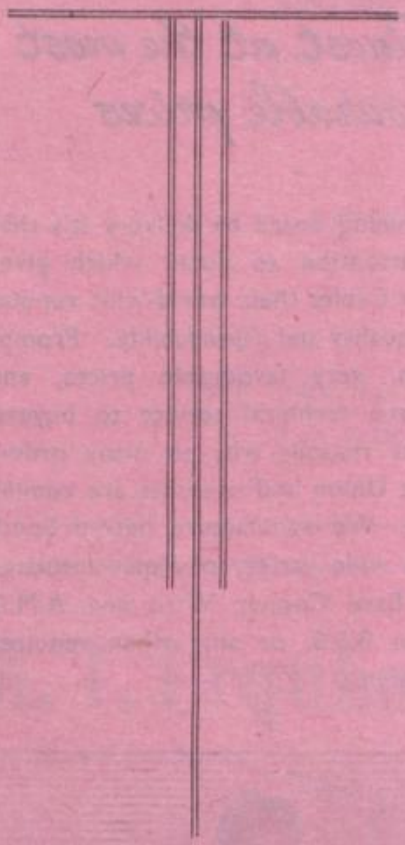

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RULES AND CONSTITUTION

ASSOCIATION OF

Municipal Electricity Undertakings

OF SOUTHERN AFRICA

---

1. TITLE

The name of the Association shall be "The Association of Municipal Electricity Undertakings of Southern Africa."

2. OBJECTS

The objects for which the Association is formed are:—

(a) To promote the interests of Municipal Electricity Undertakings.

(b) To bring Municipal Electrical Engineers and Chairmen and Members of Municipal Electricity Committees together.

(c) To arrange and hold periodical meetings for the reading of papers and discussions of subjects appertaining to Municipal Electricity Undertakings.

(d) To take such action as may be lawful and expedient for the protection and defence of the rights or interests of Municipal Electricity Undertakings.

3. MEMBERSHIP

The Association shall consist of:—

(a) Honorary Members.

(b) Councillor Members.

(c) Engineer Members.

(d) Associate Members.

(e) Associates.

All Hon. Members and Members of the Association of Municipal Electrical Engineers shall ipso facto become Hon. Members and Engineer Members of the Association of Municipal Electricity Undertakings and existing Associate Members shall be eligible to transfer to the class of Associate.

4. QUALIFICATIONS

The qualifications for admission to the Association shall be as follows:—

(a) **Honorary Members** shall be distinguished persons who are or who have been intimately connected with Municipal Electricity Undertakings and whom the Association especially desires to honour for exceptionally important services in connection therewith.

(b) **Councillor Members.** The Member whose Chief Electrical Engineer shall have qualifications acceptable to the Council shall be the Committee appointed by the Municipality or Local Authority to have control over its Electricity Undertakings and shall be represented as regards its qualifications to vote by one member of such Committee.

(c) **Engineer Members.** The Member shall be the Chief Electrical Engineer engaged on the permanent staff of an Electricity Undertaking owned by a Municipality or Local Authority and who has had a thorough training in electrical engineering and is otherwise acceptable by the Council of the Association. After 1st June, 1947, one only duly qualified assistant in an undertaking with sales of over 20,000,000 units per annum may also be admitted to this class on the recommendation of the Chief Electrical Engineer.

(d) **Associate Members.** The Member shall be a Technical Assistant engaged on the permanent staff of any Electricity Undertaking represented by its Councillor Member and/or Engineer Member.

(e) **Associates.** Any member resigning from the class of Engineer Member or Associate Member shall be entitled to apply for transfer to the class of Associate. An Associate may also be an Engineer in the employ of an Authorised Electricity Undertaker other than a Local Authority who is engaged in the supply of electricity to consumers in the area of jurisdiction of a Local Authority.

5. ADMISSION OF MEMBERS

(a) The election of Honorary Members and other classes shall be vested in the Council.

(b) Councillor Members may be admitted on an application signed by the Town Clerk of the Municipality or Local Authority concerned.

(c) Every candidate for election into the Associatoin as Engineer Member shall make application on the prescribed form suitably endorsed by two supporters who shall be either Engineer Members, Councillor Members or Members of the Committee of the Municipal or Local Authority in charge of the Electricity Undertaking of which the applicant is Chief Electrical Engineer.

(d) Every candidate for election into the Association as Associate Member or Associate shall make application on the prescribed form suitably endorsed by the Engineer Member on whose staff he is engaged.

(e) Every candidate for transfer to the class of Associate shall make application in writing for transfer.

6. CONTRIBUTIONS

Contributions shall become due and payable annually on the 1st day of September which shall constitute the new financial year of the Association.

(a) **Honorary Members** shall not be required to pay any contribution.

(b) **Councillor Members.** In the case of the Committee appointed by a Municipality or Local Authority to have control over the Electricity Undertaking, the undermentioned scale of contributions shall apply:

SCALE OF CONTRIBUTIONS

Up to	½	million	units	... 4	guineas
½ ,,	1	,,	,,	... 6	,,
1 ,,	10	,,	,,	... 8	,,
10 ,,	50	,,	,,	... 12	,,
50 ,,	100	,,	,,	... 14	,,
100 ,,	200	,,	,,	... 16	,,
200 ,,	300	,,	,,	... 18	,,
Over	300	,,	,,	... 20	,,

(c) **Engineer Members.** The contribution of an Engineer Member in the service of a Committee making a contribution shall merge into and form part of such contribution. When a Committee is not a Member or resigns from membership, the Engineer Membership contribution shall be two (2) guineas.

(d) **Associate Members and Associates.** The contribution of Associate Members or Associates shall be one (1) guinea.

Part year contribution. All members shall pay the contribution for the year in which they are elected without reference to the period of the year at which their election takes place and they shall be entitled to receive a copy of the Proceedings or any other publication issued during such year.

Arrear Contributions. No class of member whose contribution is six months in arrear shall be entitled to attend or take part in any of the meetings of the Association or to receive any of the Association's publications.

Any class of member whose contribution is in arrear at any Convention shall deem to have forfeited claim to membership and his name may, by the Council, be removed from the register of the Association, but he shall, nevertheless, be liable for such arrears up to the date of his name being removed.

7. COUNCIL

Management. The affairs of the Association shall be managed by the Council, who shall have power to incur any expenditure necessary for the objects of the Association.

Members of the Council. The Council shall consist of a President, Vice-President, two Immediate Past Presidents, all of whom shall be Engineer Members and eight other members, two of whom may be Councillor Members.

Officers of Council. The officers of the Council shall be President, Vice-President, Secretary and Treasurer.

Election of Council. The Officers and members of the Council (other than the Secretary and Treasurer) shall be elected by nomination and ballot at the Convention, and shall hold office until the next Convention. In the event of a vacancy occurring during the year the remaining members shall have power to appoint a member to fill the vacancy.

Co-option. The Council shall have power to co-opt any members of the Association or other persons for any special purpose whose services in their opinion may advance the objects of the Association.

Election of Secretary and Treasurer. The Council shall appoint and from time to time determine the remuneration (if any) and prescribe the duties of the Secretary and Treasurer who shall hold office during the pleasure of the Council.

8. MEETINGS

Council. The Council shall meet as often as the business of the Association may require and at any meeting three shall constitute a quorum.

Convention. The Association shall hold Conventions yearly (of which the local Press of the town in which the Convention is held shall be given full particulars) as far as may be conveniently arranged, and at that meeting the Secretary and Treasurer shall present the Report and Balance Sheet of the Association for the immediate past period.

Quorum. At any meeting of the Association 15 shall form a quorum.

Chairman. The President shall take the chair at all meetings of the Association, the Council and the Committees, at which he is present, and shall regulate and keep order in the proceedings.

In the absence of the President, it shall be the duty of the Vice-President to preside at the meetings of the Association, and to regulate and keep order in the proceedings. But in the case of the absence of the President, and of the Vice-President, the meeting may elect any member of the Council or, in the case of their absence, any member present to take the Chair at the meeting.

Resolve into Committee. The Association shall reserve to itself the right to resolve itself into Committee at any time during its proceedings; moreover, it shall be competent for any member to have his paper read and discussed in committee if he so desires.

Sectional Voting. When a motion is before any Convention or meeting of the Association it shall be competent for any member of either the Councillor or Engineer sections to apply to the Chairman for a "Vote by Section." This application shall be granted by the Chairman whereupon each of these sections shall vote separately on the motion and unless a majority shall be obtained in each section, the motion shall be lost. On a sectional vote being called for, Associate Members and Associates shall not be entitled to vote.

MEMBERS, DELEGATES AND VISITORS ATTENDING THE CONVENTION

COUNCILLORS AND ENGINEERS

ALIWAL NORTH
W. J. F. S. Lutsch

ALBERTON
Cr. L. C. Spies
C. E. Gregor

BARBERTON
P. C. Asselbergs

BENONI
Cr. N. C. Korsman
R. Tarran

BETHLEHEM
K. M. Fisher

BLOEMFONTEIN
Cr. F. J. C. Castelyn
G. J. Muller

BOKSBURG
Cr. F. A. Keuler
Cr. C. J. Chambers
E. L. Smith

BRANDFORT
D. v. S. Dreyer

BULAWAYO
Cr. S. H. Millar
A. R. Sibson

BUTTERWORTH
M. J. C. Kruger

BRAKPAN
Cr. S. J. Thomas
P. L. Vergottini

BOTHAVILLE
Cr. O. J. Carey
J. D. Hattingh

CAPE TOWN
Cr. F. Morrell
Cr. A. F. Keen
H. A. Eastman

CRADOCK
A. Rossler

DELMAS
G. C. Delport

DURBAN
Cr. J. Johnston
Cr. J. L. Farrell
C. Kinsman

EAST LONDON
Cr. R. L. de Lange
P. A. Giles

ERMELO
G. A. Lotter

EDENVALE
Cr. J. P. Bezuidenhout
R. W. Barton

FORT BEAUFORT
J. H. Rogers

GEORGE
Dr. G. J. Lamprecht
P. H. Newcombe

GRAHAMSTOWN
J. Iverach

GREYTOWN
J. S. Craig

GWELO
A. W. K. Hadfield

GRAAFF-REINET
V. E. O. Barratt

HARRISMITH
J. T. Williams

JOHANNESBURG
Cr. L. M. Weiner
Cr. C. G. Thompson
R. W. Kane

KIMBERLEY
Cr. J. D. C. Baxter
C. R. Burton

KLERKSDORP
Cr. P. J. Muller
J. M. Gericke

KOKSTAD
W. G. Thackwray

KROONSTAD
Dr. J. M. Donges
W. Rossler

KRUGERSDORP
Cr. E. B. Neill
J. L. van der Walt

LADYSMITH
Cr. F. O. Rapson
Frank Stevens

MAFEKING
G. E. H. Jones

MATATIELE
Cr. E. C. Pike
L. J. Roberts

MIDDELBURG (Transvaal)
H. A. McIntyre

ODENDAALSRUS
N. Ferreira

PAARL
Cr. E. du Preez
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A. R. Campbell, Johannesburg (Associate)
D. J. R. Conradie, Ficksburg (Associate)
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B. Marchand, Witbank (Associate)
E. W. Mole, Port Elizabeth (Associate)
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W. H. Milton, Johannesburg.
I. de Villiers, Johannesburg.
E. T. Price, Jnr., Johannesburg.
H. H. Jagger, Cape Town Undertaking.
E. L. Damant, Durban.
W. Fenwick, Rand Undertaking.
J. W. Phillips, Southern Rhodesia, Bulawayo.

Other Departments:

H. O. Smith, Chief Inspector of Factories and Chairman, Electrical Wiremen's Registration Board, Pretoria.
H. Mill, Divisonal Engineer, Post Office, Port Elizabeth.
H. E. Saffery, Divisional Council Engineer, Port Elizabeth.
Chas. H. Clutterbuck, Electricity Control Board, Pretoria.
H. F. Archer, District Electrical Engineer, Public Works Department, Port Elizabeth.
T. V. More, System Manager, S.A.R. & H., Port Elizabeth.

OTHER REPRESENTATIVES

E. Vivian Perrow, Institution of Certificated Engineers and Safety Precautions Committee, Johannesburg.
J. Ritchie (Director), O. J. Alexander, P. N. v. d. Merwe } S.A. Bureau of Standards, Pretoria.
J. Russell, S.A. Institute of Electrical Engineers, Johannesburg.
A. Nimmo, Industrial Development Corporation of S.A. Ltd., Johannesburg.
Dr. P. N. Lategan, Transvaal Coal Owners' Association, Johannesburg.
D. A. D. Adams, S.A. Broadcasting Corporation, Grahamstown.
W. J. Morris, Midland Chamber of Industries, Port Elizabeth.
H. O. Smith, S.A. Standards Institution.

VISITORS

A. S. Foster, System Electrical Engineer, S.A.R. & H., Port Elizabeth.
S. V. Lindridge, Electric Lamp Manufacturers' Association S.A. Ltd., Port Elizabeth.
Major P. S. Fourie, Dist. Commandant, S.A. Police, Port Elizabeth.
H. C. Gardham, Principal, Technical College, Port Elizabeth.

VISITORS—(Continued)

E. J. G. Lawler, Port Elizabeth Publicity Association, Port Elizabeth.
Major S. G. Redman, T. R. J. Bishop } Merz & McLellan, Johannesburg
G. M. Pirie, Port Elizabeth (Ex City Electrical Engineer, Bloemfontein).
G. Drewett, Johannesburg.
B. B. Gripper, Port Elizabeth.
F. Heaton, Johannesburg.
A. P. Cairns, Cathcart.
E. M. Aspeling, (Mains Engineer), Port Elizabeth Municipality.
R. G. Bruce (Chief Clerk), Port Elizabeth Municipality.
M. J. Chappel (Technical Assistant), Port Elizabeth Municipality.
T. D. Davies (Clerk), Port Elizabeth Municipality.
H. H. Gooseman (Meter Test Engineer), Port Elizabeth Municipality.
S. B. Isacke (Installation Inspector), Port Elizabeth Municipality.
E. J. Collopy (Chief Draughtsman), Port Elizabeth Municipality.

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Poole, E., "Illingworth", Springfield Road, Durban.

Rodwell, A. T., "Miranda", Oxford Road, Parktown, Johannesburg.

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Benoni, Tvl., Municipality, P.O. Box 45.
Bethlehem, O.F.S., Municipality, P.O. Box 130.
Bloemfontein, O.F.S., City Council, P.O. Box 288.
Boksburg, Tvl., Town Council, P.O. Box 215.
Brandfort, O.F.S., Municipality, P.O. Box 13.
Bulawayo, S.R., City Council, P.O. Box 591.
Butterworth, Transkei, Municipality, P.O. Box 36.
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Brits, Tvl., Town Council, P.O. Box 106.
Bothaville, O.F.S., Municipality, P.O. Box 12.

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Cradock, C.P., Municipality, P.O. Box 24.
Ceres, C.P., Municipality, P.O. Box 44.

Delmas, Tvl., Municipality, P.O. Box 6.
Durban, Natal, City Council, P.O. Box 147.

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Ermelo, Tvl., Municipality, P.O. Box 48.
Eshowe, Zululand, Town Board, P.O. Box 37.
Edenvale, Tvl., Town Council, P.O. Box 25.

Fort Beaufort, C.P., Municipality, P.O. Box 36.
Ficksburg, O.F.S., Municipality, P.O. Box 116.

Gatooma, S.R., Municipality, P.O. Box 114.
George, C.P., Municipality, P.O. Box 28.
Grahamstown, C.P., City Council, P.O. Box 176.
Greytown, Natal, Borough, P.O. Box 71.
Gwelo, S.R., Municipality, P.O. Box 278.
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Harrismith, O.F.S., Municipality, P.O. Box 43.

Johannesburg, Tvl., City Council, P.O. Box 1049.

Kimberley, C.P., City Council.
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Kokstad, E. G., Municipality, P.O. Box 8.
Kroonstad, O.F.S., Municipality, P.O. Box 302.
Krugersdorp, Tvl., Municipality, P.O. Box 94.
Kuruman, Bech'd., Municipality, P.O. Box 4.

Ladysmith, Natal, Borough, P.O. Box 29.
Louis Trichard, Tvl., Municipality, P.O. Box 96.
Livingstone, N.R., Municipality, P.O. Box 29.

Mafeking, Bech'd., Municipality, P.O. Box 42.
Matatiele, E. G., Municipality, P.O. Box 35.
Middelburg, C.P., Municipality, P.O. Box 55.
Middelburg, Tvl., Municipality, P.O. Box 14.

Nelspruit, Tvl., Municipality, P.O. Box 45.
Newcastle, Natal, Borough, P.O. Box 21.
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Nigel, Tvl., Municipality, P.O. Box 23.

Oudtshoorn, C.P., Municipality. P.O. Box 132.
Odendaalsrus, O.F.S., Municipality.

Paarl, C.P., Municipality, P.O. Box 12.
Pietersburg, Tvl., Municipality, P.O. Box 111.
Pietermaritzburg, Natal, City Council, P.O. Box 321.
Piet Retief, Tvl., Municipality, P.O. Box 23.
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Potgietersrust, Tvl., Municipality, P.O. Box 34.
Pretoria, Tvl., City Council, P.O. Box 440.

Queenstown, C.P., Municipality, P.O. Box 113.
Que Que, S.R., Municipality, P.O. Box 15.

Randfontein, Tvl., Municipality, P.O. Box 139.
Robertson, C.P., Municipality, P.O. Box 52.
Roodepoort-Maraisburg, Tvl., Municipality, P.O. Box 217, Roodepoort.
Rustenburg, Tvl., Municipality, P.O. Box 16.

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Springs, Tvl., Municipality, P.O. Box 45.
Springfontein, O.F.S., Municipality, P.O. Box 10.
Stanger, Natal, Town Board, P.O. Box 72.
Stellenbosch, C.P., Municipality.
Somerset West, C.P., Municipality, P.O. Box 19.

Uitenhage, C.P., Municipality, P.O. Box 45.
Umtata, Transkei, Municipality, P.O. Box 57.
Umtali, S.R., Municipality, P.O. Box 121.
Upington, C.P., Municipality, P.O. Box 17.

Vereeniging, Tvl., Municipality, P.O. Box 35.
Vrede, O.F.S., Municipality, P.O. Box 155.
Vryburg, Bechuanaland, Municipality.
Vryheid, Natal, Borough, P.O. Box 57.
Ventersdorp, Tvl., Municipality, P.O. Box 15.
Walmer, C.P., Municipality, Town Hall, Walmer.
Winburg, O.F.S., Municipality, P.O. Box 26.
Windhoek, S.W.A., Municipality, P.O. Box 59.
Willowmore, C.P., Municipality, P.O. Box 15.
Worcester, C.P., Municipality, P.O. Box 37.

Zastron, O.F.S., Municipality, P.O. Box 20.

ENGINEER MEMBERS

Aalbers, G., Municipal Electrical Engineer, P.O. Box 116, Ficksburg, O.F.S.
Adams, C. H., Municipal Electrical Engineer, P.O. Box 132, Oudtshoorn, C.P.
Anderson, F., Municipal Electrical Engineer, Port Alfred, C.P.
Ashley, T. P., Municipal Electrical Engineer, P.O. Box 113, Queenstown, C.P.
Asselbergs, P. C., Town Electrical Engineer, P.O. Box 33, Barberton, Transvaal.
Barton, R. W., Town Electrical Engineer, P.O. Box 25, Edenvale, Tvl.
Bahr, H., Municipal Electrical and Waterworks Engineer, P.O. Box 15, Ventersdorp, Tvl.
Barrett, V. E. O., Municipal Electrical Engineer, P.O. Box 71, Graaff-Reinet, C.P.
Barlow, K. B., Town Electrical Engineer, P.O. Box 29, Livingstone, N.R.
Bevington, H. R., Municipal Elec. and Waterworks Eng., P.O. Box 55, Middelburg, C.P.
Bradley, D. A., City Electrical Engineer, P.O. Box 369, Port Elizabeth, C.P.
Brown, D. D., Municipal Electrical Engineer, P.O. Box 217, Roodepoort, Tvl.
Burton, C. R., City Electrical Engineer, Kimberley.
Buchanan, E. L., Municipal Electrical Engineer, P.O. Box 52, Robertson, C.P.
Buckerfield, E. N., Municipal Electrical Engineer, P.O. Box 19, Somerset West, C.P.
Cherry, J. R., Municipal Electrical Engineer, P.O. Box 139, Randfontein, Tvl.
Cowley, B. W., Borough Electrical Engineer, P.O. Box 21, Newcastle, Natal.
Craig, J. S., Borough Electrical Engineer, P.O. Box 71, Greytown, Natal.
Delport, G. C., Municipal Electrical Engineer, P.O. Box 6, Delmas, Tvl.
de Wet, D. P., Municipal Electrical Engineer, P.O. Box 15, Willowmore, C.P.
de Wit, T., Engineer-in-Charge, Municipality of Brits, P.O. Box 106, Brits, Tvl.
Downey, J. C., Town Electrical Engineer, P.O. Box 45, Springs, Tvl.
Downie, C. G., Deputy City Electrical Engineer, P.O. Box 82, Cape Town, C.P.
Dreyer, D. v. s., Town Electrical Engineer, P.O. Box 13, Brandfort, O.F.S.
Dwyer, C. H., Electrical Engineer, Town Board, P.O. Box 72, Stanger, Natal.
du Toit, A. A., Municipal Electrical Engineer, P.O. Box 44, Ceres, C.P.
Eastman, H. A., City Electrical Engineer, P.O. Box 82, Cape Town, C.P.
Fainsinger, G. S., Municipal Electrical Engineer, Power Station, Mossel Bay, C.P.
Ferreira, N., Town and Electrical Engineer, Odendaalsrus, O.F.S.
Fisher, K. M., Municipal Electrical Engineer, P.O. Box 130, Bethlehem, O.F.S.
Foden, A., City Electrical Engineer, P.O. Box 529, East London, C.P.
Foley, C. B., Municipal Electrical Engineer, P.O. Box 35, Vereeniging, Tvl.
Ford, A. M., Town Engineer, P.O. Box 26, Winburg, O.F.S.
Fraser, J. C., General Manager, Electricity Department, P.O. Box 699, Johannesburg, Tvl.
Gericke, J. M., Municipal Electrical Engineer, P.O. Box 99, Klerksdorp.

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Giles, P. A., Assistant City Electrical Engineer, P.O. Box 529, East London, C.P.
Grandin, P. C., Town and Electrical Engineer, Vryburg Municipality, Bechuanaland.
Gregor, C. E., Town Engineer, P.O. Box 4, Alberton, Tvl.
Gripper, H. J., Assistant City Electrical Engineer, P.O. Box 369, Port Elizabeth, C.P.
Hadfield, A. W. K., Town and Electrical Engineer, P.O. Box 278, Gwelo, S.R.
Halliday, K. W. J., Municipal Electrical Engineer, P.O. Box 5, Port Shepstone, Natal.
Halle, C. R., City Electrical Engineer, P.O. Box 399, Pietermaritzburg, Natal.
Hattingh, J. D., Municipal Electrical Engineer, P.O. Box 12, Bothaville, O.F.S.
Hugo, D. J., City Electrical Engineer, P.O. Box 423, Pretoria, Tvl.
Inglis, J. I., Town Electrical and Water Engineer, P.O. Box 111, Pietersburg, Tvl.
Iverach, J., City Electrical Engineer, P.O. Box 176, Grahamstown, C.P.
Jones, G. E. H., Municipal Electrical Engineer, P.O. Box 42, Mafeking, Bechuanaland.
Kane, R. W., Assistant General Manager, Electricity Department, P.O. Box 699, Jo'burg.
Kinsman, C., City Electrical Engineer, P.O. Box 147, Durban, Natal.
Kramer, T., Municipal Electrical Engineer, P.O. Box 113, Potchefstroom, Tvl.
Kirberger, M. N., Town Electrical Engineer, P.O. Box 96, Louis Trichardt, Tvl.
Kruger, M. J. C., Municipal Electrical Engineer, P.O. Box 10, Butterworth, Transkei.
Kruyt-Hoogendyk, P. D., Town and Electrical Engineer, P. O. Box 8, Theunissen, O.F.S.
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Lategan, J. F., Town Electrical Engineer, P.O. Box 201, Heidelberg, Tvl.
Lombard, C., Assistant City Electrical Engineer, P.O. Box 288, Bloemfontein.
Lotter, G. A., Town Engineer, P.O. Box 48, Ermelo, Tvl.
Lutsch, W. J. F. S., Municipal Electrical Engineer, P.O. Box 46, Aliwal North, C.P.
Lyall, R. R., Municipal Electrical Engineer, P.O. Box 45, Nelspruit, Tvl.
Mathews, J. A., Municipal Electrical Engineer, P.O. Box 45, Uitenhage, C.P.
McDonald, F. G., Assistant City Electrical Engineer, P.O. Box 399, Pietermaritzburg, Natal.
McIntyre, H. A., Municipal Electrical Engineer, P.O. Box 14, Middelburg, Tvl.
Meintjes, P. A., Municipal Electrical Engineer, P.O. Box 16, Rustenburg, Tvl.
Mitchell, J. E., City Electrical Engineer, P.O. Box 73, Salisbury, S.R.
Mitchell, E. W. O., Municipal Electrical Engineer, P.O. Box 114, Gatooma, S.R.
Milln, D. R., Town Engineer, P.O. Box 67, Blantyre, Nyasaland.
Mocke, T. M., Town and Electrical Engineer, P.O. Box 25, Piet Retief, Tvl.
Mossop, G. E., Town and Electrical Engineer, P.O. Box 155, Vrede, O.F.S.
Muller, G. J., City Electrical Engineer, P.O. Box 288, Bloemfontein, O.F.S.
Muller, H. M. S., Town Engineer, P.O. Box 17, Upington, C.P.
Newcombe, P. H., Municipal Electrical Engineer, P.O. Box 28, George, C.P.
Nicholas, I. J., Municipal Electrical Engineer, P.O. Box 57, Umtata, Transkei.
Prevost, H. A., Municipal Electrical Engineer, P.O. Box 21, Somerset East, C.P.
Redman, R. H., Assistant City Electrical Engineer, P.O. Box 591, Bulawayo.
Relihan, H. J., Municipal Electrical Engineer, P.O. Box 12, Paarl, C.P.
Reyeneke, G. M., Town Electrical Engineer, P.O. Box 10, Springfontein, O.F.S.
Ritson, D. W., Municipal Electrical Engineer, Stellenbosch, C.P.
Roberts, L. J., Municipal Electrical Engineer, P.O. Box 35, Matatiele, E. G.
Rogers, J., Municipal Electrical Engineer, P.O. Box 36, Fort Beaufort, C.P.
Roode, L., Town and Electrical Engineer, P.O. Box 34, Potgietersrust, Tvl.
Rossler, A., Municipal Electrical Engineer, P.O. Box 24, Cradock, C.P.
Rossler, W., Town Electrical Engineer, P.O. Box 302, Kroonstad, O.F.S.
Rush, W., Borough Engineer, P.O. Box 57, Vryheid, Natal.

ENGINEER MEMBERS—(Continued)

Sibson, A. R., City Electrical Engineer, P.O. Box 591, Bulawayo, S.R.
Sims, C. N., Municipal Electrical Engineer, P.O. Box 3, The Strand, C.P.
Smith, E. L., Municipal Electrical Engineer, P.O. Box 215, Boksburg, Tvl.
Smith, M. M., Municipal Electrical Engineer, P.O. Box 38, Adelaide, C.P.
Stevens, F., Borough Electrical Engineer, P.O. Box 56, Ladysmith, Natal.
Tarran, R., Municipal Electrical Engineer, P.O. Box 45, Benoni, Tvl.
Thackwray, W. G., Town Electrical Engineer, P.O. Box 8, Kokstad, E.G.
Theron, W. C., Municipal Electrical Engineer, P.O. Box 37, Worcester, C.P.
Turner, H. T., Town and Electrical Engineer, P.O. Box 121, Umtali, S.R.
Van der Walt, J. L., Town Electrical Engineer, P.O. Box 94, Krugersdorp, Tvl.
Vergottini, P. L., Municipal Electrical Engineer, P.O. Box 15, Brakpan, Tvl.
White, J. H., Municipal Electrical Engineer, P.O. Box 197, N'Dola, N.R.
Williams, V. E., Town Electrical Engineer, P.O. Box 59, Windhoek, S.W.A.
Williams, J. T., Town Electrical Engineer, P.O. Box 43, Harrismith, O.F.S.
Wilson, J., Assistant City Electrical Engineer, P.O. Box 423, Pretoria, Tvl.
Woolridge, W. E. L., Town Electrical Engineer, P.O. Box 24, Harding, Natal.

ASSOCIATES

Andrew, W. M., c/o E.S.C., P.O. Box 116, King William's Town, C.P.
Baskerville, C. H. V., P.O. Box 1094, Salisbury, S.R.
Baskerville, J. J., Town Engineer, P.O. Box 25, Edenvale, Tvl.
Campbell, A. R., P.O. Box 584, Johannesburg.
Clinton, J. S., P.O. Box 4648, Johannesburg.
Coulthard, R. D., "Lyonsdown", World's View Road, P.O. Doonside, Natal.
Conradie, D. J. R., P.O. Box 18, Ficksburg, O.F.S.
Dawson, C., Electricity Supply Commission, P.O. Box 2408, Durban.
Dobson, Dr. J. H., P.O. Box 7764, Johannesburg.
Ewer, Col. G. G., 261 Walker Street, Pretoria.
Gyles, J. H., P.O. Gilletts, Natal.
Harvey, A. Q., c/o A.E.G. Engineering, Ltd., P.O. Box 4554, Johannesburg.
Heasman, G. G., P.O. Box 77, Fort Victoria.
Houreld, W., 4 Monument Street, Krugersdorp.
Lloyd, R. K., Arusha, Tanganyika.
Mail, W. Mortimer, P.O. Box 164, Kokstad, E.G.
Marchand, B., P.O. Box 223, Witbank, Tvl.
Mercier, G., P.O. Box 377, Salisbury, S.R.
Milton, W. H., P.O. Box 1091, Johannesburg.
Mole, E. W., P.O. Box 428, Port Elizabeth.
Pentz, J. O., P.O. Box 4560, Johannesburg.
Proctor, Major L. B., 281 Burger Street, Pietermaritzburg, Natal.
Powell, W. N., P.O. Box 1386, Johannesburg.
Phillips, J. W., P.O. Box 592, Bulawayo, S.R.
Stewart, G. A., P.O. Box 6672, Johannesburg.
Theron, G. C., P.O. Box 1, Van der Byl Park, Transvaal.
Tubb, B. H. T., P.O. Box 1699, Salisbury, S.R.
West, J. A., "Edgerton," P.O. Box 24, St. Michael's, South Coast, Natal.
Wright, G. R. E., P.O. Box 465, Benoni, Tvl.

AGENDA AND PROGRAMME

Twenty-Third Convention held in the Wool Exchange, Port Elizabeth From 17th to 20th May, 1959

AGENDA

1. Election of President.
2. Retiring President's Valedictory Address.
3. Address by Lt.-Col. J. H. Dobson, D.S.O., D.Eng., D.Sc.(Hon.), M.Inst.C.E., M.I.Mech.E., M.I.E.E., M.I.Chem.E., etc.
4. Presidential Address.
5. Annual Report of Secretary and Treasurer.
6. Venue of next Convention.
7. Election of Officers:
   - (a) Vice-President.
   - (b) Executive Council.
   - (c) Sub-Committees and Representatives.
8. Reports of Sub-Committees and Representatives:
   - (i) World Power Conference.
   - (ii) International Conference on Large Electric Networks (C.I.G.R.E.)
   - (iii) Electrical Wiremen's Registration Board.
   - (iv) Registration of Electrical Contractors.
   - (v) S.A. Bureau of Standards—Safety Codes and other Committees.
   - (vi) S.A. Bureau of Standards—Meter Testing Code.
   - (vii) S.A. Standards Institution.
   - (viii) Overhead Lines and Code of Practice.
   - (ix) Statistical Tables.
   - (x) Coal Supplies.
9. Appointment of Auditors.
10. Amendments to Rules and Constitution.
11. General.

RETIRING OFFICERS

President: A. FODEN, East London.

Vice-President: D. A. BRADLEY, Port Elizabeth.

Past Presidents: G. J. MULLER, Bloemfontein; C. KINSMAN, Durban.

Councillor Members: One representative each of East London and Port Elizabeth.

Alternates: One representative each of Durban and Johannesburg.

Engineer Members: H. A. EASTMAN, Cape Town; D. J. HUGO, Pretoria; J. C. FRASER, Johannesburg; J. C. DOWNEY, Springs.

MEMBERS OF SUB-COMMITTEES AND REPRESENTATIVES

Sub-Committees:

1. S.A. Standards Institution: J. C. DOWNEY. Alternate: D. J. HUGO.

2. S.A. Bureau of Standards, Safety Codes and other Committees: J. C. DOWNEY. Alternate: D. J. HUGO.

3. Meter Testing Code: J. C. DOWNEY. Alternate: D. J. HUGO.

4. Safety Precautions: J. C. DOWNEY. Alternate: J. C. FRASER.

5. Overhead Lines, Code of Practice: J. C. FRASER. Alternate: G. J. MULLER.

Representatives:

6. World Power Conference (Local Committee): H. A. EASTMAN.

7. Electrical Wiremen's Registration Board: J. C. FRASER.

8. Registration of Electrical Wiring Contractors: J. C. FRASER.

9. Coal Supplies: H. A. EASTMAN (Convener), A. FODEN, D. A. BRADLEY and G. J. MULLER.

10. International Conference on Large Electric Networks (C.I.G.R.E.): A. FODEN and D. J. HUGO.

PROGRAMME

MONDAY, May 16th, 1949

9.00 a.m. Meeting of Council in Wool Exchange.

TUESDAY, May 17th, 1949

9.00 a.m. Registration, Issue of Papers, etc.

10.00 a.m. Official Opening of Convention by His Worship the Mayor of Port Elizabeth (Councillor John S. Young).

10.30 a.m. to 11.00 a.m. Refreshment Interval.

11.00 a.m. Address by Lt.-Col. J. H. Dobson, D.S.O., D.Eng., D.Sc. (Hon.), M.Inst.C.E., M.I.Mech. E., M.I.E.E., M.I.Chem.E., etc.

Annual General Meeting (Visitors may attend but only members may vote).

12.30 p.m. Adjourn for lunch.

2.15 p.m. Official Photograph (in Skating Rink of Feather Market Buildings).

2.30 p.m. Visit to Aberdare Cables of South Africa, Ltd.

WEDNESDAY, May 18th, 1949

8.30 a.m. Executive Council.

9.30 a.m. Convention Resumes.

10.30 a.m. to 11.00 a.m. Refreshment Interval.

11.00 a.m. Paper by Mr. H. J. Gripper, Assistant City Electrical Engineer, Port Elizabeth. "Efficiency in Municipal Electricity Supply Undertakings."

12.30 p.m. Adjourn for lunch.

2.30 p.m. Convention resumes.

3.30 p.m. to 4.00 p.m. Refreshment Interval.

5.00 p.m. Convention adjourns.

THURSDAY, May 19th, 1949

8.30 a.m. Executive Council.

9.30 a.m. Convention resumes.

10.30 a.m. to 11.00 a.m. Refreshment Interval.

12.30 p.m. Adjourn for lunch.

2.30 p.m. Harbour Trip or visit Factories.

5.30 p.m. Mayoral Reception, City Hall.

FRIDAY, May 20th, 1949

8.30 a.m. Executive Council.

9.30 a.m. Convention resumes.

10.30 a.m. to 11.00 a.m. Refreshment Interval.

12 Noon Convention closes if business completed.

LADIES' PROGRAMME

TUESDAY, May 17th, 1949

10.00 a.m. Official Opening of Convention.

10.30 a.m. to 11.00 a.m. Refreshment Interval.

11.00 a.m. Address by Lt.-Col. J. H. Dobson.

2.30 p.m. Visit to Aberdare Cables of South Africa, Ltd.

WEDNESDAY, May 18th, 1949

10.00 a.m. Bus Tour of City including Parks, Snake Park, etc.

THURSDAY, May 19th, 1949

10.00 a.m. Trip to Schoenmakers Kop via Marine Drive.

2.30 p.m. Harbour Trip or visit Factories.

5.30 p.m. Mayoral Reception, City Hall.

FRIDAY, May 20th, 1949

12 Noon Convention closes.

D. A. BRADLEY, PORT ELIZABETH

President, 1949-1950

THE ASSOCIATION OF MUNICIPAL ELECRICITY UNDERTAKINGS OF SOUTHERN AFRICA

Proceedings of the Twenty-Third Convention

The Twenty-Third Convention of the Association of Municipal Electricity Undertakings was opened in the Wool Exchange, Port Elizabeth, by His Worship the Mayor, (Councillor J. S. Young, M.P.C.), at 10 a.m. on Tuesday, 17th May, 1949.

Representatives of 64 Councils were present at the Convention, including 50 Councillor Members, 65 Engineer Members and Engineers representing Municipalities, two Honorary Members, 10 Associates, two of which represented other organisations, 22 Delegates from Government Departments, other Supply Authorities and Engineering Institutions, etc., 19 other visitors, 59 Trade Representatives, 71 Ladies, four Press and others—a total of 302.

CIVIC WELCOME

PAST PRESIDENT (Mr. C. Kinsman, Durban):

It is a pleasure for me to welcome the delegates to this our twenty-third Convention, and it is a further pleasure for me to introduce to you His Worship the Mayor of Port Elizabeth, Councillor J. S. Young, who will declare the proceedings open.

HIS WORSHIP THE MAYOR OF PORT ELIZABETH (Councillor J. S. Young, M.P.C.):

Mr. President, Ladies and Gentlemen,

I frequently find some difficulty in the capacity of Mayor of a fairly large city in deciding precisely what I am going to say at luncheons, dinners and receptions and other functions which fall to the lot of the person who is frequently referred to as the "First Citizen".

Indeed, Ladies and Gentlemen, the Mayor is expected to be quite a remarkable person, fully prepared on all occasions to converse on any subject and attend innumerable functions and always appear to be enjoying himself more than anyone else. He is, indeed, expected to be ready at a moment's notice to take part in almost any kind of social and business event and you may take it as quite definite that the duties are arduous and take up a tremendous amount of time.

One of the difficulties that one finds in connection with the entertaining of visiting bodies is that the overworked Mayor is often expected to speak to the visitors on several occasions and say something different at each affair that may be arranged. He has to maintain the interest of those who are called upon to listen—or try to; he has to endeavour to infuse a certain sense of humour into his remarks and at the same time endeavour to retain the civic dignity of the high office which he holds.

With these remarks I ask you to bear with me in the opening of this very important Convention and not accuse the Mayor of becoming the conventional bore that Mayors are supposed to be.

You will appreciate that this afternoon I have to speak to some equally important people connected with electricity and on Thursday again—when I hope to have the pleasure of entertaining you at the City Hall at a Reception—I presume I shall be expected to speak for a third time and have something different to say.

Well, Ladies and Gentlemen, I trust you will enjoy your visit to Port Elizabeth and that your deliberations will be successful and useful to the community as well as to yourselves. You are what may be termed the spearhead of a very important industry—so important in fact that without electricity our world would be a very different one.

I understand that this 1949 Convention is the twenty-third so far held and I would like to congratulate you most heartily upon the growth of the Association since it was founded in 1915. I do not intend to recapitulate the history of the Association to you with its objects and number of members and other data, because I am sure it has been disseminated on so many occasions that you know it off by heart

and consequently there is no need for me to repeat it to you here. I have read your retiring President's speech and have had a preview of the speeches to be delivered by Mr. Bradley and Mr. Gripper. The last should provoke considerable discussion which I will not anticipate nor criticize on this occasion.

This is the first time the Convention has been held in Port Elizabeth since 1933 and as you have not been here *en bloc* for some sixteen years I am sure you will notice during your stay here the considerable expansion that has taken place in the industrial field. This has resulted in very large sums of money being expended upon electrical power for the servicing of the new industries which have chosen Port Elizabeth as their home.

Like other towns which are in the growing stage, we have found some difficulty in regard to electricity and although our existing power station is constantly in process of extension we have found it necessary to ask the Electricity Supply Commission to establish an entirely new power station in Port Elizabeth and look forward to the time—in the not too distant future—when a really modern and efficient station will be in operation to service not only our existing needs but future contemplated expansion.

But I think, ladies and gentlemen, I have said sufficient on this occasion and it remains for me once again to wish you a happy stay in Port Elizabeth and a most successful Convention—and naturally I look forward to meeting you all again on Thursday at the City Hall for something a little lighter than the opening of a Conference.

PAST-PRESIDENT (Mr. C. Kinsman, Durban):

Your Worship, Ladies and Gentlemen,

I am confident that I am voicing the feelings of all present when I say how much we appreciate the kindness of His Worship in coming here this morning to open our Convention and how much we appreciate, too, his sincere and encouraging address.

I would take this opportunity to express, on behalf of our Association, the debt of gratitude we owe to our various councils throughout Southern Africa for their continued support of our Association. Without that support our Association could not have grown to its present stature. Despite what one may hear occasionally, these Conventions serve a most valuable purpose. They afford an opportunity for exchange of views between technical men, for consultations with officers of Government Departments and they provide a medium for the expression of the considered views of Municipal Electrical Engineers.

May I ask you, Mr. Mayor, to convey to your fellow Councillors our deep appreciation of their hospitality. I am sure we will return to our several cities and towns with happy memories of your City and refreshed in body and mind to the tasks which lie before us.

My next duty, ladies and gentlemen, is to call for nominations for the office of President for the ensuing year.

ELECTION OF PRESIDENT

COUNCILLOR R. DE LANGE, East London:

It gives me pleasure to propose as President for the year Mr. Bradley, who is very well known to all engineers of this country, and I am sure there is no better choice. Mr. Bradley is very small, but they say that good things are always wrapped up in small parcels.

Now, Mr. Chairman, we look upon Port Elizabeth as one of our minors, and it is for that reason I find pleasure in proposing Mr. Bradley. As you know, the last Convention to be held in Port Elizabeth was during 1933 when Mr. Bickell was elected. May I point out that during Mr. Bickell's term of office he became electrical engineer. In the year 1945 the load developed by 50%, which is exceptional for a small dorp like Port Elizabeth.

We are happy in our choice and I know we are not going to be disappointed. I wish Mr. Bradley a very successful year of office.

Dit is vir my 'n aangename voorreg om mnr. Bradley voor te stel as voorsitter. Ons voel dat in mnr. Bradley ons 'n voorsitter sal he wat vir ons baie gaan beteken, en ons kan hom die versekering gee dat ons sal hom ondersteun. Ek maak 'n beroep op die kleinere stadsrade

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om hom te help. Nogmaals baie dankie. Good luck, Mr. Bradley.

Mr. G. J. MULLER, Bloemfontein:

I second the proposal so ably put forward by Councillor de Lange.

I have known Mr. Bradley since 1930, and in later years since I joined the Executive Council I got to know him very much better. He has been a tower of strength to this Association, as many know even better than I, and therefore it is so much easier for me to second the proposal put forward by Councillor de Lange.

Mr. C. KINSMAN, Durban:

Any other nominations? There being no further nominations, I have much pleasure in declaring Mr. Bradley elected President for the ensuing year.

Mr. D. A. BRADLEY, Port Elizabeth:

Mr. Kinsman, Mr. Mayor, Ladies and Gentlemen, the work that I have been appointed to do will, I hope, progress as in former years, but as I look at the list of past presidents my task will not be an easy one, if the high standard of efficiency and ability is to be maintained.

The chain of office which I now wear bears the names of many prominent Engineers who have been engaged in Electricity Supply in South Africa since the inauguration of our Association in 1915. In that regard it is our privilege to have the first president, Dr. J. H. Dobson, with us this morning. The duties will have my best endeavour, and I am sure with your collaboration, we will have no difficulty in getting through the business before the Convention. I take this opportunity to welcome to the Convention and this City all our Members, Delegates, Councillors and Friends.

It is rather singular, even if it is a personal matter, but I am proud to refer to three very important Engineers, present with us this morning, who have played a big part in my life as an Engineer. When I started my Apprenticeship, quite a long time ago, I was placed under the charge of Mr. E. Vivian Perrow, who is well known to all present. He "put up" with me that first morning, and indeed has been a true friend ever since.

Having started work I had to attend Technical Classes, and there, in what was then known as the S.A. School of Mines and Technology, Johannesburg, I came under the instruction of Dr. Dobson, who as I previously mentioned, was the first President of the Association. In spite of possible "difficulties" with me as a Student, he has always been a great friend and helped me over the stile on many occasions.

The third Engineer to whom I refer is Mr. Arthur Rodwell, who has been the President of this Association on two occasions. He set me off in Municipal work, in that he gave me a "start" in the Johannesburg Municipality and from then till now he has never failed to assist me in every possible way. I would say that without Mr. Rodwell's help and wise counsel I could not be in the position of President today.

With appreciation I sincerely thank these three gentlemen for their presence at this Convention.

OBITUARY

I must now refer, unfortunately, to obituaries since the last Convention, namely the deep loss the country has sustained in the death of the renowned Scientist and Engineer, Dr. H. J. van der Bijl, whose attainments need no recapitulation by me, as he was one of our most eminent engineers in South Africa.

Mr. Bickley and Mr. Solomon, two of our Engineer Members, have passed over during the year, and Mr. Frank Castle, who was a foundation member of this organisation, also died during the year. I would take this opportunity to ask you to rise as a mark of the esteem in which they were held.

Mr. Hallé has just intimated to me that Dr. Bernard Price, who was very well known to all the members of this Association, has passed on, and it would not be out of place for us to record that worthy name too in our Proceedings for this year.

APOLOGIES AND GREETINGS, ETC.

We have many apologies from various engineers and council delegates who have not been able to be present. We accept those with regret because some very prominent people have been unavoidably

prevented from attending and we would have liked to have had them with us.

The following cables and telegrams were received:—

A. Foden, President:

"Best wishes to all for a happy and successful Convention."

J. C. Fraser, Executive Council Member:

"Congratulations to your President and wishing Convention all success in its deliberations."

H. R. Bevington, Middelburg, Cape Province:

"Regret absence wishing you good Convention and successful year."

H. Bahr, Ventersdorp:

"Wishing you a successful year of office. Regret having been unable to attend Congress. Am detained at Pretoria Hospital."

Councillor F. T. Edeling, Bethlehem:

"Regret due circumstances beyond control precludes me from attending your Conference tomorrow. Good luck for successful gathering."

Town Council of Brits:

"Alle sukses word 'n toegewens tydens die verrigtinge van u Kongress."

Mayor, Municipality of Umtali:

"Regret inability to be present. Wish you and Conference every success."

A. M. Jacobs, Chairman, Electricity Commission:

"Cordial good wishes for success of your Association's twenty-third Convention and congratulations to incoming President. Regret unable to attend in person."

S.A. Lead Works, Cape Town:

"We congratulate you on your distinguished appointment."

COMMUNICATED

Councils:

Elliot, Ficksburg, Livingstone, Ndola, Nelspruit, Newcastle, Port Alfred, Zastron.

Councillors:

C. W. Sinclair, City Council of Pretoria.
N. Burleigh, Municipality of Fort Beaufort.

Engineer Members:

D. J. Hugo, Pretoria (Member of Executive Council).
C. H. Adams, Oudtshoorn.
G. Aalbers, Ficksburg.
H. A. Prevost, Somerset East.
M. M. Smith, Adelaide.
E. W. O. Mitchell, Gatooma.
K. W. J. Halliday, Port Shepstone.
M. N. Kirberger, Louis Trichardt.

Associates:

J. S. Clinton, Johannesburg.

S.A.R. & H.:

G. Williams, Acting Chief Electrical Engineer.

Government and Other Institutions, etc.:

Dr. T. E. Donges, The Honourable, The Minister of the Interior.

Dr. F. J. de Villiers, Chairman, Standards Council.

Dr. B. J. F. Schonland, President, S.A. Council for Scientific and Industrial Research.

Department of Commerce and Industries, Pretoria.

Department of Public Works, Pretoria.

Provincial Administration of the Cape of Good Hope.

The Johannesburg Chamber of Commerce.

Chief Engineer, Rand Water Board.

President of the Institution of Engineers, Johannesburg.

Chairman, Electricity Supply Commission, Salisbury.

F. W. Joubert, ex-Chief Inspector of Factories.

Geo. S. Cochrane, Chief Engineer, African Theatres, Ltd., Johannesburg.

Engineering Firms:

Aycliffe Industries, Ltd.
Contactor (Pty.), Ltd.
George Kent (S.A.) (Pty.), Ltd.
Rice & Diethelm Ltd.
G. S. Rogers (Pty.) Ltd.

We have some former members with us. I refer to Mr. Pirie, late of Bloemfontein, Mr. Poole, an Honorary Member and at one time Secretary, and others. It is a real pleasure that so many have found it fitting and are able to be with us this morning.

I thank you all most sincerely for my election to the Presidential Chair.

VENUE OF NEXT CONVENTION

I would like to bring forward the question of the venue of the next Convention. If we have that first, it will help us considerably in the business scheduled for this morning. I invite proposals on this subject.

COUNCILLOR C. E. K. YOUNG, Pietermaritzburg:

Speaking on behalf of the City of Pietermaritzburg I would like to ask you to hold the next Convention in our City, the capital of Natal. We have changed it in a few years from a "Sleepy Hollow" and I can assure you that we really will be able to accommodate all members and any visitors. I think I may emphasise this point which has cropped up in the minds of many members. In offering you the City of Pietermaritzburg I can assure you we can give you quite a lot of entertainment; also when the Convention is finished you may want a little rest, and we have two mental hospitals there.

In mentioning the hospitals, we feel that with all these things on your mind, a rest will do you good in the beautiful City of Pietermaritzburg.

Apart from that, you will see the prettiest place in the Union and Rhodesias. I am very confident you will not forget Pietermaritzburg.

I do, on authority of my Council, extend a very warm welcome to you to come to Pietermaritzburg next time. Thank you.

PRESIDENT:

I accept gratefully your kind offer and we will hold the twenty-fourth Convention in Pietermaritzburg during 1950.

Mr. E. L. SMITH, Boksburg:

Seeing that the next venue has now been determined, I would like to suggest that the next Convention be held earlier in the year, as most engineers are busy at this time of the year with estimates, and also winter loading, and I would therefore propose that the next Convention be held in February.

PRESIDENT:

The subject is now open for discussion whether the Convention shall take place as formerly. Mr. Smith proposed the month of February.

Mr. J. L. VAN DER WALT, Krugersdorp:

I wish to second the proposal, for the reasons mentioned by Mr. Smith.

PRESIDENT:

Any further proposals regarding the period? I would point out that our Hosts naturally must have the final say as to the time most convenient to them.

Mr. FRANK STEVENS, Ladysmith:

Knowing Pietermaritzburg and how hot it can be, I suggest that for the delegates to enjoy the Convention, the date be fixed for a little later, say March or April.

Councillor R. DE LANGE, East London:

I am moving to have the Convention in May, same as we have now. When fixing the time for the Convention, we have to consider which city we have to go to, and May would be the most convenient for Pietermaritzburg. Each and every engineer has his difficulties, but I think on the whole that would be the most suitable month.

Councillor C. E. K. Young, Pietermaritzburg:

For Pietermaritzburg, May would be one of the most suitable months. I do not desire you to come to Pietermaritzburg in summer as you might find yourself nearer Hades than you would have thought probable, resulting in an influx in the City's rest homes. I would also like to point out that it is the question of getting accommodation for such a large gathering as that of the Convention which makes the month of May more suitable.

PRESIDENT:

We have no alternative but to go to Pietermaritzburg during the month of May. Our Secretary will make the necessary preparations for the final arrangements in regard to the date.

As it is now 10.30 a.m. I extend a hearty invitation to you, Mr. Mayor, and all present to join us for morning tea in the Feather Market Hall.

The Convention resumed at 11.00 a.m.

PRESIDENT:

It is our privilege to have with us this morning, our worthy Guest Speaker and Past-President, Dr. J. H. Dobson, who needs no introduction to this Assembly as he is famous throughout the Union and the Rhodesias. Dr. Dobson, will you please come forward and deliver your address:

"SOUTH AFRICA'S INDUSTRIAL OUTLOOK DURING THE POST-WAR YEARS OF THE SECOND GREAT WORLD WAR, 1939-1945"

By

Lt.-Col. J. H. DOBSON, D.S.O., D.Eng., D.Sc.(Hon.), M.Inst.C.E., M.I.Mech.E., M.I.E.E., M.I.Chem.E., etc.

PRELIMINARY

Mr. Mayor, Mr. President, Ladies and Gentlemen,

I am greatly honoured to be given this opportunity of addressing you at this, your Twenty-third Convention. The last occasion on which I addressed you was in 1936, which was the Twenty-first Anniversary of the birth of the Association, and on that extremely happy occasion, as I was your first President, I was given the privilege of extinguishing the twenty-one lighted candles which surrounded the birthday cake, and which were symbolic of the twenty-one years of exceptionally fine and progressive organisation. The founders of the Association were Messrs. John Roberts and George Swingler in conjuction with myself, and we gained the most cordial support from Municipal Electrical Engineers and the first Convention was launched in Johannesburg in 1915 under my Presidency with 33 members, and it was regarded as having been an outstanding success. It has been a great joy to me to see how this Association of Municipal Electricity Undertakings has grown from its humble beginning of '33 members in 1915 to its present great sphere of National influence and usefulness, and I express great confidence that our Association with its present membership increased to about 220, will continue its powerful influence to an even greater extent in the future years. It is also gratifying to know that there are always an appreciable number of Council members present and their interest at these annual Conventions adds greatly to the value and practical effect of the decisions of their Chief Municipal Electrical Engineers.

It is now over twenty-eight years since I relinquished my Municipal position as General Manager and Chief Engineer of Johannesburg's Municipal Gas and Electricity Supplies and Tramways Departments, and I thoroughly enjoyed my years of Municipal service.

As a result of the Great War of 1914-18 in which I was engaged in Military service under General Smuts in the East African Campaign firstly as Officer Commanding the S. A. Pioneer Battalion of Engineers and eventually Chief Engineer of the Second Division, like many others who had been engaged on military service, I became imbued with the idea that there might be greater scope outside the sphere of Municipal activities, and in conjuction with the late R. M. Dowson I decided to take the risk of starting the organisation of Dowson & Dobson Ltd., firstly in Johannesburg and in the succeeding years Dowson & Dobson organisations have been added to that of Johannesburg at Durban, Cape Town, Port Elizabeth, East London and recently at Bulawayo and during this year also at Salisbury—all these are associated with Dowson & Dobson's Engineering Works on 21 acres of ground at Krugersdorp and the Company now operates on a paid-up capital plus reserves totalling approximately £600,000 and no less than six employees who have taken a very active part with me in the development and growth of our undertakings spread over many years have become Directors, Shareholders and Heads of the Specialised Sectional Departments.

The war years 1914-1918 gave South Africa its first great impetus in the development of local industry. (See J.H. Dobson's Presidential Address to the South African Institute of Electrical Engineers dated February 1918 entitled "The Industrial Awakening of the Great War 1914-18"). The war years 1939-1945 gave the D & D organisation a tremendous impetus in connection with the local production of such as Phosphor Bronzes and special White Metals and the making of specially designed Compressed Air driven fans and the cold exhaust air therefrom utilised together with the movement of the air by the fans for cooling some of the hot spots in mining operations. These items of local production have resulted in an appreciable growth of the D & D engineering works covering most of the the 21 acres of our industrial ground at Krugersdorp.

It has also been my privilege to have been closely associated with the starting up of many new industries in South Africa such as the S. A. Rubber Manufacturing Company at Howick in Natal, the Iron and Steel Industry (having been one of the first Directors of Iscor) and subsequently for a few years Chairman of the Union Steel Corporation where I introduced the manufacture of Rock Drill Steels and special steel alloys and the wire drawing and stranding of copper, leading up to the formation by others of South Africa's electric cable-making factories.

THE POST-WAR YEARS OF THE 1939-45 WAR:

As was the case in the post-war years of the first World War of 1914-1918, the year 1949 finds the whole world still suffering from the aftermath of the second great World War of 1939-45; this was the war that was supposed to terminate all possibilities of any future wars, for which purpose (like the old League of Nations) the existing United Nations Organisation came into existence. It is extremely disappointing (and during the late War was considered almost inconceivable) that Russia who was one of the principal members of the Allied Nations that were ranged against and defeated Hitler's hordes of Nazis, now shows the strongest possible opposition to her late Western Allies, and the possibilities of yet another World War have been constantly in the minds of many nations of the World as being within the measure of possibility: this has resulted in essential protective measures having been taken by the Western countries by the formation of the Atlantic Pact and there are other possible similar Pact developments. We have read recently that South Africa's line of Defence is far removed from the borders of the Union of South Africa, and that the port of Cape Town will be of far greater importance in any future conflagration of war than ever before.

It is terribly distressing when we realise that the past two great World Wars, whilst adding tremendously to scientific, technical and engineering developments, are at present not being devoted exclusively to the benefit of the human race and that thousands of millions of pounds to be spent on protective measures against the possibility of another War, now form a very great portion of the National Budgets of most of the important countries of the world, thus bringing about tremendous dissipation of the world's wealth from which all the peoples of the world are now suffering including South Africa, whose great potentialities of all-round economic developments are being stifled included in which are the great developments of gold mining in the Orange Free State, which are being hindered in their vast potential development by the delays in getting the necessary supplies of plant and equipment.

Some of the greatest developments arising out of the last war are in (1) Atomic Power, (2) the development of the Gas Turbine, (3) the use of Industrial Electronics in telecommunications including such as mobile radio equipment, radar and navigational aids, radio frequency heating including dielectric and induction heating, sound amplification equipment, sound recording apparatus for disc, film, tape and wire systems, electronic controls for welding and photo-electric controls for machinery. By the use of electronic instruments, noise, vibration, distortion and moisture content can all be rapidly measured. Rotating machinery can be examined and checked whilst in operation and flaws can be detected in metals—much of such equipment may be of appreciable use to all Municipalities—and (4) the wonderful growth of air-plane designs, especially in regard to Rocket Propulsion now making air-planes capable of traversing enormous distances and heights at speeds even greater than sea level velocity of sound of 762 miles per hour and able to carry men, arms and atomic bombs over incredibly long distances, all of which are virtually awe-inspiring if applied in any future wars instead of being applied to the arts of a peaceful world. In the words of the Right Honorable Anthony Eden (formerly Great Britian's Secretary of State for Foreign Affairs) the greater part of all mankind yearns for peace, but sees no immediate hopeful prospect of enjoying it. In times of Peace, rocket-assisted take-offs for air-planes will enable heavily laden aircraft to use relatively short Runways, and due to the complete independence of the external atmosphere for rocket thrust production presents enormous

future possibilities together with the largely increased "power-to-weight ratio" of the rocket propelled planes, thus making peace-time possibilities of air travel never even previously imagined. Thus we read in the Press of March 29th 1949 that an R.A.F. Vampire Jet plane flew 6000 miles on one of the longest staged flights in the history of jet-propelled aircraft when it crossed desert and ocean, jungle and mountain, on its 6000 mile flight from Singapore to Khartoum: also that British Flying Boats ordered by the B.O.A.C. will be in operation during 1950 and 1951 capable of carrying 80 to 100 passengers with an effective range of 5500 miles sufficient to maintain **non-stop services** between Southampton and New York.

The terrible contemplation of any future wars places South Africa and the whole of the African Continent in positions of far greater strategic importance than has ever been previously conceived, and as time goes on this strategic importance of South Africa and its Northern neighbours, according to Generals Auchinlech and Sir Francis W. de Guingand, will be immeasurably increased. Prior to his departure overseas to attend the Conference of the Premiers of the British Commonwealth, our Prime Minister (Dr. Malan) dealt exhaustively with this relatively new aspect of matters as he sees them today. In this respect the article by Mr. Anthony Eden published in the issue of the Johannesburg "Star" of December 18th, 1948, entitled "World's longing for peace frustrated by the threat of World Communism" is of special interest to all who wish to study the dangers of the flow of Communism throughout the World. The German Fifth Column policy of Hitler which was linked with the infamous Ausland with its tentacles spread over the whole world on the principle of "World Power or Downfall" led inevitably to the second great World War of 1939-45. Hitler's Fifth Column Organisation appears to form the present Russian Communist pattern but it is on a far greater and more intensive scale with the Communist Fifth Column movement within the borders of most Nations of the world—in the words of Mr. Winston Churchill, this highly developed Russian Communist Technique is "quite as wicked but in some ways is more formidable than Hitler's". It has been recently reported that the members of these Communist Fifth Columns have sworn to give their support exclusively to Russia in any future conflagration of war, independent of whatever their nationalities may be in the countries which give them their livelihood. To meet these dangers, the Western Powers have been compelled to take adequate precautions by the formation of such as the Atlantic Pact, and by other means **to prevent the possibility of a third World War** and meanwhile wherever possible to prevent the economic life of smaller powers from being undermined and destroyed by Communist Fifth Columnists' activities. Thus we read in recent Press announcements that the Atomic Energy Commission of the U.S.A. has reported an important speed-up in the production of atomic fuel and increasing the out-put of new and more powerful Atomic Bombs. Notwithstanding these essential precautions, the world's longing for peace may yet be the means of avoiding a third World War, the horrors of which must be fully realised by Russian Communists as they must be acquainted with the experience and terrible results of the Second World War of 1939-1945 which have shown clearly that both victor and vanquished in a third World War will be sunk to almost irretrievable oblivion—the old idea that the war expenses of the victors can be extracted from the vanquished is a hideous delusion. Fortunately there are favourable processes operating to avoid War and recently Winston Churchill said "War is not inevitable: hope and patience need not be abandoned."

SOUTH AFRICA'S POST-WAR ACTIVITIES

Turning now to "peace time" world affairs and particularly to South Africa, we see very satisfactory progress being made in many respects in our wonderful country and although they are being stifled under present world conditions (in common with other Nations), they have long term progressiveness from which all South Africans will ultimately benefit.

SOIL CONSERVATION:

The perils of South Africa's soil erosion are now realised more than ever previously and that soil conservation is vital to our future existence. The introduction of the

Soil Conservation Act operating in conjunction with the Farmers has resulted in energetic protective measures being intensively accelerated and it is gratifying to note that there were no less than 79 B.Sc. Degree Graduates in Soil Conservation at the Witwatersrand University Graduation Ceremony of March 26th of this year, the courses for which were pioneered by Professor John Phillips

As a result of our Government's intensive publicity and propaganda being superimposed upon that put forward by the National Veld Trust, of which Mr. Havenga our Minister of Finance was one of the founders; he stated in his speech at the official opening of the Johannesburg Agricultural Show on the 13th April this year that the "State" stands committed "for millions of pounds in the war which we have declared against soil erosion so as to make our soil safe for the future"—this is very good news and particularly to Dr. J. C. Ross and the staff of his Division of Soil Conservation.

According to Dr. J. C. Ross, the Director of South Africa's Division of Soil Conservation, when he addressed the Agricultural Scientific Association of Natal at the beginning of March this year, there are now established under the Soil Conservation Act over 240 Soil Conservation Districts covering an area now totalling about 30 million morgen which is more than a fourth of the total farm lands of the Union of South Africa. He also stated that further rapid developments of Soil Conservation schemes may be expected in the very near future.

WATER CONSERVATION

The great necessity for South Africa's Water Conservation has been driven home by many of our principal Water Engineers like Dr. A.D. Lewis (formerly Director of Irrigation), Dr. F. E. Kanthack, Mr. J. P. Leslie, Chief Engineer of the Rand Water Board, and other authorities. The community realises that South Africa's Water Conservation goes hand in hand with Soil Conservation, and water conservation is bound to be accelerated by the accelerated attention now being given to the Conservation of our Soil, both of which are vital factors in the production of food. Furthermore, water conservation is a matter of great concern in regard to our large-scale industrial developments: some of these new industries may have to choose sites in the Northern and Eastern Transvaal away from the Vaal Basin, where it is believed there is plenty of water, but which still has to be harnessed.

DEVELOPMENT OF AFRICAN TERRITORIES NORTH OF THE UNION OF SOUTH AFRICA:

The gigantic schemes for the development of the African territories north of the Union of South Africa are being carefully planned to extend agricultural production on scientific lines into the far distant future. Included in these developments is the great work of the British Overseas Food Corporation of which Professor John Phillips late of the Witwatersrand University has been well chosen as their Chief Director as he has been very prominent in the pioneer work of Soil conservation in South Africa and as one of the founders of the National Veld Trust, I can speak very highly of the work he has done in South Africa from a close association with him.

Water Conservation and the utilisation of it in power production, as well as in agricultural pursuits looms largely in the developments that are receiving energetic attention on the part of the Northern African territories, which are bound to accelerate endeavours in numerous directions in the Union of South Africa. Recent Press announcements have indicated that the two Rhodesias have plans initiated by their Inter-territorial Hydro-electric Power Commission for the erection of the biggest Hydro-electric scheme in Central Africa to harness either or both of the Rivers Zambesi at the Kariba Gorge and the Kafue River Gorge. The dam for the Zambesi at Kafue may be between 250 ft. and 300ft. high and it is estimated there will be an all-the-year-round electric power supply of about 500,000 Kilowatts which will deliver electric power at an estimated generated cost of ·15 pence per unit to large-scale users of electricity hundreds of miles away from the source of generation. The scheme is considered sufficient to supply the Northern half of Southern Rhodesia including the Industrial Midlands as well as the Copper Belt of Northern Rhodesia. Thses projects will take some eight to nine years to complete: this is a case of planning well ahead as by

that time the two Rhodesias are expected to be highly industrialised.

A new dominion north of the Union of South Africa is being initiated by representatives of Northern and Southern Rhodesia and Nyasaland, the creation of which is considered to be vital to the British Commonwealth. This New Dominion is said to have large and important mineral deposits such as Iron, Lead, Bauxite, Cobalt, Vanadium, Chrome Ore, Asbestos, Gold, Coal and Copper together with their potentially cheap Hydro-electric power and vast cattle areas.

Further north of the Rhodesias, it is reported that there are projects under consideration for a large Dam at Lake Victoria to harness the Nile River and to reclaim some 2,000,000 acres of cultivable land, this being one of a chain of projects to harness the Nile in which Lake Kioga and Lake Albert will also be adequately controlled and utilised. One of these projects namely the "Egypt—Uganda" scheme is expected to commence the erection of its Dam next October.

It will be seen from the foregoing that the African Continent north of the Union of South Africa, including the activities of the vast British Overseas Food Corporation, is receiving an intensity of vast potential development that has been conceived in the past years, but which now appears to be approaching something like reality and will serve to provide employment for an appreciable portion of the vast population of well over 150,000,000* of Non-Europeans of various nationalities on the African Continent. The important question of transport is also under consideration. These are very important factors from the point of view of markets in regard to the growth of South Africa's Industrial enterprises and cordial relationships with South Africa's Northern neighbours are essential for the Union's Industrial prosperity—in this connection, the visit to Nairobi in East Africa early in April this year made by the Union's Minister of Economic Affairs (Mr. Eric Louw) was a happy augury and the tours of the North African Territories being made by the Hon. Charles te Water are most opportune.

Another matter of the very greatest importance is the Conference of about 100 Scientists representing U.N.O. bodies, three Major Powers and more than 25 territories south of the Sahara, to be held at the University of the Witwatersrand in Johannesburg and to be opened by our Prime Minister, Dr. Malan, commencing on the 17th October this year and expected to last about 12 days. The International scale of this Conference is bound to be the start of a new era of scientific and agricultural development in the African continent which may eventually enable it to supply materials and food to other parts of the world, as well as to increase industrial productivity of the Northern populations and make them healthier and happier with a higher standard of living.

It is pleasing to record that two South Africans, Dr. B. J. F. Schonland and Dr. P. J. du Toit, President and Deputy President respectively of the S.A. Council for Scientific and Industrial Research, are responsible for the main organisation of this Conference.

The last five or six paragraphs of this address indicate that "Darkest Africa" is at last being unveiled and this is bound to have profound influences not only on the African Continent, but on other parts of the World.

SOME OF SOUTH AFRICA'S ACTIVITIES IN REGARD TO ITS INDUSTRIAL DEVELOPMENTS:

Gratifying efforts are being made in numerous directions, which although some of them are being stifled due to the aftermath of the second Great War years 1939-1945, they have long-term planning from which all South Africans will ultimately benefit. Items worthy of mention are:—

(a) The discovery of the Orange Free State Goldfields from which have arisen the shaft sinking stages of the Companies of St. Helena, Welkom, Freddies (North and South Lease areas), Western Holdings and the Free State Geduld and the drilling to locate the shafts of the President Steyn and President Brand, together with the new Gold Mines on the west of Randfontein, like the Libanon, Blyvooruitzicht and Venterspost, all three of which are now in

* For territorial details, see J. H. Dobson's Presidential Address to the Associated Scientific and Technical Societies of South Africa, December, 1944.

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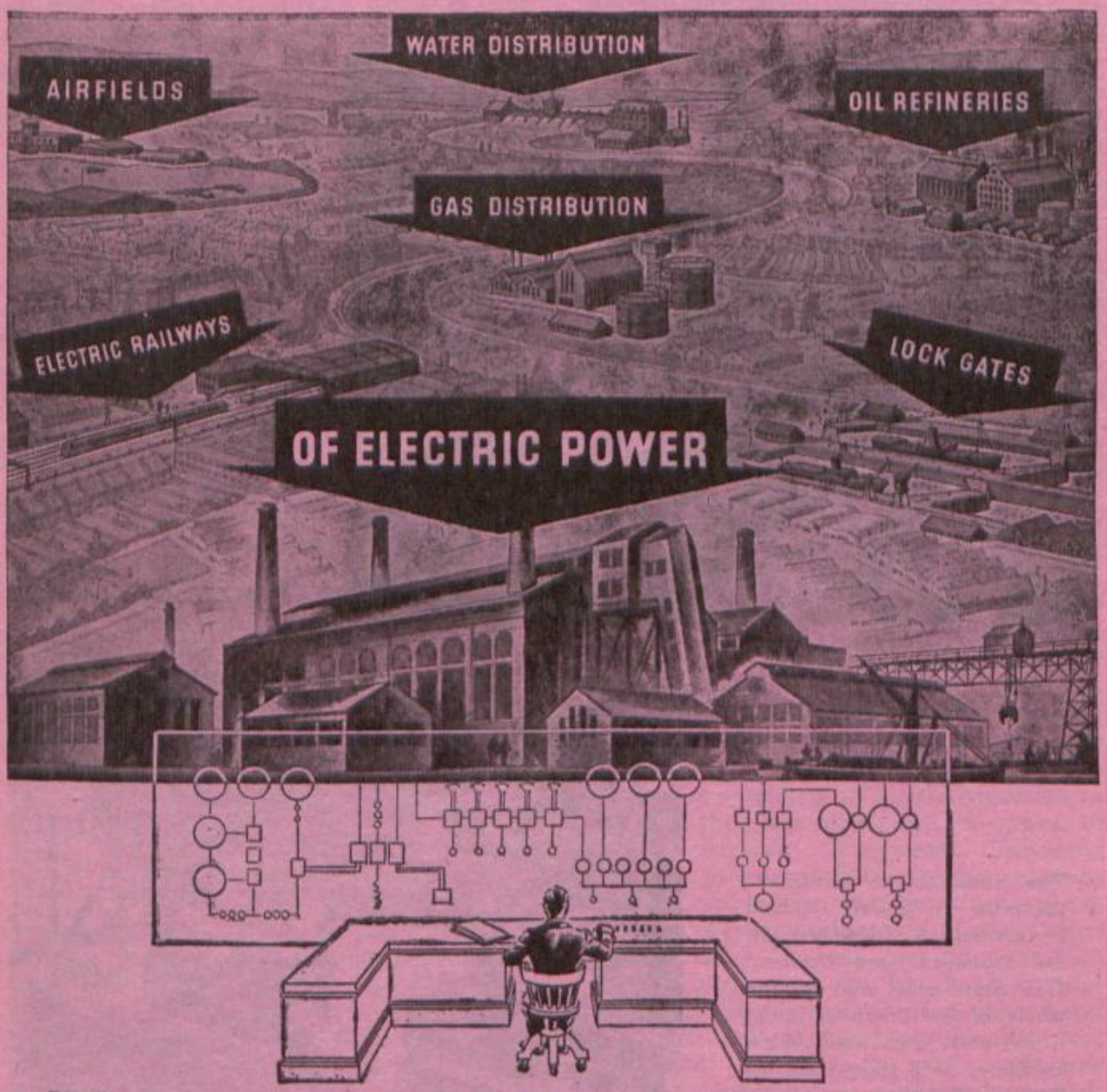

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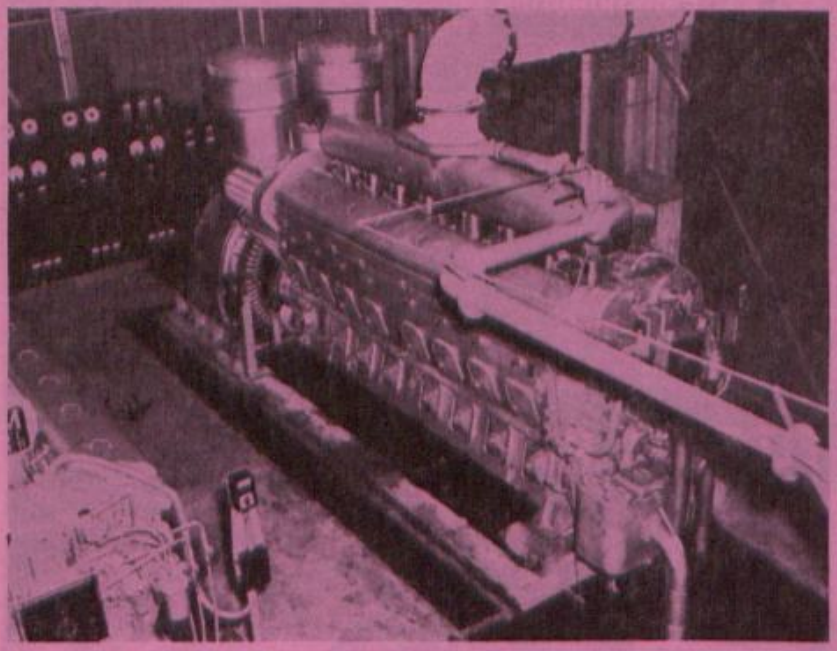

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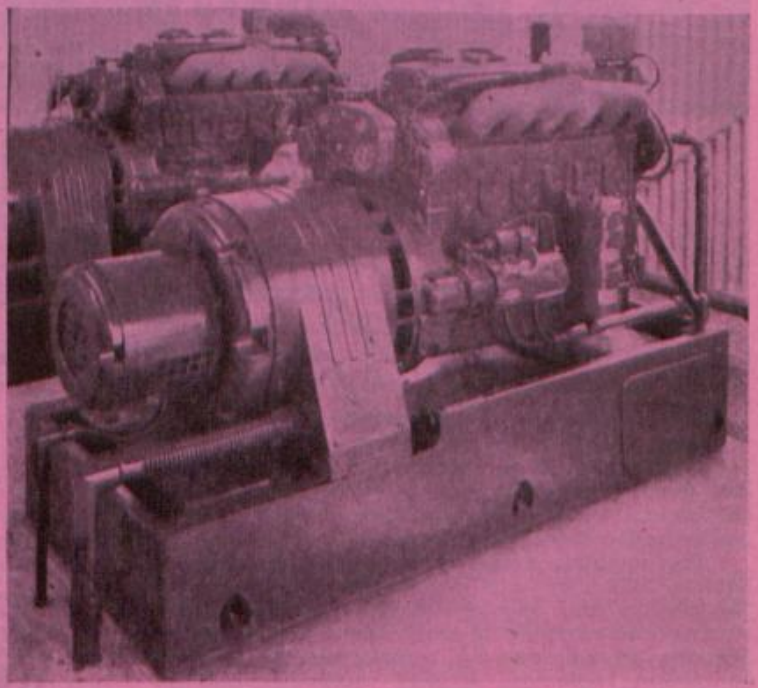

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production, and the West Driefontein and Doornfontein Companies are in the initial shaft sinking and development stages, as well as the gold mining areas in the Klerksdorp area, such as the Western Reefs (now in production) and the Vaal Reefs shaft sinking, whilst Stilfontein and Strathmore which are in the shaft sinking stages have all provided a new era in South Africa's Gold Mining operations. The drilling to a depth of about 4000 ft. some five miles south of Odendaalsrust in the Orange Free State made World news and the Union of South Africa thus found itself on the eve of a new gold mining era which may finally result in something approximating to a second Witwatersrand area. It will be seen that steady progress has been made in connection with the four new mines mentioned as producing, but supplies of the necessary plant and machinery for the others are appreciably delayed due to the present difficult world conditions arising from the aftermath of the war years 1939-1945, but it is confidently expected that this aspect of matters will undergo a change in the not far distant future and according to Mr. Malherbe, our Government Mining Engineer, it will be 1952 before we see the start of Gold production of these new Mines on a significant scale. This new Mining era will help considerably to sustain our Gold Mining Industry against the time when certain of the existing gold mines arrive at the end of their economic lives and sustained efforts are being made to speed up deliveries of plant and machinery.

According to a recent statement made by the Government Mining Engineer, Mr. D. G. Malherbe, gold production in South Africa at the 1948 milling rate of about 58,000,000 tons is now estimated will be maintained for the next 25 years—this was an extention of the period given in the last estimate made in July 1947 and the reason for the extension was that during the past two years prospecting in the Orange Free State and the Western Transvaal had indicated the probable establishment of several additional mining areas, and he said it is possible when a further estimate is made in two or three years' time that the 58,000,000 mill tonnage may be maintained for even a longer period than 25 years before a decline sets in—this is a very gratifying statement to all South Africans. Mr. Malherbe also mentioned that the tonnage milled is largely limited by available labour resources and in framing his estimate of 25 years or more, he had assumed that the labour complement level will continue at or about the same level as that obtaining at present.

Adequate supplies of native labour, however, is the great problem of today and in regard to the place of the non-Europeans generally in South Africa, since I made this country the land of my adoption over 45 years ago, I have often felt that the future aspects of South Africa's native labour in industry, which are at present being dealt with principally by opposing political parties, would be better dealt with by a properly constituted National Convention on somewhat similar lines to those which brought into being the Union of South Africa. At such a Convention, chosen delegates from all the recognised political parties and from Institutions such as the Chamber of Mines, Associated Chambers of Commerce, the Associated Chambers of Industry, the Universities, Farmers' Associations, Trade Unions, and the Institute of Race Relationships, would—through their delegates—submit the considered views of their respective Institutions and the decisions arrived at by the Convention would represent the views of a very large responsible section of South African opinion as a pattern for legislative action in regard to the place of the non-Europeans in South Africa's long-term industrial activities, more especially so as the people in South Africa must now take into consideration the present and future place of non-Europeans in the vast developments that are taking place in the Northern African territories and any Isolationist policy whereby South Africa might conceivably deal with its complicated race problems absolutely independent of the influences of the African territories beyond its borders, is rapidly becoming untenable.

(b) **Industrialists are being inspired to grasp the present opportunities for appreciable industrial development utilising to the fullest extent South Africa's Raw Materials.**

Dr. T. E. Donges, our Minister of the Interior, in a speech delivered last December to the Northern Transvaal Chamber of Industries, appealed to South African Industry to make far greater use of our raw

materials. He also gave some striking figures in regard to the export of our unprocessed raw materials at very low export values which can be raised many times by processing them within the Union of South Africa. Some of the potentialities in this regard are "timber" which could be processed for paper and news-print; "wool" in the raw state after being processed to finished goods could multiply export value by something like six times; South Africa's vast "Chrome-Ore" deposits as well as "Manganese Ore" when processed to "Ferro-Chrome" and "Ferro-Manganese" would likewise have an export value several times that of their respective Ore export values. There is the further point that processing our raw materials into higher values will find employment for thousands of South Africans. I think that a good slogan for South Africa would be "Avoid wherever economically possible the export of South Africa's unprocessed raw materials and increase the export of processed raw materials to far greater export values". This policy will greatly influence the balance of Trade in our favour, i.e. an appreciably greater revenue of Total Export values compared with the total expenditure on our imports.

An official of the Transvaal Chamber of Industries is said to have expressed the opinion that South Africa's Industrialists hope to increase production to meet the demands of the country for items on the "List of Prohibited Imports" if adequate supplies of essential raw materials are available. It is also reported that the official view of the Natal Chamber of Industries is that under present conditions, Industry in South Africa has been given **its second chance** for achieving real development especially in Clothing and Textiles, provided always that they are competitive with and equal in quality to those imported. Mr. Havenga speaking on Industrial matters at the opening during March of this year of the Masonite Factory at Estcourt in Natal which will employ about 150 Europeans and 200 Natives, also drew attention to the prospects of a major timber industry in South Africa.

Referring to South Africa's Labour Supply, this is a problem that will require the most careful consideration and it will have to be borne in mind that the Northern African territories also have to build up their labour resources. Collaboration with the other African territories appears to be very essential so as to make the best use of all potential labour resources.

The vast resources of coal in the Union of South Africa place our coal industry as one of the greatest assets in the Union. Arising out of the "Liquid Fuel and Oil Act of 1947" authority has been given to the Minister of Economic Affairs to issue licences for the production of liquid fuel and oil from coal. The Anglo Transvaal Consolidated Investment Company is the first to apply for a licence for operations in the Vereeniging District, and I understand that the Minister will not issue any other licences for about four years unless there is a National emergency which may compel him to do so. All those concerned with South Africa's industrial development hope to see the project of the Anglo Transvaal Company an outstanding success and that Liquid Fuel from coal will become another of South Africa's great industries.

Recently attention has been directed to the vast coal reserves in Natal that are still untouched, particularly the area from the Pongola River to the foot of the Drakensberg mountains, and the Director of Irrigation, Mr. L. A. Mackenzie, in his recent Presidential Address to the South African Institute of Civil Engineers, referring to the abundance of coal in this area, mentioned also that it was extremely well watered and had reasonable road and rail communications which made that area very suitable for large industrial developments.

It is appropriate to refer briefly to South Africa's output of minerals for the year 1947 by referring to the comprehensive and valuable article entitled "The Base Minerals (excluding Coal) of the Union of South Africa" by E. M. Little, the Officer-in-Charge of the Mineral Development Section of the Government Mining Engineer's Department. This is published in the March 1949 issue of "The South African Journal of Economics" and it is stated that including coal and gold (at the average price realised for it) the value of South Africa's Mineral output for the year 1947 totalled £123,059,966. The items of mineral output included:—

Gold, Diamonds, Coal, Silver, Platinum metals, Osmiridium, Copper, Tin, Arsenic,

Antimony, Chrome Ore, Iron Ore, Lead Ore, Manganese Ore, Nickle, Tungsten Ores, Andalusite, Asbestos, Barytes, Corundum, Fluorspar, Graphite, Graphite Shale, Iron Pyrites, Kaolin, Kieselguhr, Magnesite, Mica, Mineral Paints, CO_2 Gas, Soda, Talc, Vermiculite, Crocidolite, Felspar, Granite or Norite, Gypsum, Lime and Limestone, Marble, Phosphates, Sandstone, Silica, Silcrete, Slate, Wonderstone, Miscellaneous Stone, Shale (used in cement manufacture) to the total value in 1947 (with gold at the average price realised) of £123,059,966.

SOUTH AFRICA'S IRON AND STEEL INDUSTRY:

A brief reference may be made to Iscor's great development to increase the output of steel products from 600,000 tons per annum to 1,000,000 tons per annum, and I understand there are corresponding increases at the Union Steel Corporation and the African Metals Corporation at Vereeniging and at the Dunswart Iron & Steel Works, as well as the Newcastle Blast Furnaces. According to the Report of the Coal Commission (of which the author was a member) the previous contention that the Coking Coal reserves of the Union were extremely limited was not borne out by evidence. This is a very gratifying feature for Iscor's future.

Due to the lamented death of the late Dr. H. J. van der Byl, it has been a source of gratification to industrialists that Dr. Meyer has been appointed to succeed him as Chairman of Iscor seeing that he has been occupying highly responsible positions there from the starting-up period in 1934 to the present date.

THE VANDERBIJL ENGINEERING CORPORATION'S WORKS AT VANDERBIJL TOWNSHIP

This is adjacent to Vereeniging and is also a notable achievement in heavy engineering development with a capital of £2,000,000 for dealing with such as large Mining Winders, etc. and the maintenance of Iscor's plant. Owing to the present world conditions in regard to supplies of plant and machinery, it will take a few years before these projects are in full operation. The Directors have decided to double the capital up to £4,000,000 for very appreciable extensions of its activities including a 1,000,000 volt X-Ray plant for special inspection and other industrial purposes.

SOUTH AFRICA'S OTHER NUMEROUS NEW INDUSTRIES

There are large numbers of other new industries springing up all over the country, which cannot be dealt with in a brief address of this description. In this respect it has been my privilege to assist in pioneering two more new indusrties, namely the manufacture of bicycles on a large scale by the formation of the Ace Cycle & Engineering Company with its works at Springs and the new Match Works at Bloemfontein owned by the new Capital Match Corporation Ltd; both these products should find very large markets in the African territories north of, as well as in the Union of South Africa. I also sail from South Africa on May 27th on business visits to the U.S.A., Canada and Great Britian and hope to return with decisions to start up two new South African Industries.

SOUTH AFRICA'S TEXTILES:

The growth of South Africa's Textile factories has been a most encouraging development in the direction of turning our raw materials into high valued products and the South African Industrial Development Corporation continues to carry out successfully most important functions under the capable direction of Dr. van Eck.

THE UNION'S ATOMIC ENERGY BOARD:

Another gratifying industrial development is the formation of the Atomic Energy Board, which was gazetted in Pretoria on the 11/3/49. It is anticipated that investigations into the sources of supply of Uranium in South Africa will form a prominent part of their investigations. The membership of the Board has been well chosen under the Chairmanship of the Minister of Mines and the members of the Board are well-known men of eminence in South African industry. There is therefore some assurance that this country will keep pace with the industrial aspects associated with Atomic Power in peaceful pursuits.

THE SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH:

This continues to carry out its very important functions under the capable Presidency of Dr. R. F. T. Schonland and the National Physical Laboratory also continues its sphere of great national usefulness under the capable Presidency of Dr. S. M. Naude.

THE SOUTH AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION is dealing with many proposals for extensions to its vast system and in particular it has been decided to extend its electrified railway sections in the Cape Province for about 160 miles from Belville to Touws River via Paarl and Worcester at which last place the Electricity Supply Commission intends to erect a Power Station of 60,000 Kilowatts capacity. Incidently the name of Worcester is to be changed to Hex River.

THE ELECTRICITY SUPPLY COMMISSION must naturally keep pace with the vastly increasing electricity demands due to the Union's increasing industrial developments including the supply needs of the new O.F.S. Goldfields and the other new West Rand Mines. Accordingly they are in the stage of planning and developing several new Power Stations estimated to cost between £40,000,000 and £50,000,000, (1) at Vierfontein near the O.F.S. Goldfields; (2) at Worcester in the Cape Province; (3) another Station adjacent to the Salt River Power Station at Cape Town; (4) at Pinetown and (5) doubling the Vaal River Power Station south of Vereeniging, and the Commission by arrangement with the De Beers Corporation will take over the Kimberly Power Station. In addition to these additional Power Stations, there wil be very appreciable expenditure in Transmission Lines and their Sub-Stations.

The foregoing comments regarding the phenomenal growth of South Africa's Industries and its great future possible developments as well as the potential developments of our Northern neighbours including the Rhodesias and Nyasaland, show some very gratifying features and when the world settles down to more normal conditions they indicate very bright prospects for the future of South Africa.

It is appropriate to mention here as Members of the Association of Municipal Electricity Undertakings of Southern Africa, the pleasure it has given us that Mr. A. M. Jacobs has been appointed to succeed the late Dr. H. J. Van der Byl as Chairman of ESCOM after having been more than 25 years its Chief Engineer as well as a member of the Board for 20 years.

SOME OF SOUTH AFRICA'S PRESENT DIFFICULTIES AS A RESULT OF THE AFTERMATH OF THE WAR YEARS 1939-1945:

Generally speaking, South Africa may be regarded as one of the most fortunate of the countries engaged in the last War of 1939-1945 in having escaped the dire consequences and devastation of its industrial buildings, domestic buildings and public buildings of every description which those countries in the war areas have so grievously suffered, but South Africa has not entirely escaped the economic consequences from which the world is suffering due to the dislocation of the world's wheels of finance and industry—in this respect, however, South Africa is in no way different from any other countries in all of which it is confidently anticipated that during the next few years matters will eventually get down to something approximating the pre-war years of 1939-1945. Some of the exceptional difficulties that exist in South Africa may be briefly mentioned:—

(a) The South African Railways Administration after having rendered exceptionally good service during the most difficult periods of the war years 1939-1945 has been struggling against the most difficult conditions of the post-war years in that it has been unable to secure reasonably quick deliveries of the large orders for rolling stock particularly wagons that have been on order for some considerable time; this has made "truck shortage" a vitally difficult problem in regard to some of the large Power Stations as well as the principal Industries of South Africa, the output and capacities of which have been considerably restricted due to the unavoidable shortage of trucks: the development of the new Goldfields in the O.F.S. and far West Rand have been similarly retarded. It is anticipated, however, that this extremely difficult position will be gradually relieved and in some respects

there is evidence of some relief having already started. In addition, it was reported in the South African Press that Mr. Sauer, our Minister of Railways, stated in the House of Assembly on April 12th last "that the railways had allotted more trucks to the Natal Collieries than they needed, and the truck position for Transvaal coal was better than it had been for a long time. There were enough trucks to supply all the needs of South Africa, and no consumers were now without enough coal, or would be without enough coal for the winter."

It is expected that a similar improvement will soon be effected to all other Industries that have suffered from the shortages of Railway Trucks.

In common with other vast enterprises, the additional cost of labour and materials has brought about the necessity of increasing the S.A.R's railway rates, thus throwing additional burdens on the community including both producers and consumers.

(b) The costs of labour and materials have appreciably increased throughout South Africa as in other countries. Thus it is that the prices of imported goods to South Africa have risen considerably, and South Africa's exports have not been able to command correspondingly increased prices—this particularly applies unfortunately to our greatest export, namely that of the gold derived from our wonderful Gold Mining Industry, but I think it is becoming recognised throughout the world that the present position cannot possibly continue indefinitely and that the price of gold must be increased to correspond with the increased costs of labour and materials as well as the additional costs of administration.

THE PRESENT ECONOMIC POSITION OF THE UNION:

The Union's adverse balance of trade, i.e., South Africa's expenditure on imports as compared with the revenue from its exports including gold, according to the report of the Johannesburg Chamber of Commerce dated 23rd February 1949, is arousing appreciable concern. Such a position requires the most earnest consideration of every section of our community which I am confident will be forthcoming. It is stated in the Chamber of Commerce Report that the Union's adverse balance of trade in 1946 was about £64 million; in 1947 it was £156 million and for the year 1948 the adverse balance of trade is estimated to be something like £160 million. It is pointed out that during 1947 the adverse balance was covered by a great influx of funds from abroad, but during 1948 this inward flow of funds from abroad was very appreciably reduced. It is also pointed out that since 1939 the prices of imports have increased from 1939 up to the present time to more than twice the prices in 1939, whilst gold which is recognised as the Union's principal export, has risen only from 148/- in 1939 to 175/- per ounce in 1949 (which is less than one-fifth), added to which is the very appreciable rise in labour costs and the materials consumed in the Gold Mining Industry. Consequently our Government and particularly our Minister of Finance are faced with very difficult financial problems from which has arisen a list of "banned imports" to reduce the value of the Union's imports and this will doubtless be strengthened by a National policy that South Africa's industries must produce more and still more at competitive prices with at least as high a quality as is produced in other countries—this subject has already been emphasised in this brief address, namely that the processing of South Africa's ores and other raw materials into products of appreciably higher export value must be developed to the highest possible degree. In this respect every conceivable sound policy must be adopted to secure the necessary supplies of labour and essential raw materials as well as the necessary additional capital required to enable the processing of our raw materials to appreciably higher export values to be put into active operation as soon as possible.

Mr. Havenga, our Minister of Finance, is fully aware of these necessities in which respects he plans to set up a new Finance Corporation under the auspices of the South African Reserve Bank to mobilise the idle capital in the Union which is considered to be of very appreciable magnitude, and to attract such idle capital in a voluntary manner—this controversial scheme has been described in some Press commentaries as very commendable and laudable. In addition to initiating this scheme, it is well-known that Mr. Havenga

has been exerting his energies in the direction of securing a higher price for South Africa's gold production. I am of the opinion that all South Africa's financial institutions as well as our commercial and industrial organisations will apply themselves to correcting the Union's present unsatisfactory economic position regarding the excess value of our imports over our exports in dealing with which adequate supplies of labour and raw materials and fresh capital are recognised as essential necessities. Whenever there are possibilities of exporting some of our high value industrial products, every endeavour should be made to plan the site of such industries at or as near to our eastern ports as is economically possible so as to reduce our export charges particularly in regard to the cost of railage.

South Africans have had to apply their grit and determination in many national difficulties that have arisen in past years which they have done with marked success, and the same grit and determination exist today as will be seen from its long-term policies to which I have briefly referred, and it is with great confidence I say that all sections of South Africans will rise to the occasion required and pull their weight with the result that South Africa will soon find means of putting the present unsatisfactory economic position on a sound basis and "Alles sal reg kom". In these respects, war-worn Great Britain increased her production and revenue last year even on a more slender diet and I am confident that South Africa can and will do it, because she has realised in the past years that the gold mining industry with the additional costs at increasing depths and at the same time lower assay values at the increasing depths compared with those at the outcrops, have necessitated the greatest possible all-round efficiency methods in mining, metallurgy, engineering and administration, and the battle of increasing mining depths had no magic formula to take the place of efficiency and concentrated effort, and South Africa's mining and engineering groups and technical institutions will continue to play a very important part to increase our national productivity and to export more of our raw materials after being processed to appreciably higher export values; not the least among such efforts will be those of the South African members of this Association of Municipal Electricity Undertakings of Southern Africa, the principal bases of their normal work being that of thermal and administrative efficiency and the influences they are able to bring to bear in the development of South Africa's industries.

In conclusion, I would state that responsible South Africans should not treat the present economic position lightly, but on the other hand there is no necessity to regard the position as in any way calamitous: the reasonable view is that it is due to the aftermath of the war years of 1939-45, and by adopting appropriate intensive measures coupled with intelligent publicity and propaganda, South Africans will rectify matters as has been done under exceptional circumstances that have arisen in the past years. Confidence in ourselves has been a conspicuous characteristic of South Africans in times of peace and of war, and with its vast resources of extremely valuable raw materials, although we have some very difficult problems to face, our country must be regarded as a land of vast opportunities justifying intensive activities and great exertions with a healthy prospect of appreciable financial rewards which will stabilise our national budgets, the present unsatisfactory position of which I regard as a passing phase which will be rectified at no far distant date.

PRESIDENT:

Thank you very much, Sir, for your comprehensive and most interesting Address. I am calling on Mr. Eastman to respond.

Mr. H. A. EASTMAN, Cape Town:

We congratulate ourselves that the holding of our Convention has been made the occasion for the public issue of so comprehensive a review of South African Industrial conditions and their previous outlook as that which we have been privileged to hear from Dr. Dobson.

Dr. Dobson is not only a recognised authority on these matters but he is also one of our leading scientists and engineers.

These circumstances make his Address all the more valuable, and it is particularly acceptable to a large number of our engineer members as a further contribution to their indebtedness towards one who

probably above all other leaders in the engineering profession in this country has been their guide, philosopher and friend for more years than they care to count.

Our appreciation of the Paper is enhanced by the fact that Dr. Dobson is one of the founders of our Association and was its first President. There are two other foundation members present at this Convention, namely, Messrs. Poole and Ashley, who we have no doubt will be greatly stirred by the occasion.

Since those early days our Association has gone from strength to strength.

The fact that whilst in the first instance membership of our Association comprised only Municipal Electrical Engineers—it now includes Municipalities themselves—has awakened still greater interest in its activities and has greatly enhanced its status.

Our members are imbued wholeheartedly with the concept that electrical development is the key to improved living conditions and to the progress of the country industrially. They are fully conscious also what great service Municipalities have been able to render in the past in this direction on a national scale and the contributions which they have been privileged to make in the national interest through the combination of electricity with other public services.

We therefore readily take to heart the exhortation contained in the concluding passages of this most interesting Address to continue to have confidence in ourselves and to regard the immediate outlook as merely being clouded temporarily by a haze which faith in the future and energetic action on our part will soon dispel.

Dr. Dobson, on behalf of the Association, I tender to you my thanks for your most interesting Address.

PRESIDENT:

I have now pleasure in asking Mr. Poole, who was one of the Pioneers of this Association, to say a few words.

Mr. E. POOLE, Durban:

Mr. President, Ladies and Gentlemen, I notice the time is getting on, so I will be very brief in my remarks. The last time I attended a Convention was ten years ago, shortly after which I resigned the Secretaryship of this Association pending my journey overseas, resulting in my stay in England, but I am very pleased to be back again in South Africa.

I have looked forward to the time when I could attend a Convention and sit back and take things easy instead of getting all hot and bothered over the many duties which were my concern as Secretary. Now I am free of such duties I feel much more at ease, but I will not tire you too much as I am probably a better listener than speaker.

I am very pleased to meet again so many of the old members and to make new friends, and am particularly pleased that our foundation President, Dr. Dobson, is present, as otherwise I would have felt rather lonely as the only foundation member here. Though the passing of time has caused a few gaps in our ranks, it is pleasing to remember how the Association has benefitted by the outstanding work put in by such men as the late Messrs. Sankey, Roberts and Swingler; particularly do I mention Mr. Sankey, for he was Electrical Engineer of this City and President of the third Convention of this Association held here at the close of World War I. That this Association has weathered another world war and is still going strong is ample proof of the good work it is doing in furthering the advancement of electricity in our South African homes.

I thank you, Mr. Chairman.

ELECTION OF VICE-PRESIDENT

PRESIDENT:

Thank you, Mr. Poole. We will now continue with our Agenda. I have pleasure in inviting nominations for the position of Vice-President of our Association. It is usual that the Vice-President should be the Engineer of the City or Town where the next Convention is to be held.

Mr. G. J. MULLER, Bloemfontein:

Mr. President, I have great pleasure in proposing as next Vice-President Mr. C. R. Halle of Pietermaritzburg.

Mr. F. STEVENS, Ladysmith!

I would like to second that proposal.

PRESIDENT:

There being no further nominations, I have much pleasure in declaring Mr. Halle Vice-President for the ensuing year, and shall be very glad if he will come up and take his place on the rostrum.

AMENDMENT TO CONSTITUTION

PRESIDENT:

We desire to amend the Constitution. Most of the Committee work of the organisation takes effect in the Transvaal, and the Transvaal members find that the work entailed in the numerous meetings is just getting beyond them. The Executive Council has therefore decided to increase the number on the Committee by two Engineer Members. This amendment must be approved by the Convention.

MEMBERS:

Agreed.

PRESIDENT:

It is unanimously agreed that the Constitution be amended accordingly.

ELECTION OF EXECUTIVE COUNCIL

PRESIDENT:

The Councils of the town where the Convention is being held and where the next convention is to be held are automatically represented by their Councillor Delegate being elected a member of the Executive Council. Is it agreed that the Councillor members of Port Elizabeth and Pietermaritzburg are elected to the Executive Council for the ensuing year?

MEMBERS:

Agreed.

PRESIDENT:

The present Engineer Members on the Council are:

Mr. J. C. Downey of Springs.
Mr. J. C. Fraser, of Johannesburg.
Mr. G. J. Muller, of Bloemfontein.
Mr. H. A. Eastman, of Cape Town.

Mr. C. KINSMAN, Durban:

The Constitution as amended provides for a President, Vice-President, two Past-Presidents, six Engineer Members and two Council Members. With the election of a new President today, one of the vacancies for Past-President falls to Mr. Foden, leaving Mr. Muller, the retiring Past-President, available for nomination as a member on the Council.

PRESIDENT:

I now call for nominations for six Engineer Members on the Executive Council.

The following members were nominated:

Mr. J. C. Fraser, of Johannesburg, proposed by Mr. E. L. Smith.

Mr. H. A. Eastman, of Cape Town, proposed by Mr. D. W. Ritson.

Mr. G. J. Muller, of Bloemfontein, proposed by Mr. C. Kinsman.

Mr. J. C. Downey, of Springs, proposed by Mr. C. E. Grigor.

Mr. J. L. v. d. Walt, of Krugersdorp, proposed by Mr. C. Kinsman.

Mr. A. R. Sibson, of Bulawayo, proposed by Mr. J. E. Mitchell.

PRESIDENT:

Are there any further nominations? If not, I have great pleasure in announcing the election of Messrs. Fraser, Eastman, Muller, Downey, v. d. Walt and Sibson as Engineer Members of the Executive Council for the ensuing year, and thank them for accepting office.

Two alternates are required for Council Members.

Mr. G. J. MULLER:

I propose Bloemfontein.

Mr. FRANK STEVENS:

I propose Bulawayo.

PRESIDENT:

There being no further nominations, I have pleasure in declaring Bloemfontein and Bulawayo the Alternative Executive Council Members and thank them for their acceptance.

Nominations will now be taken for the election of Members to Sub-Committees and Representatives.

Front Row: L. to R.—Miss A. E. Eastman (Cape Town); Mrs. H. A. Eastman (Cape Town); Mrs. A. R. Sibson (Bulawayo); Mrs. J. C. Downey (Springs); Mrs. R. W. Kane (Johannesburg); Cr. C. G. Thompson (Johannesburg); A. R. Sibson (Bulawayo); Cr. C. E. K. Young (Pietermaritzburg); J. Wilson (Pretoria); H. A. Eastman (Cape Town); C. Kinsman (Durban); Cr. J. C. K. Erasmus (Port Elizabeth); D. A. Bradley (President, Port Elizabeth); C. R. Halle (Pietermaritzburg); G. J. Muller (Bloemfontein); Dr. J. H. Dobson (Johannesburg); Cr. F. J. C. Castelyn (Bloemfontein); J. C. Downey (Springs); R. W. Kane (Johannesburg); J. L. van der Walt (Krugersdorp); A. T. Taylor (Sec. and Treasurer); Cr. S. H. Millar (Bulawayo); Mrs. J. Wilson (Pretoria); Mrs. D. A. Bradley (Port Elizabeth); Mrs. C. Kinsman (Durban); Mrs. E. F. Partridge (Port Elizabeth).

Second Row: L. to R.—Mrs. H. M. Rochester (Johannesburg); A. T. Rodwell (Johannesburg); Mrs. A. T. Rodwell (Johannesburg); C. R. Burton (Kimberley); Mrs. R. H. W. Tainton (Springs); J. H. Rogers (Fort Beaufort); Mrs. J. H. Rogers (Fort Beaufort); W. M. Andrew (King William's Town); Cr. J. D C. Baxter (Kimberley); Mrs. C. G. Thompson (Johannesburg); Mrs. J. D. C. Baxter (Kimberley); E. N. Buckerfield (Somerset West); Cr. F. O. Rapson (Ladysmith); F. Stevens (Ladysmith); Cr. G. Blake (Stellenbosch); G. E. H. Jones (Mafeking); D. W. Ritson (Stellenbosch); Mrs. H. H. Holtzhausen (Potchefstroom); Cr. H. H. Holtzhausen (Potchefstroom); Cr. W. Havenga (Potchefstroom); Cr. P. J. Muller (Klerksdorp); J. M. Gericke (Klerksdorp); Cr. J. C. Visser (Vryburg); S. G. Redman (Johannesburg); E. L. Damant (Durban); T. P. Ashley (Queenstown); P. C. Grandin (Vryburg); T. M. Mocke (Piet Retief); Dr. P. N. Lategan (Johannesburg); H. J. Relihan (Paarl); N. Gold (Cape Town).

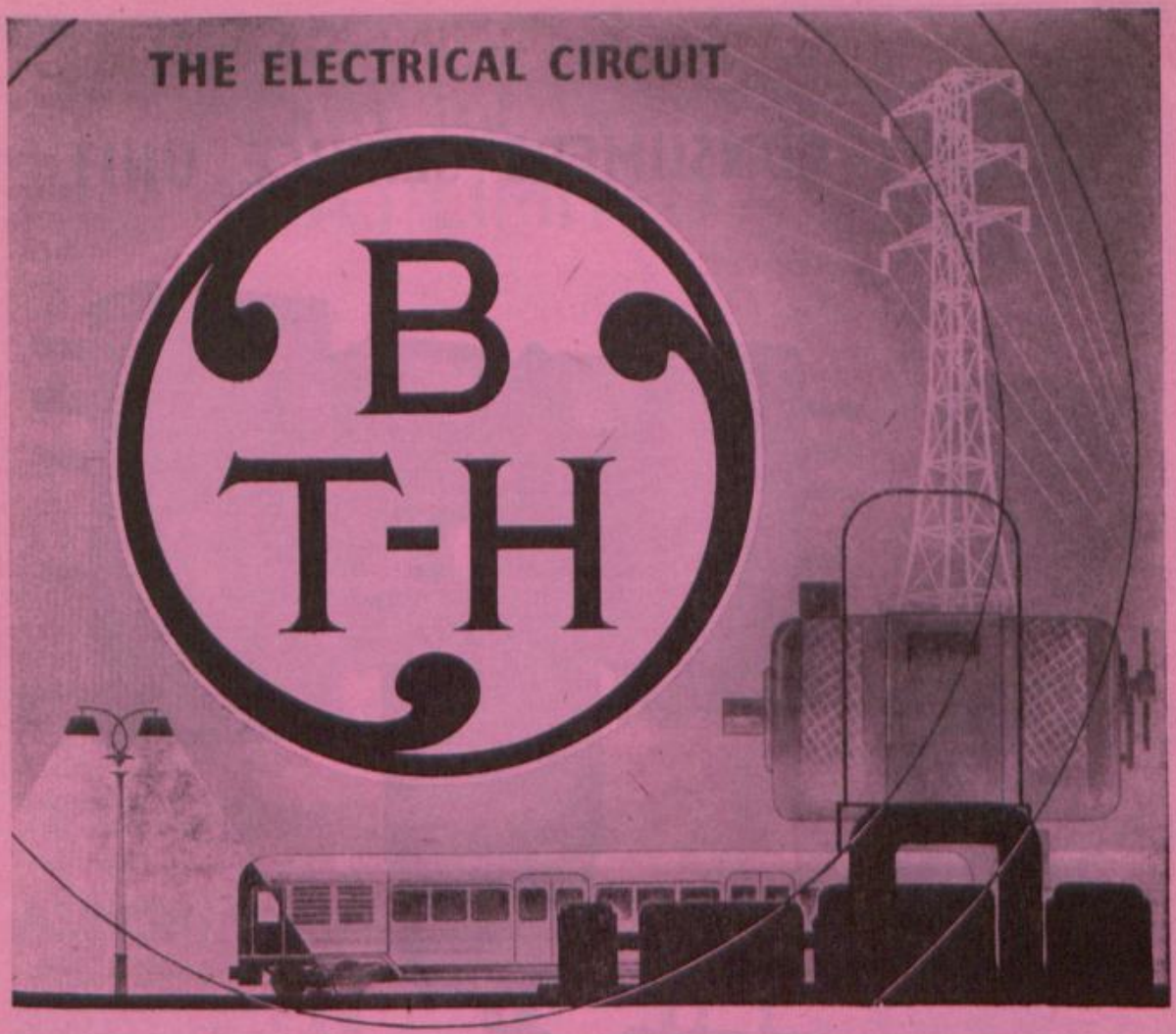
Third Row: L. to R.—Mrs. H. H. Jagger (Cape Town); H. J. Gripper (Port Elizabeth); Cr. F. P. Greeff (Somerset East); J. W. Allen (Port Elizabeth); J. Ritchie (Pretoria); Cr. R. H. W. Tainton (Springs); Mr. T. Kramer (Potchefstroom); Mrs. T. Kramer (Potchefstroom); P. D. Kruyt-Hoogendyk (Theunissen); Cr. J. C. Potgieter (Theunissen); Mrs. J. C. Potgieter (Theunissen); Cr. E. B. Neill (Krugersdorp); W. G. Thackwray (Kokstad); G. E. Mossop (Vrede); P. C. Asselbergs (Barberton); J. E. Mitchell (Salisbury); Mrs. K. M. Johnston (Johannesburg); A. Morton Jaffray (Salisbury); S. W. Sandford (Salisbury); K. M. Johnston (Johannesburg); Q. R. Nothard (Johannesburg); Mrs. Q. R. Nothard (Johannesburg); Mrs. J. W. Phillips (Bulawayo); J. W. Phillips (Bulawayo); Mrs. H. D. T. Harris (Johannesburg); Mrs. A. T. Taylor (Johhannesburg); Mrs. T. P. Ashley (Queenstown); G. A. Lotter (Ermelo); Cr. E. du Preez (Paarl); Cr. C. L. Gregory (Somerset East); W. D. Robertson (East London).

Fourth Row: L. to R.—H. M. Rochester (Johannesburg; . . . . . ; N. R. Yorke (Johannesburg); Mrs. J. Iverach (Grahamstown); J. Iverach (Grahamstown); R. D. Coulthard (Doonside) Mrs. R. D. Coulthard (Doonside); Cr. Dr. G. J. Lamprecht (George); Mrs. P. H. Newcombe (George); P. H. Newcombe (George); Cr. E. C. Pike (Matatiele); L. J. Roberts (Matatiele); Mrs. E. Poole (Durban); E. Poole (Durban); F. Heaton (Johannesburg); P. L. Vergotrini (Bfakpan); Cr. S. J. Thomas (Brakpan); J. Monks (Johannesburg); M. E. Walsh (Port Elizabeth); Mrs. E. V. Perrow (Johannesburg); E. Vivian Perrow (Johannesburg); C. G. M. McCock (Port Elizabeth); R. W. Wright (Johannesburg); P. D. Jephson (Johannesburg); C. H. Clutterbuck (Pretoria); A. Rossler (Cradock); Mrs. A. Rossler (Cradock); W. Rossler (Kroonstad); C. B. Wilson (Port Elizabeth); W. G. H. Jarvis (Johannesburg); Mrs. A. R. Campbell (Johannesburg); A. R. Campbell (Johannesburg); H. H. Jagger (Cape Town).

Fifth Row: L. to R.—I. de Villiers (Johannesburg); . . . . . ; Mrs. A. C. Grant (Johannesburg); Cr. A. F. Keen (Cape Town); Cr. F. Morrell (Cape Town); Mrs. C. R. Burton (Kimberley); J. A. Barnett (Johannesburg); B. B. Gripper (Port Elizabeth); Miss M. E. Gripper (Port Elizabeth); Mrs. J. A. Matthews (Uitenhage); J. A. Mathews (Uitenhage); H. A. McIntyre (Middelburg, Tvl.); D. vs. Dreyer (Brandfort); E. L. Buchanen (Robertson); Mrs. E. L. Buchanan (Robertson); R. W. Barton (Edenvale); G. M. Reyneke (Springfontein); W. H. Milton (Johannesburg); V. E. O. Barratt (Graaff-Reinet); A. J. Powell (Johannesburg); W. N. Randell (Vereniging); I. A. England (Port Elizabeth); E. L. Smith (Boksburg); G. C. Delport (Delmas); H. T. Turner (Umtali); W. Fenwick (Johannesburg); Mrs. W. Fenwick (Johannesburg); D. G. Brown (Johannesburg); A. W. K. Hadfield (Gwelo); Mrs. W. H. Walsh (Durban); B. Marchand (Witbank); P. A. Giles (East (London).

Sixth Row: L. to R.—R. Tarran (Benoni); Mrs. G. Drewett (Johannesburg); W. N. Powell (Johannesburg); W. C. Theron (Worcester); Cr. L. C. Spies (Alberton); C. E. Gregor (Alberton); Cr. P. Schoeman (Roodepoort); D. D. Brown (Roodepoort); W. J. F. S. Lutsch (Aliwal North); J. D. Hattingh (Bothaville); Cr. O. J. Carey (Bothaville); Cr. J. Johnstone (Durban); M. J. C. Kruger (Butterworth); G. Phillips (Cape Town); Cr. J. P. Bezuidenhout (Edenvale); Mrs. J. P. Bezuidenhout (Edenvale); H. J. H. Nethersole (Johannesburg); N. Ferreira (Odendaalsrus); P. N. van der Merwe (Pretoria); O. J. Alexander (Pretoria); Cr. A. S. J. van Rensburg (Vryheid); Cr. R. D. Froneman (Vryheid); W. Rush (Vryheid); R. F. Slater (Johannesburg); Cr. H. W. Kruger (Vereeniging); J. R. Cherry (Randfontein); Cr. J. E. Mackenzie (Randfontein); Mrs. L. M. Weiner (Johannesburg); Cr. L. M. Weiner (Johannesburg); W. H. Walsh (Durban); E. F. Partridge (Port Elizabeth).

Seventh Row: L. to R.—P. A. Meintjies (Rustenburg); . . . . . ; G. Drewett (Johannesburg); J. Russell (Johannesburg; A. C. Grant (Johannesburg); E. T. Price (Jnr.) (Johannesburg); Cr. E. Traub (Worcester); E. W. Ramsay (Port Elizabeth); J. W. Hunter (Johannesburg); R. T. Park (Port Elizabeth); Cr. G. Sinclair (The Strand); C. N. Sims (The Strand); G. Pirie (Port Elizabeth); Cr. H. J. Ofsowitz (Uitenhage); H. A. Deschamps (Walmer); D. A. D. Adams (Grahamstown); D. J. R. Conradie (Ficksburg); J. D. McNeil (Johannesburg); T. R. Johnson (Johannesburg) E. W. Dixon (Johannesburg); G. C. Theron (Vanderbyl Park); A. E. Woolf (Johannesburg), H. D. T. Harris (Johannesburg); A. P. Cairns (Cathcart); H. F. Archer (Port Elizabeth); R. D. Wright (Johannesburg); J. I. Inglis (Pietersburg); W. J. Gibbons (Johannesburg); T. R. J. Bishop (Johannesburg); Cr. R. J. K. Baker (Pietersburg); A. C. Tilley (Johannesburg).



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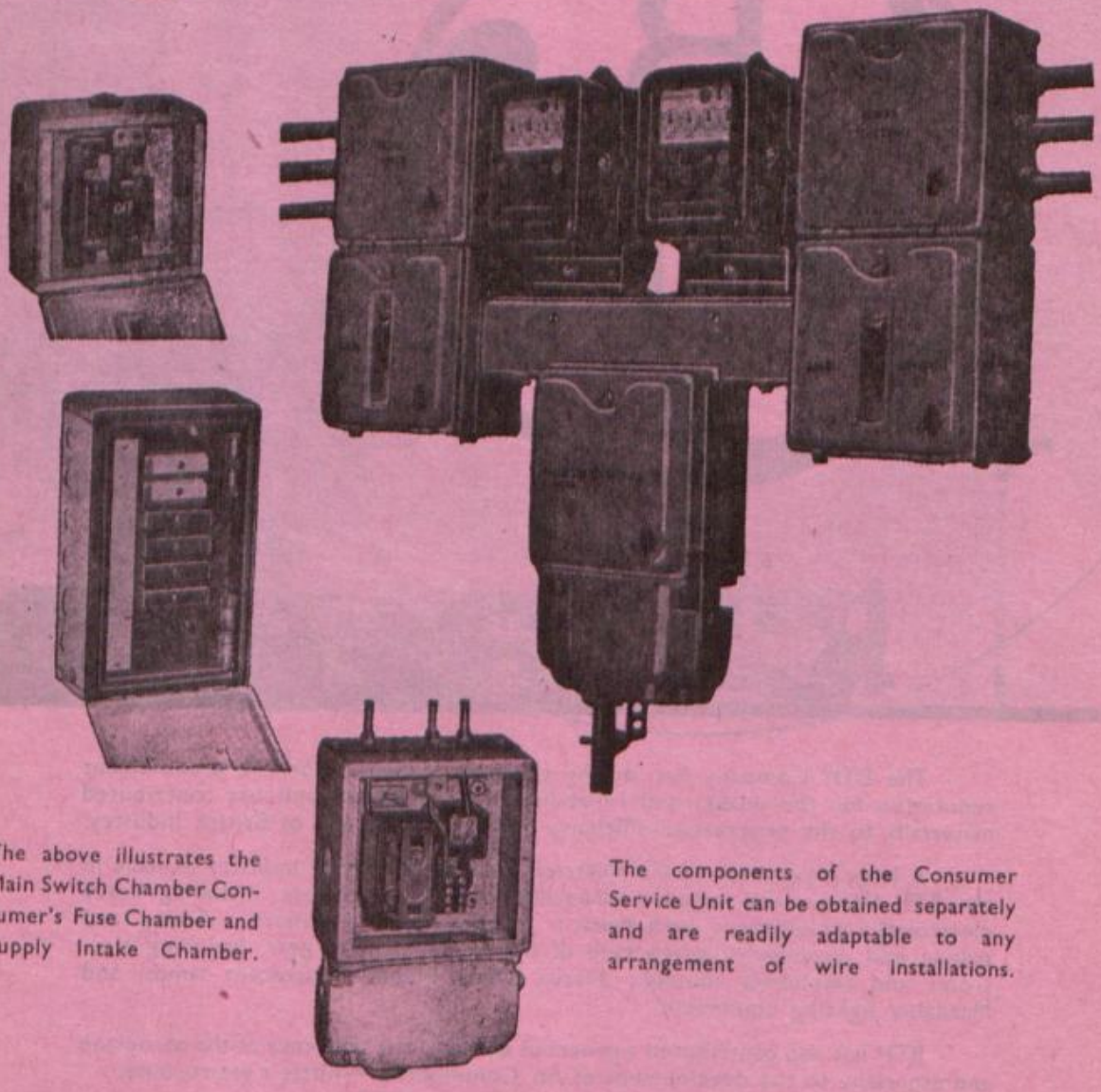

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ELECTRICAL, DIESEL and MECHANICAL ENGINEERS

The undermentioned members were nominated and duly elected:

Sub-Committees:

S.A. Standards Institution—J. C. Downey. Alternate, D. J. Hugo.

S.A. Bureau of Standards, Safety Codes and other Committees—J. C. Downey. Alternate, D. J. Hugo.

Meter Testing Code—J. C. Downey. Alternate, D. J. Hugo.

Safety Precautions—J. C. Downey. Alternate, J. C. Fraser.

Overhead Lines, Code of Practice—J. C. Fraser. Alternate, G. J. Muller.

Mr. Downey is a very much overworked committee member. We are very grateful to him for his efforts carried out over a number of years, and the only reason for his request for assistance is that he finds time is only 24 hours per day, of which he has to spend so much carrying through his duties at his office. It has been arranged for Mr. v. d. Walt to assist Mr. Downey, in so far as representing the Association with some of the Sub-Committee work.

Representatives:

World Power Conference (Local Committee)—H. A. Eastman.

Electrical Wiremen's Registration Board—J. C. Fraser.

Registration of Electrical Wiring Contractors—J. C. Fraser.

Coal Supplies—H. A. Eastman (Convener), A. Foden, D. A. Bradley and G. J. Muller.

C.I.G.R.E.—A. Foden and D. J. Hugo.

Thank you, Ladies and Gentlemen, for your attentive hearing this morning.

For this afternoon a visit to Messrs. Aberdare Cables of S.A. Ltd. is planned which should prove very interesting, and give us the opportunity of hearing the inauguration ceremony with the specially arranged telephone "hook up" to their factory in Wales.

The Convention will now adjourn until tomorrow at 9.30 a.m.

The Convention adjourned at 12.30 p.m.

The Convention resumed on Wednesday, the 18th of May at 9.30 a.m.

PRESIDENT:

May I extend a very cordial welcome to any of the delegates who are here today and were not able to be with us yesterday. We offer you our hearty greetings and hope your time here will be as happy as possible.

With your permission I will now ask Mr. Kinsman to read the Valedictory Address of our President who is in England on holiday.

Mr. C. KINSMAN, Durban:

Mr. President, as you have said, and I said yesterday too, it is regretted that Mr. Foden is not here to deliver his Address personally because I do think it loses a lot by not being delivered by the author but we have no alternative but to read his Valedictory Address.

VALEDICTORY ADDRESS

By

A. FODEN, M.I.E.E., M.I.Mech.E.,
City Electrical Engineer, East London.

Gentlemen,

It is my sincere regret that I am not able to be present at the 23rd Convention of the Association of Municipal Electricity Undertakings, particularly after having been appointed President for the past year.

My year of office has been a very pleasant one, and in this regard I pay tribute to the untiring work and assistance I have received from the members of the Executive Council and to our Secretary and Treasurer.

It is pleasing to know that our membership is increasing and this tendency is indicative of the growing confidence that Councils have in this Association and all it stands for.

When I asked Mr. Kinsman to read my Valedictory Address I had no idea of the subject matter. I feel that to give details of the activities of the Association during the past year would only be repetition when you hear the reports of the Secretary and Treasurer and the representatives of the various Committees.

I therefore had to find some subject that will be, I hope, of interest to all and of a non-technical nature, so that with the

technical papers that follow you may get that blending of ideas and subjects for more mature consideration and which may appeal to both Council and Engineer members.

Following on that approach I reflected on my Presidential Address under the heading "Progress and the Engineer" and also the Paper I gave at the Umtata Convention in November 1939 entitled "The Engineer: His Education, Training and Duty to the Community." Considering what I said in 1939 in that Paper and later in my Address, may I be excused for continuing a review of world conditions and the situation facing the young engineer of to-day, a situation, as I see it, fraught with uncertainty and frustration.

In these days of rapid scientific advancement we older engineers appreciate that the more we learn the more there is to learn, and we have to impress upon the rising generation of engineers who have graduated that their training and education has not ended but just begun and will continue throughout their career.

I remember at Umtata one contributor stating, during the discussion on my Paper, something to the effect that I was not positive in my recommendation regarding the training of engineers. I thought I was, because, in those days and even now, I am a great believer of the "sandwich" system of training, and this belief I can assure you is shared by many others. My experience, and I believe that of members of Apprenticeship Committees, shows that some 4th and 5th year Apprentices are inclined to absent themselves or not take the continued interest in the lectures that are submitted by the lecturers. Upon investigation it has been found in the majority of cases that these Apprentices consider that the academic standard of the lectures is such that they cannot apply the teaching when they return to their practical work.

Briefly, I submit that this is due to the present system of training and the syllabus to which Educational Establishments have to work.

In case I am accused of believing in practical training only, I can assure you that I am just as great a believer in technical training, because it is the technical knowledge and **the knowledge of how to apply it** that makes the successful professional man. I am sure we would prefer to engage for our ills the services of a doctor who has high academical qualifications combined with many years' practical experience in hospitals and general practice than the young practitioner who has just received his Degree and left college. That this is realised in the medical profession is evidenced by the number of young doctors who "walk" the hospitals for this practical experience.

The advantage of the "sandwich" system is that it would fit a junior engineer to take up a responsible position at an earlier age than is now possible because he would have had previous practical training. In this responsible position, although it may be a junior post, he would have the advantage of co-ordinating his academic training with the hard facts of practical experience. In many cases it is conceivable that some post graduates, after training say two years in an engineering works or power station, may sit the examinations for the Government Certificates of Competency and if succesful expect to be appointed to positions of responsibility far in excess of that for which their academic and practical training make them suitable.

I submit that if such junior engineers had been trained by "sandwiching" their practical and technical training they would be more capable to take up a position of responsibility involving as is usually the case, being in charge of staff and being capable of directing and advising staff and making correct decisions.

It may be advanced by some that it is not necessary for a senior executive engineer to have the dexterity of the artisan. I willingly grant that point, but he should by reason of his earlier practical training be capable of instinctively appreciating the practical difficulties that his staff may be involved in and so be of assistance to them in successfully solving, by either discussion or practical demonstration, the problems that may confront them.

Practical experience should be acquired whilst the student is young and able to be accepted by the artisans as a keen apprentice who desires to acquire and understand their skill and dexterity. In my opinion it is too late to do this after leaving college. This practical experience should be gained whilst

the young engineer is undergoing his Degree Course, as it gives the practical experience at a time when it is most necessary and the opportunity of applying and discussing with others the application of his academic knowledge. Further, there is the added advantage of mental relaxation. Many young engineers, having spent several years in academic training immediately following their general education, no doubt suffer from such intensive effort and their minds do not take kindly to a change of effort particularly if it takes a practical form.

Here again the "sandwich" system should eliminate that tendency, due to variety, and I have found that variety is particularly appealing to young men.

It may be argued that these necessary breaks in the "sandwich" system caused by alternating from the academic to the practical training would militate against the students knowledge of his academic subjects such as mathematics, etc. Should this be so then I retaliate by saying that the knowledge he has acquired in these subjects is so hazy or nebulous that its value later is of no consequence.

I mention earlier the desirability of a junior engineer taking up a responsible post at an earlier age. It may be asked why is it desirable? Replying I would say that at this stage of his career he would commence to learn other subjects not taught at college which would become his personal attributes. I now refer to the following qualities that are so essential and should be developed throughout his training:—

(1) Judgement;
(2) enterprise;
(3) determination;
(4) effectiveness;
(5) initiative;
(6) inspiration.

There may be other desirable qualities but I give the above as examples that can best be acquired in the early years in a responsible position.

Not only in this country but in Great Britain there appears to be a lack in the engineering educational make-up. Under the present system of placing college trained engineers to complete their further training, there is no opportunity, no responsible position which they can occupy between the end of their college training and practical training in a works or power station and that of taking up an executive position.

Most employers when attempting to select a junior engineer for an executive post endeavour to find, if possible, a young man with all the desirable features enumerated above or at least to have the basic training for the development of all those features or attributes.

Would it not, therefore, be desirable in the interest of the young engineer to devote the period immediately after his Degree Course, not to the most highly paid post where only he can find an outlet for the application of recently learned engineering science, but to the work which will enable him to reduce or better still eliminate his shortage of practical experience.

I referred to a lack in educational make-up. In the November 1948 issue of the "BEAMA Journal" the British Electrical Authority is offering to technically trained men **and women** who possess a Degree, Higher National Diploma or Certificate or are Associate Members of the I.E.E. or I.Mech.E. £285-£300. per annum for two years, plus travel, subsistence and London allowances, to be trained in Courses comprising Power Station Operation and Maintenance, Construction, Maintenance and Operation of Transmission Systems.

It would appear that there is a deficiency in the system of practical training, and in this country the Technical Colleges are anxiously awaiting the deVilliers Commission's report which may, it is hoped by the writer, cause a radical change in the system of engineering education in our Technical Colleges.

The training of engineers should be planned on sound lines and provision made in the system of training for adjustment to meet the constant changing conditions in this present engineering world of ours.

The training of engineers should ensure that they are acquainted with the organisation and managements of engineering concerns and be appreciative of the world's economic conditions and the **human factor** in industry. These subjects are equally as important as scientific engineering knowledge.

Administrative engineering positions demand rapid solutions to unexpected problems and situations. To enable the solving of such solutions a quick mind and a wide store of **practical** experience is requisite.

Referring to my earlier remark regarding constant changing conditions, the career of the engineer or the development of engineering science cannot be prophesied. Therefore the knowledge and training of the apprentice or graduate during his academic career should be fundamental in character and as broad as possible. The academic training should be such as to develop an alert and receptive mind, a mind that is analytical, critical and able to approach problems from a scientific angle. These factors, combined with the study of human nature and practical engineering problems which would be "sandwiched", would, I am convinced, result in turning out better trained and more adaptable engineers to the benefit of our country in general and the engineering profession in particular.

In conclusion, and as I stated many years' ago at Umtata, we engineers have a duty to the community.

The latin inscription on the Armorial Bearings of the London Institution of Electrical Engineers is:

Disce Doce — Teach and Learn

If we teach the young engineers who are to follow us what we have learned and are still learning, then we have gone a long way to fulfil our duty to the community.

Mr. President and Gentlemen,

I thank you all for the support I have received from you. My year of office as President has indeed been a very happy one and I still appreciate the honour you conferred on me in May 1948.

In passing on to Mr. Bradley the duties and responsibilities of President, I do so with every confidence, knowing as I do his keen interest in the activities of our Association.

To you, Mr. President, I wish you a very happy and successful year of office and I again express regret of my inability to hand over to you personally.

Please convey officially my apology for absence to the members attending the Convention.

PRESIDENT:

I will call on Mr. Downey, of Springs, to reply to the Valedictory Address.

Mr. J. C. DOWNEY, Springs:

Mr. President, Ladies and Gentlemen, I wish to thank Mr. Kinsman for the able way in which he has delivered the Valedictory Address of the retiring President, Mr. Foden.

Mr. Foden has touched on a subject that I think is of vital importance today, particularly so when so much development in industrialisation is taking place all over the country.

The difficulty of obtaining the services of experienced technical engineers is increasing every year in all the branches of engineering in this country and I am of the opinion that a system similar to that suggested by Mr. Foden would go a long way in solving some of our problems.

I think Mr. Foden should be congratulated in bringing to our notice an item of such great value to the future of South Africa.

It is a pity he could not be with us today, but we still have very pleasant memories of the last Convention held at East London.

The year has been a very happy one, and we are very grateful for the work the retiring President has done on our behalf. I sincerely trust that Mr. Foden's year of office as President of this Association will remain one of the happiest year's of his life.

PRESIDENT:

Thank you Mr. Downey.

May I ask Mr. Hallé, Vice-President, to occupy the chair while I read my Presidential Address.

PRESIDENTIAL ADDRESS

By

D. A. BRADLEY,
M.I.Mech.E., A.M.I.E.E., M(S.A.)I.E.E.
City Electrical Engineer, Port Elizabeth

Ladies and Gentlemen,

The high honour you have conferred on me by electing me the President of this Association is sincerely appreciated and

this privilege, which has coupled with it great responsibility, will be foremost in my endeavour to carry through my duties during my term of office to the satisfaction of all the members. I fully realise the task set is rather formidable, but with the help and co-operation of the Executive Committee, together with the good will and tolerance of the members, I look forward to the work which lies ahead with every confidence.

The problems and difficulties experienced in all municipal undertakings in carrying through the requirements to meet the continual growth of electricity demand, would seem to mount in number and be more intense in each succeeding month, the two chief factors being the shortage of skilled labour, and the difficulty of obtaining —with reasonable delivery—new plant and machinery. With regard to the former it would seem we are passing through the period which, but for World War II, we would now have the influx of artisans that would have been trained during these years; the present labour shortage will no doubt be remedied in due course, but it will possibly be a further three years before it will be adequate to meet the shortfall and compensate for the wastage, redundancy and depletion associated with artisan staff through natural causes. The specialised nature of the works attaching to an Electricity Supply Undertaking, calls for workmen of particular ability and adaptability and I suggest an increasing number of apprentices should be trained, particularly in the larger Undertakings to meet the serious labour shortage.

The second factor, shortage of plant, is most serious, and throughout the Union, progress is handicapped, indeed is being retarded because of the inability to obtain heavy plant for power generation. The increase of population and the exceptional growth of industry throughout South Africa in the past three years have made demands that have taxed most supply authorities to the utmost, and it is only by much improvisation and the loyalty of the staff that we are able to give continuity of supply. The restrictions, that gave us much concern during, and immediately after the war, have been withdrawn or alleviated, and we hope, with a measure of satisfaction, that plant and materials will again be in sufficient supply to meet the general needs in the near future.

The last Convention of our Association to be held in Port Elizabeth was sixteen years ago, and I consider that a brief survey of the growth and activities of this Undertaking would be welcomed, because, no doubt, many if not most of our delegates and members here to-day, have not visited this city before.

The Municipal Corporation of Port Elizabeth—that was its title in those days—commenced its operation in 1905, the plant consisting of two 200 k.W. Brush Turbo Generators. Prior to this, in 1897, the Port Elizabeth Electric Tramway Co. Ltd., became the Contractor to the Corporation to operate an Electric Rail Tram System in substitution for the horse drawn trams which had been in use from 1880. The Tramway Company built and operated the first power station in the city, which was situated on the south bank of the Baakens River, a distance of about three hundred yards from this hall; from 1925 the municipal power station provided all the electricity supply requirements of the Tramway Co. up to the 17th December, 1948, when the trams were finally abandoned. It is interesting to note that the chassis and bodies of some of the original tramcars supplied in 1897, were in full service up to the abandonment of the electric trams, in 1948, a period of fifty-one years. Buses are now exclusively used for all the city's public transport, operated by the same Company.

From these "early days" up to the beginning of World War II in 1939, the growth of the city was fairly constant and the increase that would normally be attributable to a seaside resort with shipping activities, was maintained, bearing in mind the small European population of the country as a whole.

Additional generating and boiler plant had been installed from time to time until in 1939 the power station consisted of 34,000 k.W. of turbo plant with suitable boiler plant of similar capacity; a further 12,500 k.W. turbo alternator was ordered in 1939, but through war exigencies this set was not placed in commission until 1944—but with the advent of war the whole aspect changed, with all energy and resources possible being diverted to assist

the war effort. The impetus of this war effort is shown in the Department's statistics in that, during the first year of the war—1940—the maximum demand rose to 23,000 k.W., the units generated to 91,300,304 and the units sold to 80,031,607, representing an increase of 15·5%, 7·65% and 8·23% respectively. Increasing industrial activity raised the figures and in 1945 the demand rose to 29,300 k.W., the units generated to 117,497,579, and the units sold to 102,872,956, representing an average increase over the war years of 5·18%, 5·05% and 5·24% respectively.

The establishment of industry during the war years proved effective and the trend towards further industrial development has been continuous and most marked over the past four years, the statistics reveal the maximum demand in 1948 of 39,100 k.W., the units generated 174,027,971, and the units sold to 151,660,442 units, an average increase of 8·5%, 11·38% and 11·34% respectively.

The power station plant consists of three 12,500 k.W. and three 3,000 k.W. turbo alternators, totalling 46,500 k.W.'s, and 11 boilers totalling 527/613,000 lbs./hr. evaporative capacity; it will therefore be noted that the winter peak loads are attainable only by the use of all the plant installed, a condition which is not commendable, but calls for, and is given, the utmost loyalty and unsparing effort by all members of the staff. The necessary overhaul and repairs to plant must be "sandwiched" in the periods of light loads which can only be in the night hours and during week-ends.

The City Council in 1945 adopted a scheme involving extensions to the present power station by the installation of two additional 12,500 k.W. turbos and two 80/000 lb./hr. boilers which will bring the station generating capacity up to 71,000 k.Ws. The first stage of these proposals—one turbo and one boiler—will be in commission towards the end of this year, the second stage towards the end of 1950 or early in 1951.

The present power station site will not permit of any further plant installation after the extension scheme is completed, and the City Council have negotiated with the Electricity Supply Commission to provide a basic supply of 20,000 k.Ws. to augment the output from the present station.

Since the war ended—1945—areas covering some 560 acres have been opened up by the City Council for Industrial purposes and industries established and in production include engineering, the manufacture of cement, tyres, boots and shoes, electric cable, electric lamps, the assembly of motor cars, bus bodies and electric batteries, and the processing of wool combing and textiles.

Consequent to the expansion of industry, the housing problem became very acute, and a big scale building programme continues in the new residential areas set up by the Council.

The city's boundaries now include some 42 square miles and the present population numbers 61,549 Europeans and 81,171 Coloureds, Natives and Asiatics.

The brief resumé readily indicates that the Undertaking is making, and will continue to make rapid progress and so keep abreast with the unprecedented growth of the city which has been described as "the Liverpool of South Africa".

I thank you for your courteous attention, and trust that the transactions at this Conference will prove useful and valuable thereby adding to the progress of all Electricity Supply Undertakings.

Mr. C. R. HALLE, Pietermaritzbrg:

I now call on Mr. Kane, of Johannesburg, to thank our worthy President.

Mr. R. W. KANE, Johannesburg:

Gentlemen, our President has touched rather generally on two very important subjects: shortage of skilled labour and plant. We could have added to that the more recent factor which seems to be concerning us all during the last few weeks, the distinct lack of capital. As engineers, probably during these last few years these probably particularly during these last few years these problems have been very common ones. I think, however, that throughout the years to come we will surmount all these difficulties and proceed as we have done in the past, probably not taking advantage of Councillor Young's thoughtful suggestion yesterday that we may need special rest accommodation.

When you consider the Address we have just heard and the question on plant installed, particularly in Port Elizabeth and the load factor, I think a very important point there is one concerning the staff. Despite various conciliatory awards, arbitration, labour troubles, the bulk of our staffs are very loyal and really are the backbone of our individual undertakings. Without them I don't know what we should do.

While I am on my feet I have a special request from Mr. Fraser who is now overseas to express his keen appreciation and pleasure in the election of Mr. Bradley as President. Mr. Fraser and one or two of us are colleagues or ex-colleagues of Mr.Bradley of many years' standing. I have great pleasure, Sir, in wishing you a very happy and successful year in all your undertakings.

PRESIDENT:

Thank you very much Mr. Kane.

I understand that our good friend, Mr. Ritchie, and his colleagues cannot be with us this afternoon so I am taking the opportunity of now bringing forward to the Convention the matters which are relative to his Department. These will be in connection with Items 8 (c) and (vi) under the headings S.A. Bureau of Standards Safety Codes, and the Meter Testing Code. I will ask Mr. Downey to give a resumé of the Bureau of Standards Committee Work—Safety Codes—during the past year.

SOUTH AFRICAN BUREAU OF STANDARDS

Mr. J. C. DOWNEY, Springs:

I have to report that meetings have been held regularly every month, starting at 9.30 in the morning until 5 p.m.

The following are now in course of publication.

(1) The Meter Testing Code.
(2) A Safety Specification for the General Requirements for Electrical Materials and Equipment.
(3) A Safety Specification for Manually Operated Air-Break Switches.
(4) A Safety Specification for Electric Portable Immersion Heaters

The following have been reviewed after comments had been received.

(1) A Safety Specification for Electric Radiators.
(2) A Safety Specification for Rubber Insulated Flexible Cords.
(3) A Safety Specification for Fixed Electric Water Heaters.
(4) A Safety Specification for Vulcanised Rubber Insulated Cables.

The following Safety Specifications have been dealt with by the Committee and are now issued for comment:

(1) Electric Kettles, Jugs and Saucepans.
(2) Domestic Washing Machines.
(3) Plugs and Socket Outlets.
(4) Socket Outlet Adaptors.
(5) Heating and Heater Elements.
(6) Portable Handlamps.
(7) Toasters.
(8) Electric Irons.
(9) Electric Soldering Irons.
(10) Insulated Mouldings.
(11) Electric Stoves and Hotplates.
(12) Transformers for use with Electricity Operated Toys.
(13) Bayonet Lampholders.
(14) Normal Bayonet Lampholder Adaptors.
(15) Apparatus Connectors.
(16) Tungsten Filament Lamps.

In addition to the above the Committee have been dealing with quality Specifications for Electric Stoves and Fixed Electric Water Heaters.

Special Committees were formed for the consideration of Specifications for:—

(*a*) Tungsten Filament Electric Lamps.
(*b*) P.V.C. Wire.
(*c*) Paper Insulated Cables.
(*d*) Electric Motors.

The Specification for P.V.C. Wire is now out for comment.

As the work of the Bureau was stepped up considerably during the year, I found it incumbent to report to your Executive the necessity of giving me some assistance in the carrying out of this additional work to which your Executive agreed.

I therefore wish to thank Mr. Fraser for taking over the work of attending the Cable Specification Committee, which is now in preparation for sending out for comments.

This Specification has been divided into two sections.

The first section deals with cables up to 22,000 volts, and the second section deals with heavy duty cables for mining purposes up to 11,000 volts.

This Specification has gone beyond the British Standard Specification in that it provides for factory tests, and quality requirements with current ratings under varying conditions.

I have also to thank Mr. van der Walt, the Engineer of Krugersdorp, for his attention to the Motor Specification Investigation Committee.

This Committee investigated the necessity for a S.A. Specification for Motors, but found that there was no need for a S.A. Specification at present.

Many other Specifications still await attention, and the work will continue to grow for some time yet.

In conclusion I wish to thank the members for submitting comments on the various Specifications, and it has been very heartening to note the increased interest that is being taken by members of this Association in this work. My grateful thanks are due to the Director and Staff of the Bureau for the courtesy and assistance given to me at all times during the year.

PRESIDENT:

Will someone propose the acceptance of the report submitted?

Mr. F. STEVENS, Ladysmith:

I propose the acceptance.

PRESIDENT:

Is there any comment from any member of the Association on this matter?

Mr. C. R. HALLE, Pietermaritzburg:

I have something against plug adaptors, where one can make three plugs out of one. I think that causes a lot of fusing despite the precautions, and it is not a very commendable thing. We should encourage people to have more plugs, not to use one plug and be able to get three appliances out of it, and I am rather in favour of dropping the plug adaptor altogether.

The item having been used somebody must have requested the Bureau for a specification, otherwise I do not think the Bureau would have issued a Safety Specification for it.

PRESIDENT:

Might I now call on Mr. Ritchie, the Director of the S.A. Bureau of Standards, to address the Conference?

Mr. J. RITCHIE.

Mr. President, Gentlemen, I would like to congratulate you on the very good organization of this Convention which includes many interesting visits to local industries and other places of interest. We appreciate the opportunity of attending your Conventions to discuss matters of mutual interest with you.

Regarding the Approvals Committee I would like to reaffirm that it was established by the Standards Council at your request and the committee operates on your behalf in an advisory capacity only.

We, the Bureau's officials, act on this committee purely as technical advisors.

Unfortunately I cannot stay for the duration of the Convention as I have to leave this afternoon to attend an urgent meeting in Cape Town.

However, Messrs. P. N. van der Merwe and O. J. Alexander will be able to stay and will be able to deal with any subjects affecting the Bureau.

Mr. P. N. van der Merwe, our Principal Technical Officer of the Electrical Engineering Division will now report to you on the activities of his Division during the past year.

Mr. P. N. VAN DER MERWE.

ACTIVITIES OF THE ELECTRICAL ENGINEERING DIVISION OF THE SOUTH AFRICAN BUREAU OF STANDARDS

June, 1948–May, 1949

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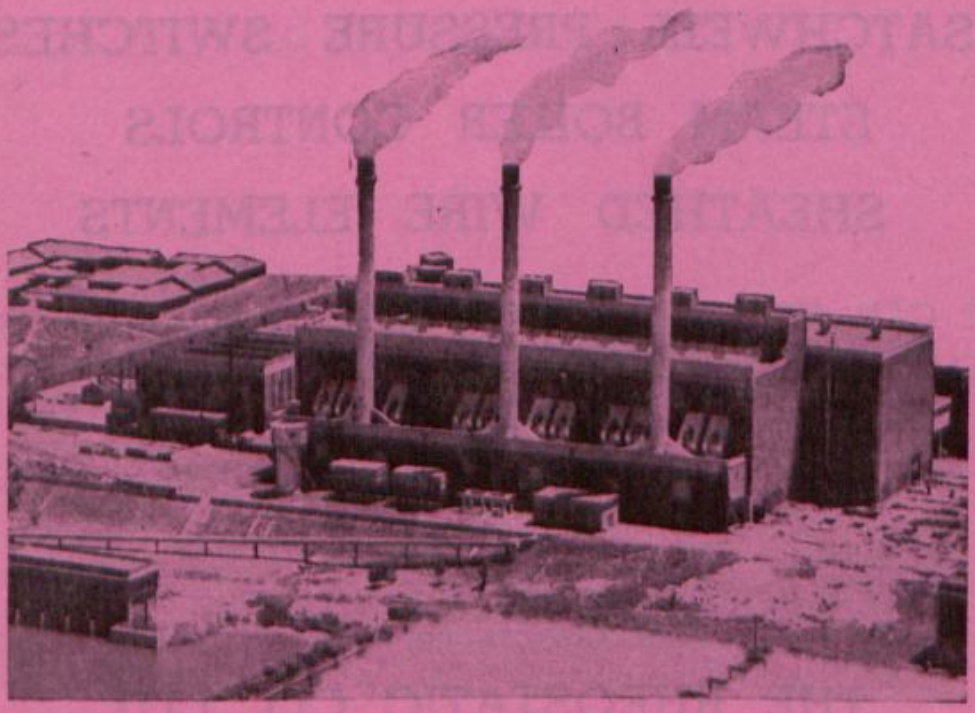

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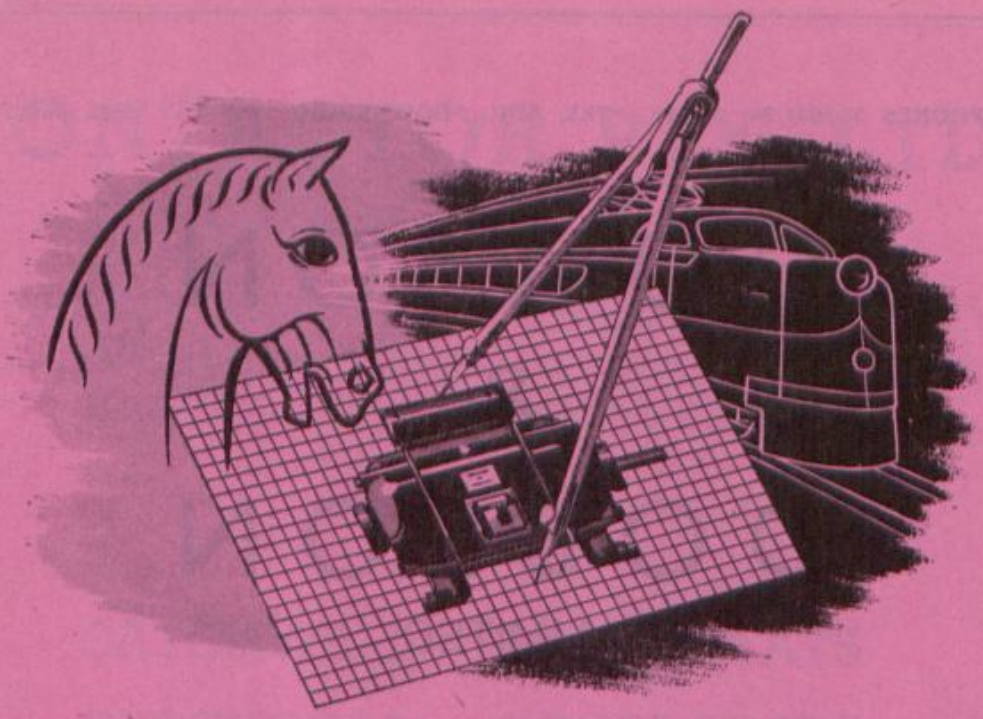

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by a corresponding increase in the demand for services which the Bureau of Standards can provide in this field. To maintain a satisfactory service level, the Bureau has substantially increased its staff and laboratory facilities.

The Electrical Engineering Division now consists of the following sections:

A. General Electrical Engineering Section.
B. Electrical Appliance Section.
C. Battery Section.
D. Meter Testing Section.

A. GENERAL ELECTRICAL ENGINEERING SECTION.

This section deals with all electrical engineering matters not specifically covered by the functions of the other three sections. Much of the work handled during the year under review has been new, and is still either in the initial stages of development or of an exploratory nature.

Requests made for standardization in the following lines of manufacture have been dealt with or are under consideration:

(1) P.V.C. Insulated Conductors.
(2) Paper Insulated Cables.
(3) Electric Motors.
(4) Ceramics and Insulators.
(5) Electric Lamps.

1. P.V.C. Insulated Conductors.

This specification was framed in response to many applications, from municipal authorities and manufacturing interests in the Union, for a specification prescribing minimum quality and performance requirements of polyvinyl-chloride insulated conductors, cables and flexible cords used under South African conditions.

Specifications for P.V.C. cables have been issued by the major standards organizations throughout the world and it is significant that, in the latest edition of the wiring regulations issued by the Institution of Electrical Engineers in Great Britain, and in the proposed revised edition of the South African Standard Regulations for the Wiring of Premises, the use of these cables for general power and house wiring installations is permitted, subject to certain temperature limitations.

The specification which is now ready for circulation, after which it will be reviewed in the light of any comments received, prescribes tests for copper conductors, tinning, insulation and sheathing, dielectric strength, insulation resistance, mechanical strength, ageing, brittleness at high and low temperatures, deformation, abrasion, flammability, water and oil resistance, and mould growth. The tests and minimum requirements are intended to insure that cables complying with the specification will be suitable for their designed purposes.

2. Paper Insulated Cables.

Two specifications for paper-insulated, metal-sheathed cables have been framed and will be ready for circulation in the near future. One of these deals with cables for general purposes at system voltages not exceeding 22,000 volts, and is based on the dimensions laid down in B.S. 480-1942, while the other covers cables with heavier insulation and sheathing, at voltages up to 11,000 volts, and is based on the dimensions laid down in B.S. 760-1938. These specifications will be accompanied by tables giving, as well as other useful information, current ratings of cables laid direct in the ground, run in ducts, suspended in free air, or used in the interior of buildings.

3. Electric Motors.

The necessity for the preparation of a South African specification for electric motors was recently investigated by an exploratory committee which came to the conclusion that at this stage a specification for general purpose motors was premature, but that there was a strong case for a South African specification for flame-proof motors. It was further agreed to recommend the preparation of specifications for component parts required for the manufacture of electric motors obtained in this country.

4. Ceramics and Insulators.

Various requests have been received for specifications for ceramics and insulators. The electrical manufacturing industry is becoming increasingly dependent on South African ceramics and clay products. An investigatory committee will meet next month to discuss preliminary matters concerning such specifications.

5. Electric Lamps.

The specification for incandescent tungsten filament lamps has now reached its

final stage and will be published within the next month or two.

6. Welding Goggles.

Published.

7. Fireclay Bricks.

Completed—out for comment; will be printed in approximately three months.

8. Approvals Committee.

A further activity of this section is to do the necessary investigatory work for the committee for the approval of new electrical products, sponsored by your Association. This committee which consists of members representing the Association of Municipal Electricity Undertakings, the Safety Precautions Committee, the Electricity Supply Commission, the Steel and Engineering Industries Federation of South Africa, the Master Builders' and Allied Trades' Association and the Bureau of Standards, receives enquiries and makes interim or emergency recommendations regarding the temporary approval of new electrical products not yet covered by a South African specification, and advises your executive committee accordingly. The committee has no statutory powers and acts merely in an advisory capacity to supplying authorities who are empowered to grant final approval.

The Committee which has met three times has dealt with the following matters:

(*a*) Non-metallic conduit.
(*b*) Aluminium-alloy conduit.
(*c*) Bergmann conduit.
(*d*) Armoured Cable for the wiring of fittings.
(*e*) P.V.C. insulated conductors for internal installations and overhead service connections.
(*f*) 13 Amp standard and non-standard plugs and socket outlets.
(*g*) Micro-break double-pole A.C. Switches and switch fuses for use as main switches.

The following decisions have been reached by the committee:

(*a*) *Non-Metallic Conduit.* No final recommendation has as yet been made. Further tests are being carried out and more information regarding the characteristics of the various types of conduit and their behaviour is being collected.

(*b*) *Aluminium-Alloy Conduit.* The committee has recommended temporary approval for the use of this conduit only with the following provisos:

(i) it shall not be buried in concrete or plaster;
(ii) the fittings shall be of aluminium or an approved zinc-base alloy;
(iii) the conduit shall not be relied upon for earth connection, but a separate earth continuity conductor shall be used.

Note.—A test is being carried out by the Electricity Supply Commission on behalf of this committee on an installation in the Cape where aluminium alloy conduit is buried in plaster. As such a test stretches over a considerable period of time, conclusive results will not be available in the near future.

(*c*) *Bergmann Conduit.* The committee has not recommended temporary approval of Bergmann conduit, as in its opinion the material is unsatisfactory in that it lacks mechanical strength and rigidity in joints, is easily penetrated by nails and the inner lining is flammable.

(*d*) *Armoured Cable for the Wiring of Fittings.* The committee recommended temporary approval of the material for use as fittings wire as provided for in the Wiring Regulations.

(*e*) *P.V.C. Insulated Conductors.* The committee has deferred its recommendation until the specification for P.V.C. insulated conductors, at present in its draft form, is finalized.

(*f*) *13 Amp Standard and Non-Standard Plugs and Socket Outlets.* The committee is not in favour of the introduction of non-standard plugs and socket outlets, and has therefore recommended temporary approval only if they conform to the South African Electrical Equipment Safety Specification for Plugs and Socket Outlets.

Note.—This specification is at present in its draft stage and is being circulated for comments. In its present form it does not make allowance for the non-standard type of plug, but only for the flat-pin 13 Amp. plugs designed in accordance with B.S. 1363-1947.

(g) *Micro-Break Double Pole Switches.* The committee has agreed that temporary approval be recommended for the use of these switches *as main switches* provided that they are capable of withstanding an A.C. test voltage of 10,000 volts R.M.S. between the contacts in the open position, and that they are manufactured of non-tracking material. This recommendation was made after taking into account the severe lightning conditions in this country and the popularity of overhead line distribution systems.

B. ELECTRICAL APPLIANCE SECTION.

The committee appointed for the preparation of safety specifications for electrical equipment has now completed the preparation of 23 Safety Specifications. Of these the first seven are now being published, while the remainder are at present in circulation for criticism and comments, or are ready for circulation. They are as enumerated in Mr. Downey's report.

A further safety specification for Domestic Radio and Electronic Apparatus is almost completed. This specification is being drafted by a sub-committee, which consists of experts representing the following organizations: Electricity Supply Commission, General Post Office, South African Broadcasting Corporation, South African Council for Scientific and Industrial Research, South African Railways Administration, Steel and Engineering Industries Federation of South Africa, University of the Witwatersrand and the Bureau of Standards.

This sub-committee is co-ordinating its work with that of the committees of the British Standards Institution, engaged on a revision of B.S. 415, and of the International Electrotechnical Commission engaged in drafting a specification for Safety Requirements for Radio Receiving Apparatus, so as not to lose touch with universally accepted practice.

Being aware of the increasing popularity of A.C./D.C. sets throughout the world it proposes to make provision for these sets, subject to stringent requirements which will render them safe. It is, for instance, its intention to exclude resistance cords from being used and to insist on a safety earth connection for all sets having exposed metal parts, while the aerial terminal is isolated from the inner wiring by a condenser of maximum specified capacitance, shunted by a high-ohmic resistance for discharging atmospheric statics. Similar precautions are taken with other circuits such as those of sound reproducing apparatus, pick-ups etc.

The Standards Council intends to recommend to the Minister of Economic Affairs that all safety specifications be declared compulsory after a trial period, giving importers, dealers and manufacturers ample chance to apply these safety standards. It is thus the intention to bar all electrical appliances, which do not conform to the requirements of these specifications, from being sold in the Union.

As these specifications are limited to safety aspects only and quality is only specified where it affects safety, it has been found necessary to prepare additional quality specifications for electrical appliances.

Quality specifications are for purely voluntary adoption and appliances conforming to them will be allowed, under permit, to bear the Standards Council's standardization mark, an ellipse enclosing the letters S.A.B.S.

The first request for such quality specifications was received from the City Electrical Engineer of Johannesburg. All appliances sold under that Municipal hire-purchase scheme will have to conform to these specifications. The Bureau will carry out the necessary approval tests for this purpose. It is anticipated that other municipalities with similar schemes will also avail themselves of the Bureau's services. Some manufacturers are tempted to claim Bureau approval on factual documents.

Two of these specifications are now ready for circulation for comment, one for Fixed Electric Storage Water Heaters, the other for Electric Stoves and Hotplates. A specification for Electric Heating Units and Elements is under preparation.

The Bureau's appliance laboratory is carrying out an ever increasing number of tests on electrical equipment. Applicants whose appliances have been tested against a safety specification, are supplied with test reports which they can use for whatever

purpose they wish, provided they are reproduced in full.

Unfortunately some instances have occurred where these reports have been misinterpreted as indicating the Bureau's "approval" of a particular appliance tested. Approval tests are only carried out in connection with the Council's standardization mark which can only be granted against a South African quality specification.

Appliances which comply with the requirements of a safety specification may therefore not be taken as approved in this sense. It is for this reason, and to avoid further confusion, that no separate safety mark will be issued.

C. BATTERY SECTION.

History was recently made in the South African battery industry when an East London manufacturer was granted permission to use the Standards Council's mark on his batteries. This is the first case where a South African manufactured motor car battery, tested by the Bureau, has reached a quality of the standard required by the Standards Council's battery specification.

Other manufacturers are making every effort to attain the standard set by the specification and there is indication that these manufacturers will soon qualify for the standardization mark.

D. METER TESTING SECTION.

At the last Convention of your Association it was decided by vote that the Meter Testing Code should be introduced without further delay.

In order to satisfy those members of your Association who were in favour of postponing the matter for a period of 12 months, and in order to enable everybody concerned to study its implications, the Code was held in abeyance for one year. During this period the Electricity Control Board discussed the Code and the possibility of its promulgation at various meetings. We have a representative of the Board with us here to sound the feelings of constituent members of this Convention before a final decision is reached by the Board.

It is gratifying to the Standards Council to note that Municipalities are bringing their testing stations in line with the Code in anticipation of its promulgation. Useful experience has already been gained in the practical application of the Code.

The Municipality of Springs, for instance, recently established a Class B Meter testing station on the basis of the Code with little additional expenditure to the existing equipment. The difficulty of personnel was overcome by training meter testers in the station itself. The men most adaptable for this type of work were found to be light-current technicians of which a relatively large number were trained during the war.

Regarding the supply position of equipment it may be encouraging to know that the Bureau has just received a three-phase meter testing bench and that other standard and sub-standard equipment will arrive shortly.

PRESIDENT:

Thank you, Mr. van der Merwe, for your comprehensive report. There is quite a lot in that to keep us occupied for days if we wish to follow item by item.

Is there any member present who would care to open discussion on this matter concerning the activities of the Electrical Engineering Division of the S.A. Bureau of Standards?

Mr. H. J. GRIPPER, Port Elizabeth:

Time is rather short for a general discussion on the question of standard specifications, but I should like to know whether there will be an opportunity under "General" to discuss the proposed Standard Wiring Regulations and additional matters such as the proximity of gas and electricity outlets, plug adaptors and motor starter regulations. I would also like to refer to those specifications which are being issued and which will be compulsory under the title of "Safety Specification". These the Bureau has styled VS specification. I would suggest they call them SV specification because of the possible confusion with BS specifications when spoken or dictated. In other words let us have "SV: Safety Veilig" rather than VS.

Mr. J. RITCHIE, S.A. Bureau of Standards:

We have nothing to do with the promulgation of the Wiring Regulations so that

all those points raised by Mr. Gripper in that connection fall away, but as regards the second point, the suggestion that we should change the letters to SV is a good one and will be adopted.

PRESIDENT:

Thank you, Mr. Ritchie.

PRESIDENT:

Mr. Gripper, it will depend on the time available. I would like everything to be discussed if time will permit, and if you would like me to put that under the heading of "General" to bring it up later, that will be done. Wiring Regulations will also come under that heading.

Is there any further speaker on the matter now before the Convention? Mr. Ritchie or Mr. van der Merwe will only be too glad to enlighten them I am sure on any point that is not clear.

Mr. E. L. SMITH, Boksburg:

With regard to the Meter Testing Code which was brought before the Convention last year, is it now the intention to go ahead and have it enforced?

PRESIDENT:

Yes, but the position there, Mr. Smith, is that the Electricity Control Board have found a little difficulty as Mr. Ritchie's report here says: "During this year the Electricity Control Board has discussed the Code and the possibility of the promulgation at its various meetings"—I do not know who their meeting was with. We have a representative of the Board with us to sound a few of the constituent members of this Convention. It stands on our records that we took a vote at the last Convention whereby we requested that they proceed immediately with this Code. Is the Electricity Control Board delegate perhaps in a position to give us a resumé of the Board's activities?

Mr. C. H. CLUTTERBUCK, Electricity Control Board:

Mr. President, I intended to hold a listening brief in regard to this matter. The Convention last year agreed to the acceptance of the Code and promulgation of regulations. From the point of view of the Control Board there is no doubt that the Code itself supplies a long felt need, but from an examination of the proposed method of enforcing it, it would appear that any objection would be based on the cost factor, and this factor would affect the smaller suppliers to a greater extent than larger undertakings. For this reason the Board would like to hear the views of smaller suppliers.

It might be pointed out that the cost to small suppliers would be in greater proportion to that of larger municipalities for several reasons; one is the necessity to purchase a certain number of new meters for replacements, the cost of transport to and from testing stations, and limited labour available for effecting changes. Of course it must not be overlooked that the cost of carrying out the terms of the Code will ultimately fall on the consumer and in some cases the areas served by small local authorities are very poor ones and the consumers can ill afford any surcharge on their existing tariff.

I do not want to go into the matter too deeply, but at the same time, if time permits, now or at a later stage of the Convention, on behalf of the Board I would welcome the opinions of any electrical engineers from isolated areas on the question of the reaction of their particular authorities to the enforcement of this Code.

PRESIDENT:

I think it is thoroughly understood the difficulties that will confront the smaller Undertakings, and I suggest that if we think it over and bring it forward at a later stage this morning, we can do so and dispose of it. As time is getting on I suggest we adjourn the Convention, and resume just as soon as we can comfortably do so after tea.

The Convention adjourned at 10.45 a.m.

The Convention resumed at 11:00 a.m.

PRESIDENT:

Ladies and Gentlemen, we will now resume and I suggest that the discussion on the Meter Testing Code be held over for the time being and that Mr. Gripper be now asked to submit to us his Paper, "Efficiency in Municipal Electricity Supply Undertakings."

Mr. H. J. GRIPPER, Port Elizabeth:

Mr. President, Ladies and Gentlemen, I have no intention of reading the Paper which you all have before you. If any further copies are required they are available in the vestibule. A summary of the Paper will take a few moments and then we can get down to the discussion which I would like to add, Mr. President, is the main and principal purpose of the Paper.

Mr. Gripper read a brief summary of the Paper entitled "Efficiency in Municipal Electricity Supply Undertakings", which is reproduced in full hereunder.

"EFFICIENCY IN MUNICIPAL ELECTRICITY SUPPLY UNDERTAKINGS"

By

H. JASPER GRIPPER, B.Sc., A.M.I.E.E., A.M.(S.A.)I.E.E.

Assistant City Electrical Engineer, City of Port Elizabeth

1.00 SUMMARY AND CONTENTS

The principal factors to be taken into account in considering the relative "efficiencies" of Electricity Supply Undertakings are the number of units sold per annum per consumer and per £ of capital expended on the distribution and sale of electricity. From figures taken from published returns, the average ratio between the two factors mentioned is found to be approximately 40 to 1, *i.e.*, £40 of capital expenditure to each consumer. Similar efficiencies as computed from the product of the two factors may be obtained where one factor is increased at the expense of the other, but the capital per consumer will then be found to vary between say £20 and £80.

The use and application of a chart is submitted to enable Undertakings to compare their own results over a period of years and to compare one Undertaking with another for the same year.

While "efficiencies" may be high and the figures not reflect that the working of the Undertaking conforms to average practice, it is also shown that an Undertaking may adopt the best practice, show a comparatively high efficiency and yet not develop sufficiently to satisfy the area it is intended to serve.

The meaning of "efficiency" is discussed in relation to Consumer Service and the effects upon the overall efficiency of such matters as staff relations, Departmental organisation and Tariffs etc. as well as the General and Financial policy of the Municipal Council are considered and put forward as "Agenda for Discussion".

The headings under which the subject matter is divided are given hereunder:—

2.00 INTRODUCTION.
- 2.10 The Chart Method.
- 2.11 Assumptions necessary.
- 2.12 Generation and Distribution Expenditure.
- 2.13 Average Practice.
- 2.14 Exclusion of Units Exported.
- 2.20 Serving the Consumer.

3.00 THE CHART.
- 3.10 Description and Construction of Chart.
- 3.11 Average Practice Line.
- 3.12 Examples on Chart.
- 3.13 Conclusions to be drawn from Chart.
- 3.20 Alternative ways of conforming to Average Practice.
- 3.30 Chart not sufficient in itself.
- 3.40 Data required for Chart.

4.00 EFFICIENCY.
- 4.10 The Meaning of "efficiency".
- 4.11 Efficiency not the only Criterion.
- 4.12 Analogy of a Small Business.
- 4.20 Are Consumers aware of their Rights?
- 4.30 Pleasure to Staff to serve well.
- 4.31 Danger of losing Civic Pride.

5.00 CONSUMER SERVICE AND GOODWILL.
- 5.10 Essentials for Consumer Service.
- 5.11 Power Supply and Reliability.
- 5.12 Tariff Structure.
- 5.13 Advice and Information.
- 5.14 Depots and Showrooms.
- 5.15 Installation Service and Regulations.

6.00 STAFF.
- 6.10 Contentment and Civic Pride.
- 6.11 Fair Criticism.
- 6.12 Trust in Judgment of Officials.
- 6.20 Interdepartmental Relations.
- 6.30 Subjugation of One Department to another.
- 6.40 Attendance at Council meetings.

7.00 DEPARTMENTAL ADMINISTRATION.

- 7.10 Drawing up and Administering Regulations and Tariffs.
- 7.20 Tariff Structure.
- 7.21 Tariffs for Small Consumers.
- 7.22 Domestic Tariffs.
- 7.23 Bulk Supply Tariffs.
- 7.24 Scope of Tariffs.
- 7.25 Financial Incidence of Tariff Revisions.
- 7.26 Consumer Classification for Tariff Purposes.
- 7.27 Coal Clause in Tariffs.
- 7.28 Tariff for Supplies at High Voltage.
- 7.29 Applying a Two Part Tariff.
- 7.30 Load Building and Load Spreading.
- 7.31 Street Lighting.
- 7.40 Regulations.
- 7.50 Control of Stores and Meter Reading.
- 7.51 Operation and Function of Stores.
- 7.52 Meter Reading and Invoicing.

8.00 GENERAL AND FINANCIAL POLICY.

- 8.10 Capacity Expenditure per Consumer.
- 8.11 Rate of Turnover of Capital.
- 8.20 Effects of Curtailing Distribution.
- 8.21 Obligations and Area of Supply.
- 8.30 Planning as a Business Proposition.
- 8.31 Relegating Responsibilities for Power Supply.
- 8.32 Equip and Organise as a Business Concern.
- 8.33 Separate Identity of Electricity Department.
- 8.40 Disposal of Profits in Relief of Rates.
- 8.41 Publication of Accounts.
- 8.50 Annual Estimates.
- 8.51 Capital Expenditure in Times of Threatened Depression.
- 8.60 Services of Town Clerk and Treasurer.
- 8.70 Staff Schedule to cover Present and Future Needs.

9.00 CONCLUSION.

2.00 INTRODUCTION.

2.10 The Chart method.

The method used herein to compare the so called "efficiencies" of Electricity Undertakings was described by R. C. Golding in his paper to the Incorporated Municipal Electrical Association of Great Britain at Eastbourne in 1948 and was used before that by H. A. Eastman in Cape Town to obtain what he termed an "economic figure of merit."

There are no doubt others who have made use of this or a similar method for comparing the workings of their own and other Undertakings from time to time. It is felt however that the method should be used more often and that the statistics which are published in the tables contained in the Official South African Municipal Year Book should be so compiled as to provide the data necessary for this purpose.

2.11 Assumptions necessary.

The figures which are at present available in these annual tables are such that many assumptions and presumptions must be made and it is necessary for some of the existing methods of accounting to be revised in order to provide the information in the form in which it is most useful.

2.12 Generation and Distribution Expenditure.

For a true comparison to be made the capital expenditure and the working costs of the Management and Distribution departments of an Undertaking should be shown separately from the figures pertaining to Generation and, or, the purchase of electricity in bulk.

2.13 Average Practice.

From a series of points representing some 30 Generating and 25 Bulk Supply Undertakings for the years 1945 and 1946 it has been found that an average capital expenditure figure per consumer in South Africa is £40 excluding Generating Plant and £100 including Generating Plant.

The corresponding figure arrived at by Golding for Undertakings in the United Kingdom is £50 excluding Generating Plant, no figure being given to include capital expended on Generating Plant.

2.14 Exclusion of Units Exported:

Here it should be pointed out that the figure of Units sold per annum used for the purpose of computing the efficiency of an Undertaking should not include any units exported in bulk to other Municipalities or Undertakings for distribution by them. For this reason too it is highly desirable that the total units "exported" per annum by any Undertaking should be shown in the statistical tables of the Municipal Year Book as is required in the case of the figures furnished each year to the Government Department of Census and Statistics.

2.20 Serving the Consumer.

While many of the arguments put forward will not be new to Municipal Electrical Engineers, it is hoped that they may be of some interest to Councillors and other Municipal Officials who share the responsibilities of civic administration. Ratepayers of our towns and cities should be encouraged to take some pride in the Electricity Undertakings of which they are nominal owners but for which they have paid nothing, for they, together with their Officials and Councillors are one and all beholden to serve the customer—to wit the electricity consumer—who foots the bill and yet very often has the least say of all in the running of the business in which he is primarily interested. Let it not be forgotten that the moral duty to serve an electricity consumer is all the greater due to the monopolistic nature of the service.

3.00 THE CHART.

3.10 Description and Construction of Chart.

The chart, Figure 1, has been compiled to enable individual Undertakings to plot their own progress thereon from figures which are ostensibly obtainable from the tables in the Municipal Year Book. To enable delegates at the Convention to follow the course of each Undertaking contributing to the discussion it is hoped that members will complete as far as possible the columns shown in Table I prior to attending the Convention, when they will then be able to indicate to others by means of the efficiency zones and radial lines how their Undertakings have fared from, say 1925 to date.

The left hand side of the chart is graduated in units per £ of capital excluding generation, but where it is not possible to exclude capital expended on Generating Plant the right hand side of the chart should be used. It will be observed that this implies the assumption that, in an Undertaking running its own generating plant, the capital expenditure on such plant is approximately 60 per cent of the total, i.e., as stated earlier that the capital expenditure per consumer is £40 for Distribution etc. and £100 when Generating Plant is included.

The base of the chart is graduated in units sold per annum per consumer.

The hyperbolic (curved) lines on the chart are lines of "constant efficiency" where this "efficiency" is defined as the product of (Units sold per £ of Capital) multiplied by (Units sold per Consumer). It is appreciated that either of these factors may be increased at the expense of the other with the same resulting efficiency.

3.11 Average Practice Line.

The Scales used on the chart are such that points along the diagonal line from the origin will be those indicating good average practice while the hyperbolic zones of constant efficiency and the radial zones equally spaced on either side of the "good practice" line have been marked with numbers and letters respectively for ease of reference. It will be seen therefore that the further a point is from the origin, the higher the efficiency while the nearer it lies to the diagonal line, the closer it approaches the average conditions.

3.12 Examples on Chart.

As an example a point X has been shown on the chart where the annual Units sold per £ of Total Capital are 31·6 and per £ of Distribution Capital 79 while the units sold per consumer per annum are 3163. This point can be represented as 12 LM from the zoning of the diagram.

Undertakings X1 X2 X3 and X4 all have the same efficiency in zones 12E, 12H, 12R and 12V respectively but in the case of X1 and X2 it would appear that more publicity and consumer service is required along with additional capital expenditure, while with X3 and X4 we are approaching consumer saturation and the capital utilisa-

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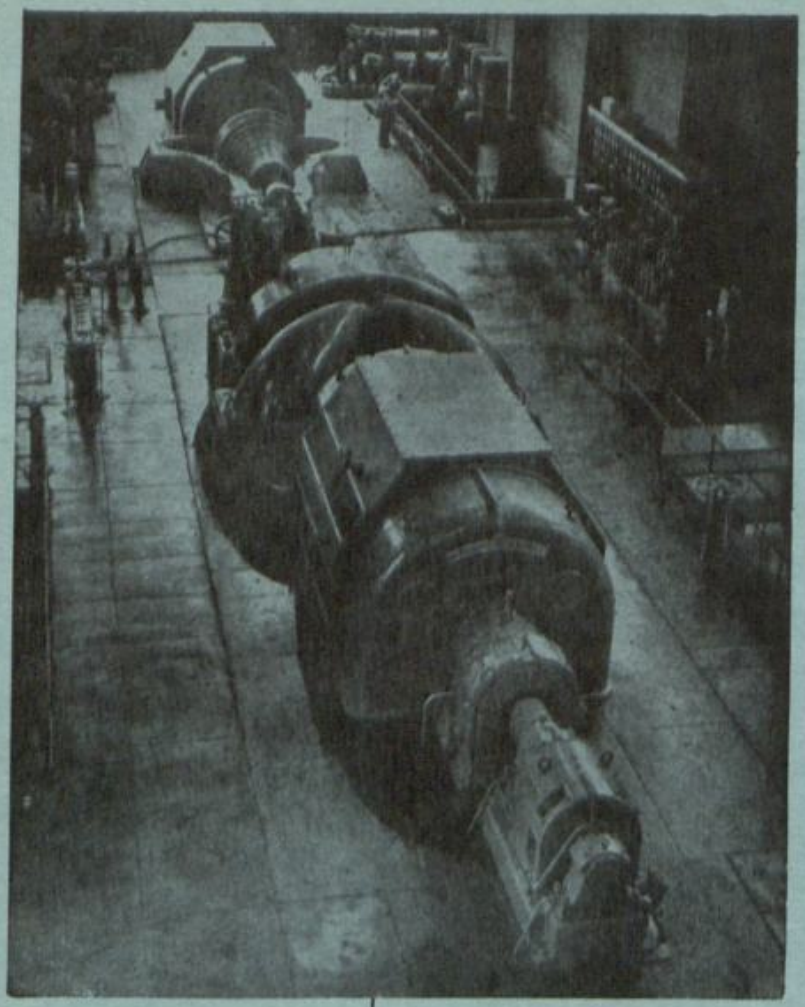

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tion is low indicating that extensions are due in order to obtain more consumers.

From indications on the chart itself it will be noted that the Undertakings X1 and X2 are possibly of greater value to the ratepayers while X3 and X4 have gone out of their way to provide value to their existing consumers without making full use of their capital resources.

3.13 Conclusions to be drawn from Chart.

Generally speaking, undertakings in radial zones A to E may be assumed to be short of plant and equipment or for some other reason are due to expend capital in the near future, while those falling in zones V to Z are for the time being too heavily capitalised for their output.

A moral to be drawn from this chart would appear to be:—

"Avoid creating conditions where capital requires to be spent without a corresponding increase in the number of consumers served and similarly see that capital expenditure is increased in time to meet the requirements of new consumers."

3.20 Alternative ways of conforming to Average Practice.

It has been indicated that the ideal course for an Undertaking to follow on the chart from year to year is one which keeps reasonably close to the diagonal line of average practice. It is also clear of course that the greater the number of units sold per consumer and per £ of capital expended, the higher the "efficiency".

While wide departures from the "straight and narrow" may be unavoidable in certain circumstances they cannot be accepted as good practice. There are however, two distinct ways of maintaining a reasonably high standard of efficiency measured in terms of units sold per £ of capital expenditure.

(1) A "Leading" Policy which allows the Undertaking to develop as an enterprising and progressive business organisation, the Council acting and functioning as a board of directors. Capital requires to be spent on extensions with a concerted drive by all working hard to expand and encourage sales. Maximum possible service to be rendered and an energetic propaganda campaign launched and maintained. All plant and equipment must be maintained at maximum efficiency and obsolete material must be scrapped as soon as possible.

(2) A "Lagging" policy in which, as in times of national emergency, everything is concentrated on present needs. Endeavour to meet demands as they arise and carry out the minimum work on maintenance and renewals consistent with the requirements immediately envisaged. Avoid all forms of advertising and sales propaganda and reduce capital expenditure to a minimum. Provide only such services as are necessary for public safety and essential growth, and exert all available effort in keeping old and possibly inefficient plant in working order.

It may be noted that the "lagging" policy, though it may keep an Undertaking on the straight and narrow way in terms of the efficiency chart, is only possible where a virtual monopoly exists or where the community is not fully aware of its rights and possibilities.

It has been said that this policy in abnormal times is in the best interests of the ratepayers, but whether this is so or not, it cannot be in the interests of the electricity consumer who, after all, is the one to "foot the bill".

Circumstances do arise where the "lagging" policy is forced upon an Undertaking through causes beyond immediate control, such as rapid and unexpected growth when capital expenditure, or at least labour and administration for capital works, cannot catch up with the demand. However such a state of affairs can only be attributed to lack of planning and forethought at some earlier stage or to misplaced consideration for ratepayers at the expense of consumers.

3.30 Chart not sufficient in itself.

It will thus be seen that our efficiency chart is the beginning and not the end of our considerations. It is not even a means to an end but rather an indication of the route that has been or should be taken. It is valuable for comparative purposes if the

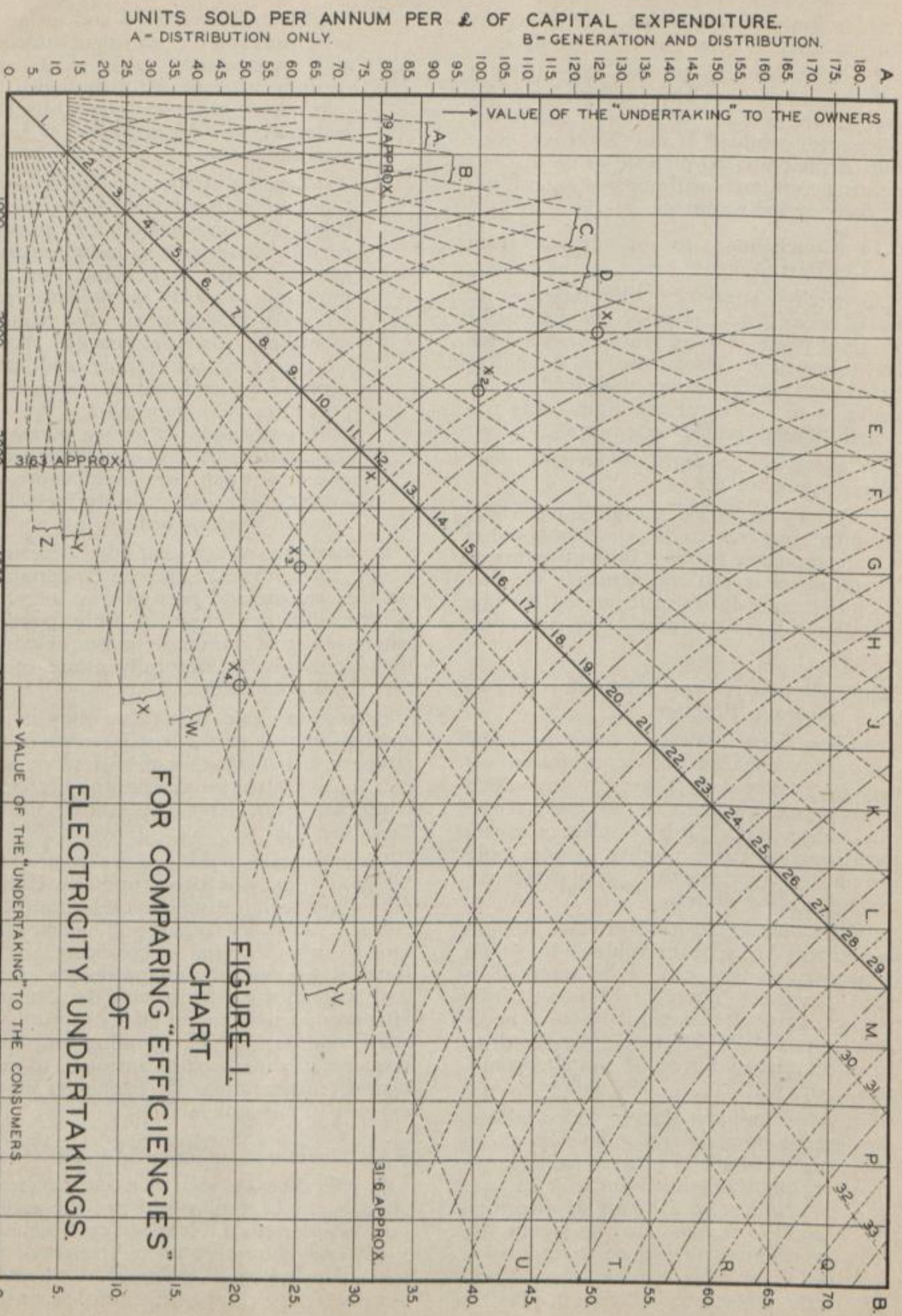

FIGURE I.

CHART

FOR COMPARING "EFFICIENCIES"

OF

ELECTRICITY UNDERTAKINGS.

TABLE NO. 1

ELECTRICITY UNDERTAKING OF

Year	Units Sold (*a*)	Cap. Exp. £(Dist.) (*b*)	Cap. Exp. £(Total) (*c*)	No. of Consumers (*d*)	(*a*) div. by (*b*) or (*c*)	(*a*) div. by (*d*)	Efficy Zone	Racial Zone
1925								
1929								
1933								
1937								
1941								
1942								
1943								
1944								
1945								
1946								
1947								
1948								

required statistical data can be made available.

3.40 Data required for Chart.

The information required to complete the chart in respect of each Undertaking is indicated in Table No. 1 which it is suggested should be completed as far as possible prior to considering the points discussed in sections 4, 5, 6, 7 and 8.

It should be noted that the use of columns (*b*) or (*c*) in the table will determine which of the vertical scales should be used on the chart. Scale A would be used for column (*b*) and Scale B for column (*c*).

4.00 "EFFICIENCY".

4.10 The meaning of "efficiency".

How can we define "efficiency" in an Electricity Supply Undertaking? In the long run it is for the Consumers to judge whether an Undertaking is efficient or not but from first principles, "Efficiency" should be the quotient of (what you get out) divided by (what you put in). The former should be as high as possible and the latter as low as compatible with the results required, comprising occasional capital plus continuous effort, stores, fuel, etc., etc.

As for what is got out—by the consumers (not the ratepayers) we have Electricity as such, plus Electricity as a service for which the sky alone is the limit. However we cannot go on getting more and more out without putting a great deal in and if we ease off on both processes the efficiency, as such, does not suffer.

4.11 Efficiency not the only Criterion.

For the reason given above therefore, efficiency alone is no real criterion, since any operation or undertaking can be performed to a degree which may approximate to, say 90 per cent efficiency yet this will not necessarily mean that *sufficient* has been done. This is particularly the case with an Electricity Undertaking where a high degree of efficiency might be attained with a small plant and a few good consumers albeit the volume of profit may be small and the percentage high. The duty of such an Undertaking however, if run as a public utility, is to provide (without loss to the community) an abundance of electricity for all and not merely for those whom it is immediately profitable and convenient to supply.

4.12 Analogy of a Small Business

A small isolated business can maintain a steadily increasing efficiency to meet the steadily growing needs of the owner, but never branching out into a flourishing business by raising additional capital and increasing staff so as to be of greater benefit to the community which it serves.

4.20 Are Consumers aware of their Rights?

Tardy progress can so easily occur and be blamed on all sorts of factors, most of them correct, though avoidable with long term planning. Unfortunately however, this state of affairs is not so much due to the fact that a monopoly exists, but from the fact that the public get out of the way of realising what they are missing as their rights.

4.30 Pleasure to Staff to Serve Well.

It is service and more service which is required and those of you in the small towns will know the satisfaction that you and your staff obtain when your department is looked upon as the public's friend; when newcomers express their pleasure in the service and advice so freely given, and when the carping critic is set upon by his or her neighbours who resent any aspersions being cast upon what they are proud to consider to be their own Electricity Undertaking.

Such a state of affairs has its reflection in a contented staff combined with a spirit of civic pride.

4.31 Danger of Losing Civic Pride.

When it is known that certain technical works are required and the Engineer's report has been approved by the Committee acting as the Board of Directors, such works should be carried through without hindrance or delays due to shortage of funds or staff. Failing this the staff are liable to become despondent and depressed when, as public servants, they are not only hindered in the execution of their duty, but are also unable to voice their disapproval of the tactics adopted by those who, though no doubt acting according to their convictions, are unfortunately not able to perceive the rot which has set in

until it reaches the stage of a dispute and possibly arbitration. This leaves a degree of unpleasantness which may take years to remove.

5.00 CONSUMER SERVICE AND GOODWILL

5.10 Essentials for Consumer Service.

If the Electricity Supply Undertaking is to maintain an efficient service for its consumers, the first essential is the fostering and maintenance of "Consumer Goodwill" to which end the following factors are of vital importance:—

1. Abundant and reliable supplies of electricity.
2. A simple and attractive tariff structure.
3. Expert advice where required through personal contact with the Management, Distribution and Accounting staffs.
4. Facilities for payment of accounts by domestic consumers at pleasantly equipped depots and showrooms within, say, two miles of their homes.
5. A tactful and efficient staff of Inspectors and Installation engineers, provided with a well designed set of local supply regulations to ensure safety and efficiency with a minimum of inconvenience to the public, the electrical trade and the department itself.

While matters of staff, departmental administration and general policy are intimately connected with the subject of consumer service, these are considered separately in sections 6, 7 and 8 hereafter, and in the remainder of this section the abovementioned factors will be reviewed in so far as they affect the consumers.

5.11 Power Supply and Reliability.

The subject and technique of power generation is relatively unimportant in considering Consumer Service providing it is accepted that it is a major responsibility of the Electrical Engineer and Manager to ensure that a supply from some source or other is permanently assured with provision for the ever increasing requirements of the Undertaking. The day has passed when new generating plant can be looked upon as a "new toy for the Engineer to play with". On the contrary it is no more than an added responsibility for the Management and Staff.

Having ensured the abundance of supply, the equally, if not more onerous duty remains to provide for reliability in its distribution. This is a problem which grows in intensity as the total volume of power increases. A balanced combination of technical staff and delicate instruments associated with high rupturing capacity switchgear are required to provide the consumer with the constant supply such as is so essential for modern industrial plant, hospital equipment and transport undertakings, as well as for domestic needs.

5.12 Tariff Structure

Tariffs should be simple and straightforward and should not be discriminating except in so far as the effect of a particular load on the electricity system is concerned, that is, if it occurs throughout the day and night or largely at night it should be encouraged. Large or steady consumption should be at a cheaper rate than small or irregular loads. Other than such considerations should not affect the tariff. There is no reason why a bakery or an hotel or an industry should be treated differently one from another if their loads are similar. Reasons may be advanced for treating the private resident differently from the consumer who uses electricity in his business for gain but that should be the only discrimination apart from the type and character of the load. In all cases such "off-peak" or steady loads as Battery Charging for Electric Vehicles, Hot Water Storage Cylinders, Space Heating plant, etc. should be given at the very lowest possible rates.

A further consideration of Tariffs will be found in section 7.20.

5.13 Advice and Information.

Free advice and information should be available to the consumer at all times and advantage should be taken to have this service in evidence wherever and whenever the public congregates for such occasions as an agricultural show or an industrial fair and if possible groups of consumers should be invited to attend demonstrations at regular intervals. Mobile demonstration vans should also be available for service in the rural areas.

It must never be forgotten that the electricity consumer is not necessarily a ratepayer nor even a citizen of the town. This point will be mentioned later on when dealing with administrative policy.

Every encouragement must be given to organised bodies, representative of consumers, and the Press (as distinct from ratepayers only) to be taken fully into the confidence of the management and the executive staff and constructive criticism should at all times be welcomed. Here of course it will be seen how essential it is that a Municipal Council should delegate fully the powers of the Supply Authority to its General Manager or Engineer in all matters which affect the Undertaking as a business concern, since that official is required to assume full and legal responsibility for protecting the public against faulty wiring and apparatus of all kinds and maintain contact personally and through his staff with every consumer. When the meter reading is done by the Treasurer much of this personal contact is lost.

Once the consumer's confidence is gained the smooth running of the Department is ensured and the Electrical Trade will follow suit. The impression that the staff of an Electricity Undertaking are unapproachable by any but technical persons can be dispelled easily enough if it is desired to do so. Many an interested consumer has been pleasantly surprised to find that he can appreciate the meaning of Power Factor in Alternating Current supplies on being given the analogy of the child learning to clean his teeth and wagging his head in or out of phase with the movement of the brush!

An example of consumer service however that overshot its mark might not be out of place here:—

The owner of a small factory proposed to extend his building and came to the Electrical Engineer for advice in arranging the circuits for lighting prior to calling for tenders for the wiring.

When asked if he was engaging an Architect the reply was "Yes! but he won't know anything about electricity". To which the Engineer replied that the Architect should know as much about the arrangement of artificial lighting as he does about the placing of windows. However the consumer was given the information he required and left.

When he came back on a subsequent occasion regarding another extension, he had not only omitted again to engage an electrical consultant but had dispensed with the services of his Architect as well!!

5.14 Depots and Showrooms.

The provision of depots at which a certain amount of routine filling of forms and paying of accounts can be conducted in various parts of a large town has become established practice in many centres. These depots are usually used as show rooms too in which electrical apparatus can be inspected and information given.

Whether or not the Undertaking should sell appliances on its own account or for the account of approved dealers is a matter on which opinions differ widely, as in the case of Hire Purchase Schemes, etc. If there is a demand by the consumers for such a service it should be given providing there is no question of the sale being subsidised or subeconomic. In a small town, such a service may be necessary to make the public electrically minded but there is then the danger that it may become extremely difficult to give it up at a later date and to persuade the consumers that they can obtain equally good service from the dealers who are anxious to take over.

5.15 Installation Service and Regulations.

In its Installation Department and particularly in the persons of its Inspectors, an Electricity Undertaking can have one of its greatest assets from the point of view of consumer service and load building. The Supply Regulations which are administered by this section of the Undertaking require to be drawn up and revised when necessary by the Electrical Engineer in a manner which will ensure safety and smooth running of the department in its relations with consumers and the electrical trade.

A skilled and tactful staff can do much to promote the interests of safety where a mere "book of rules" alone might result in complacency on one hand or panic tactics on the other.

An example of service provided by a certain Undertaking which cost very little, but created a valuable degree of "goodwill"

in the case of new consumers in a National Housing Scheme, was the connecting up of the Hot Water Geyser in each house some 12 to 24 hours before the meters were connected and the keys handed over to the tenants. This meant that all services, including hot water were immediately available to the consumer when he moved in.

Further consideration of Regulations, etc., will be found in section 7.40.

6.00 STAFF.

6.10 Contentment and Civic Pride.

An essential requirement for the successful administration of any Municipal Undertaking is undoubtedly a contented staff imbued with a spirit of civic pride. To enable the Engineer and Manager to get the team together in the first place it is obvious that the various grades of the service must be adequately paid for the work that is required and the experience and ability that is expected of each individual member. To keep that team together and build it up as the Undertaking expands the chief's personality and reputation for fair dealing count for much but there must also be a plan to which the staff "build up" is aiming, even though for some time many posts may remain vacant, and the individual himself must have reasonable expectations of advancement according to his or her age, experience and qualifications.

Given the conditions as stated above, it is still necessary that the staff, through its organised Union or Association as well as individually should demonstrate to the public and the Council that it has the well-being of the department at heart. This in turn should be reflected by the public and the Council in their attitude towards the staff.

6.11 Fair Criticism

A public service should thrive on fair criticism, but when complaints become numerous from those who feel they want to have a "crack" at the department or the Council, goodwill starts to fade and feelings of resentment and frustration replace the spirit of civic pride. Executives and Foremen who were successful as leaders become less competent as drivers and a rot sets in from the top downwards which is foreign to the engineering profession where enthusiasm in the job and in the results attained count more than any desire for personal agrandisement.

6.12 Trust in Judgment of Officials

Engineers, like other officials in Municipal Departments, are presumably appointed for the experience and knowledge they are able to apply to their duties and the Heads of Departments in turn must rely upon the judgment of experts in their own particular fields of work; indeed it would be a sorry state of affairs in a large Undertaking if this were not the case.

Councils have been known to take offence when it is suggested that an outside opinion should be called for on a particular subject, yet they have rejected the advice of their own experts or at least turned the tables on them, lectured to them and so restricted their course of action that well conceived schemes have been shelved and enthusiasm lost in the process.

Once a spirit of resignation is created, complaints from the public start to come in via the Town Clerk who is satisfied to obtain some form of excuse from the Department concerned and to send it out without further investigation, in the hope that the matter will rest there.

6.20 Interdepartmental Relations

Just as a spirit of co-operation is required within the department, so should it be between the various departments constituting the structure of civic administration.

It has been stressed before at the Association Conferences that the Electrical Engineer and the Town Treasurer should enjoy mutual confidence and co-operate with one another to ensure a thorough understanding of each other's problems. The same applies in the case of the Town Clerk and other departmental heads. These officials should not be so inundated with the routine working of their departments that they, or their chief assistants, cannot find time to meet at least once a month to promote co-operation in departmental matters and in Municipal schemes in general. At the same time the Council would be spared much time and detail work involved in the frequent reference of procedure and planning from one department to another through the respective Committees.

That bogey of precedent and the reactions of other departments to any decision effecting the staff of one department, would be overcome if all departments enjoyed mutual confidence.

6.30 Subjugation of One Department to Another.

The Paper presented recently by Brian Porter to the Institute of Town Clerks entitled "Partly Concerning Town Clerks" puts forward some sound arguments on these matters, written though it is essentially from the viewpoint of a Town Clerk.

It is quite unnecessary, and wholly against good civic administration that any Department should be subjugated to any other, least of all a Trading Department. If such conditions exist it will more often than not be found that it is the subjugated department that is at fault, due possibly to a lack of policy and determination or a refusal to co-operate in the interests of the whole administration.

6.40 Attendance at Council Meetings.

To further the ideal of departmental harmony it is felt that all the Heads of Departments should be present at Council meetings and at meetings of the Finance Committee. This would prevent misunderstandings which, to say the least of it, waste time when motions subsequently require rescinding or, through ignorance of some technical point, are allowed to be framed in a manner which may make them difficult to carry out in practice. Furthermore the Departmental Heads are servants of the Public and they would then be able when necessary and when called upon to make their viewpoint public.

In the interests of continuity too, it is felt that the Chief Assistant in any department should, whenever possible accompany the Head of the Department to all meetings of the Committee.

7.00 DEPARTMENTAL ADMINISTRATION

7.10 Drawing up and Administering Regulations and Tariffs.

To return to the Administration of the Electricity Undertaking in particular, it has previously been stressed that the local regulations and tariff structure can have a considerable influence on the efficiency of the Undertaking. Too often these are amended and patched without reconsideration of the whole. Whether they are drawn up afresh or merely revised, and this applies also to special agreements and contracts, the Council or Committee, having approved the policy or principle involved, should instruct the Engineer and Manager to draw up the first draft which he will then pass to the Town Clerk and the Treasurer in turn for comment. The Engineer and Manager will then complete a fair copy which, after submission if necessary to legal advisers, and approval by the Council, will be submitted by the Town Clerk to the Administrator for promulgation.

Thereafter the Tariff, Regulation or Agreement will be administered and operated by the Electricity Undertaking (*i.e.*, the Supply Authority). If it should ever become necessary again to refer any portion or section of the Tariff, Regulation or Agreement back to the Town Clerk or the Council, it can only be for the reason that it requires revision.

7.20 Tariff Structure

Many papers have been and will still be written on the question of Tariffs without risk of belabouring this highly important subject.

It has already been stressed that, from the point of view of the consumer, the tariff structure should be attractive, simple and nondiscriminating. These features should also be foremost in mind when considering the matter from the viewpoint of the Undertaking itself.

In determining the tariff that would apply to any one consumer, there should never be any argument in regard to what he is or who he is. The size of his proposed load will determine whether he is likely to be able to avail himself of any tariff which provides a low rate per unit for large consumptions when the fixed charges are paid on (say) a kVA demand basis. The only other consideration might be the nature of the load (the Load Factor), *i.e.*, whether it will be of a "peaky" nature or entirely "off-peak", etc.

Anomalies between one tariff and another must be avoided at all cost and the scales should not be complicated by the inclusion of hire charges for switches and trans-

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formers, etc., which, if applicable, form part of a separate transaction along with connection fees, etc., etc.

Special provision should be made in the tariff structure for supplies to public and communal installations as well as for temporary services for periods up to (say) three months.

A few typical tariff forms are quoted hereunder together with brief comments thereon which it is hoped will speak for themselves.

7.21 Tariffs for Small Consumers.

Lighting (say) 10d. per unit for the first nine units and thereafter a reduced rate or rates per unit.

Heating, etc. (say) 1d. per unit.

A "minimum" payable per month under each tariff.

Such tariffs require separate wiring for each and imply that the lighting load is the most costly to provide which, of course, is no longer correct.

One undertaking made as if to reduce its charges announcing a change from 10d. for the first 9 units to 9d. for the first 10 and the public swallowed it hook, line and sinker.

In another the "minimum" was fixed at 7 units per month for lighting and when these were consumed, candles were brought out, while if the minimum had not been used when the meter reader was due to call, the door was locked or they conveniently forgot to chain up the dog.

"Two-rate" metering on Lighting Circuits, in fact any high rate Lighting charge at night is an anomaly to-day, being a relic of the days when the overhead and fixed charges were dependent on the fact that all consumers used electricity for light and the other loads could only be encouraged by lower rates—vide the term still used in some Municipal reports, etc., "The Electric Light Account."

7.22 Domestic Tariffs.

Tariffs based upon number of rooms, rateable value, etc., etc.

Here a consumer with a compact dwelling suffers in comparison with the owner of an old house with a few large rooms—alternatively if floor area is the basis used, the work and records of the department are greatly increased.

A large Municipality recently undertook a census of the number of rooms in its area and the result brought in an increase in annual revenue of £30,000.

The practice of meeting the fixed costs by charging for the first few units each month at a high rate or by applying a Kilowatt (or kVA) or Horse Power Demand charge is reasonable and correct. But when this charge is related to some comparatively irrelevant factor such as the number of rooms, the floor area or the rateable value of a property it often becomes unfair and even unworkable. These factors have little if anything to do with the electricity demand of the consumer which could much more effectively be assessed by the size of service connection that he requires. The rateable value method has several peculiar disadvantages, *e.g.*:

(1) It creates the false impression that the Electricity Service has some relation to the General Rate account.

(2) It causes variations in electricity revenue which are quite unnecessary when revaluation of the property is made.

(3) Such variations are usually put into effect immediately, irrespective of the financial year of the rating account and the cost of electricity is increased even before the rates themselves go up (if indeed they ever do go up on balance!)

(4) It probably has the least relation of all to the current consuming capacity of the consumer.

(5) Improvement of Site Valuations due to (say) the establishment of industries, etc. in the town, will bring increased consumption of electricity which in turn should be accompanied by a fall in the cost of electricity per unit—but this would be off-set by an increase in the fixed charge if based on valuation. Surely an anachronism which might destroy goodwill at the very time when it is being built up.

7.23 Bulk Supply Tariff.

This is usually a misnomer where it is merely intended to imply that large consumption is involved.

In some forms these tariffs require a guarantee of a minimum consumption whereas what is intended is a minimum payment whether there is any consumption or not.

Again the minimum is often stated on an annual basis and applied monthly and, on occasions, vice versa.

Where the tariffs carry a higher charge for the first block of units per annum or per month and embody a coal clause, the latter clause cannot be operated fairly since it should by rights apply only to the cost of generation (or the cost of units in a purchased supply under a two-part tariff) and should not affect charges for overheads, etc. Similarly rebates for Power Factor improvement on a percentage basis operate incorrectly, particularly so when the contract is an annual one and the high rate units all fall in January and possibly February.

Where two part tariffs are applied with a charge for kVA, Kilowatt, Horsepower or Ampere demand (often erroneously applied to installed loads) the minimum load chargeable together with the maximum limitations and the amount by which the demand meter may be reset (if any) during subsequent months, are often inaccurately or incompletely defined.

There is a point in regard to properly designed two-part tariffs which our engineer members will appreciate and which Councillors and even Treasurers may be content to take for granted. If Logarithmic scales are used for plotting the average price per unit against the units consumed per month, straight lines may be drawn parallel to one another representing different values of maximum demand while the price per unit as well as the monthly Load Factor may be read off direct. This simplifies the process of discussing the financial incidence of the tariff with a present or prospective consumer.

(*Note.*—An explanation of the use of the word "Logarithmic" is given in Mr. Gripper's reply to comments on page 113).

7.24 Scope of Tariffs.

While tariffs require to be simple and straightforward their scope should be wide enough to cover changing circumstances and new types of consumer without the necessity for frequent reconsideration by the Council or the Provincial Authorities.

Furthermore, no tariff should be so constructed that it pays a consumer to have two or three separate services added together, whether it be for the reason that he saves the cost of internal distribution mains or that he escapes a portion of the fixed charges or high-rate units. Nor should any consumer be forced to take supply at one particular tariff for any reason other than that the nature or size of his load demands it in the interests of economy.

7.25 Financial Incidence of Tariff Revisions.

In any revision of Tariffs it becomes difficult to assess the probable financial incidence unless the process is developed slowly. Here a classification of consumers becomes useful. The new tariffs, which are non-discriminating as between classes of consumers, should be designed generally to bring in the same or a greater revenue than before and promulgated in such a way as to permit periodic reductions to be made in the charges without affecting other tariffs.

The existing tariffs are then repromulgated as applicable to particular classes of consumers clearly defined. In subsequent stages one such class after another is made eligible for the new tariffs and these consumers will automatically apply for these as the rates are reduced. Ultimately the original tariffs fall away by disuse.

7.26 Consumer Classification for Tariff Purposes.

The limit to which consumer classification should ultimately be permitted may be stated as follows:—

(1) Private and Residential (*i.e.*, consumers not operating for gain or reward).
(2) Business and Industrial.
(3) Institutions, Public and Communal Services.
(4) Bulk supplies for re-sale.

To those should be added special tariffs for "Off-Peak" loads, temporary services, outdoor and street lighting, etc. These main tariff scales should be so designed that large consumers receive adequate benefit without any unfair discrimination, while small consumers and consumers with a poor load factor are made to pay proportionately high rates.

7.27 Coal Clause in Tariffs

The application of the so-called "Coal Clause" should apply only to two part tariffs where the price per unit, as distinct from the kVA charge, is intended to cover the variable costs such as coal, oil and running stores and all charges proportionate thereto. If required it could be so designed as to be called a "Coal and labour clause". Sight must not be lost of the possible application of such a clause by the Supplier in the case of Undertakings drawing a bulk supply.

Coal clauses should be dependent upon the calorific value of the coal used and consequently worded somewhat as follows:

> "The price per unit in the two-part tariff is based upon the cost of coal averaging — pence per 100,000 B.T.U's delivered in the Power Station Bunkers and the price charged per unit shall be subject to adjustment *pro rata* for any variation in this rate providing that no such adjustment will be made on accounts for less than — units in any period of — months."

7.28 Tariff for Supplies at High Voltage.

When taking a High Tension supply, a consumer should be given a special discount on the appropriate Low Tension tariff.

7.29 Applying a Two-Part Tariff.

When calling for a supply on the two-part tariff the consumer should be required to state his "notified maximum demand" and should thereafter be charged on that demand, or on some definite fraction thereof as a minimum charge. He should also be required to give ample notice of his intention to take more than a defined margin over and above his "notified demand" which "notified demand" should then be increased accordingly.

In fixing the method of charging for "Maximum Demand" it is extremely useful to word the tariff in such a way that the actual time during which cognisance is taken of the demand can be fixed by agreement to cover any period or periods of the day from 24 hours down to, say, 1 hour. It is also as well to permit the demand to be assessed or measured in Amperes if so required.

If these points are taken into account when designing the tariffs it should never be necessary to have to resort to special agreements as far as the cost of electricity is concerned and furthermore if the scales are so designed that future reductions can easily be made without affecting the tariff structure as a whole, the old and out of date tariffs will automatically fall away by disuse.

A guaranteed minimum monthly payment might well be required from any consumers at present enjoying special tariffs such that the estimated revenue for the year would not be affected although the new tariff could be applied to encourage improved load factors or to discourage unnecessary loads at the time of the peak load on the generating plant.

Two-part—tariffs, *i.e.*, those with a kVA demand charge and a low price per unit approximating to the cost of generation only—encourage consumers automatically not only to maintain as high a Load Factor as possible, but also to improve the Power Factor of their load.

Psychologically they have the advantage that a Bulk consumer can redistribute, if he wishes, at the same tariff as he pays to his supplier and still show a profit on account of the diversity of the individual loads on his system.

7.30 Load Building and Load Spreading.

Load Building, as in the case of Tariffs, is a subject in itself of such wide scope that it can only be touched upon in this Paper.

It is however of particular importance that Councils should fully appreciate their responsibilities in this matter since any policy which does not encourage an active load development campaign by the Engineer and Manager and his staff for reasons of presumed economy, is counter to the development of the Undertaking as a business proposition and deprives the consumers of the service to which they are entitled. Unfortunately, quite apart from the results of mistaken policy in the past, the shortage of plant and delays in delivery (which might nevertheless have been countered to a large extent in some cases by a greater degree of forethought and by more attention to technical advice and the experiences of others) have resulted in shortage of power reserves in many Undertakings today. This means that

peak load problems assume major proportions in the winter season, while they continue almost to a similar degree throughout the year if the maintenance of plant is to be carried out properly.

Nevertheless the load building programme which should be a first consideration in the administration of any Undertaking must not be allowed to lapse. Rather should it be applied even more rigorously to develop off-peak loads since the psychology of a well treated consumer (the qualification is important) is such that an exhortation to make full or better use of electricity at all times but to "save it specially for (say) cooking between 10.30 a.m. and noon" will go home. On the other hand straightforward appeals and exhortations to "switch-off" at peak times are liable to have the very opposite effect to that intended.

Load building propaganda should be applied to all classes of consumer present and prospective, not forgetting those situated outside the Municipal boundaries. There should not be any possible and safe use for which electricity is not encouraged, though tariffs and local supply regulations should be specially designed to encourage such usage as for electric vehicles where the batteries are charged at night, various forms of water and space heating where the control is automatic and no inconvenience need be felt if the supply is cut off for short periods each day.

Show rooms situated at convenient points throughout the system and even mobile demonstration vans can become valuable assets at all times besides facilitating the receipt of all municipal accounts and the payment of wages. Whether or not the Undertaking adopts a scheme for the sale or hire of apparatus on its own account or on behalf of traders, these show rooms should be considered primarily as centres for demonstrations and for the provision of advice on all matters affecting the supply and use of electricity.

Load Building as will be gathered from the foregoing remarks, must at all times be combined with a policy of Load Spreading. The peak load usually occurs at the same time of day for months if not years on end, but the time comes when it will change and the Undertaking must be prepared for this. For example, the growth of a town may result in fewer people going home to lunch and the peak may swing from noon to 6 p.m. During the war a shortage of electric ovens meant more frying and less roasting and the peak shifted from 11.30 a.m. to 12.15 p.m.

7.31 Street Lighting.

A useful form of load, and one which provides a service to the greatest number, is Street Lighting. While the supply of current, the maintenance of the lamps, the control and switching operations and the design and location of fittings and standards are the responsibility of the Electricity Department, that department need have no say in the decision as to the degree of illumination required in each particular portion of the town nor in the hours of burning, etc. Such matters should be decided by the departments responsible for town layout, road safety and general security. In fact street lighting is probably the only service which a municipal Electricity Undertaking renders direct to the ratepayers, property owners and the community in general as distinct from the consumers.

Nevertheless the success or otherwise of the street lighting system in a town is usually attributed to the Electricity Department. Good lighting reflects to its credit while insufficient and inadequate lighting is probably responsible for most of the letters to be found in the complaints file. For this reason therefore we cannot ignore this subject when considering the factors affecting Efficiency and Consumer Goodwill.

With its specialised knowledge of the subject of illumination by electricity the department is able to translate figures of lumens per square foot of road surface into a few classifications or grades of lighting and to provide visible examples of these grades for the guidance of Councillors, Traffic Control Officers and the Police to whom the capital and operating costs per mile of street for different widths can also be shown and these authorities should collaborate to issue instructions to the Electricity Department according to the requirements of each street and area.

It is wasteful and purposeless to expect Councillors to spend time constantly inspecting odd corners and dark patches. There are instruments available which can

determine exactly whether or not the Electricity Department has provided the degree of lighting called for in any particular area and only when this has been done and complaints persist, would it be necessary to refer the matter to the Council for a decision in regard to a possible regrading of the area due to increased traffic or other reasons. It is not the Electricity Committee of the Council however that should be concerned in this matter, but the Works, Roads or Traffic Control Committees.

The various means of controlling street lighting including "all night" and "part night" sections etc. are subjects of special interest to our Engineer members but cannot be discussed in the scope of this Paper. A word on maintenance however would not be out of place.

The system of providing street light scouts to report failures of lamps and the haphazard renewal of lamps as and when they fail, is a costly process if carried out thoroughly. Now that the manufacturing limits for lamps are so very much closer than they have been heretofore, the bulk replacement of all lamps of any one type in a particular area after a pre-determined number of burning hours becomes an economic procedure. Similarly the cleaning and inspection of lighting fittings can be made a routine procedure. For these duties a comparatively small but well trained staff with a Tower Wagon can cover a very wide area. The occasional premature failure of one or two lamps here and there will stand out on the records and enable special investigations to be made and appropriate precautions taken to prevent recurrences.

In addition to the maintenance staff mentioned, it is essential that the preparation of new street lighting schemes and the supervision of their installation together with the controlling and switching equipments should be in the hands of an experienced specialist engineer with skilled and qualified assistants.

7.40 Regulations

The less red-tape that is involved in the routine working of an Electricity Undertaking the better and for that reason the Local Supply Regulations should be drawn up in simple terms but in a manner which covers every conceivable eventuality. This requires a great deal of experience, not only in the Undertaking concerned but the experiences of other centres must be drawn upon from time to time to lessen the chances of unexpected problems arising which may have been commonplace elsewhere.

The regulations should include all the application forms required to be completed for new installations, alterations to existing services, changes in tariff, disconnections, temporary services as well as certificates of registration for Contractors, etc.

The S.A. Bureau of Standards is at present revising the Standard Wiring Regulations which will cover all the aspects of wiring and installation work from the point of view of safety to life and property, but the local regulations, with which are embodied the various tariffs for connection fees, servicing and for the supply of electricity, require to be framed and promulgated by the Supply Authority itself.

Periodically the local regulations will require revision to meet changing conditions in the town or area and on these occasions it will often prove wise to repeal the original regulations if these are more than ten years old and promulgate a fresh set. The practice of making a number of amendments from time to time usually results in repetitions and contradictions which should be avoided at all costs.

The Standard Wiring Regulations usually state that certain requirements are subject to the approval or the ruling of the local Supply Authority and these matters should consequently be covered in the local regulations. Where possible, and it is only at the Annual Conventions of the Association of Electricity Undertakings that these matters can be dealt with effectively, an effort should be made to adopt uniform requirements in regard to method and procedure throughout Southern Africa. There are some matters which must vary according to the type of system adopted and the tariffs in force, but as a case in point, it is high time that the method of starting motors of varying types and ratings in installations of different capacities should be specified for all towns.

Formulae have been devised for the permissible size of motor, value of starting current and rating of installation which

could be adopted with very considerable benefits to all. In fact there is no reason why this matter should not be covered by a "Code of Practice" issued by the S.A. Standards Bureau or by the Association of Municipal Undertakings. It is urged however that this and similar matters such as specifications, etc., should not be embodied in the Standard Wiring Regulations themselves which should deal only with matters affecting the safety of life and property.

7.50 Control of Stores and Meter Reading.

While the electricity mains reach out in all directions as the veins and arteries in the human body, we still require the lungs, nerves and capillaries to complete the system.

The stores may be considered as the lungs which are drawn upon and replenished to meet the needs of the system—transport of men and materials being a necessary adjunct to the breathing system.

In the operating staff we have the nerves which control our system while the thousands of individual services, in which our installation and meter reading staffs are concerned, form the capillaries to complete the purpose of our network.

Restrictions in the operation of the stores or leakage in the mains or in the services to individual consumers can retard progress if indeed they do not result in asphixiation or anaemia in the long run.

From these analogies and indeed from observations in actual practice, it is abundantly clear that the proper control of the Electricity Supply Undertaking must involve full control of stores and meter reading even though, for purposes of centralisation, it may be thought fit to operate them as functions of the Treasurers Department. There need be nothing to prevent highly efficient working of these departments as branches of the Treasury providing they operate to systems designed by and for the Electricity Department which must have and maintain full control of the results.

7.51 Operation and function of Stores.

Every item purchased, whether spares, running stores or equipment should have a 6 or 7 figure code number, which in itself is sufficient to identify the item, and such numbers should be quoted on all orders and requoted on suppliers' invoices.

This system of numbering in the first place, should be drawn up by Engineers in the Department in such a manner that the ordering, receiving, storing, issuing and re-ordering of goods can be readily effected by non-technical persons.

Due to the constantly changing programme of new works and other causes it is essential that control of the stores system should be a function of the Electricity Department but there is no reason why the Treasurer's department should not be responsible for the storekeeping, ordering, stocktaking and costing processes.

In addition to a Main Store, there will inevitably be a few sub-stores to which materials are issued in bulk for urgent maintenance work and for routine replacements of items out of stores hours.

An in-transit and unpacking store should also be provided.

Costing and transport services, though rendered respectively by the accounting and general works departments if desired, should be designed and operated to suit the requirements of the Electricity Undertaking and provide service and information at call.

7.52 Meter Reading and Invoicing.

The duties of an efficient meter reader are not technical but they involve a degree of intelligence and observation combined with a tactful personality. Meter readers should form a team in which the Installation Inspectors, the Meter Testing Engineers and the Management itself are interested. Such interest in turn should be reflected by the meter readers as members of a trading department rather than as collectors of dues and taxes from their fellow men.

In some cases where the meter reading is carried out by employees of the Treasury, it is the practice to change the men around periodically, even monthly, in the hope that one man will check up on another. This is an indication that the official delegated to these duties is of a somewhat unreliable type and it very effectively prevents the meter reader from taking an intelligent interest in his job.

If the organisation is such that the Electricity Department cannot employ and

control the meter reading staff it is highly essential that a copy of all readings and accounts should reach the department within a day or two of reading so that a regular and constant check can be kept on the whole process.

An alternative suggestion is made that consumers be given a simplified form on which they are required to return their own meter readings, failing which a predetermined account would be rendered and an adjustment made later for which a small fee could be charged. One or two inspectors only would then be required in place of an army of meter readers and the Electricity Undertaking would obtain readings more or less simultaneously which would be very valuable for estimating losses or preparing statistics.

8.00 General and Financial Policy.

In this section those factors which are determined by, or which are the result of, the Council's general policy are considered in the light of their effect upon the efficiency of the Electricity Undertaking.

8.10 Capital Expenditure per Consumer.

It has been stated earlier that figures taken for some 55 South African Undertakings for the years 1945 and 1946 show that the average capital expenditure per Consumer for Management and Distribution only amounts to approximately £40, whereas the corresponding figure when the cost of Generating plant is included becomes £100 per consumer. Thus a sum of £60 per consumer may be debited to the cost of generation and the interest, redemption and maintenance charges on this value of plant may be taken as roughly £6 per consumer per annum or 10s. per month, payable by all, irrespective of the source of power supply.

This provides a rough and ready yardstick to determine whether or not it should benefit the consumers in an Undertaking to generate their own supplies or to purchase in bulk, *i.e.*, whether to allocate £60 of capital per consumer on generating plant or to pay fixed charges at a rate not exceeding £6 per annum per consumer to an outside Undertaking for a bulk supply.

In passing it may be pointed out too that it should be considered worth while and good practice to connect up additional consumers so long as the extra capital involved in mains, transformer services, meters, etc. does not exceed £40 per additional consumer while as much as £60 per additional consumer may be spent on new generating plant assuming that the capital value of the original equipment is maintained at the corresponding rates per head of old consumers.

8.11 Rate of Turnover of Capital.

As pointed out by C. G. Downie in his Paper to the Association of Municipal Electricity Undertakings at Durban in 1947, and by others, the essential difference between an Electricity Undertaking and most other industries, is that the electrical product cannot be stored for sale at times of peak demand and consequently the capital invested must be that necessary to provide and distribute the maximum quantity of the product at the moment it is required.

This requires a much greater volume of capital and as a result the rate of turnover must essentially be slow while the proportion of annual costs representing interest and redemption charges is relatively high.

From figures given in the Municipal Year Book for all Electricity Undertakings in Southern Africa it is found that the capital invested in self contained plants is turned over once every 5 or 6 years while those that purchase supplies in bulk can turn their capital over in 1½ to 2 years. If it is found that the capital is turned over in a shorter time this is not likely to be a sign of greater financial efficiency but rather that too little capital has been expended to cover the future growth of the Undertaking which will probably have to face serious difficulties and much criticism in the near future.

8.20 Effects of Curtailing Distribution.

As stated elsewhere the Distribution department of an Electricity Undertaking today is assuming the major role in determining both the policy and the efficiency of the Undertaking as a whole. Whether or not the supply is produced locally, it is after all the consumer's needs that call the tune and the Undertaking that has to adopt a "go slow" policy in its distribution system, due to shortage of supplies at the source, is paying the con-

sequences of a short sighted policy adopted in the past or losing a valuable opportunity at present.

The Manager and Engineer of an Undertaking is often faced with a serious lack of co-operation from the financial advisers to the Council which greatly reduces his ability and authority to re-organise his department today to meet the changing conditions resulting from national and international crises.

Where his power as the Supply Authority should be fully implemented by the Council, it is more often than not curtailed in the supposed interests of the ratepayers who are seldom, if ever fully informed of the position.

How often does one hear it said, for example, that rural electrification for non-ratepayers must be shelved until the full amenities of supply have been provided for the ratepayers of the town. Yet in this way the ratepayers are being denied the effect of the income which would result from such extensions and which would thereby improve the value of one of the town's greatest assets.

8.21 Obligations and Area of Supply.

It may be of assistance to many who are not directly engaged in the operation of Electricity Undertakings, to be reminded of the conditions laid down in the Electricity Act No. 42 of 1922 which makes the circumstances attached to the supply of electricity so different from the supply of water or any other Municipal Service.

The Electricity Undertaking of a Municipality does not provide amenities for the few thousand property owners as such, but for a much larger community comprising many thousands of electricity consumers, scattered throughout the Area of Supply defined by the Electricity Control Board in terms of the Electricity Act No. 42 of 1922.

Any consumer situated within this area has the right to demand a supply of electricity from the Municipality provided that he is able and willing to pay for it. If the Municipality cannot give it to him he may apply to the Electricity Control Board for the existing licence to be revoked in favour of any other party able to furnish the required supply.

If the Electricity Supply Commission should establish a Generating Station in the neighbourhood, they will not be granted a licence to supply any Consumers in the area already granted to the local Undertaking, unless the latter has failed to develop those areas in the manner intended when the original application for the licence was made.

While electricity must be supplied at the promulgated tariff rates within the Municipal boundaries, the tariffs applicable to those portions of the Licensed Area of Supply outside these boundaries are determined in consultation with the Electricity Control Board and laid down in the permit or licence for each particular Area. Needless to say such tariff rates are never less than those applying in the municipal area.

Irrespective of the source of supply, the right to distribute and sell electricity within the Municipal boundaries remains with the Town Council as long as it retains the ownership of the Electricity Undertaking. The continued rights to distribute and sell in the other portions of the licensed area will depend upon the maintenance of a high degree of economic and technical management of the local Electricity Undertaking.

If the Municipal boundaries are extended at any time, this would have the effect of forcing the development of the local Undertaking, unless it contemplates handing over the whole of its system to the Electricity Supply Commission.

This would bring home to ratepayers through their elected representatives, the fact that, being owners of the Electricity Undertaking—an asset for which they as ratepayers have paid nothing—they must be prepared to agree to the extensive development of this asset for the reasons that:—

(1) It would be a sound business proposition.

(2) It is the least that present and prospective electricity consumers can expect seeing that they are expected and willing to pay for it.

(3) It would react in favour of the ratepayers and property owners through enhanced values of the areas both present and enlarged.

While the rate of increase in electrical load has been considerable during the past

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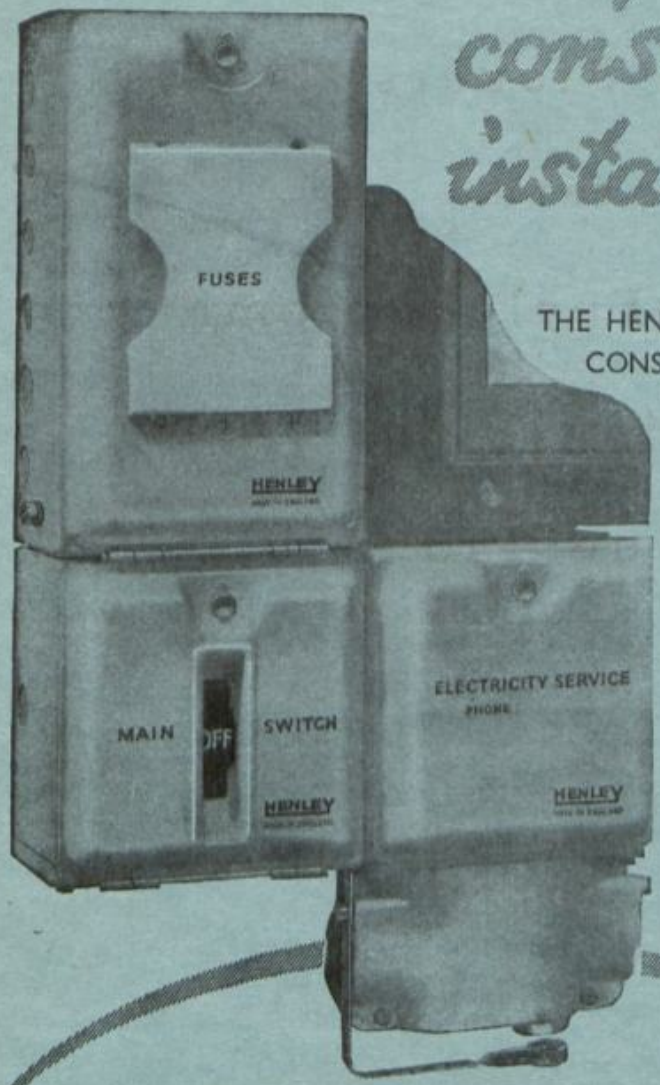

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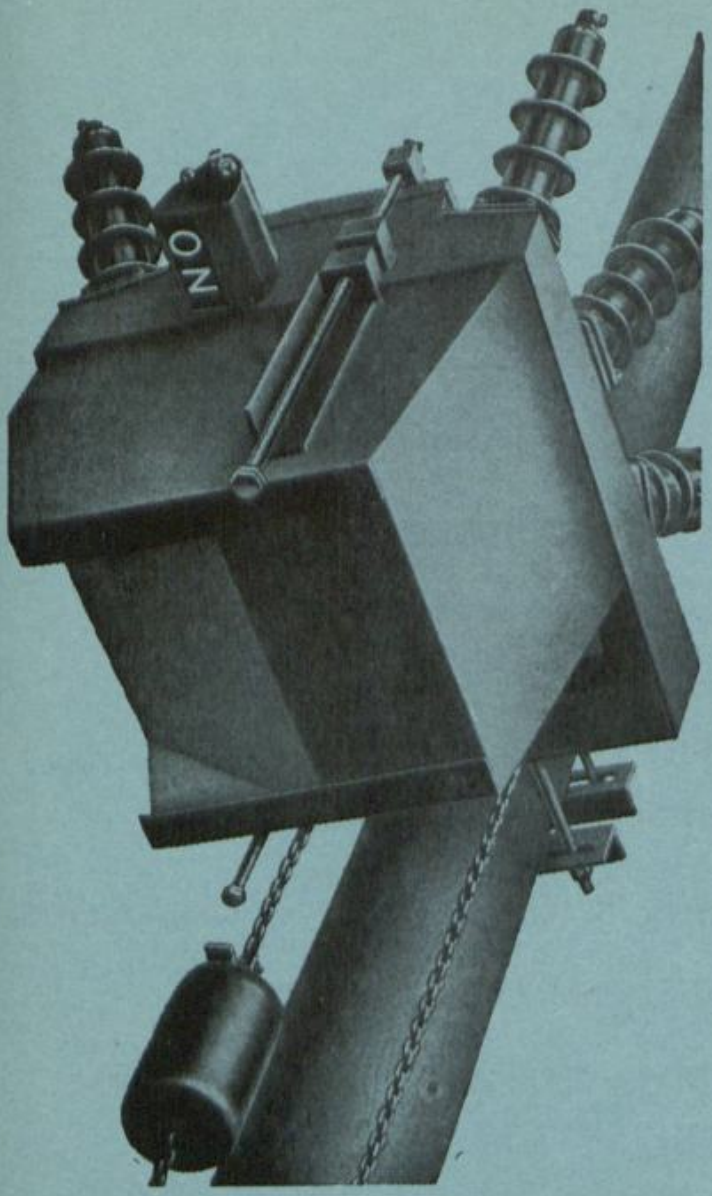

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four or five years in most centres, it cannot be stated with certainty that it has caught up with the load that would have prevailed if the war had not intervened. Development has probably kept pace only with the more urgent demands and it is felt that considerable extensions to the service in many of our towns will in any case require to be undertaken without regard to artificial boundaries if we are to ensure full provision for our future economy.

8.30 Planning as a Business Proposition.

Since an electricity supply Undertaking is a business concern even though its profits, if any, are returnable to the community which it serves, its organisation must include engineers with business acumen.

It must plan for the future, knowing that its first duty is to ensure continuity of supply of electricity to all who are prepared to pay for it.

Long term planning in the Distribution Department on the lines well described by J. S. Clinton in his Paper to the Association of Municipal Electricity Undertakings at Salisbury in 1945, is necessary if capital is to be used efficiently. Such matters as automatic and discriminative protection against fault conditions, the location of main and subsidiary Sub-stations, the development of Ring Mains, etc., are matters which must be considered in detail by the Engineer and his technical staff and they are matters in which these Officials must be fully qualified and trusted implicitly.

8.31 Relegating Responsibilities for Power Supply.

As time goes on, the tendency to centralise the generation of electricity in large Power Stations for reasons of overall economy results in the Distribution process assuming relatively more and more importance in each Undertaking and the Managerial responsibilities of the Municipal Electrical Engineer increase accordingly. This is a natural process since the generation of power is an Industry while the Managing and Distributing functions are a Service.

Even in some of the larger Municipal Undertakings the responsibility for the installation and operation of generating plant is being handed over in part or in the whole to the Central Authority. It is important however, in those cases where only part of the load is transferred, to see that the effect of handing over a large portion of the base (*i.e.*, 24 hour) load, does not leave the Undertaking with the responsibility for the peaks only. Very few power stations are designed to operate economically under purely peak load conditions when the resulting maintenance and operating costs become disproportionately high.

Interconnection with other sources of power supply adds considerably to the problems that have to be dealt with by the Distribution Engineers in view of the magnitude and complicated nature of the possible fault currents which may flow in the system.

8.32 Equip and Organise as a Business Concern.

To maintain the necessary degree of efficiency in the Distribution of electricity on a business basis, the engineering and clerical staff are constantly in touch with the public, many of whom are well versed in business methods and highly critical of "red tape" and ponderous bureaucratic methods.

The electricity department's offices should be modern in layout and equipment, situated preferably in distinctive premises built and owned by the Undertaking which should pay all rates and charges and have power to sublet any portions of the building which may not be needed for the time being.

These offices should be equipped in modern style and provided with appropriate furniture, filing and indexing cabinets, dictating, transcribing and calculating machines, etc., in order to obtain the best possible results from the staff, some of whom will spend a great deal of time out on the system.

Given suitable conditions and a well designed routine it should not be necessary for the Electrical Engineer and Manager or his principal executives to be burdened with so much detail work that they find it difficult to maintain contact with the work going on outside and with the consumers whose problems frequently require to be studied first hand and on site.

8.33 Separate Identity of Electricity Department.

The Electricity Undertaking should retain and exercise its identity in so far as its dealings with Consumers, Official bodies and Engineering firms are concerned. Naturally matters of policy which require final confirmation by the Council will be handled through the Town Clerk, but that official has too much on his hands to be burdened with technical matters or with matters which concern the routine operation of the Electricity Undertaking in terms of its published regulations and tariffs.

In dealing with consumers, and prospective consumers it is usual to open a file or dossier with the official application form. This form should be printed in Afrikaans on one side and English on the other and according to the way in which it is filled in, so it serves as an indication as to the official language in which the consumer desires further correspondence to be addressed.

The Electricity Undertaking should have its own distinctive letter heads, also in both official languages, giving the address of the Department and the telephone numbers for the various services rendered.

While centralisation of administration from the clerical and financial angles in the Town Clerk's and Treasurer's departments respectively has undoubted advantages up to a point, there is a tendency for this to be overdone at times.

The identity and control of a trading department such as an Electricity Undertaking should not be merged into non-technical departments, particularly when this may result in the interests of many thousands of electricity consumers being subjugated to those of a comparatively few property owners. Indeed this fact has been so appreciated in some centres that all the powers of the "Supply Authority" have been vested in the "Electrical Engineer and Manager". This is made possible with the permission of the Chief Inspector of Factories who might well be given powers of enforcement in this direction if only for technical and safety considerations.

If for reasons far removed from the realms of electricity supply, the public are roused to criticise the civic administration in a particular centre, it should not lay the electricity department open to strictures which, if under competent management itself, it might not deserve.

It is unfortunately not uncommon for the less responsible members of a community to remark—"Oh, he's a municipal employee, he gets paid just the same whether he does the job or not".

8.40 Disposal of Profits in Relief of Rates.

Once it is appreciated that the Undertaking should be run as a business proposition for the benefit of the consumers and not as a milch cow for the doubtful benefit of the ratepayers, it becomes clear that a tremendous field for controversy is opened up. However it is not the purpose of this Paper to do more than encourage constructive criticism and discussions among delegates representing Electricity Undertakings without hitting too many of our absent friends on the Finance Committees "below the belt".

Let us rather state now, once and for all that if it is to be the policy of any local authority to raise money in relief of rates from the electricity consumers, it should be done as a direct surcharge on all electricity accounts and not in any disguised form. Having agreed to do this, the Council should exhort the Electrical Engineer to do his best for them and give him a free hand or "fire him"!

This method of relieving the rates should satisfy those who appeal in aid of Parks, Cleansing, Poor Relief, Orchestras, etc., etc., while brief replies to some of the other arguments are given below:—

Argument: The ratepayers should get some return.

Reply: If they must have a return for guaranteeing interest payments on loans, they have it by becoming owners of assets for which they have paid nothing.

Argument: The profits should not be ploughed back into the business as this results in loading the present generation for the benefit of posterity.

Reply: Agreed but then the profits should be used to reduce the charges for electricity if reserves are ample, otherwise it amounts to raising loans to relieve the rates.

Argument: Electricity services are entrusted to Local Authorities for the reason that, being a monopoly, the consumers will not be exploited for private gain.

Reply: For "private gain", read "Municipal Convenience".

Argument: The Ratepayers make no charge for wayleaves for cables and mains in the streets.

Reply: There is nothing to prevent their doing so but then the same should apply in the case of water pipes and General Post Office mains, while Divisional Councils could also collect for rural power lines. However the Electricity Act gives the Supply Authority full powers to use streets and public places when required.

Argument: The Municipality, as such, can raise money more cheaply than could a private body.

Reply: If so, this is for the reason that it is expected to provide more cover for reserves, depreciation and obsolescence on account of it being a public service and not a profit making machine.

These arguments and replies are not put forward as new and the author does not solicit discussion on this matter except in so far as it is relevant to the subject of efficiency in Electricity Undertakings.

Lest it be thought that this wind blows no good whatever as far as the Undertaking is concerned, it might be pointed out that several Undertakings do manage to utilise some of their profits on items of Capital Expenditure from revenue, prompted no doubt by the realisation that if this is not done, still more might be taken for the rates. This, in some cases, amounts almost literally to a "ploughing back" process when, as often happens, the money is spent on Underground mains where overhead lines would have been quite suitable.

The immediate advantage of putting the mains underground is that faults due to birds, stormy weather, kites, etc. are eliminated and the staff position eased. However cable jointers are needed in place of linesmen and the problems of arranging for street lighting are very much increased. Ultimately the Undertaking with a large network of underground cables will be faced with very costly renewals and provision for this must be made in the renewals and obsolescence fund.

8.41 Publication of Accounts

It is urged upon those whose duty it is to control the municipal purse strings and to inform the public thereon at appropriate times, that the finances of the Electricity Supply Undertaking should not be so presented as to appear to balance year after year without any indication being given as to a policy in regard to reserves. The extent to which the Rates have been relieved—the "rights released" or the "profits plundered", it matters little how it is termed, should also be clearly shown.

8.50 Annual Estimates.

The circumstances which may require a local authority to reduce its capital expenditure on non-productive works should not apply to an Electricity Undertaking, yet far too often we come across reports to Finance Committees where the capital charges on some proposed expenditure for electricity works are translated into an equivalent rate in "pence per pound". There would be more reason to state this in pence per unit of electricity, though this would also be misleading since the capital is usually required for development which will result in an increase in the units sold.

If these considerations were applied more frequently in weighing up the annual estimates submitted by the Engineer, there would be less occasion for a Finance Committee to cut these estimates at one end of the year and then admonish the department for overspending at the other end—a procedure which results in a feeling of frustration among the staff of an Undertaking.

When estimates are drawn up by the Electricity Undertaking they should be accepted in good faith and if the Council or its Committee wishes to reduce any items, the Electrical Engineer and Manager should be given every opportunity to consider the proposals and to report on the probable effect they would have on the year's working.

To make a habit of cutting proposed expenditure on the revenue and expenditure

accounts and to criticise the consequent overexpenditure twelve months later, reflects seriously on the trust which should be placed in the Manager of the Undertaking and can only result eventually in those estimates being deliberately inflated so that they can be cut without detriment to the maintenance and operation of plant and equipment.

8.51 Capital Expenditure in Times of Threatened Depression.

The Financial Authorities have no mean task before them when the fear of bad times to come indicates the need to postpone capital works with a view to averting somewhat the effects of a depression. In the case of an Electricity Undertaking however, every effort should be made to increase production and if bad times should come the opportunity can then be taken to undertake major repairs or to renew obsolete equipment and machinery. One of the most effective ways of bringing about a depression is to attempt to meet it half way.

Finally it must never be said that Capital Works are cut out, due to shortage of staff to carry them out for such a state of affairs would indicate the opposite of depressed conditions. Nevertheless such reasons have been advanced and yet at the same time estimates for labour involved or required on maintenance work have been cut! Such conditions more often than not indicate that the Undertaking is not offering sufficiently attractive rates of pay and is therefore having difficulty in maintaining and operating the existing plant, not to mention new work.

8.60 Services of Town Clerk and Treasurer.

Charges are usually made for the services of the Town Clerk's and the Treasurer's Departments. This of course is quite in order providing the charge is in proportion to the services rendered and not according to the Electricity Undertaking's ability to pay. It has been stated that such charges are made, not for clerical services but for "clerical interference" and we should hasten to condemn any such statement as indicating a lack of that interdepartmental harmony which we have stated elsewhere is so vital to the success of Civic Administration.

In one Municipality within the author's knowledge, a larger annual payment is made to the Treasury and Town Clerk's Departments than is expended on the administration and management of the Undertaking itself. No doubt there are charges for meter reading and storekeeping in the amounts so paid but it is imagined that this fact might make the pill all the more difficult to swallow.

The idea that an Electricity Undertaking should be governed strictly in accordance with the precepts laid down by the financial advisers to the Council does not necessarily work out to the benefit of the consumers or the town as a whole and one is reminded of the epitaph on the tombstone of Michael O'Day who died contesting his right of way. "He was right, dead right as he sped along—But he was just as dead as if he'd been wrong!"

8.70 Staff Schedule to cover Present and Future Needs.

Let it not be thought that the author is pleading for more capital expenditure and a larger staff for all Undertakings. On the contrary it is an Engineer's pride and purpose to manage with one pound of seed where others require or call for two, and to make two blades of grass grow where but one could be raised before. Similarly it can often be shown that more and better work can be done by a reduced but more contented staff provided that full powers of control and organisation are entrusted to those in authority and credit bestowed where it is due.

There must be a workable staff schedule which is not limited in scope by the particular circumstances of the moment or as may have existed when some previous dispute was settled by arbitration. Both sides are to blame if arbitration becomes necessary and, if the staff schedule is such that no elasticity is provided for new posts and no inducement can be offered to reward the enterprising worker for his devotion to duty, it is obvious that all attempts to create harmony between employer and employee will fail.

9.00 Conclusion.

While the chart described in the earlier portions of this Paper provides a means of studying the working of one Electricity

Supply Undertaking from year to year and of comparing one Undertaking against another, the remarks which follow the chart contain much that is essentially a matter of opinion and readers may be excused if they discount the subject matter as a Counsel of Perfection. Nevertheless, while there may be some Undertakings and some Councils which conjointly approach a high degree of perfection, it is hoped that they will find something worthy of their consideration, while those who should, but do not take cognisance of their shortcomings might be wise to hand over their Undertaking lock, stock and barrel to the Electricity Supply Commission before the ratepayers have lost all prospects of warding off the encumbrance of a liability which should have proved their greatest asset.

The opinions expressed throughout this Paper are those of the author who, in self defence, takes this opportunity of stating that the views expressed on any particular subject do not necessarily apply separately or out of their context.

Thanks are due and offered to the City Electrical Engineer and to the City Council of Port Elizabeth for affording the opportunity to gain information which has added force to many of the arguments and views expressed herein.

In the preparation of this Paper, or rather in the condensation of the subject matter which filled several hundred pages of notes collected over a period of many years in the Municipal, Commercial and Manufacturing fields, many pints of midnight (off peak!) oil have been used, but it will be more than sufficient reward if some electricity consumers in some part of Africa benefit directly or indirectly as the result of the author's efforts on their behalf.

I would like, before starting any discussion on points arising from the Paper to ask those delegates who have had an opportunity of filling in page 9 of the Paper to indicate where their own undertakings fall on this chart. We will pin that up with coloured tape on the blackboard and members will then be able to compare the effects of one undertaking against another. It may be very enlightening.

PRESIDENT:

Thank you, Mr. Gripper, for the full Address as published and for your summary as given now. Delegates will realise and know that this excellent Paper has taken a long time and much hard work to compile. I have much pleasure in asking Mr. Giles of our Association to pass a vote of thanks to Mr. Gripper for his publication.

Mr. P. A. GILES, East London:

Mr. Gripper, as the Assistant Electrical Engineer in Port Elizabeth, has a certain relationship with me as the Assistant Electrical Engineer in East London, and I can sympathise with him considerably in the work which it is obvious he has put in the Paper. It is one of the most thoughtful and provocative Papers that I have read since I had anything to do with the Association. The thoughtfulness is exemplified by the fact that Mr. Gripper has continued the ideas which were promulgated several years ago and he has now developed a chart from which it is possible to get some idea of the efficiency in the financial sense of an undertaking. East London has been analysed and appears to be very much on the diagonal line. I do not think a study of the chart has brought this result about but as East London is reasonably average it does indicate that the diagnonal line is as near as one could get to average practice. From that point of view the work that Mr. Gripper has carried out shows intensive and concentrated thought.

I do not want to anticipate the lines which the discussion will take. I feel there are a lot of people perhaps more competent than me to do it, but I would like to say that East London seems to be in the lagging section, that is below the diagonal line, and I am afraid it will be a very difficult matter to persuade the councillors to take a leading policy. They want to take a measure out but do not wish to put anything in, which is of course the reverse of the definition of "efficiency". Whether they would be able to spend much time learning about the chart, or whether we will be able to instruct them, I feel is a very doubtful possibility. But I have found, speaking with the Councillors, that they can understand the diagonal lines, but not the hyperbolic lines. These are simply beyond them. So I would suggest that if the chart is going to be of universal use and is going to be of

payable value to the Councillors, we can perhaps cut out the hyperbolic chart lines and deal with the diagonal lines. I do not know if Mr. Gripper may be able to amend his thinking of many years and overcome the difficulty of adapting the Chart to that idea.

Mr. President, I would very much like to thank Mr. Gripper for his very fine Paper. I have read it with considerable interest and members of the staff have spent some time on reading it through and they derived a measure of satisfaction from it. It has given them some idea where the department is going, and I think that must apply to all departments.

Thank you, Mr. President.

Mr. H. J. GRIPPER, Port Elizabeth:

Thank you, Mr. Giles, for your remarks. Mr. President, with your permission, I prefer not to reply to specific points at this stage, as I feel in many respects that the discussions will possibly cancel each other out. I will make notes of the points raised and reply to them in the Proceedings if that meets with your approval.

PRESIDENT:

That is satisfactory.

Mr. W. H. MILTON, Electricity Supply Commission:

Mr. President, Gentlemen, I have read with very great interest the Paper presented by Mr. Gripper. In the first place I would congratulate him on the amount of time and thought he has most evidently devoted to his subject and, secondly, on his fearless statement of his views.

The Paper is ample evidence of the fact that he enjoys that spirit of co-operation which he stresses as being so essential to the satisfactory and effective functioning of a Municipal electricity undertaking.

Mr. Gripper has made use of an analysis for comparing the performance of electricity undertakings which has been described elsewhere. He draws attention to the fact that from a series of points representing 30 generating and 25 bulk supply undertakings for the years 1945 and 1946, he has found that an average capital expenditure figure per consumer in South Africa is £40 excluding generating plant and £100 including generating plant and to the fact that the corresponding figure arrived at by Golding for undertakings in the United Kingdom is £50 excluding generating plant.

It is facts such as these which indicate the great care that must be exercised by any user of such a system for the purpose of analysing and comparing the performance of undertakings. As we are aware, the cost of materials and equipment and labour has been increasing for a long time past without an equivalent increase in use of electricity. The vertical ordinate of the curve represents the number of units sold per annum per pound of capital expenditure. Points on the curve are used by the author to indicate the possibility that an undertaking may be over or under capitalised in relation to the service it is intended to render. With increasing costs it will be appreciated that the number of units sold per annum per pound of capital expenditure must reduce for undertakings in the future, notwithstanding that they may be well and efficiently developed. Another factor which must not be lost sight of is that in some of the old established undertakings, where the capital has been redeemed, it may no longer be shown as an item of capital expenditure although the asset purchased may still be in effective use. A condition of this description would have the effect of increasing the apparent number of units sold per pound of capital expenditure. In the circumstances, three equally efficient and effective undertakings may disclose points on the graph which would fall on one of the vertical lines above, on, and possibly below, the optimum line, depending upon the time when they were financed and the accounting procedure adopted.

An analysis of costs of distribution networks will show the extreme variation that occurs on the basis of, say, capital expended per consumer served. Unless a town is extremely well developed, a figure of £40 per consumer may be regarded as impossible of achievement. In practice today these costs approach more nearly £100 per consumer although it is possible in some cases to carry out a reticulation at an expenditure of the order of £60 to £70 per consumer. In most instances these low figures of cost per consumer are the result of a penny wise pound foolish policy because expenditure on copper for example, has been skimped to the extent of giving unsatisfactory service even to the initial

consumer load and would require replacement before even small normal development could be effectively supplied.

The author has suggested that the delegates attending the Conference would assist matters if they were to calculate the position of their Undertakings on the graph. It has not been possible for me to do this except in the case of one Undertaking. You will realise that the undertakings of the Commission do not compare with Municipal undertakings because "export in bulk" as referred to by the author, is a common practice on the Commission's undertaking and, further, the Commission's undertakings comprise largely transmission systems to centres of load which centres might be compared in some cases with Municipal undertakings.

As an example, the undertakings for which points were considered give the following results:—

(*a*) A Municipal reticulation on the undertaking for which the relevant information is available show that its point on the curve is situate on the line of efficiency between 8 and 9 in the zone P.

(*b*) If the undertaking is further examined on the basis of the whole of its distribution and generation costs, the graph is not sufficiently large but, a point on the graph is attainable by dividing the magnitude of both ordinates by 100. This point lies in the square 7,000/7,500 on the horizontal ordinate and 0 to 5 on the vertical ordinate using the right-hand scale. It will be seen that the zone is below the Z zone and the efficiency is probably somewhere in the region of 4 or 5.

(*c*) If now the undertaking is examined excluding generation, a point represented by 13,900 on the horizontal scale and approximately 7 on the vertical scale is arrived at after dividing both ordinates by 100. This point of course, again falls completely off the graph although divided in both its ordinates by 100. Once again the point falls below the Z zone but it is impossible to indicate even approximately the efficiency line.

I trust that the foregoing illustrations will give point to the author's note of warning that the curve can only be used on systems which have similar characteristics as regards the incidence of types of consumers. The author has not made this specific point, but it can be obtained by inference from his Paper.

In the light of what I have said the author's remarks to the effect that, generally speaking, undertakings in zones A to E are under-capitalised and those in zones V to Z are overcapitalised, must only be taken as applying to a particular type of undertaking. For example, if a Municipal undertaking has one extremely large consumer of high load factor the indications given by a point on the curve may be most misleading. In particular I would stress the necessity of having regard to the geographic situation of the particular undertaking under investigation.

In fairness to the author I would again stress that he himself has stated that the efficiency chart is the beginning and not the end of our considerations. It is not even a means to an end, but rather an indication of the route that has been, or should be, taken. He goes on to say that it is valuable for comparative purposes if the required statistical data can be made available. I am, however, doubtful of the indications which would be given by this method of comparison.

Coming to the author's remarks on the aspect of tariffs, I wholeheartedly agree with his recommendation that the tariffs should be simple and straightforward and that they should not be discriminating except insofar as the effect of a particular load on the electricity system is concerned. He goes on to say, however, that reasons may be advanced for treating the private resident differently from the consumer who uses electricity in his business for gain but that should be the only discrimination apart from the type and character of the load. I personally do not agree with this attitude because it is a reversion to the old basis of consideration of tariff structures, namely, that they should have regard to the consumer's ability to pay. Tariffs which take account of this aspect of the situation are subject to very considerable criticism particularly having in mind that any alteration to a tariff which is earning a

considerable profit may mean that other tariffs require to be increased and the consumers so affected might have been involved in capital outlay, etc., based on low rates and thereafter be themselves placed in an uneconomic and untenable position. If tariffs must be increased through rising costs, a different situation arises because it is reasonable to assume that the rising costs as they affect an electricity undertaking affect the market and producers as a whole and therefore from consumer to producer both in regard to electricity and other products a similar change must take place, leaving the producer still in an economic position in relation to products with which he is competing.

The author also deals with "off-peak" tariffs. These are dangerous unless they are controlled to the night hours on Municipal undertakings, and by night hours I mean the hours following the falling off of the evening peak which is so common in Municipal practice. If they are introduced to develop a day load it is not improbable that within a reasonable time the peak may occur during the day and both plant and distribution installations will require to be designed for the day load conditions. If and when that occasion arises then the off-peak tariffs require to be restricted to other hours and normal tariffs introduced for the day load. In view of what I have just said extreme difficulty would be experienced in raising charges against consumers who have been led to establish a practice based on special low rates for electricity.

Later in his Paper, the author makes the statement that there should never be any argument in regard to what he is or who he is (in determining the tariff) and then follows this remark with a statement that special provision should be made in the tariff structure for supplies to public and communal installations as well as for temporary services for periods up to (say) three months. Surely this is discrimination on the basis of what he is or who he is. In my opinion there should be **no** such discrimination.

I wholeheartedly agree with the author in condemning separate rates for lighting and for heating which require dual circuits in an installation and separate metering. There have been innumerable occasions of such tariffs leading to theft. There is, in fact, no need to introduce this temptation.

The author proceeds to condemn tariffs based on the number of rooms, rateable value, floor area, etc., and mentions that a consumer with a compact dwelling suffers in comparison with the owner of an old house with a few large rooms. If the floor area is used he makes the point that the records of the department are greatly increased. He then draws attention to the fact that a large Municipality recently undertook a census of the number of rooms in its area with the result that a further £30,000 in annual revenue was secured. I fail to see the point of this latter example. It would have been better to have mentioned the relative magnitude of £30,000 per annum as compared with the revenue received from the room "rate" at the time the census was taken. I venture to suggest that the amount of £30,000 would be found to be a relatively small item although in its own magnitude, a large sum.

It is noteworthy that the author commends the practice of meeting the fixed costs by applying a kilowatt or kVA or horsepower demand charge, but he proceeds to say the same when these costs are met by charging the first few units each month at a high rate. Charging the first few units per month at a high rate assumes that each consumer is establishing the same demand regardless of the size of his premises or the use to which electricity is put. When a high rate is charged against the first few units, that first few units must be related to the actual or assessed demand of the user. Therefore, I would express the opinion that his condemnation of relating the high rate charge to some comparatively irrelevant factor such as the number of rooms, etc., applies at least equally, and probably to a greater degree, to his own acceptance of a charge for the first few units in each month at a high rate. Whilst the author says that the factors used in many undertakings as a basis of equivalent assessment of demand have little, if anything, to do with the electricity demand of the consumer, I venture to disagree. Anomalies will, of course, arise but in the majority of cases the method of assessment may be regarded as quite reasonable. The author has suggested that the high rate should be

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based on the magnitude or size of the service connection provided. At first sight this would seem to be quite equitable but, on the other hand, service connections have been standardised in most undertakings and those service connections are often provided regardless of whether or not the consumer concerned intends to make effective use of electricity. They are, in fact, provided on the basis of what some consumer at some time may require from that service connection.

I wholeheartedly agree with the condemnation of the assessment based on rateable value.

The author has drawn attention to the fact that any tariff is based on the cost of coal etc. at the time the tariff is framed. It is not unusual in tariff design and quotation to provide for variation of a charge to the consumer on the basis of the variation of coal cost because that cost can vary quite considerably at short intervals of time without any regard to the question of the development of the undertaking as such. Railage rates change and pithead prices also change. To avoid too frequent modification of tariffs, it is therefore desirable to provide for an adjustment for the cost of this variable which constitutes a relatively large proportion of the cost of the electricity service to consumers. I do not understand, however, why the author has stated that a coal surcharge should not be applied where the first block of units per annum or per month is sold at a high rate. Surely the cost of production of a unit whether sold at a high rate or a low rate in a block rate tariff, varies to the same extent with variation in the cost of the fuel used. If, then, a surcharge of the order of say one-tenth of a penny is to be applied in the event of the fuel costing, say, 2s. per ton more in any month that surcharge would apply whether the units have been sold at a high or a low rate. Presumably the high rate has been so established as to include an allocation on the basis of demand. This would appear from the author's own remarks. Therefore, the high rate unit is really a unit sold at a composite price of the standard low rate plus another rate for demand. If that other rate for demand had been shown separately, the author himself, I am sure, would have agreed that all units must be affected by the coal surcharge.

I have not followed the author's arguments in relation to rebates for power factor improvement which he criticises on the same basis as the coal surcharge.

In dealing with the application of two-part tariffs, the author mentions that they are often erroneously applied to installed loads. Here again I do not agree with the author's statement of error because on his own recommendations, the service would probably be installed on the basis of the consumer's installed load in order that the consumer might not damage the service should he make use of all his equipment. As the service is provided and as there is, in effect, a reserve of output available to that consumer from the power station related to his potential demand, surely the consumer should be called upon to pay whether or not he makes use of that service at any one time or at all times.

On this subject the author has suggested the limit of consumer classifications for tariff purposes and in that classification has shown institutions, public and communal services as a special class. I do not agree with the inclusion of this sub-division. The tariffs applied to private and residential properties and business and industrial consumers should equally well be applied to the special class he desires to create. To the four classes of consumers he has added certain special tariffs and again mentions off-peak loads. I would sound a note of warning to anyone desiring to introduce special tariffs of this description.

In dealing with the coal clause in tariffs in detail, the author has stated that it should only apply to two-part tariffs where the price per unit, as distinct from the kVA charge is intended to cover the variable costs. Surely in all tariffs the unit rate is intended to cover these costs and if the rate is established well in excess of those costs, the excess over the true variables is required to offset fixed costs and in establishing the unit rate some attempt has been made to assess the allocation of fixed costs on the basis of normal usage such that those fixed costs are just covered. In these circumstances, if necessary, it should be permissible to adjust all the tariffs on the basis of a coal clause. I fully realise that in the case of say, domestic users, their use is so small that it may be impossible to apply a coal clause in practice. For

example, a coal surcharge of ·01d. per unit could not be applied to a domestic user using, say, 30 units in a month as the surcharge would only amount to ·3d. on his bill, which could hardly be recovered.

In putting forward a standard form of a coal clause, I observe that the author adds a proviso that no such adjustment will be made on accounts for less than units in any period of months. I fail to see the reason for this proviso unless he has in mind that a coal surcharge of less than, say, 3d. should not be applied.

The author's remarks on the subject of street lighting and street lighting tariffs are particularly interesting and well worthy of careful study.

Coming now to more general matters, the author has raised the question of trading. In my view no electricity undertaking should trade in any way if there is an effective trader giving service in the district.

The author has some significant remarks to pass on the question of handing over a part of the load to a central authority and stresses the importance of the effect of the peak load being left with the undertaking. It is very dangerous to generalise in these matters but I am sure the author will agree with me that, if it becomes necessary to establish a new station for supply to an undertaking, whether the new station is owned by the undertaking or some other authority, that new station is usually made the base load station in view of its greater efficiency, leaving the older plant to take care of the peaks. The author's remarks should, therefore, be definitely qualified on this particular aspect.

There are several other important points in the Paper which I would have liked to have discussed but I feel that I have taken up too much of your valuable time already. May I conclude in again congratulating the author on his courage and on the amount of study that he has devoted to his subject.

PRESIDENT:

Thank you, Mr. Milton, for your contribution.

Mr. A. R. SIBSON, Bulawayo:

In past years some of us have been concerned about the small number of Papers of a technical nature that have been presented to the Association. When I saw on the agenda that there was only one Paper this year I felt somewhat disappointed, but on reading Mr. Gripper's contribution I realised we had here much more than just one Paper. I think Mr. Gripper has raised just about every controversial point that has ever been raised at these meetings, and I do hope, Mr. President, that very full time will be given for discussion of this very valuable Paper and that this time will not be based on the fact that there is only one Paper to discuss.

There are one or two matters which I would like to raise in connection with this valuable addition to our Proceedings, and others that I had intended to discuss had the same points not already been very competently dealt with by Mr. Milton.

The first point in connection with the efficiency chart that Mr. Gripper has presented is the fact that he has shown on one side of the chart the capital costs for distribution and on the other side of the chart the capital costs for generation. I feel he should have left out the generation costs altogether although he states that some undertakings are unable to separate these costs adequately. There are so many undertakings whose generating equipment is much larger than would be necessary for supplies to ordinary consumers, on account of large bulk supplies given and by including the figures for the capital cost of generation, the whole calculation may be upset.

As a matter of passing interest I would say that the figures for Bulawayo for the last financial year based on Distribution expenditure, when represented on Mr. Gripper's diagram, would fall in the area T. 32, which on the chart given in the Paper is outside its range. I mention the question of generation expenditure because in our own case a very large proportion of our generating plant is installed for the purpose of giving bulk supply to another large undertaking with the result that the figures produced would be completely wrong if they were used in interpreting our undertaking from a municipal point of view.

Mr. Gripper has again referred to the hardy annual of the Statistical Tables; but I do hope that the Convention in the not too distant future is going to get down to the rationalisation of the Statistical Tables we have employed in the past. The author

must have had an almost impossible task in trying to analyse the Undertakings figures as they appear at present. Much could be said regarding this matter but I do not propose to waste the time of the Convention at this stage since it appears elsewhere on the Agenda.

One of the factors which I think must be taken into account in dealing with the efficiency chart is the variable introduced by the density of consumers in an area, and this largely depends on the activities of the town planner. In an area which consists of flats with a very high consumer density, the capital cost per consumer is bound to be less than where town planners have laid down that every person shall have two acres each! This fact would upset the calculations and the effects so produced would not be due to any activity of the electrical engineer concerned, but to factors which are quite obviously beyond his control.

Another point which the chart does not reflect at all is the distribution losses: there is no way of bringing this factor into the chart, and it would be possible for very high distribution losses to take place due to insufficient capital expenditure on distribution plant without this being shown up on the chart, although it is a very important item of efficiency. Further, the number of units per head of consumer must also vary according to the nature and habits of the community served. A community which has a large proportion of poorer people or perhaps coloured people or even natives, will obviously have a very much lower consumption per head of population, and this again would produce results on the diagram which would possibly be misleading.

Actually, Mr. President, the variables not taken into account on this chart are so many and so important that I am inclined to agree with Mr. Milton, and with Mr. Gripper himself when he draws attention to its limitations. It is very interesting for us as engineers to discuss these possible ways of comparing efficiency, but we must remember we have councillors with us this morning, Mr. President, who may not appreciate the technical limitations of these comparisons. They may go home and make their own calculations which may not be at all in accordance with the facts, and this may lead us, and them, up the garden path.

On the other hand, I realise that Mr. Gripper has been trying to find something that is very badly needed as far as the municipal undertakings are concerned. As he says, we are monopolists in our districts and, as he says, it is very valuable indeed to have some way of ascertaining whether a monopoly is doing its job or not. If you have no local competition, no one will know whether you are efficient or not. The nearest approach to local competition is the comparison of one undertaking with another, and by attempting to find a tentative method of comparison Mr. Gripper has done us a very great service. I think it is possible that some of the important variables, at present missing from the formula proposed, may in some way, be incorporated in a more comprehensive expression, so that we will have some method of comparing the activities of A and B and of knowing how effectively we are carrying out our duties.

Now there are two more points I would like to touch on. On the question of tariffs I have only one comment to make and that is in complete disagreement with both Mr. Gripper and Mr. Milton. May I suggest that the idea of charging "prices that the business will bear" is by no means irrational and that, just as in the case of Railway rates, there is considerable advantage in obtaining from one group of customers rates that they can afford to pay, and are prepared to pay, thereby enabling supplies to be given to other groups at prices that make possible amenities which would otherwise be quite unavailable to them. We know how the tariffs of today have been evolved. We know that, initially, electricity supply was concerned principally with lighting in competition with gas, candles and paraffin lamps, and we were able to give, at a cost as high as 2/6d. a unit, a service equal to our competitors. Then, lighting not being required during the day time, we offered low rates for consumption during the day in order to keep our plants occupied. And out of that was born the idea of a high rate for lighting and a low rate for heating, cooking and other such purposes. Now things like cooking and water heating are not economic in comparison with other methods of heating unless the power can

be sold at the cost of ½d. to ¾d. per unit, and there is no undertaking in the world that can sell power for cooking or any other purpose to its ordinary consumers at prices of that order unless extra revenue is obtained from somewhere else. I can see no reason why a group whose principal consumption is for lighting purposes, that is the commercial community, shops, businesses, hotels and similar types of consumers who can well afford, and are quite happy to pay for, their lighting at rates very much in excess of the cost of production—since it is still so much cheaper than any other form of illumination —should not pay such higher rates as are needed to offset the lower rates available to them, and their employees in their capacity as domestic consumers. I still hold the view that differential tariffs for lighting and heating are an essential part of any municipal tariff scheme. Broadly my attitude to tariffs is this: that lighting, as such, should be sold at a profit, that cooking and heating should be sold at a comparable loss, and that industrial loads should be given at cost.

I entirely agree with Mr. Gripper's remarks regarding the control of stores and meter reading. There is an increasing tendency for various functions of the Electricity Department to be taken over by other Departments, and it would be possible to conceive an Electricity Department doing little else than operating a generating plant, if it had one and repairing fuses. No efficient administration can be built up if the majority of its functions are carried out elsewhere, and, as I am going to say in a moment in another connection, I am a very strong believer in the adage that responsibility and authority should never be divorced. The Electricity Department should be responsible for the production, sale and distribution of electricity, and all the factors that are required to be considered in connection therewith should be under the control of that administration, and this, of course, includes stores and meter reading. Meter reading is most important because it represents the principal contact between the Department and consumer, apart from those consumers who make enquiries when they are angry about a failure of supply. This contact between the consumer and the Department, through the meter readers, makes them most important people, who should clearly be under the control of the Department.

Mr. Gripper's suggestion that, when generation capital expenditure reaches the figure of £6 per consumer, we should start thinking about handing an Undertaking over to some other Authority is, I think a very dangerous one to make, in view of the complete unreliability of such figures. I have already referred to the considerations that make this approach incorrect, and the enormous variations in capital cost which have taken place over the last five years alone would make such a proposition quite unsound.

Mr. Gripper refers to capital expenditure in times of threatened depression. I think that members of this Association will probably be aware of the policy that we have been carrying out in Bulawayo for some years in respect of capital expenditure, particularly on distribution extensions, and I think some of you regard with a certain amount of envy our practice of allocating "profits" for the year's working to distribution extensions rather than the raising of loans for such purposes. We have contributed, up to now, nearly £500,000 out of "profits" to distribution construction, and as a result of that policy we are still drawing what may be considered as "profits" for the same purpose, instead of paying interest and other fixed charges that would have been necessary if the Capital had been raised by loans. As a consequence, should a depression occur at any time, we shall still have sufficient revenue coming in to go on with capital work, and even if the depression is a very bad one and the revenue is restricted, we can still cut expenditure without getting into financial trouble: a very different situation to that which would exist if we were paying interest on borrowed capital which would have to be found whether there was a depression or not. I suggest therefore that the best method of ensuring that any undertaking keeps its head above water in times of threatened depression is to follow the policy of allocating excess revenue in good times to capital works and not to other purposes.

I referred a moment or two ago to the dictum that authority and responsibility should not be divorced, and I apply this to questions of staff organisation to which

Mr. Gripper has also referred. The most effective administration of an efficient organisation will result when every member of the staff from top to bottom is perfectly clear about his duties and responsibilities, and the extent to which he can use his discretion. I believe that there should be no one on the staff of an electricity department who does not know exactly what his job is and who his immediate superior is; it is surprising how often that is not the case. Any properly organised undertaking will have, as Mr. Gripper suggests, a proper staff diagram showing the flow of responsibility in the one direction and the flow of authority in the other, and that document should be sacrosanct. There should be no overlapping of responsibility, and no possibility of dual control. Apart from other obvious advantages, this ensures the happiest possible relations between the various members of the staff, which is so important for efficient running.

Now, like Mr. Milton, there is much more that I would have liked to have said, Mr. President, but the time is getting short and I must therefore close with very hearty congratulations to Mr. Gripper for the extremely valuable Paper which he has presented to us, and for the enormous amount of thought which he must have put into it, and for the ample food for thought, which he has given to us, in our consideration of it.

PRESIDENT:

Thank you very much Mr. Sibson for your contribution. There are still a few minutes. If there is no one who would like to continue the discussion now the Convention will adjourn for lunch.

I may be a few minutes away from the opening session this afternoon and I hope you will excuse me. Further discussion on Mr. Gripper's Paper will be postponed until to-morrow morning.

The Convention adjourned at 12.30 p.m.

The Convention resumed at 2.30 p.m.

Mr. C. KINSMAN, Durban, deputising for President:

I have been asked to put before the Convention—as the President will be delayed for about half-an-hour—that Mr. Clutterbuck may welcome expressions of opinion on the Meter Testing Code, especially from those of the smaller municipalities or those who feel that the financial cost might be disproportionate. There is no need to remind you that at the last Convention we took the decision against a postponement of the Code. The Executive Committee see no reason to put before this Convention a review of this decision. I think it would be a mistake to do so. Now the final promulgation, or the decision to promulgate, presumably will rest with the Electricity Control Board, and I appreciate Mr. Clutterbuck's desire to get some expression of opinion, and the Control Board will find this a very suitable occasion, having all the engineers here together at the Convention, to get their views. I take it that the Control Board will bear in mind, not only the decision of the Association in Convention, but will also give due weight to representations which might be put before this Convention. If there are any members who wish to put forward views for the information and guidance of the Control Board against the immediate promulgation of the Meter Testing Code I would like them to do so.

Mr. C. E. GREGOR, Alberton:

Mr. President, at the last meeting in East London a motion was put forward to delay the Meter Testing Code for a period of three years. I moved an amendment to that. In that amendment I thanked the Bureau of Standards for the work it had undertaken, and asked that the Meter Testing Code be proceeded with without delay. That motion was carried, and it was carried on behalf of the smaller municipalities, the reason being that it will be a godsend for the smaller municipalities who cannot afford to go in for a staff and equipment for testing, to have their meters repaired and tested for a nominal sum. Now we hear that it is being delayed. Does that mean a vote of no confidence in this Association? The undertakings represented by this Association are probably handling the bulk of meters in this country. Why then has a resolution of this Association been delayed? We have not passed a resolution for the delay; our motion to go ahead with the Meter Testing Code still stands.

PAST PRESIDENT, Mr. Kinsman, Durban:

I do not want to enter into a discussion here, but to my mind there is no question

of a vote of no confidence in this Association. I thought I had made the position clear, but probably I did not. The decision to promulgate this Code forthwith does not rest on a vote of this Association, although I have no doubt that the Control Board will, despite contrary views, attach considerable weight to our decision, and that the ultimate decision whether it should be promulgated or not will rest with the recommendation of the Control Board. I think it is only common courtesy on our part to accord Mr. Clutterbuck, as representative of the Control Board, the opportunity of hearing the views of some of those who do not agree. Mr. Clutterbuck may go back to the Control Board and say: "Yes, we did hear some opposing views but in view of the strength of the Convention and of the Association and its direct vote, I feel that the contrary views should not prevail".

Mr. C. H. CLUTTERBUCK, Electricity Control Board:

May I explain, Mr. Chairman? There is no question of a vote of no confidence in your Association at all. The Control Board accepts the vote as being the opinion of your Association, but, at the same time, representations have been made to the Board since, that, at the last convention the reading of a Paper by a representative of the Bureau of Standards was the first intimation they had of the proposed organisation and estimated costs, and that, when the vote was taken, there were many men, particularly those in charge of small municipalities who had not had time to study the details or to appreciate its implications. Before coming to a decision the Control Board wants to be quite sure of its ground. It does not want to recommend the promulgation of the regulations and then to be faced with complaints from local authorities throughout the country which are serving small numbers of consumers, and it must not be forgotten that a local authority includes a Health Board and quite a number of small suppliers not represented by this Association.

VICE-PRESIDENT, Mr. Halle:

Thank you, Mr. Clutterbuck. I think it will be a very good thing if they can get some form of opinion at this stage as to whether the majority of small undertakings do realize what is implied by this proposed regulation for the standard testing of meters, because there are one or two snags not clear in the regulations, as to how they will be applied. For instance I recently noticed in one place that meters having been tested could not be put into operation until O.K.ed by the Inspector. That sort of thing is going to tie up the whole affair: if meters are wanted, they are wanted, and if you have to write to Pretoria to get a certain type of thing done before the meters which are tested out are fit for measuring consumption, that is going to be a big drawback. It would be good if we had the assurance from the majority of people here that they do know what is implied if this Code is put into practice.

Mr. KINSMAN, Durban:

Mr. Chairman, May I at this stage just clarify the position. Mr. Clutterbuck has said that it appears that at the last Convention some representatives hesitated to vote at all on the promulgation of the Meter Testing Code because they did not quite realise its implications, because they had no previous time to study it. The attendance register at East London was signed by 95 representatives with a right to vote—Councillors and Engineers. When Mr. Fraser put forward that the proposal be deferred for twelve months the number in favour of immediate promulgation was 37 and those who favoured the delay were 24. It still stands as a decision of the Association, but it does clear up what Mr. Clutterbuck said, that obviously some municipalities hesitated to vote because they were not quite clear on the position. I do not think we need delay further on the reasons for immediate promulgation, but I would like to ask those municipalities who want to oppose these views—to clarify as to why its promulgation should be delayed—to put these forward.

Mr. P. L. VERGOTTINI, Brakpan:

Mr. Chairman, I seconded Mr. Fraser's proposal of the postponement. A new meter today costs £3 3s. and before the war the average price was 17s. 6d. per meter. At the last Convention I was made to understand that it will cost 16s. 6d. to have a meter tested at the Testing Stations. Assuming that the cost of meters will come

down again, I am wondering whether it would not be practicable for the Bureau of Standards to have a portable testing laboratory with which they can go around and in that way test the meters in different towns. I do not suppose it will take the same form as for Excise testing of weights, but it is just a suggestion to make the cost of testing meters less.

Mr. O. J. ALEXANDER, Bureau of Standards:

Mr. Chairman, any suggestion put forward to reduce the cost of testing meters which is practicable at all will be welcomed by the Bureau. We have no fixed administration scheme laid down yet. We want the most economical, suitable and practicable scheme, and if anybody can make a suggestion that will be practical and economical we would welcome it.

PRESIDENT:

Does that answer your question, Mr. Vergottini?

Mr. P. L. VERGOTTINI, Brakpan:

Thank you, Mr. Chairman.

Mr. V. E. O. BARRETT, Graaff-Reinet:

I felt very sorry when in the amended draft regulations they withdrew Class C Test Stations. I am situated at Graaff-Reinet, and comparatively far away from testing stations, the nearest would be Port Elizabeth. If we want meters tested it would mean we have to pack them in special containers, they would have a long journey by rail before they could be installed and I also think that it would work out cheaper for our undertaking were we permitted to have Class C test stations. I do not know what the Standards Bureau would think about Class C stations but I think there are a lot of municipalities to whom the operation of Class C test stations would prove in the long run cheaper than sending meters to a larger centre.

Mr. O. J. ALEXANDER, S.A. Bureau of Standards:

May I answer that question too? I do not think it is quite correct that we omitted the Class C stations, but it was suggested at the last meeting that it was improbable to establish a new Class C station on an economical basis; where there are existing stations and where there is equipment available, and where they are not likely to be covered by a station like yours, there is no objection to have a Class C station. My previous remarks apply here as well.

Mr. HALLE, Pietermaritzburg:

Mr. Clutterbuck, I would like to mention a thing from the Chair. When you brought in the Standard Wiring Regulations I remember you brought them in by declaring certain areas, and until those were proclaimed areas the wiring regulations did not work. It gave us some pain and trouble waiting for them to be declared. I would like to ask you if there is a possibility of this Meter Testing Code being applied in the same way that you would take a certain area which you know, and apply it there. Then from your experience gained in that section you could see whether you could apply it elsewhere, as and when time will necessitate and when equipment improves.

Mr. CLUTTERBUCK, Electricity Control Board:

Mr. Chairman, I did not want to make a voluntary statement to that effect and disclose what is in the mind of the Board, but that system of application is under consideration by the Board.

CHAIRMAN:

Will anyone who has anything to say please come forward?

Mr. P. C. ASSELBERGS, Barberton:

The last Convention at East London was the first one which I attended and therefore I have no details of previous discussions. I understand, however, that the meter testing actually consists of two parts, *i.e.*, the testing itself and a general overhaul of the meter. Perhaps the representative of the Bureau of Standards could tell us what percentage of the total cost falls under testing and what under overhaul and repairs. I should imagine that the cost of actual testing is only a very small portion of the total cost. Testing to an accuracy of plus/minus 3% is a very simple matter and I do not think that the enormous expense of testing in a central testing station is justified.

I understand that South Africa is about the only country to have a meter testing code. Are we so far advanced, or is it that other countries have not found a need for a testing code.

Mr. O. J. ALEXANDER, S.A. Bureau of Standards:

The cost mentioned, namely 16s. for testing a meter was a pessimistic estimate made by Mr. Clarke at the last convention, and would include both overhaul and testing. We have not made a distinct separation between these two items because we feel they cannot be separated. The overhaul is an important part of the testing procedure, so it is hardly possible to separate the two.

The second point is that the committee which drafted the Meter Code made much use of the experience gained in other countries, especially in Great Britain.

Mr. C. E. GREGOR, Alberton:

Mr. President, before discussing this matter any further I think it would be advisable to get a few opinions from the larger cities in this country who run their own meter testing and repairs shops such as Johannesburg, Cape Town, Durban and several other municipalities.

I think it would be excellent information for most of us to obtain details such as

(*a*) Accurate life of meter.
(*b*) How often tested and errors obtained.
(*c*) Approximate life before replacement parts are required.
(*d*) Life of meter.
(*e*) Whether testing pays or not.

Mr. C. H. CLUTTERBUCK, Electricity Control Board:

May I comment on this point and say that the Control Board has consulted the nine larger municipalities and it is in possession of all the necessary information regarding the application of the proposed code to those municipalities.

Mr. P. C. ASSELBERGS, Barberton:

I do not think that the experience of the larger Municipalities is of any great value, because the larger centres have proper testing equipment and presumably also test meters regularly. You would require information from the smaller towns where meters usually are only tested when needing repairs. In Barberton, until last year, meters had not been tested for at least 15 years. During last year approximately half the number of installed meters were tested, and only a comparatively small number proved to have an error greater than 3%.

Mr. G. E. MOSSOP, Vrede:

I do not know whether it is appreciated, but this 16s. to overhaul and test a meter is a thing that happens every 6-10 years. This comes to about 3s. per meter per annum, slightly less, and that is surely not a very great burden when compared with the value of knowing that the meter is accurate.

Mr. P. L. VERGOTTINI, Brakpan:

Mr. Chairman, it is not only just the matter of the 16s. 6d. for testing and repairing the meter, as it must also be borne in mind that time will be spent in taking the old meter out and putting the new meter back. I just mention that because we must bear in mind that cost when comparing it with meters which used to and may in the near future, cost, new, 17s. 6d each.. As the price of meters comes down, so eventually the cost to repair and test meters will also have to come down, or you will come to a point eventually where it will pay you better to buy new meters, for example, you may have an old meter which has given 7-10 years' service; by the time that has been overhauled and repaired, one might as well, at a very small extra cost, instal a new meter.

CHAIRMAN, Mr. C. R. Halle:

Now you have heard these views. I do not know whether there are any more contributors. I trust that Mr. Clutterbuck is satisfied. I am surprised to find that Mr. Asselbergs only found 5% of his meters out after a service of 15 years as I have seen some myself 20% slow for which I would gladly pay 16s. to get them right, but Mr. Clutterbuck, if you are satisfied we will pass on to the next item.

Mr. C. H. CLUTTERBUCK, Electricity Control Board:

I am satisfied.

Mr. F. STEVENS, Ladysmith:

Who will have the classifying of meter testing stations?

Mr. O. J. ALEXANDER, S.A. Bureau of Standards:

The classifications of meter testing stations will be based on the equipment

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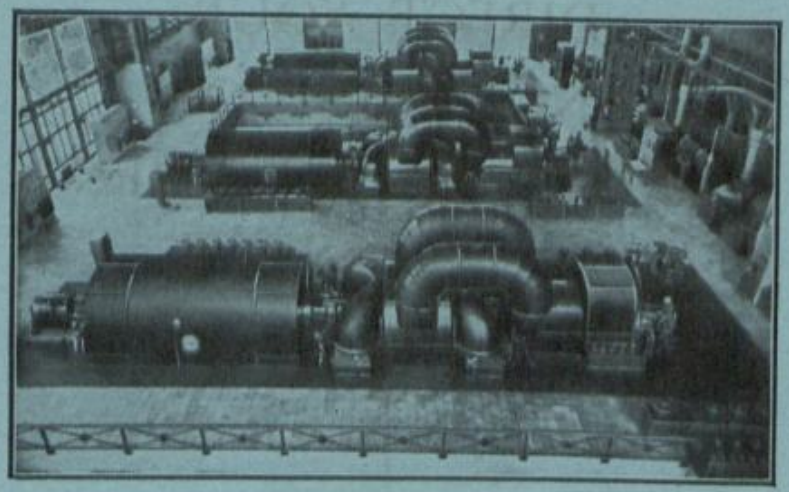

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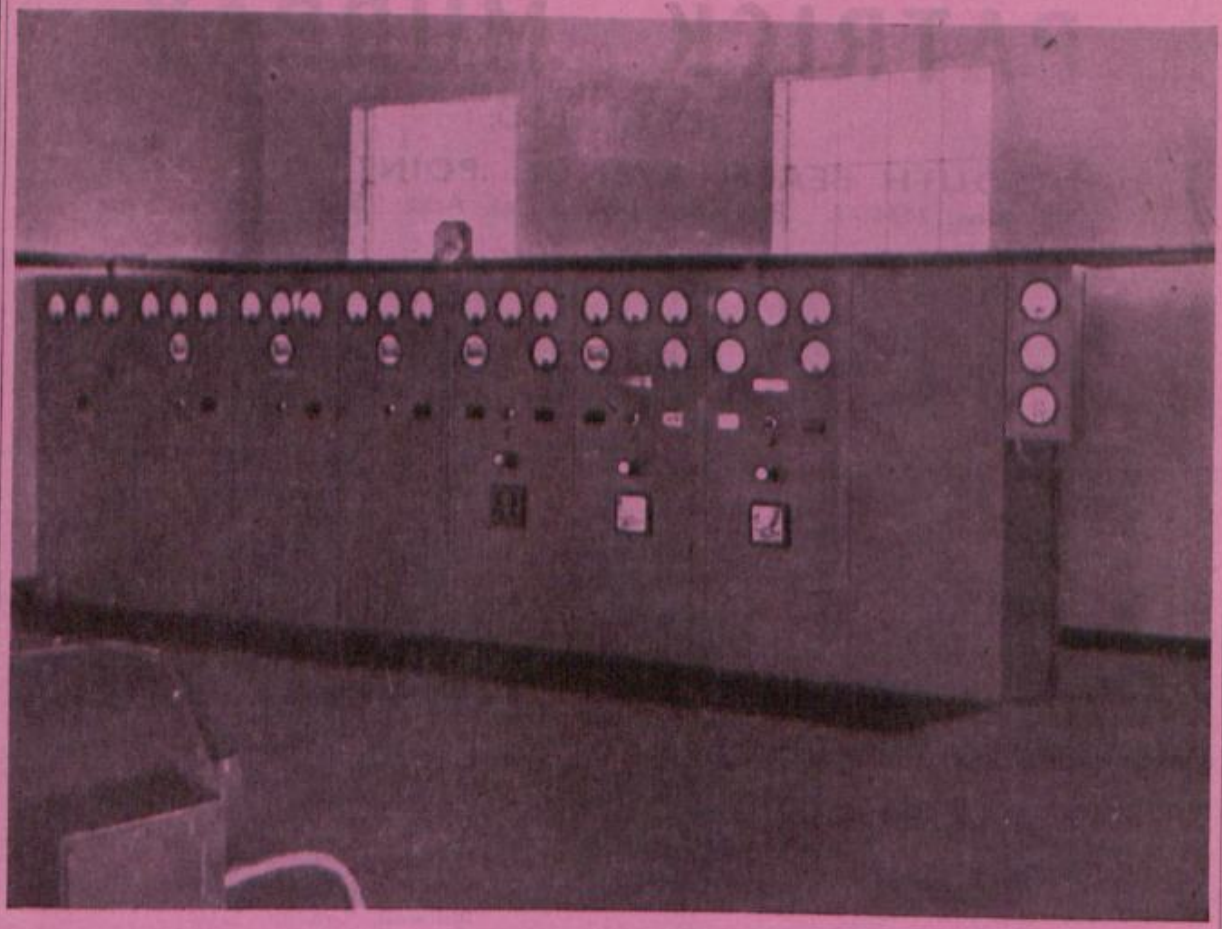

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which is available in the station itself. There are three distinct classes. The class A stations are those stations equipped for the calibrating of all sub-standard apparatus used for meter testing, as well as the testing of all kinds of K.W.-hour and Ampere-hour meters. The Class B stations are those stations equipped for testing against sub standards, indicating instruments of rotating substandard watt-hour meters and Amp-hour meters and the testing of all K.W.-hour and Amp.-hour meters. And, lastly, Class C stations are those stations equipped with a minimum of apparatus for testing A.C. single phase and D.C. meters. Thus, for instance, in the case of the Class C station all that would be required would be a rotating substandard, a stopwatch, standard clock and a suitable supply.

Mr. P. C. GRANDIN, Vryburg:

Listening to the various members from the smaller municipalities I am surprised to find that municipalities larger than mine have not got the meter testing equipment that would easily meet the requirements for a Class C station. We opened our scheme in 1933. At that time we had to serve only 200 consumers. We then purchased adequate meter testing equipment which only cost us £230. I have subsequently submitted to the Bureau of Standards details of the equipment and they have accepted the equipment, and all I have got to do is to send my Rotating substandard Watt-hour meter for checking. I am surprised that engineers of larger municipalities have not adequate meter testing equipment.

CHAIRMAN:

I think that closes that subject. Now if Mr. Eastman will help us we will carry on with the World Power Conference.

Mr. E. L. SMITH, Boksburg:

Mr. President, may I be permitted to ask one more question?

PRESIDENT:

Yes.

Mr. E. L. SMITH, Boksburg:

If a municipality is not classed on the schedule as mentioned by Mr. Alexander, will there be any objection if a municipality wants to put up a Class A or Class B station, whatever the case may be? Will there be any objection against them afterwards coming under the classification?

Mr. O. J. ALEXANDER, S.A. Bureau of Standards:

Mr. Chairman, there is certainly no objection. We will never stop you from doing so, although we would advise against it if there is another station near.

Mr. E. L. SMITH, Boksburg:

I would like to know if a small municipality could test meters against a rotating standard which could be tested from time to time to save cost of sending their meters away.

CHAIRMAN:

Such comparatively minor matters we can leave to discuss with Mr. Alexander afterwards.

Mr. H. A. EASTMAN, Cape Town:

Mr. Chairman, my report as your representative to the World Power Conference local committee is as follows: The International Executive Council to the World Power Conference was held in Stockholm on the 7th and 8th of June, 1948. The third congress of the International Commission on Large Dams was held in Stockholm from the 10th-17th of June, 1948, and the twelfth session of the International Conference on large electric H.T. systems (C.I.G.R.E.) was held in Paris from the 24th of June until the 3rd of July, 1948. The Conferences were well attended by representatives from many countries including South Africa, but not representing our Association. The Fourth World Power Conference will be held in London from the 10th-15th July, 1950. The theme of the Conference will be World Energy Resources and the Production of Power. The headquarters of the Conference will be the building of the Institution of Civil Engineers. The technical sessions will be held in the Main Hall and the Library of the Institution of Civil Engineers, and in the halls of other Institutions, and among the subjects for discussion at that conference are "Energy resources and their development in South Africa", "Torbanites and oil shales, their occurrence and utilization in South Africa", "Preparation of coals of high ash content", "Production of power in the Union

SOUTH AFRICAN NATIONAL COMMITTEE—WORLD POWER CONFERENCE

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31st DECEMBER, 1948

PAYMENTS

To Payment made to World Power Conference—Central Office (London) Maintenance Fund in respect of the year, 1948			£50 0 0
,, Exchange on £50			0 5 0
,, Cablegram to London			0 10 5
,, Balance being excess of Recipts over Payments			7 18 7
			£58 14 0
,, Balance as at 31st December, 1948			£110 7 10
			£110 7 10

RECEIPTS

By Subscriptions Received			£54 4 0
Electricity Supply Commission ...	£10 0 0		
The Victoria Falls and Transvaal Power Company, Ltd.	10 0 0		
South African Railways & Harbours	10 0 0		
Association of Municipal Electricity Undertakings of Southern Africa	10 0 0		
Associated Scientific and Technical Societies of South Africa	5 0 0		
Department of Mines	5 0 0		
S.A. Institute of Engineers	2 2 0		
S.A. Institute of Electrical Engineers ...	2 2 0		
,, Sale of Publications			4 10 0
			£58 14 0
,, Balance brought forward from 1947			£102 9 3
,, Excess of Receipts over Payments for 1948			7 18 7
			£110 7 10

JOHANNESBURG, 1st April, 1949.

G. R. D. HARDING, Secretary

of South Africa". You will see that that Conference will have special interest to us as Union Nationals. Your Executive Council would like to know if any members of our Association would desire to attend the forthcoming conference so that arrangements may be made in good time for them to be present as representatives of our Organisation.

The South African National Committee's receipts and payments account for the year ended 31st December, 1948, is as follows:—
(see previous page)

CHAIRMAN:

Thank you, Mr. Eastman, I will take it that you agree that the Report will be adopted.

MEMBERS:

Agreed.

C.I.G.R.È., S.A. NATIONAL SECTION

(Communicated).

Minutes of First Annual General Meeting held on Friday, 28th January, 1949, at 4 p.m. in Room 201, Kelvin House, Cor. Marshall and Hollard Streets, Johannesburg.

Present: Messrs. J. S. Trelease (Chairman), G. Bradford, G. A. Dalton, I. de Villiers, J. Dolan, W. Fenwick, D. J. Hastings, W. L. King, A. R. Mullins, A. E. Torrance, Dr. O. Brune, Dr. J. T. Hattingh and Miss E. P. A. MacDonald (Hon. Secretary).

Apology for absence received from Mr. J. C. Fraser.

ANNUAL REPORT, ETC. FOR 1948

After welcoming members and expressing pleasure at the good attendance, the Chairman reviewed the activities of the S.A. National Section from its inception.

The permanent Secretariat of the C.I.G.R.È. in Paris wrote to Prof. B. L. Goodlet on the possibility of setting up a National Section in South Africa. This letter was forwarded to the Council of the S.A.I.E.E., which in April, 1947, sponsored the formation of a National Committee, C.I.G.R.È., composed of Messrs. J. S. Trelease (Chairman), W. H. Milton, J. C. Fraser, A. M. Jacobs, G. A. Dalton and Professor B. L. Goodlet. The new Committee subsequently received a letter of welcome from C.I.G.R.È. Headquarters.

In July, 1947, the Committee held its first meeting and mapped out a programme for the establishment of a National Section. Finally, after a good deal of correspondence with Paris on matters of detail, the Committee was able in March, 1948, to send out information, notes and circular letters inviting membership of the Section to 42 organisations and individuals. The result was considered satisfactory—18 Collective members and 3 Personal members (in addition to the 6 Personal members comprising the Executive Committee) joined the Section, 3 addressees replied in the negative and the rest made no response.

The present membership consisted of 18 Collective members and 9 Personal members distributed as follows: 21 in Johannesburg, 1 in Germiston, 1 in Pretoria, 2 in Cape Town, 1 in Stellenbosch and 1 in Salisbury, S. Rhodesia.

At its second meeting early in June, 1948, the Committee passed a resolution opening a banking account in the name of the Section and adopted a draft constitution. (This was later forwarded to Paris and approved by the Administrative Council). As the 12th Conference in Paris was looming up, the Committee decided to send it a message of greeting and goodwill. This read: "The S.A. National Committee sends cordial greetings to the C.I.G.R.È. and good wishes for the success of the 12th Session in Paris. The Committee feels sure that the forthcoming deliberations of the Conference, with its world-wide affiliations, will once again contribute fruitfully to the advancement of electrical technology and further promote and foster international friendship and goodwill. Vive la conference!" The acknowledgment from Paris read: "We desire to express to you our best appreciation for the so kind wishes you sent us on June 18th for our 12th Session. We sincerely thank you for your attention."

Two members of the Section attended the 12th Session—Prof. H. D. Einhorn representing the University of Cape Town, and Mr. G. Bradford representing the Chamber of Mines. Mr. Bradford had agreed to give the meeting his impressions of the Conference.

Members were now receiving "Electra", the bulletin of C.I.G.R.È., and several had ordered the 1948 Proceedings, which would shortly be in print.

Although it had only recently been formed, the Section had already co-operated with both the International Study Committees and the Paris Secretariat by completing questionnaires, *e.g.*, on insulators and on transformer oil and by collaborating on matters of organisation and policy.

Submitting the balance sheet to the Meeting, the Chairman explained that it did not reflect stationery and general expenses, as these were being met as incidentals by the Rand Undertaking of the Electricity Supply Commission.

The Chairman then moved the adoption of the Annual Report and Balance Sheet for the year ended 31st December, 1948. Mr. G. Dalton seconded the motion, which was unanimously approved.

Appointment of Scrutineers and Declaration of Result of Ballot for 1949 Committee.

On the nomination of the Chairman, Dr. J. T. Hattingh and Mr. I. de Villiers were unanimously elected scrutineers for the 1949 ballot for the Executive Committee.

The Chairman announced that the result of the ballot was as follows:

> Messrs. J. S. Trelease, G. A. Dalton, G. Bradford, Prof. G. R. Bozzoli, with Messrs. A. M. Jacobs and J. C. Fraser tying for fifth place.

On the suggestion of the Chairman the meeting applied the provisions of Sect. 5 (*b*) of the Constitution and Mr. A. M. Jacobs was declared elected and Mr. J. C. Fraser co-opted to the Executive Committee.

The meeting heartily endorsed the vote of thanks proposed by Mr. Dalton to the scrutineers.

GENERAL

I. Talk by Mr. G. Bradford

The chief item under "General" was an informal talk by Mr. G. Bradford giving his impressions of the 12th Conference in Paris.

After explaining how he had come to be a delegate representing the Chamber of Mines, Mr. Bradford described the Meeting Room and the Theatre, equipped with film projectors, in which meetings were held. In the Meeting Room each delegate had a separate table and a chair and was thus able to prepare notes and to control the considerable volume of paper which soon surrounded him.

Divided into about ten groups, approximately 120 papers on very specialized subject matter were presented at either a morning or an afternoon session, so that it was possible for delegates to attend discussions on a wide variety of topics. Perhaps in future simultaneous meetings should be held as the large number of papers of diversified scope could not be discussed by all members, whose time was thus wasted. All papers were published beforehand, so that sessions were devoted entirely to discussion.

Over 800 delegates from many countries attended, Great Britain and the U.S.A. having particularly large delegations. The language difficulty was overcome by using French and English and, immediately a speaker had sat down, his contribution was broadcast in the other language. The translators deserved the highest praise for their efficiency. Not only did they cope with speeches in fluent French or English, but what was a much more difficult matter, quickly translated into the one or other medium the imperfect and broken English or French of, say, a Norwegian or Turkish speaker. A translator to whom he had spoken said that it was one of the most arduous jobs he had ever undertaken.

The chief virtue of the Conference was the opportunity it gave of renewing old friendships and of meeting men from other countries who knew so much more than one did oneself. Not only at the meetings but in the lobby new knowledge was virtually presented on a plate.

Happy memories lingered of the social evenings arranged for delegates—a musical soirée by some of the best known French musicians and a ballet presentation by the Paris Corps de Ballet.

Among the technical visits which he had made were those to St. Denis Generating Station and the 500 kV experimental station at Chevilly, near Paris.

SOUTH AFRICAN NATIONAL SECTION—C.I.G.R.E.

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31st DECEMBER, 1948

DR.			CR.		
Draft: Mons: J. Tribot Laspiere—87,516 Francs		£102 0 0	Subscriptions		£103 19 0
Bank Charges:		0 13 3	18 Collective Members	£94 10 0	
Opening A/c.	£0 1 6		9 Personal Members	£9 9 0	
Ledger Fee	0 10 6				
Commission on Draft	0 1 3				
Balance ... ... Being excess of Income over Expenditure		1 5 9			
		£103 19 0			£103 19 0

E. P. A. MACDONALD, Hon. Secretary.

After the Conference, magnificently organized excursions were made to the hydro-electric stations in the Alps and in Massif Central. The speaker regretted that he had been unable to go on any of these.

Mr. Bradford concluded by stressing how stimulating and fruitful he had found his experiences at the Conference. He urged that South Africa should be represented at all future Sessions, as there was always valuable knowledge of new problems to be gained. The Central Electricity Board had sent about twelve representatives with expenses paid. An organization like the Electricity Supply Commission should consider doing likewise. The electrotechnical progress made in Europe since the war seemed to be greater than that in the U.S.A. and Canada. Research had definitely not suffered or stopped as a result of the war and members should subscribe to the C.I.G.R.È. Proceedings, which would record important recent advances.

Members then examined a C.I.G.R.È. map of the high tension network throughout Europe and copies of various papers collected at the Conference, while Mr Bradford answered several questions on points of detail.

The Chairman thanked Mr. Bradford for his talk, which had made the Conference more vivid and less remote for all members and urged the Section to give it increased support and to work for the appointment of delegates to future Sessions.

The meeting adopted Mr. Dalton's motion that a summary of Mr. Bradford's talk be included in the Section Report sent to the Paris Secretariat.

II. New Members

The Chairman read a letter from the new President of C.I.G.R.É., Mr. R. A. Schmidt, appealing to the Section to increase its membership. It was agreed that each member should publicize the Conference among those of his friends interested in electro-technology and that the co-operation of the "S.A. Electrical Review" be sought in gaining wider publicity.

III. The Hon. Secretary

The Chairman paid tribute to the Hon Secretary, whose work had contributed largely to the establishment of the young S.A. National Section. On Mr. Dalton's motion the meeting desired that its vote of thanks be minuted.

(*Note.*—For the information of members, the Proceedings of the International Conference of large Electrical Systems, 12th Session, 1948, C.I.G.R.E., consisting of three Volumes, are now available and may be obtained on loan on application to the Secretary of the Association.)

This concluded the business of the meeting, which closed at 5 p.m.

PRESIDENT (Returned):

The next item on the Agenda, Gentlemen, is the report on the Electrical Wiremen's Registration Board. I will ask the Secretary to read that report.

ELECTRICAL WIREMEN AND CONTRACTORS ACT, 1939
ANNUAL REPORT, 1948

1.

The Electrical Wiremen's Registration Board held 16 ordinary meetings and one special meeting during the year. With the exception of a change in Chairmanship and the resignation of one member, there were no other changes in the personnel of the Board during the year.

2. Application for Registration as Wiremen

From the attached Table I it will be observed that 3,571 wiremen have now been granted registration. This is a percentage of 58·93 of the total number of applications received to date. The number of refusals amounts to 590 or 9·73% of the number of applications received. The balance of applications not finally dealt with comprises applicants eligible for examination and those whose cases have not yet been decided by the Board, on account of their not having submitted all the documents required in support of their cases.

3. Examinations

(*a*) *Theoretical Examination*

To the number of applicants, *i.e.*, 634, shown in Table I as having been accepted for examination during 1948 must be added the balance of applicants who had not yet passed the examination during 1947, in order to give a true reflection of examination transactions for 1948. 699 Candidates were notified of the examination held

during the first half of the year, while only 392 entered. During the second half of the year 828 applicants were notified of examination and only 437 saw fit to enter. Here again in order to obtain a true reflection of the number of candidates still awaiting examination, the total of 828 must be added to by 303 which comprises applicants who although eligible were not notified of examination by reason of change of address or failure to enter on four previous occasions without having furnished a reason for non-attendance. There were also some cases of immigrants who had applied while still overseas and had not yet arrived in the Union.

The total number of eligibles for examination as at September, 1948, was therefore 1,131.

The figures reflected in Table II attached, which gives details of examination results, can be further amplified by the following percentages: Of the total number of candidates who entered for both sections of the examination, 42·17% passed while 48·56% passed in one section of the examination only. Of the number accepted for Section I of the examination only 62·73% passed and of those taking Section II only 50% passed. Out of all the entries 34·74% failed the examination outright.

(*b*) *Practical Examination*

It is seldom that, once a candidate has passed the theoretical examination, he finds difficulty in passing the practical examination. Of the 249 candidates reflected as having taken the examination in Table III attached, only 8·83% failed the examination.

4. C.O.T.T. Trainees

After consultation with C.O.T.T. officials it was decided during November, 1948, that the C.O.T.T. executive should conduct examinations set by the Electrical Wiremen's Registration Board's examiner on a standard equivalent to that set for all electrical wiremen. A pass in these examinations would then be recognised as being equal to a pass obtained in the Board's examinations and would qualify candidates for registration as wiremen. This meant

TABLE I

Details of Applications Received

Details	1940	1941	1942	1943	1944	1945	1946	1947	1948	Total
No. of Applications for Registration received	2668	172	120	281	299	444	721	625	730	6060
No. of applicants registered	725	780	193	178	208	218	350	501	418	3571
No. of applicants accepted for Examination ...	127	282	148	182	159	179	418	603	634	2732
No. of applications refused	92	91	108	54	55	57	93	78	62	590

TABLE II

Part A. Written Examination—divided into Section I and II

Details	1941	1942	1943	1944	1945	1946	1947	1948	Total
No. of Examinations held	2	2	2	2	2	2	2	2	16
No. of Candidates examined	93	164	247	296	332	512	639	819	3102
No. of Candidates who passed Sections I and II ...	19	65	68	96	101	185	106	132	772
No. of Candidates who passed Section I only ...	6	48	45	77	14	135	213	222	760
No. of Candidates who passed Section II only ...	6	43	62	47	28	59	35	144	424

TABLE III

Part B—Practical Examination

Details	1942	1943	1944	1945	1946	1947	1948	Total
No. of examinations held	2	2	3	4	7	8	7	33
No. of Candidates examined	50	73	130	158	249	362	249	1271
No. of Candidates who passed	49	67	123	145	229	299	227	1138

that the Trade Test heretofore conducted by C.O.T.T. would automatically fall away. The scheme will be put into effect early during 1949.

PRESIDENT:

Thank you, Mr. Secretary. I think it would be advisable if Mr. Smith, who is Chairman of this Board, would address the Convention on the year's operations.

Mr. H. O. SMITH, Chairman, Electrical Wiremen's Registration Board:

Mr. President and Gentlemen, as this is the first occasion during the Convention on which I have had a chance to speak, I wish to take the opportunity of thanking you for your invitation to attend. I feel my attendance at the last conference at East London served a very useful purpose. I do not want to enlarge on that any further in this conference. I think most of you will remember the sentiments I expressed at the last conference. I hope that I will be able to co-operate with you and that you will be able to co-operate with me in the various spheres of contact that we have.

Now to come to the Wiremen's Board, we have during 1948 unfortunately laboured under some disadvantage through staff difficulties, and the results of examinations are therefore somewhat disappointing in that there is a slight regression in the number of candidates dealt with. While we had seven practical examinations instead of eight as compared with the previous year, I can assure you, gentlemen, that that difficulty has now been overcome, and we hope to have practical examinations once a month during 1949, and the enormous backlog that Mr. Kane has shown in his report of over 1,000 candidates being eligible for examination will be worked off. I want to point out to you that this backlog appears rather swollen by figures which is due to the candidates' own fault, in that they do not take the examination once the Board has declared them eligible. The system we are working on now is that a candidate who has been advised that he is eligible to sit for his exam is notified for three or four examinations. If he then refuses to enter he is no longer notified but he still remains on the books as an eligible unit, and with people moving about, leaving the country or assuming other occupations without notifying us that they are no longer interested in the Wiremen's registration, the result is that this figure goes on swelling. To get at the true figure of the backlog I can quote the examination which is coming off on Saturday the 28th of May. It was found that only 700 odd candidates are still so to speak alive on the books, the other 400 are more or less a dead letter. They have to be kept on the books, however, because it has been experienced that these fellows revive themselves sometimes after three or four years, and it is only fair to them that once they have been accepted for examination and can prove that during that interval they have been doing wiring work, they are still eligible for the examination.

In addition to the extra practical examination it has been possible to arrange this year three written examinations. One took place in February; the next one will take place in June, and the third in October. We hope to be able to reduce the backlog considerably by this means.

I do not know, Mr. President, whether you would like me to deal with subsequent matters on the agenda while I am here or later.

PRESIDENT:

No, please let us take the Wiremen's Registration Board first.

Mr. H. O. SMITH, Pretoria:

There is just one other point, gentlemen, and that is a reference to the changes in the constituton of the Board. I think that I told you last year during the Convention that I took over the Chairmanship from Mr. Clutterbuck in the beginning of 1948, and that of course is now the reference in the official report. The other member who resigned was one of the members who represented trade unions. He had decided to become an employer and was therefore no longer eligible for representing the employees. He was replaced by Mr. Calder. I think you all have heard of Mr. Calder, the Secretary of the Association of Electrical Workers, and also at present a member of the Commission investigating industrial legislation.

The other matters which have been dealt with by the Board are under separate headings in the Agenda, and I will conclude my remarks with this.

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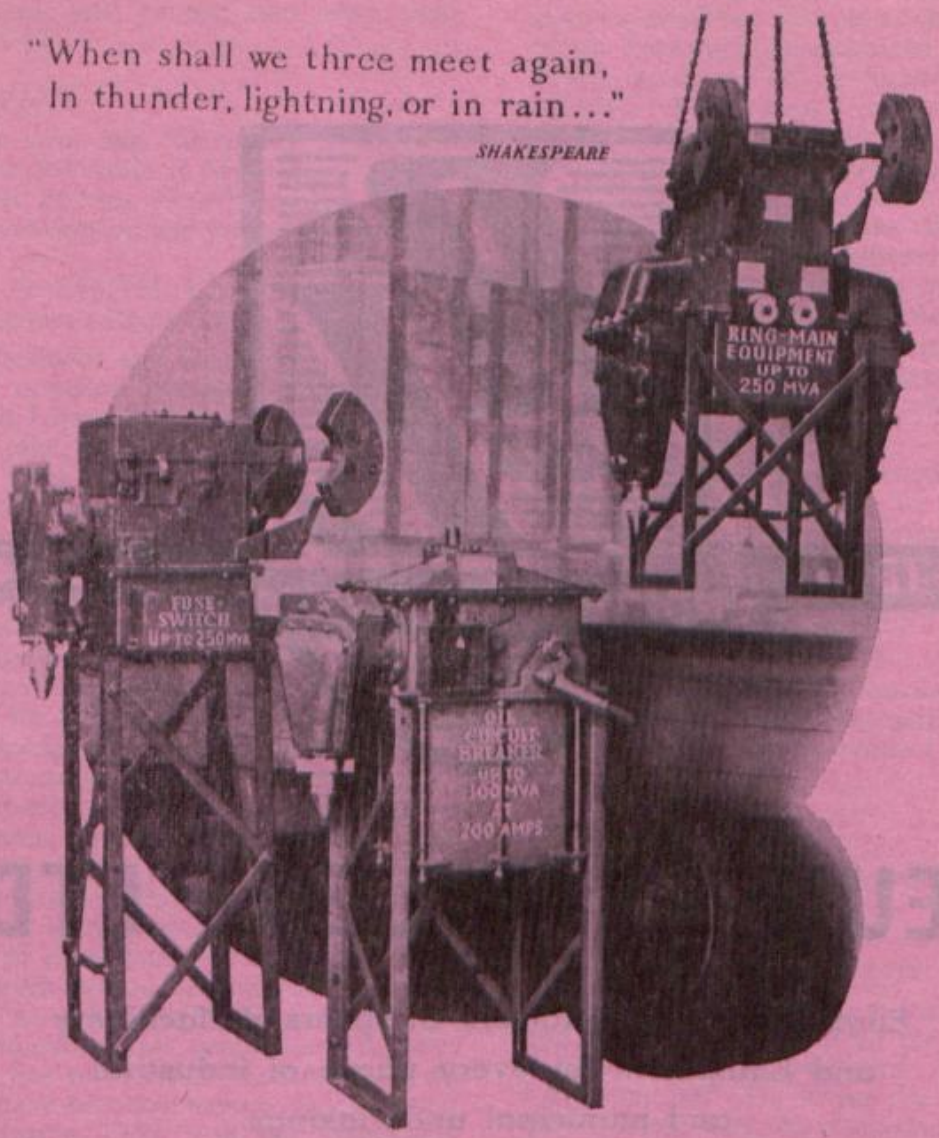
In thunder, lightning, or in rain..."

SHAKESPEARE



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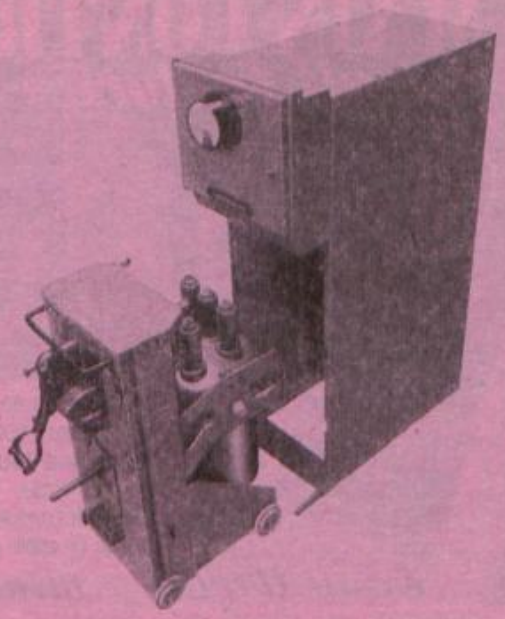

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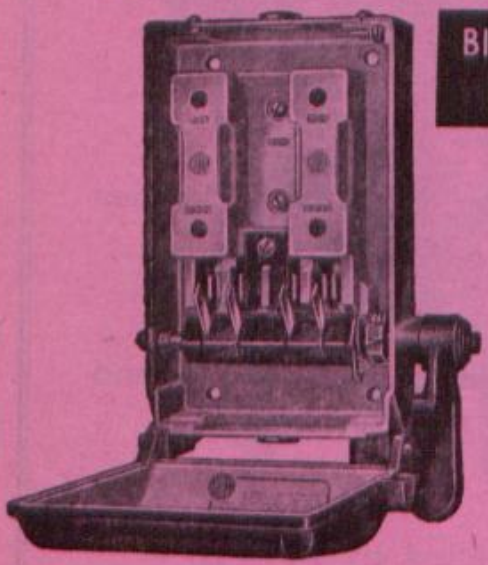

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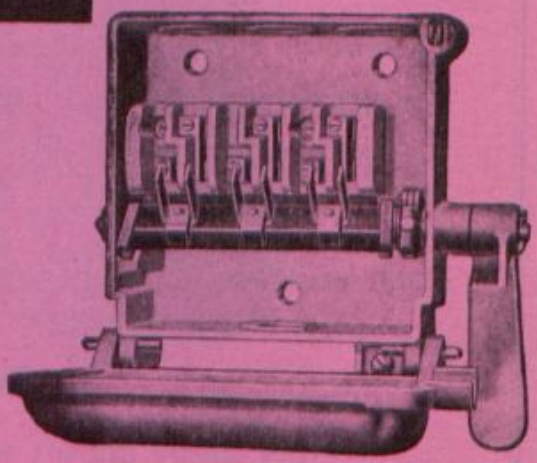

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PRESIDENT:

Thank you, Mr. Smith.

Has any member anything further to add to the remarks concerning the Wiremen's Registration Board? I would just like to say that it is my experience concerning the issue of the Licence that I thought the Board was a bit negligent but on hearing that they have some 1,100 names on their list and the applicants seem to fade out or are not interested when advised when the examination takes place, I can see there is great difficulty in the office side of this administration. I have had men come to me and say they had made application for this certificate, especially the immigrants from overseas, and they seem to get no reply. I have personally written to the Board on the men's behalf and still I am waiting for a reply too. But it is difficult, I appreciate Mr. Smith's position, because there are so many floating names, nobody particularly concerned, and yet I do not know how these men are getting employment if they have to hold the certificate before being employed. It seems that this is the position round about Port Elizabeth, anyway.

Is there any further comment, from any member?

Mr. B. MARCHAND, Witbank:

I would like to ask Mr. Smith what progress he can report with regard to determination of areas.

Mr. H. O. SMITH, Pretoria:

Mr. President, first of all may I be permitted to reply to your remarks. I can assure everybody that applications are dealt with immediately. The Board has a meeting every three weeks and any application that is complete and provides the Board with sufficient information to make a decision is dealt with. I check the number at the various meetings that we have and I add up the number of individuals dealt with, and as a rule it varies between 70 and 80 at every meeting. That would include 40 or 50 new applications and the remainder are applications which have to be reviewed for one reason or another, or else they are applications for exemptions for this and that, and each meeting deals with, as I told you, sometimes over 100 individuals. When you get the tables in your Agenda you will see that during 1948 we accepted for examination 634 new candidates, and as I told you just now, we found it only necessary to notify 700 odd candidates for the next examination, you will see from that Mr. President, that the backlog is very small, a small percentage of the total.

Now, as regards declared areas. This has been a subject dealt with by the Board for some considerable time. The Board constantly receives letters from various municipalities who wish to be declared, and the subject is discussed at almost every meeting. Now the difficulty that has been encountered so far is that there is an enormous amount of building activity, and it is felt that where large housing schemes are under construction, sudden declarations of the restrictive sections of the Act might interfere with the building progress, and it has therefore been decided to await a more favourable opportunity, but in spite of that, owing to the various applications received, the Board has recommended to the Minister a declaration of at least five additional areas. I think I will be in order in telling you that the final decision to declare these areas now would be too abrupt a step. I will give you the reason for that. If one considers the history of what actually occurred in the areas that have already been declared, it is a well-known fact that the actual operation of the Act was considerably delayed in those areas; in other words that once an area was declared, there was still quite a lot of work done by unregistered wiremen. Now, whilst that was distinctly against the law and was perhaps winked at by the local authorities, it was felt that similar circumstances would again take place in newly declared areas, and that in other words the Board would lend itself to what would be regarded as illegal practice. Therefore it has been decided to give these areas a longer period of adjustment, and it has been decided that the Minister will declare in the Gazette his intention to declare these areas within a period of twelve months, that will give the men working in these areas an opportunity to get themselves registered.

The Board has also taken the precaution before recommending these areas to the Minister to ascertain the proportion of registered men as compared with unregistered men, who are working in those areas. I am therefore able to assure the

Convention, Mr. President, that a distinct step forward has been made in declaring the registration of areas.

Mr. W. THERON, Worcester:

I would appreciate it very much if the Board can give us a ruling or a definition of "continuous supervision". We have difficulty with that as it stands today.

Mr. H. O. SMITH, Pretoria:

Now without refreshing my memory I would not like to commit myself. That ruling has been made by the Board. If you will write to the Board you will get a copy of the ruling made.

PRESIDENT:

If there are no further speakers, the Convention will adjourn for tea.

The Convention adjourned at 3.30 p.m.

The Convention resumed at 4.00 p.m.

PRESIDENT:

I now call on Mr. Downey to read his report on the work of the Safety Precautions Committee.

SAFETY PRECAUTIONS COMMITTEE

Mr. J. C. DOWNEY, Springs:

I have to report that the main Committee of the Safety Precautions Committee have met three times during the year.

Many letters have been received from Engineers and Firms regarding the interpretation of regulations, and the use of materials for various purposes. All the queries have been dealt with as promptly as possible.

The new draft of the Standard Wiring Regulations has now been sent to all members of this Association for comment, and in addition copies have also been sent to the Government Mining Engineer, the Chief Inspector of Factories, the Wiremen's Registration Board, The South African Railways, The Public Works Department, The Transvaal Chamber of Mines and the Institution of Electrical Engineers, London, for their comments.

The Committee has been investigating the possibilities of having the new draft (when completed) promulgated nationally by the South African Bureau of Standards, but their legal advisers have pointed out that this would not be possible.

The Electricity Control Board have now been approached in this matter, but up to now no reply has been received.

I regret that the Safety Precautions Committee sustained a severe loss in the death of its able Chairman, Mr. W. J. Petersen during last year, and I feel we all owe a debt of gratitude to him for his untiring efforts in the work that has been done on our behalf.

As the Chairman, Mr. E. Vivian Perrow, is with us today, perhaps he may be able to inform us of any later developments since the Safety Precautions Committee last met.

In conclusion I wish to state that our grateful thanks are due to the other members of the Safety Precautions Committee, especially the Sub-Committee, for the long and tedious work that has been done in bringing the draft of the Standard Wiring Regulations to its new form for comment for the benefit of the members of the Association.

PRESIDENT:

Thank you, Mr. Downey, I would like to add my tribute of esteem, and express my sincere regret on the death of Mr. Petersen, who was a brilliant Engineer, and possessed of sterling character.

We are indebted to Mr. Fraser for his co-operation, along with Mr. Downey in serving the interests of our Association on this Committee. Now Mr. Perrow, would you please give us any report you may care to make on this matter of the Safety Precautions Committee?

Mr. E. VIVIAN PERROW:

First of all, Mr. President, I would like to say how pleased I am to see you in the Presidential Chair of our Association, and on behalf of the Safety Precautions Committee I wish you well during your year of office.

Regarding the report Mr. Downey has presented, I do not think any amplification on my part is necessary. Mr. Downey was at the last Safety Precautions Committee Meeting, and therefore, fully aware of all that has transpired.

The Safety Precautions Committee appreciates very much the collaboration and

assistance which your representatives of that Committee have given. Mr. Downey in particular has been busy as a member of the sub-committee on the second draft of the Standard Wiring Regulations, which is now in the hands of your members, and I feel that when the draft has been perused and comments submitted, the final issue of the second draft will be considerably more up to date than it was possible to make the first edition. The result of the experience of the last few years and the experience of members in the operation of these wiring regulations will not only be valuable, but will assist in ensuring that the second edition is more comprehensive than the first.

Mr. Downey has referred to the death of the Chairman of the Safety Precautions Committee, Mr. Petersen, and I can assure you that it was with regret that we lost his services on the Committee, as he was Chairman of the Safety Precautions Committee ever since it was founded, in fact it was his original idea that the Committee should be formed as the result of various fatal accidents having occurred in connection with the use of domestic appliances. Subsequent to the formation of the first Committee which consisted of members of the Institution of Certificated Engineers it was considered desirable to have representatives from other bodies to assist in the work of the Committee, and the representatives of these bodies have been extremely valuable in their assistance and co-operation.

PRESIDENT:

Thank you, Mr. Perrow. Has anyone any comment to make on this item, Safety Precautions?

Standard Wiring Regulations

Mr. H. J. GRIPPER, Port Elizabeth:

Is it out of place at this stage to bring forward two or three specific items in connection with the Standard Wiring Regulations?

PRESIDENT:

No, that is permissible now, I think.

Mr. H. J. GRIPPER, Port Elizabeth:

Briefly, Mr. President, I would say that if the Standard Regulations for the Wiring of Premises are to be reconsidered *in toto*, and now that they are being drawn up in parallel with, if not by the S.A. Bureau of Standards, that Bureau is looking after the specification of individual pieces and classes of apparatus. I would appeal to the Safety Precautions Committee in drafting the new Standard Wiring Regulations, as far as possible, to pass on to the Standards Bureau the specification of any particular item of equipment whether it be a plug for a cooker, or a particular type of metal that should be used for conduit tubing or the details of a lead-in connection. In other words, let the Standard Regulations for Wiring of Premises make it a principal function to take care of safety and to state how safety should be secured without specifically mentioning or specifying the materials or article to be used.

Further, I would like to have a discussion on the proximity of gas and electricity outlets when it is possible to have a representative of the gas industry here, and thirdly, I would like to mention the need for some standardisation in the type and size of starter to be permitted under the Wiring Regulations. But here again, this is not so much a matter for Safety Precautions, but should be embodied in a "code of practice" enabling any consumer to know, in any part of the Union, the type of starter that will be permitted for any particular size of installation rather than for a particular size of motor. The motor and the installation must be co-related to some extent. At present we have, in one part of the Union the necessity to provide a 3 H.P. motor with a "Star Delta" starter whereas in another part of the Union direct starting is permitted on a 20 H.P. motor. It is time this was taken care of fully and I want to stress again that I do not think it should form part of the safety precautions regulations.

Mr. E. VIVIAN PERROW:

Regarding the remarks made by Mr. Gripper, I quite agree with him that in general principle the Wiring Regulations should take care of safety and not specifically mention materials or articles which would be subject to the Bureau of Standard Specifications and would naturally be referred to in the Regulations by reference to the relevant Standards Specification.

It should be remembered, however, that when the present Wiring Regulations were drawn up the Bureau of Standards was not in operation and consequently it may be that the Regulations are more explicit in some respects than would perhaps now be necessary.

In view of the fact that the draft Second Edition of the Regulations has now been circularised, it is confidently hoped that the Engineers responsible will carefully peruse them and submit any comments which they may consider desirable so that the Committee can finally amend the draft Regulations where necessary.

I have a letter from Mr. Bradley regarding the installation of gas apparatus close to electric outlets and that matter has not yet been considered by the Safety Precautions Committee. If it is possible to have this matter discussed at this Convention, it certainly would be advantageous. I think Mr. Gripper's third point is really a matter for the Convention to consider because in different parts of the Union different Municipal Regulations call for different types of equipment, and uniformity of practice in these matters is highly desirable.

Mr. J. L. VAN DER WALT, Krugersdorp:

In connection with the amended Wiring Regulations I would also appeal to the Safety Precautions Committee or to the Bureau of Standards to be more specific in connection with what they mean by "flameproof fittings". In the regulations "flameproof fittings" should be provided wherever there is a possibility of explosion or explosive gasses, but nothing is said or done about what is meant by "flameproof fittings". Overseas, in Britain I am talking about, the only recognized flameproof fitting is the Buxton certified fitting. I speak under correction but I think the Mines Department has accepted Buxton certified flameproof gear as the only permissible gear in mines. Now could not the Safety Precautions Committee take that same step and give us a definition of flameproof equipment. Many undertakings have this difficulty, especially with dry-cleaning places that are going up, paint factories and so on, where it necessitates flameproof fittings and yet the engineer cannot specify what is a flameproof fitting.

Mr. D. N. VAN DER MERWE, S.A. Bureau of Standards:

Could I make a few points in connection with the promulgation of the Wiring Regulations by the Bureau of Standards? We have investigated this matter very carefully and have found that it could not be done under the Standards Act. We have returned all papers to the Safety Precautions Committee who will be issuing these regulations as they have done before.

The second point raised by Mr. van der Walt of Krugersdorp in connection with flameproof equipment; I would like to mention that the S.A. Bureau of Standards is equipped to carry out flameproof tests and has already issued certificates for flameproof motors.

Mr. PERROW:

It is possible, that the next edition of the wiring regulations will be published again by the S.A. Institute of Electrical Engineers.

PRESIDENT:

If there is no further discussion on this matter, we will pass on to Item 8(iv) on the Agenda—

Registration of Electrical Contractors.

This involves quite a few new items which have come to our knowledge over the last few months. Has anyone any specific item to put forward on this matter? Then I will ask Mr. Smith to bring that matter forward.

Mr. H. O. SMITH, Pretoria:

Mr. Kane will not be in a position to read a report on that, as he is not a member on the Registration Board, but merely acting as a representative of the Board. I was not able to give Mr. Kane any information on the subject, and am therefore afraid that I am unable to make a report. If you want a discussion on that subject I will assist the Convention gladly.

PRESIDENT:

Under those circumstances we will proceed. Mr. Kane will understand.

Mr. H. O. SMITH, Pretoria:

In Mr. Kane's report on the activities of the Wiremen's Board he told you that there were a certain number of meetings held during the year, that is 16 meetings during

the year, and one special meeting. That special meeting was held in connection with registration of contractors where the Secretary of Labour, Mr. Lee, specifically asked to meet the Board on this question, and I think the general impression was that Mr. Lee's attitude towards this subject was very helpful. He certainly showed sympathy in our trying to bring forward some measure in view of the pressure that has been exercised on the Board by the various supply authorities. To recapitulate shortly the various arguments brought forward for registration of Contractors was that above all it is desirable to have uniformity of action throughout the Union in deciding who is eligible for registration and who is not, because it was found that the various supply authorities who today under the Wiremen's Act have the power of registering contractors do not all act uniformly.

Another difficulty experienced in the past was that contractors registered in one area were unable to tender for and accept contracts in other areas of supply in which they were not registered. It was then put forward that if registration were done by a central authority, unless that registration was valid throughout the Union, these various difficulties would not be overcome. During the meeting held with the Secretary of Labour it was pointed out to the Board that registration of contractors could only be brought about by amending the Act as it stands today. Now we all know that when we approach the Minister to amend this Act and that Act we are put off from year to year because the programme before Parliament is too heavy. I do, however, want to tell you that should it be considered desirable to amend the Act to register contractors, there would be no hope of getting that amendment through this session of Parliament. The Secretary has now given instructions to explore whether the position could not be met by amending regulations, and that is how things stand today, gentlemen. If it will be possible to meet your wishes by amendment to the regulations, there is a good chance of getting that through within a reasonable period. In other words. to sum up, all I can tell you is that the matter is under consideration by the Department.

PRESIDENT:

Thank you, Mr. Smith for your comment.

Mr. C. KINSMAN, Durban:

Mr. Smith has said that there is a difference in the manner in which the various municipalities operate the local registration or licensing of contractors. I think most of those difficulties arise either from the wording of the Act or the various interpretations that have been put on that wording. I refer to the more or less permissive character with which registration is dealt with by the local authorities. You will recall—I have not got the Act with me—but it runs something like this: "Section 21 of the Act dealing with Contractors licenses says that suppliers who have by-laws requiring the registration or licensing of people as contractors may refuse to issue such license or to effect registration if the applicant for such license or registration is not the occupier of premises which are suitable for the business of a contractor, or . . . and so on and so forth." While on the details of that I want to stress the point where it says "he may refuse". Personally I would prefer to see it more rigid and say "he shall refuse" if he does not comply with so and so. Furthermore, having in the Act certain grounds on which a local licensing authority or the supplier of the local licensing authority may refuse a license it has been ruled by at least one legal adviser that it is not competent for a municipality to add any other reasons for disqualification. A big industrial concern in Durban has an electrician on its staff whose only work, other than doing work on the premises for that firm is to do wiring work for its directors in their own houses. When the occasion arose for this electrician to do wiring work for the directors we said: "But you have not got a licensed contractor". This firm immediately applied for a licence as a contractor to regularise the position. We took legal advice as to whether a section of the firm's premises partitioned off and with an entrance on the street bearing this particular employee's name as an electrical contractor constituted a workshop within the meaning of the Act. Our legal opinion said that it was suitable to carry on the business of an electrical contractor and probably better equipped for it than those which were occupied by a large number of other electrical contractors in town. Surely that was not the intention of the Act?

Mr. Smith, I am sure, does appreciate why there cannot fail to be differences in the way different municipalities operate under the Act. I do hope that in any future amendment of the Act that section 21 will be made directive rather than permissive.

Mr. H. O. SMITH, Pretoria:

Mr. Kinsman touched on a very vital point there, and I would like to make this point to all of you. Sooner or later that Act is bound to be amended in the light of the experience gained during the time it has been in operation. If therefore, anyone of you has felt in the light of their experience that an amendment in one way or another would serve a useful purpose you would be doing yourselves a good turn and will assist the Board considerably by putting your points and your submissions in writing to the Board, for these submissions will then be collected into one file, and when the day comes when we decide to amend that Act, all these submissions will then be considered and the experience will be included in the amendment. I think a further step that will also be taken, of course I cannot promise for what will happen in the future, is that it is usual when an amendment of that nature is contemplated, that the parties interested, such as yourselves, will be circularised with the draft amendment and will be asked for comments. Therefore, Mr. President, my reply to Mr. Kinsman is this, let us have that submission in writing, and it will be filed, not pidgeonholed, for consideration when the time is ripe.

PRESIDENT:

Thank you, Mr. Smith, for the statement that it will be filed, and not pidgeonholed. Under this heading we can incorporate the rather contentious point that has arisen of late with regard to the newly designated trades, firstly that of the **Domestic Appliances Mechanic,** and secondly that of the **Refrigeration Mechanic.** As the discussion proceeds, so we will see where we are heading for, and I would like to ask Mr. Halle, our Vice-President, to lead us off on that discussion.

Mr. C. R. HALLE, Pietermaritzburg:

Mr. President, in the Proceedings of the last Convention the opinion was expressed that if the Government designated a new trade, as Domestic Appliance Mechanic, they should come under the control of the Wiremen's Registration Act.

The position now is this, that they have designated this trade and as far as we know we can only feel disappointed that they have not taken notice of the wishes of this Association, that these men come under the Wiremen's Registration Act. I believe they serve a five-year apprenticeship and it seems a long time to put in to learn a rather small isolated section of the electrical trade. An electrician after he has served a five-year apprenticeship, is quite capable to do wiring and other work and repair domestic appliances, but here we have a section of young men who are going to concentrate their whole time on this and as far as we know will have little knowledge of the loading, wiring and the whole installation to which their appliances are connected. I think you all know the inevitable result that sooner or later these young men will start putting in stoves and connect them to the electric wiring system and will gradually branch off in a sort of black market in wiring work. It just seems wrong to me and by the report you arrived at at the last Convention it seemed wrong to you at that time, because you definitely passed a resolution that it should be considered as falling under the control of the Wiremen's Registration Act. I think at our meeting this morning of the Executive, it was suggested that it would be better if certain wiremen can specialize on wiring installations, or have their ticket qualified with say, a special qualification as domestic appliances mechanic. That would be an off-shoot of an already designated and controlled trade instead of a separate uncontrolled off-branch who will cause us a lot of trouble, and so I bring the matter up again in this Convention.

PRESIDENT:

Thank you, Mr. Halle.

Mr. H. O. SMITH, Pretoria:

Mr. President, may I reply to that, gentlemen? I feel that I should point out to you that the general feeling on the Wiremen's Act is perhaps slightly misconceived in this respect—that the object of the Wiremen's Act is purely that of public safety, and furthermore that the Act only deals with wiremen as distinct from electricians or even electrical engineers.

The Board has repeatedly received applications from engineers—well qualified engineers—for registration as wiremen on the grounds that they have installation experience and knowledge of what is required. The Board's attitude, however, is that it has to be satisfied that an applicant can prove by documentary evidence that he himself has done a reasonable amount of wiring work. The position is, therefore, that a highly qualified electrician or an electrical engineer who all his life has supervised wiring work is not qualified to become a wireman on those grounds alone. Now we come to the **Domestic Appliance Mechanics.**

When there was a move in declaring this trade, the Board's attention was drawn to this move, and the various bodies like yourselves who felt that it was not desirable to declare this trade, made representations to the Wiremen's Board. First of all I must point out to you that that is not within the jurisdiction of the Wiremen's Board. That is entirely a question for the Registrar of Apprentices; that is his jurisdiction, and in spite of that, the Board felt it its duty to support these various representations that were made against declaring this trade but the department was forced by pressure exerted by the employees, that is the various trade unions, and the employers concerned in this to declare that trade. It went through the National Apprenticeship Board and owing to the wishes expressed by the persons concerned, it was felt desirable that these wishes be given effect and the trade was then declared.

Now, as regards controlling these people under the Wiremen's Act, as I have explained to you, the Wiremen's Act only deals with wiremen. These people will undoubtedly, as Mr. Halle has correctly pointed out, be compelled in many instances to connect these various appliances permanently, which would then constitute wiring work. It must be quite clearly understood that if these appliances are plugged in it is not wiring work. If you look up the definition of wiring work in the Act, you will find that it only refers to such work as is done on a fixed point. Anything outside the plug, or rather the plug socket, is not fixed; therefore it is not wiring work. So with regard to this difficulty the position could be met there and these people would not be allowed to do any work on an appliance that is permanently connected, but they would be allowed to work on an appliance that is plugged in. But there is another point I want to make and that is a very serious one.

While I appreciate Mr. Halle's fears, and probably he has voiced all your fears, that these men may eventuate in to so called black market wiring work is it fair to criticise these men, their qualifications and their skill, if the syllabus of their training is not known? Has Mr. Halle gone into the details of their training system? Personally I must confess that I do not know of their training yet, but I cannot conceive that their apprenticeship will not include a considerable amount of electrical theory and purely electro-technics and electric wiring work, and I feel therefore that whilst this trade is designated as a particular trade they will, due to their syllabus of training, be at least conversant with the elementary knowledge of an electrician and I think that your peace of mind, Mr. Halle, is perhaps unduly perturbed on the position, and that it will not deteriorate in the general sense of the word as much as you seem to have anticipated.

Mr. J. L. VAN DER WALT, Krugersdorp:

Mr. President, while I am in full agreement that we should have qualified men, or capable men, dealing with domestic appliances, I cannot say that I am in great favour of the establishment of this separate trade now known as the domestic appliances mechanic. And before that is given consideration—well it has already been given consideration—but I think it needs a lot of thought and a warning should be sent out. We have today this anomaly that the tail is already wagging the dog as far as the Wireman is concerned, compared with the Electrician. If we are not careful, we are going to have the tassel of that tail wagging dog and tail, if careful consideration is not given to the establishment of this trade. The argument is always put forward that the electrician can obtain his Wireman's licence. Correct, I agree with you, Sir. But was it not a mistake to have registered the wiremen first and not the electrician? To my mind the electrician should have been the profession or the trade which should have been registered first, and from that the Wiremen should have been an

offshoot. Could we not overcome this difficulty by widening the field of the wireman and include in his examination an examination on domestic appliances and enable him to repair those appliances? Why go and establish another trade, making it a specialist trade, and as I see it, causing us great difficulty in the future? I think we should appeal to whoever deals with this matter to give this matter careful consideration before it is too late as is the case with the electrician. As I have said the electrician can become a wireman, but why is that restriction laid on to him, and not on the wireman to become an electrician, which is the condition that we have today? Due to the wireman having the wireman's licence he is entitled to do the electrician's work. I think all should agree that many electricians that are capable and trained for it to instal motors, transformers, just to give you a few examples, are not entitled to do so because they have no licenses. That restriction is laid on him, although he can do it. The wireman, who has probably been trained in house wiring, shall we say 99% of his time—pure plain house wiring—is entitled to go into a factory and do those power installations, and in many instances is not as capable as the electrician would have been.

Mr. C. KINSMAN, Durban:

Mr. President, this trend towards specialisation recalls the story of an old lady who had heard that her nephew had become a Naval surgeon and said: "My word these doctors do specialize nowadays". I think we should watch the situation for the very reason so ably put forward by Mr. van der Walt. I do not think we can do much more than record our disappointment that despite our representations made at East London this has been designated a separate trade without our knowledge and Mr. Smith is right there that we are on dangerous ground in criticising unless we know the regulations under which the Apprenticeship Committee is administering this. I propose that we should simply record our disappointment that our representations have not been given effect, or apparently are not being taken into consideration, and that our Executive be directed to investigate the position and to take such other measures as may be open to them and to report to the next Convention. I move that.

PRESIDENT:

Councillor Schauder of Port Elizabeth has just come in to the Convention, and has signalled to me that he would like to have a word.

Councillor A. SCHAUDER, Port Elizabeth:

I would like to take this opportunity as a former Mayor of this city and former Acting-Chairman of the Electricity Committee, to extend to you the heartiest congratulations of the City Council and people of Port Elizabeth and to wish you a very happy and successful year in office. You have always been loyal to your profession and to your work, and have always been conscientious in your duties. I wish you the best of luck and every success.

Whilst I am on my feet I would like to stress to you all, the utmost necessity for you to see that any man who handles any electrical appliances for repairs should be properly trained and certificated because of what has happened on some occasions in the past. We know of cases where electrical appliances had been sent to a so-called repair shop and were supposed to have been repaired and paid for, but the work had been carried out inefficiently, and the workmen constituted a danger to the community. I would like to stress that no electrician be allowed to touch electric appliances unless he has thorough knowledge and has been trained to carry out his work with intelligent understanding of basic principles.

Finally I appeal to you as Engineers to realise that you are the trustees for our future. Electricity is now the very basis of our life as a community, and its management must be regulated by men serving the highest ideals of duty and loyalty. We do not ask you for technical skill alone; we ask you to combine that skill with a high sense of responsibility, and a firm resistance to all sections that might wish to use you for their own selfish ends. You have a high record of service. My message to you is to carry on, and we will be with you.

PRESIDENT:

Any other speaker on that matter? Mr. Smith will again address the conference on this subject.

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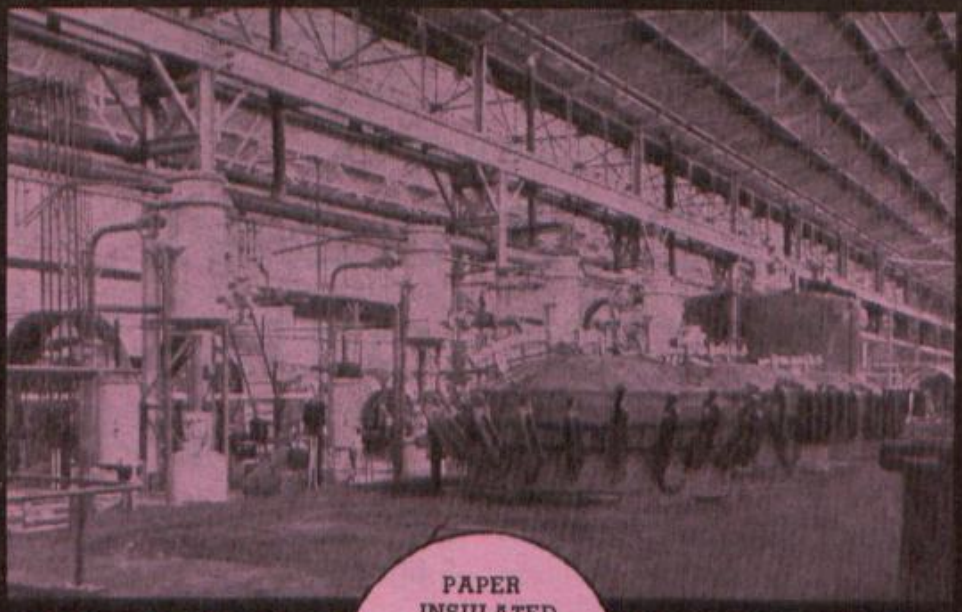

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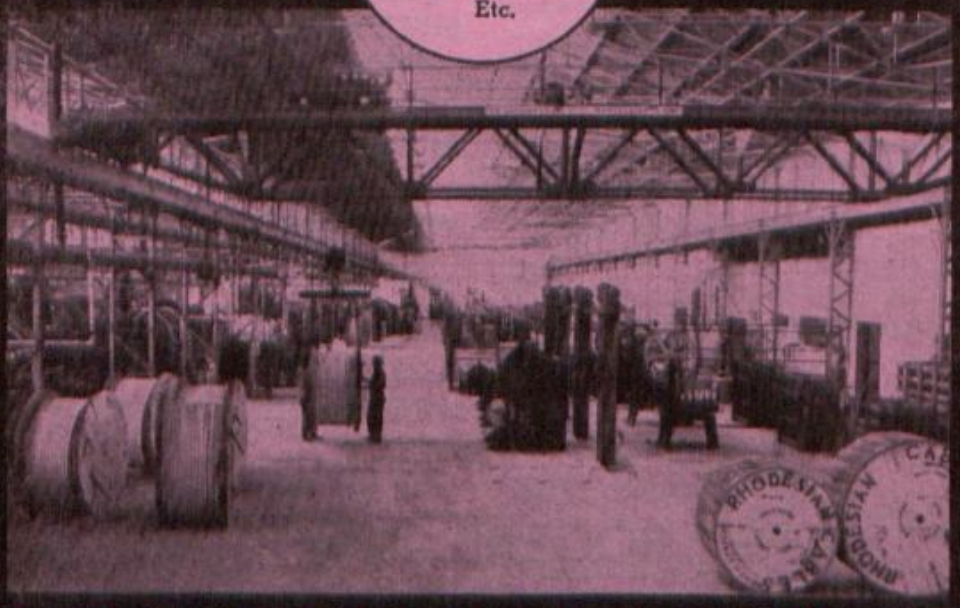

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Mr. H. O. SMITH, Pretoria:

I would like to thank Councillor Schauder for doing my job for me. I am now speaking to you as the Chief Inspector of Factories, and I hope, with your permission, Sir, I may take this opportunity of addressing your members on this very point of safety. I have been considerably concerned by the position that exists in the Union. We have had in the Union during 1948 no less than 23 electrocutions. I compared that with overseas figures and His Majesty's Chief Inspector of Factories in Great Britain reports in 1947 that in the whole of his area of jurisdiction containing some 40,000,000 people there were only 30 electrocutions, and bear in mind that these figures include everything in England, whereas my figures only include factories and domestic installations, not mines. I do not know how many electrocutions the mines had. Now if you compare these figures 30 against 40,000,000 and 23 against some 11,000,000 or 12,000,000, including non-Europeans, it is rather disturbing and a very high rate and nobody can help me to reduce that figure more than the electrical engineer and I therefore take this opportunity of appealing to you gentlemen to concentrate on the safety angle in all your activities as much as you can, and particularly in doing away with overhead service lines that do not comply with the regulations. We are still having any number of electrocutions on overhead service lines that are not on the approved list. I would like to make it quite clear to you, gentlemen, that under the Factories Act domestic appliances have been excluded from the definition of machinery, and that electrical domestic appliances are only deemed to be machinery for the purpose of accident enquiries. As I explained to you last year domestic electric appliances are not machinery until you have had an accident with them. The Factory Regulation only goes as far as the service line, thereafter it is the responsibility of the supply authority. You are the technical advisers, you are the gentlemen who represent the supply authorities on the technical side, and it is your duty to see that domestic wiring is safe. Unfortunately that also includes domestic electrical appliances. I know the difficulty that exists to control their safety because once a man has bought himself a kettle or an electric iron it is impossible for you to know what he is doing with it, but if you preach this aspect of safety to your installation inspectors and to your contractors that wherever they come across dangerous appliances they should report it to you, then you should at least take advisory action although you have not any legal power, but where you have legal power you must certainly exercise it. I thank you for your remarks, Mr. Schauder, I would like to support them.

Mr. H. A. EASTMAN, Cape Town:

Mr. President, Gentlemen, we are greatly indebted to Mr. Schauder and Mr. Smith for reminding us of the need of doing everything we can to ensure that appliances used in this country, particularly domestic appliances, are safe, but I hope that I have misunderstood Mr. Smith when he referred to the responsibility for accidents in the houses of domestic installations. In the course of an appeal to the Privy Council in connection with a fire in New Zealand, it was made clear that a supply authority has no common law duty of care to a consumer to see that the consumer's installation is in order unless it knows that that installation is unsafe. Our attitude has always been that when we carry out a test on a consumer's installation we carry a certain amount of implied responsibility for the safety of the installation at the time of the test, but what happens on the installation afterwards, I will not say is nobody's business, but it is certainly not ours unless it comes to our notice.

Mr. H. O. SMITH, Pretoria:

Mr. Eastman, I want to clear this point. I did not say that the supplier is responsible for accidents. I did say, however, that he is responsible for seeing that the domestic wiring is safe and naturally it can only be ascertained after the accident, if at any time, what has been done; that has been proved previously in one case. It is then his duty to take the necessary action.

PRESIDENT:

Is there any further speaker? We have the proposition made by Mr. Kinsman that the matter be submitted to the Executive Council to deal with it.

It appears to me that the Labour Department, through various representations, are

making too many trades, and I do not see the reason for serving a five-year apprenticeship to service domestic electrical appliances. The trade of electrician includes all that if he serves his time and the Electrician should be a combination embracing Electrician, Wireman and Domestic Appliances Mechanic; there is a lot in what Mr. van der Walt has said. I thank you very much for your very able and instructive discussion, and Mr. Smith for his contribution. I declare the Convention adjourned until tomorrow at 9.30 a.m.

The Convention adjourned at 5 p.m.

The Convention resumed on Thursday, 19th of May at 9.30 a.m.

PRESIDENT:

I have pleasure in asking now that the discussion on **Mr. Gripper's Paper** be continued.

Mr. H. A. EASTMAN, Cape Town:

Mr. President and Gentlemen. In the Paper that we have listened to, presented to us by Mr. Gripper, he has produced for our consideration, I think for the first time, the concept of comparison between electricity undertakings and the value of those electricity undertakings to their consumers in the nature or the form of a chart, and I want to refer at the outset to the credit or blame which he places on me earlier in the Paper as the originator of this method of comparison. This is possibly due to my invention some years ago of the term "economic figure of merit" but considerations on these lines had been given by authorities on these matters many years before that. Difficulty must be expected in obtaining anything in the nature of universal approbation of such a curve. Such a method of comparison must be discounted to some extent by the fact that there is no definite standard of efficiency—for example 100%—that one can possibly attain. Factors vary so widely between electricity undertakings that, with this method of producing a result for what for convenience is called "efficiency" there are many considerations which will affect its value. I submit that the principal value of the analysis is to the undertaking itself, to see how it is getting on from year to year in a particular direction, and to see what is the value of the service we are giving to our consumers from year to year—is it increasing or decreasing? To use the graph as a comparison of performance between one undertaking and another is liable to introduce perhaps quite unmerited heartburning or pleasure, just according as you may be above or below a line which after all is drawn almost arbitrarily. The question really resolves itself into the question of what is the plant load factor? This technical term is translated by Councils as meaning "how much we are getting out of the undertaking for the money we have put into it"? On that basis of comparison also a great deal of difficulty may be experienced because of the differing conditions existing as between one undertaking and another. Both may be run on exactly the same economic basis so far as the use of the plant is concerned, but the average cost per consumer in one undertaking may be greater than in another because one may serve mainly one or two large consumers who take supplies direct from the busbars while the other undertaking has to spend a large amount in distributing power over a very large area. I personally thank Mr. Gripper for introducing a graph of this kind for our consideration because it does throw light on matters which sometimes are taken for granted.

In the course of his Paper Mr. Gripper draws attention to the need in preparing any kind of graph of this sort and particularly so in connection with the purpose which this graph may serve, for having some form of standard accounts. Many years ago this Association devised a standard of accounts for electricity undertakings which obtained the approval of all four Administrators in the Union. We published our system of accounts and if all municipalities do not work to that which was first of all adopted by us in consultation with the official auditors of the Provincial Administrations then I suggest that the matter be taken up again with a view to obtaining uniformity throughout the country.

I suggest, Sir, that that part of the Paper in which Mr. Gripper states that old plant—obsolete plant—should be disposed of as soon as possible should be read in conjunction with the present day fact that new plant costs such a lot and the useful economic life of old plant has been extended a great deal thereby. Quite a number of electricity undertakings in this country

have in daily operation plants which only a few years ago they were on the point of discarding altogether. They may well find it economic to run these for many years to come because of the high cost of new plant.

The position on which any point may fall on this graph is determined not only by the initial cost of plant, but is determined amongst other things by the popularity of the supply. This is governed largely by the rates of charge; hence, I presume, the reference in the Paper to tariffs. The original theory on which tariffs were built at one time, viz., the Hopkinson theory whereby the cost of supply is divided into two parts: one a fixed charge and one a running charge, has been accepted as correct and is the basis for the analysis of the cost to supply classes of consumers as well as consumers as a whole. Nevertheless practical considerations still determine the details of the tariff rates from considerations of what the service is worth. If the tariff rates are not tempered in this way it will be found that one or more class of consumer is benefitting unduly to the disadvantage of another class or that a load is being built up in a direction which is not needed, is unnecessary and may possibly be an embarrassment for the undertaking.

Control of Stores

I gather from Mr. Gripper's remarks that he has no objection to the centralization of stores under the control of the City Treasurer, provided that the engineer is responsible for the issue and use of the stores in his own department. City Treasurers in this country for many years past have endeavoured to control the stores of Electricity Departments as much as possible. It is an attitude which has been fought most bitterly by some undertakings. The attitude of the Electricity Department of at least one undertaking, a large one, has been that if the City Electrical Engineer is unable to look after stores to the advantage of his department and the Council as a whole, then the Council should get another City Electrical Engineer. The Electricity Department should not be required to hand over to another department of the municipal service what virtually amounts to control of the materials with which it carries out its work. The City Treasurer being the controller of the municipal purse in all directions, is fully justified and should be very welcome—I emphasize that—to appoint auditors to see that stocks are properly kept and accounted for, but as to what the Electricity Department shall purchase and how and when it is used is the business of the Electricity Department and should remain so.

Similarly in regard to meter reading, City Treasurers have for a long time endeavoured to obtain control of meter readers. Why should they? Their argument is that as the electricity accounts are based on the readings of meters obviously the finance department's employees should do the reading. They ignore completely the importance of the contact between meter readers and the public as representatives of the Electricity Department. If there is anything in their argument it applies also to control of meter testing departments as the revenue is entirely dependent upon the accuracy of the meters. In short the Electrical Engineer should not be subject to any kind of interference by any other branch of the municipal service in the administrative or technical functions of his department.

PRESIDENT:

Thank you, Mr. Eastman:

Mr. J. E. MITCHELL, Salisbury:

I should like to add my thanks to the author of the Paper and to congratulate him not only on his subject, which is really most interesting and instructive for Councillors and Engineers alike, but also for his method of presentation. Often one of the chief difficulties at a conference such as this, after the reading of the Paper, is to obtain sufficient discussion to get the real value of the Paper. I feel the author of this Paper has actually incited all the engineers to join this discussion for it seems to me that any engineer who finds his figures below the line, or shall I say above the line and a long way from the origin will want to get up and preen his feathers, and anybody who finds his figures near the origin and well below the line will feel the necessity to get up and defend himself. You see the Salisbury results on the table here are a long way from the origin and still below the line. I do not know whether I should boast or just hang my head in shame. As the author says,

this chart is not the be all or end all in regard to efficiency. Unless the major number of undertakings that have been used to form the average line are very similar, the average as such is sure to be fallacious, because it seems to me that in certain cases we are trying to compare chalk and cheese.

Certain factors make quite a big difference. Firstly if the undertaking by the nature of its load as Mr. Eastman has said is suffering from a very low load factor, its efficiency as shown compared by this method with one with a much higher load factor will be shown in a very bad light. In Salisbury for instance where the average number of units per consumer is comparatively high, but where all those consumers unfortunately try to consume their 10,000 units during a few hours of the day and we get a demand per consumer on the power station something like 4 kW. it is realized that the service would cost a lot more than for the ordinary type of consumer. Where the network is used to supply one type of consumer during certain hours of the day and a different type of consumer during other hours of the day the position is quite different.

Secondly at the present time a great deal depends upon what development of the undertaking has taken place part pre-war or recently. In the case of Salisbury for instance, whose undertaking is now five times the size it was in 1939, it is obvious that the greater portion of the capital spent was during the period of high prices. There are larger undertakings in the Union who must have spent a great proportion of their capital before 1939. The author suggested that possibly the Salisbury accounts were formulated in a different manner, but I do not think that is the actual reason for that curve being as it is. I think it is just the varying factors as against the average line on the chart. My Mayor has just suggested that in the case of Cape Town where the blue line returns very quickly it was possibly the result of a decision to reverse a decision of its council of the previous year.

Another point which should be taken into account is due probably to the cost of coal. For instance where you are paying a lot of money for coal you may need to pay more for your generating plant than if the cost of coal were low. In other words the lower the capital cost as shown on this chart the higher your efficiency, although your generating efficiency is naturally lower because you have a less expensive plant.

Another factor influencing efficiency designated by the author and as mentioned by Mr. Sibson is surely the number of consumers per square mile. It is obviously very much cheaper to supply electric power to a congested block of flats where usually one high tension service in the basement is all you require to instal services for possibly 100 flats, the actual number of services on the distribution main being paid for by the owner of the flats and not by the distribution authority. That of course is quite a large contribution to the actual value of the undertaking although they do not actually own the mains.

My own theory is that efficiency can only be compared when all the undertakings results are in some manner brought down to a common denominator of working costs per unit sold, but you must compensate for cost of coal, load factor, units per consumer, consumers per square mile and only then can you compare if all the undertakings keep the same incidental service such as free repairs of fuses and such like and also they should give the same reliability of supply because it is obviously cheaper to supply consumers on a single feed than on a duplicate or ring main system. Those factors must be taken into account.

I am glad the author laid stress on load-building in that it must be combined with load spreading. I think we should not so much try and get increased sales to existing consumers but that we should get increased types of consumer.

I would like to add that I am very much in agreement with Mr. Sibson of Bulawayo in regard to charging what the service can bear.

The second half of the Paper, it seems to me, is especially for Councillor members, so I do not want to take up any more time except to thank the author for his comprehensive and thought provoking Paper.

Mr. G. J. MULLER, Bloemfontein:

I would also like to add my quota of thanks to Mr. Gripper for his very interesting Paper. He has, as has already been said, raised almost every controversial subject since the Convention started some 34 years ago.

Whilst agreeing with what Mr. Eastman has said with regard to the responsibility for meter reading I feel that we should not be unduly strong in that respect because in many undertakings that I know of it is common practice for economic reasons to have the water and light meters read by the same meter readers and it will be difficult for the City Engineer and the City Electrical Engineer to decide as to whose responsibility it should be to control the meter reading and I think the practice of the Treasury reading is just a convenient way to provide a neutral party to take care of all the meter reading.

On the subject of stores the engineer should obviously be responsible for what he buys and uses, but we have found that there is so much in common in the material we require and what the City Engineer requires, apart from others, that it is very convenient to avoid overlapping of stores to have a central store which takes charge of the materials one has bought. Obviously in such matters as cables, switch gear and the like, specifications are issued by the department, material is bought by the department, but delivered to the store for control and issue. Such things as picks, shovels, bolts, nuts and such common things used in engineering which are also used by other departments are not bought by us, they are bought by the stores.

As regards the use of the chart I would not like in any way to detract from the interest but there are so many factors affecting the economics of an undertaking that I think we should be very careful in the use of this chart and I would not like to see my Council taking it too much to heart because they would then have to reverse a decision taken some years ago on a matter of policy in electrifying the surrounding plots of the peri-urban areas. I may say this has been temporarily held up on account of funds, but the decision still stands. It is obvious that the peri-urban areas cost more per consumer than the town, but on the other hand it should not be lost sight of that this service is very valuable here and may have its future benefit to the Council when these areas in the course of years become part and parcel of the city. In the meantime these consumers are very happy to have this service at an increased charge compared with the town to cover the additional charge to serve them, but if the matter is merely considered from the effect it has on the chart it would be considered a detrimental procedure to electrify rural areas because it immediately puts you on the over-capitalized side without taking into account that these people will pay for their additional service.

Thank you, Mr. President.

Mr. C. KINSMAN, Durban:

I would like to speak on one or two points already touched on by Mr. Muller, namely the question of meter reading and stores. I think it is a matter on which we must not be too dogmatic but should take into consideration all circumstances in a particular town. It may be that there are a lot of specialized stores with which one is specially concerned if one is generating. Furthermore the stores department or yard may be situated some distance from the Electricity Department, then there might be an unmistakable case for the Electricity Department to keep its own store. Now I do not suggest for a moment that the store should be run on the lines that the storekeeper, be he who he may, buys stuff irrespective of the wishes of the Department, but let us take the other side of the question—the position as it is in Durban. We are fortunate in having there the stores department for the whole municipality adjacent to the depot of the electricity department which now only runs a distribution section and a centralised mechanical workshop. There has operated there for many years with considerable efficiency and success a centralized stores. No electrical plant is bought by the storekeeper except on a requisition from and with the approval of the electrical engineer. Quotations are invited by the storekeeper on specifications issued by the electrical engineer. The quotations are submitted to the electrical engineer and the purchases are recommended by him.

After long experience I find for our particular circumstances that it would not

be in my Council's best interests to go over to the policy of running our own stores.

Now as regards meter reading, in some cases I feel that meter readers should be taken over by the City Treasury Department. I know what was said in our arguments when we lost the day years ago, but I wonder whether we had not overstressed the case. Was the meter reader all that we had claimed him to be? I do not think he was. Occasionally he brought in some report about unauthorised wiring, but he was often apt to be somewhat pronounced in such statement as to whose was the best stove to buy. The householder would think that coming from the Electrical Department he knew all about it, and he brought the Department a certain amount of trouble from the dealers. In Durban when it was a small municipality the conductors on the trams knew everybody; they had a cheery greeting for everybody and used to address them by name and so with the meter readers. As the population grew, they lost that contact and there is much more impersonality about it today. As long as the meter reader can read his meter accurately I do not think it is of much importance to the Department whether he is controlled by the Treasurer or by the Engineer.

Mr. Eastman, able debator that he is, has rather put a fast one across us submitting that if the meter reader is controlled by the Town Treasurer, should the latter then not also run the Test Department? If I want to know the time I can go to anybody in the street who is carrying a watch—he can read it. I need not go to a watchmaker, he is too far away. If there is a case where a municipality meters its water then I think it is reasonable and logical that one man on his route should read both meters. So, I do suggest that we must not be too dogmatic. In principle, naturally, we want to control all the functions relating to our department, but I think we should view those ambitions in the cold light of reason.

I wanted to speak on those two points and they also give me the opportunity to add to the praise already showered on Mr. Gripper, for the service he has rendered us, and the municipal electrical industry in particular, the tremendous amount of work he has put into the preparation of this Paper and the able way in which he put it forward.

Mr. E. L. DAMANT, Electricity Supply Commission, Durban:

It is my lot, as Manager of the Natal Undertakings of the Commission, to care for the electrical wants of smaller Municipalities, Town Boards and Health Committees who find that they cannot perhaps develop electricity undertakings themselves and I have, therefore, been very interested in the Paper which Mr. Gripper has so well prepared for our enlightenment.

Before proceeding to discuss one or two points in the Paper which are of interest to me, I would like to take the opportunity of thanking you Mr. President and your Council, for so kindly inviting me to be present here today. I have enjoyed the Meeting very much and have renewed many old associations. I can assure you that I have benefitted considerably by these contacts.

I will not take much of your time as I feel I have no right to this privilege, but I would like to pass one or two remarks especially with regard to the so-called "efficiency curves". I would congratulate Mr. Gripper on bringing such a matter to the fore. The efficiency of one's performance should be the prime consideration of every Manager and Engineer, and although it does not appear possible to compare the efficiencies of various Undertakings, it is the duty of every official to consider the efficiency of the work of the Undertaking for which he is responsible. The best way, in my opinion, to consider the efficiency of the work is to compare it with the theoretical maximum efficiency under the conditions for which the Undertaking was designed and under which the Undertaking is operating. Such a procedure will focus attention on the question of efficiency and will encourage all concerned in their endeavours to procure maximum efficiency of the plant in their care. There are several kinds of efficiencies to be considered; the operating man will probably consider immediately the thermal efficiency of his Station, but he should primarily consider the financial efficiency; a point which so many Engineers, I regret to say, neglect. The one efficiency of course affects the other, but the financial efficiency is the one which is more important. The cost per unit sold

is the final gauge, I think, by which the Manager of an Undertaking will be judged by his Council, and for that reason I think it is unwise to concentrate on any attempt to takings all of which have conditions and factors which are beyond the control of the Manager and the Designers sometimes.

There is yet another efficiency which is most important, that is the staff relations efficiency and that is one which cannot very well be represented by figures or percentages. It is one which very often I should say in Municipal business is affected by the deeds of others than the Manager. It is nevertheless the duty of the Manager to encourage good social relationships with his staff and at the same time obtain a fair and just output from the staff for the salaries and wages paid. You will gather therefore from what I have said that I do not think the curves described in the Paper are of much value, and I think they might even be confusing if any attempt is made by the Engineer to present such curves to his Council. There are so many variables which are not taken care of by the curves that they must inevitably present a false picture. I think there are certain factors which are in common use which will help the Engineer at any rate to understand the position and perhaps explain it more clearly to non-technical men. Such factors are "load factors", "plant factors", "plant economic use factors", etc.

Another point I would like to touch upon is the question of stores. I can sympathise with those who feel they are being unfairly dealt with when their stores are managed by officials not under their control and I believe that unless very great care is taken enmity, friction and inefficiency must arise from this arrangement. As Manager of an Undertaking I have complete control of the stores but it is of course necessary to have a clerical and a technical control of these stores. All the stores with which we deal are of a technical nature, and good technical advice is frequently required in connection with the handling of the stores. On the other hand all the bookkeeping and accounting is purely clerical and as such has to be handled by a clerical staff. It is my task to co-ordinate the activities of these two sections and if there is the will to co-operate on the part of the two heads there is no doubt that divided responsibility in this case is the best, provided of course there is some co-ordinating higher authority. It appears to me that in Municipal work the problem could be solved similarly and indeed this has been proved by Mr. Kinsman in his statements. I do insist, however, that the technical men should have the final say with regard to the type and quality of the goods which should be purchased and I look to them to see that these goods are bought in the most economical market, which of course, is not necessarily the cheapest.

I wish to congratulate Mr. Gripper on the quality of his Paper, the importance of which can be gauged by the volume of constructive discussion which has followed therefrom.

I will not take any more of your time Mr. President. I wish again to thank you for so kindly inviting me here. I have enjoyed the visit very much indeed.

Mr. FRANK STEVENS, Ladysmith:

In congratulating Mr. Gripper on his very comprehensive Paper I would like to refer to Section 5.14 dealing with showrooms and carrying out of consumers' servicing.

During 1934 I left one of the larger municipal undertakings to manage a small scheme with generation, distribution and a consumers' servicing section. In 1938 when appointed to my present position, I thought I had had enough to do with consumers' work, but to my surprise found at Ladysmith that the electricity department did even more.

Although servicing consumers' installations and appliances is troublesome, particularly during the War years owing to inferior materials, to say nothing of "Government Controls", and the difficulty in getting satisfactory wiremen, I must admit that at both places it served a very useful purpose in promoting the sale of current.

My Council has been approached by the electrical firms to discontinue trading in competition with them, but we feel that as the scheme serves such a useful purpose and our charges are competitive it would not be in the best interest of the undertaking to give it up.

We have no showroom but nevertheless I favour the idea, only consider it essential to have centrally located premises and the

right person in charge, failing this more harm would be done than good.

The main difficulty in connection with showrooms is convincing those Councillors who are opposed to such that any direct loss that may be sustained is justified.

I do not agree with Mr. Milton's assertion that electricity supply authorities should altogether refrain from consumers' servicing. Had this been the policy of my Council I am afraid we would not have had such a high proportion of consumers with stoves and water heaters, for private firms are not always sufficiently organised or interested to attend to these appliances outside shop hours.

I feel that so long as the supply authority does not do the work or sell appliances below what pays the private firms such practice is in the best interest of the electricity undertaking, its consumers, and the ratepayers who own the scheme.

Councillor S. H. MILLAR, Bulawayo:

I speak from a Councillor's point of view and I do so particularly in view of the fact that many Electrical Engineers appear to blame the Council for lots of the difficulties with which they are confronted.

I want in any case, Mr. President, to congratulate Mr. Gripper. Unfortunately Councillors have not always the time to devote to an intimate study of the details of these Papers because, unlike the Engineers who only give their attention to one aspect of the Municipal Machine, we have to try and keep step with finance, staff and all the other undertakings that go with the office of Councillor. On the other hand, from the casual observations I was able to give this Paper, I want to congratulate Mr. Gripper, because, as one of the previous speakers said, he certainly has been provocative.

There have been many aspects raised by various speakers, Mr. President, which indicate that the question of the policy of the electrical undertaking is dictated by the Council. This is not so much dictated by the Council as by the human element on both sides, the human element of the Council and the human element of the head of the undertaking, the Electrical Engineer himself. I want to submit, with all due respect, that one gets strong Councils and weak Engineers, and strong Engineers and weak Councils. To strike a happy medium is something for which we should strive. On the other hand I do not think that Councillors themselves should be blamed entirely. After all, Councils invite applications for the positions of Engineers and interview the applicants. The Council with the best intentions appoint the person they think will be the best technical adviser available for the salary offered. In Rhodesia, of course, we do not offer as much as some municipalities in the Union. Nevertheless, we engage the man we think is going to give the best service to the Council. Councillors are largely concerned with the administration, whereas the technical adviser is the man who should intimate what is required. If he is sufficiently aggressive he will get it, in all probability.

I do feel that the efficiency of the undertaking as shown by Mr. Gripper's graph is definitely a matter for the consideration of the Council. I have reason to state, with a certain amount of feeling too, that in practice the Electrical Engineer seeks permission to invite tenders for what he anticipates will see him through the period, and when it is completed—sometimes even before we have completed it—he makes a request for further augmentation of the scheme. The Council then has to decide whether or not to pay sufficient regard to the Engineer's requirements merely on the assumption that the increased demand over a set period will be bigger than the Council had at the time anticipated.

I say that the Councillors are concerned with the financial side of it, and there is a reason. Mr. Sibson, much more ably than I could possibly do, tells us how Bulawayo is running its undertaking, wisely or otherwise, and as Chairman of Electricity Committee he naturally expects me to agree with the policy followed by us, which is that the revenue should bear a large portion of current expenditure for augmentation, rather than that we should float a loan for the purpose. Mr. Sibson has dealt with that aspect already, so I will not repeat the procedure.

One of the points raised by Mr. Gripper seems rather disturbing, and that is that if an electrical undertaking is not working as efficiently as it might he suggests the Electricity Supply Commission in Rhodesia, and what I imagine is its counterpart in

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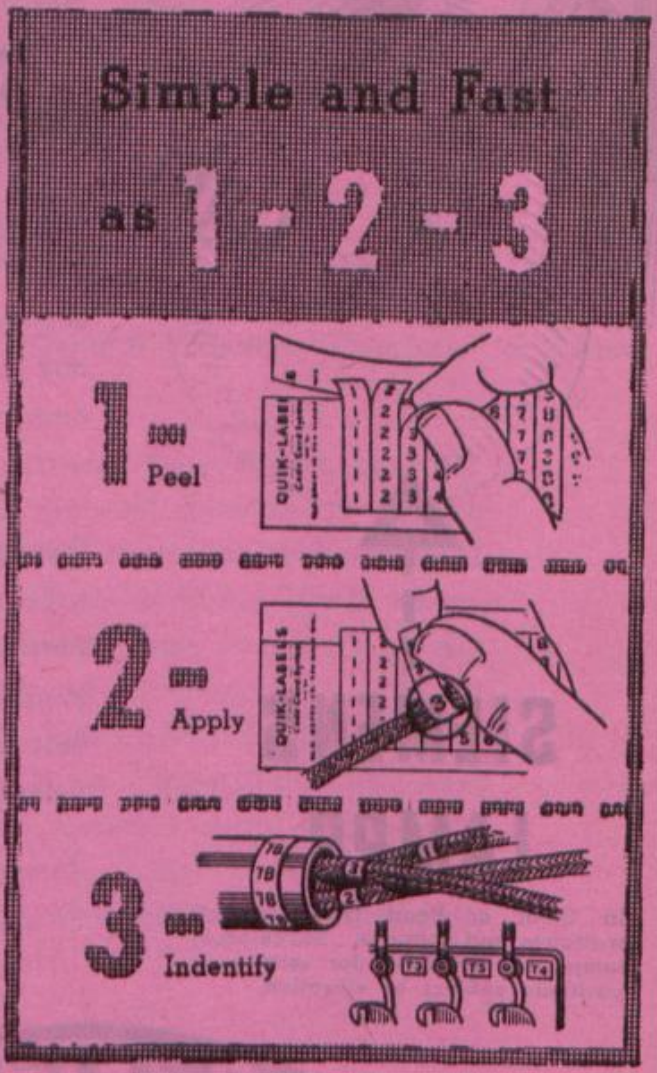

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the Union of South Africa, namely the Electricity Control Board, should take over the particular undertaking. I view with some concern the suggestion of Mr. Gripper—that any Municipal undertaking might be taken over by the State. Our ultimate aim should be to become so efficient that the Electricity Control Board would desire the Local Authorities to absorb their activities. In other words, we should strive for more control rather than relinquish what authority we have gained over the years.

I am not going to dwell on the question of the stores, meter reading, and so on, but what does appeal to me is the question raised by Mr. Eastman. I think that any suggestion of interference by Treasurers must be opposed. Some electricity undertakings have got into the sad state they are today financially, because the infiltration by the Treasurers has been so insidious that it was not noticed until it had been in existence for some time and was too late to remedy. Even a suggestion by a Treasurer to "leave the meter reading books to us, we will get the figures" should be opposed. You will have this insidious infiltration into your electricity undertaking, a matter which I view with a considerable amount of concern and which will lead to the Treasurers becoming the City Electrical Engineers. We do not have that in Bulawayo.

PRESIDENT:

I thank the various speakers for their instructive commentaries.

May I ask that the Convention adjourn for tea?

The Convention adjourned at 10.30 a.m.

The Convention resumed at 11.00 a.m.

PRESIDENT:

We will continue the discussion on Mr. Gripper's Paper.

Mr. C. R. HALLE, Pietermaritzburg:

This Paper is so large and it covers such a big field that it is very difficult to condense it to vital points. In fact it reminds me of a certain man who started a publication called "Big Books Bovnilised". He reduced the Bible to two words: "Be Good". On going through this Paper the only thing that it concentrated in my mind was that the electrical engineer is definitely underpaid because every one of the subjects Mr. Gripper has mentioned here could form the basis of a separate Paper. I think you would agree to that. I started to think what he had left out and the only thing I could think of is that there is no reference to the reason why every dog in Pietermaritzburg bites our meter readers while every bulldozer pulls up the electric cables! But apart from that the more important features are the curves and the financial side. The curves rather cheered me up because I found that in Pietermaritzburg with a loan of £150,000 being paid off next year my efficiency, that is capital per consumer, should drop to such an extent that it would be a good time to put in for a bonus.

The other point, I think it was raised by Bulawayo, is that the City Treasurer is slowly becoming a City Electrical Engineer. Now Mr. Gripper mentioned on Page 44 that in one municipality the cost of the Treasurer and Town Clerk's Departments, *i.e.*, the money expended on them, for administration, is greater than the actual money expended on the management of the undertaking itself. Well, that does apply to me, and I should say it possibly applies to a lot of others. Now I am in the unfortunate position of being both a transport manager and an electrical engineer, and I have to try and make as much profit or more profit on electricity than I can lose on transport. I have lost control of the position on the other side, but when I look at the real profits of electricity they are not so bad. Some £16,000 or more is taken out by the City Treasury Department for administration, and therefore we could show a profit which is very seldom shown up. Some Treasurers have taken the contribution in aid of rates from the unfortunate man, before he has time to show a profit. We should concentrate on some standard form of getting at the efficiency and profit capacity of municipal electricity undertakings and the really wonderful systems of finance which are hinted at here should be straightened out. Then perhaps we might be able to compare our worthy efforts and see what our real efficiency and use is.

PRESIDENT:

There are no further speakers so I will ask Mr. Gripper if he would care to reply now or do it through the Proceedings?

Mr. H. J. GRIPPER, Port Elizabeth:

Thank you, Mr. President, I would rather do it through the Proceedings if that is acceptable to all. I would just, at this stage, like to thank all those who have taken part in the discussion, and particularly for the very evident and sincere manner in which they have studied the Paper. I do appreciate the fact that so much time was given by so many to so little. I mean that. There is really so little in the Paper on each subject and therefore it does perhaps need a lot more thought before attempting to reply to the discussion.

PRESIDENT:

Thank you, Mr. Gripper.

Mr. F. G. McDONALD, Pietermaritzburg (Contributed):

In dealing with Bulk Supply Tariffs, Section 7.23 of the Paper, Mr. Gripper says that Logarithmic Scales may be used for plotting the average price per unit against the units consumed per month. I have tried out this idea but cannot make it work.

A Maximum Demand Tariff can be written

Average Price per unit =

$$\left[\frac{\text{Units}}{720 \times \text{Load Factor}} \times \text{M.D. Charge}\right] + \text{unit charge}$$

or $y = \frac{m}{x} + c$

the curve of inverse proportion.

For an equation to give a straight line on log paper, its form must be

$y = mx^n + c$.

Using log scales on *both* axes, some M.D. tariffs could give nearly straight lines, but the curve could only be considered straight within very small limits.

Perhaps I am quite on the wrong track, and thinking of completely different types of curves from those Mr. Gripper has in mind. I would be glad to have some further information about the curves. See Mr. Gripper's reply, page 113.

MR. GRIPPER'S REPLY TO THE DISCUSSION ON "EFFICIENCY IN ELECTRICITY SUPPLY UNDERTAKINGS" (Communicated)

Mr. Giles says that East London seems to follow one of the radial lines but somewhat below the Average line. This he construes as indicating a "lagging" policy. Actually in past years this meant over capitalisation but now, with higher costs, the average practice line will tend to fall from say Zone L/M to Zone P or Q. The "lagging" policy usually results in the undertaking remaining nearer the origin than it might have been under other circumstances.

I should not worry about Councillors not understanding the radial or the hyperbolic lines, these serve a purpose of course, but the great thing is to aim at selling as many units as possible to existing consumers with the Capital that is available and to see that the correct proportion of increased capital is made available to serve new Consumers.

Mr. Milton describes how the fall in purchasing power of the £ and the redemption of capital, etc. will affect the chart. This is fully admitted, in fact it is claimed that one function of the chart is to show up such matters. The chart is thus of more value in comparing the progress of one's own Undertaking throughout the years. When it is used to compare several Undertakings with one another the need for standardisation of returns and accounting methods is very evident.

Mr. Milton has endeavoured to place on the chart an Undertaking served by the Electricity Supply Commission but the data is not given in the same form as obtains with the majority of Municipal Undertakings. The same is found to be the case with the statistics given for some of the Rhodesian Towns, indicating again the need for greater uniformity in methods of financing and in making statistical returns.

I do not agree with Mr. Milton that results need be misleading in any way providing the very facts which the Chart is intended to portray, are given due consideration.

Turning to Mr. Milton's comments in regard to Tariffs, it is admitted that the ideal would be to eliminate entirely all forms of

discrimination. However, every man in business, industry or profession, has his own home where electricity is more of an amenity than a necessity and some form of encouragement is felt justifiable in this case, though the argument becomes weaker every day. Providing the domestic consumer is made to pay his fair share of the overhead or fixed costs of supply and is neither overcharged for lighting units nor undercharged for heating or power, the only consideration that should be applied is the effect of the load on the system as a whole.

Mr. Milton's warning in regard to "off-peak" tariffs is fully accepted. Given a method of disconnecting certain types of load or ensuring that their application cannot occur during times of peak load on the system, however much the latter may vary from time to time, the principle should remain that supplies of electricity which are not necessarily continuous should be cheaper than supplies which must be available for use at all or any times of the day and night.

Again, I agree with Mr. Milton in his contention that there should be no discrimination of persons in the Tariff Structure, but Municipal experience dictates the need for special tariffs for certain communal supplies which may be required for short periods only also for contractors services during building operations, etc. It is not held that any special rates should be applied, but merely that the method of application is sometimes rather special.

In reply to Mr. Milton's criticism of the suggestion to determine the fixed charge on the size of the service connection, I would stress that this method is not advocated where a kVA demand charge can be applied, but there is no reason why it should not be based upon the predetermined capacity of a special H.R.C. rewireable sealed fuse or a suitable form of circuit breaker, the "blowing" or "tripping" of which would indicate the need for a reconsideration of the fixed charge and a higher setting of the fuse or circuit breaker.

In regard to coal and powerfactor clauses, Mr. Milton's comments are accepted. In certain forms of tariff, however, these adjustments are made as percentage surcharges or rebates and it is here that they do not operate equitably when applied monthly to Block Tariffs of the annual type. The surcharge or rebate will then be much higher during the first month or two of the year, while the high rate units are being used. Finally, if tariffs are simplified and made more uniform in their application it becomes necessary to place some lower limit on the application of these adjustment clauses to avoid the irritating and laborious application to small consumers.

I fully agree with Mr. Milton's final comment in regard to the operation of base load and peak load stations. The point which it was intended to stress in the Paper however was the possible detrimental effect of throwing peak loads on and off a station where the plant may not be in a fit condition or suitably designed to withstand such treatment.

Replying to Mr. Sibson's contribution to the discussion, I agree fully that the capital costs of generating plant and the ancillary civil works should be omitted from the chart but it was found necessary to include the total capital on the right hand side since Undertakings with their own generating plant do not at present separate their capital costs in the published tables.

Mr. Sibson quite rightly points out that units lost in the distribution system do not figure in the Chart which deals only with units sold. Mr. Damant and other speakers have made welcome contributions on the same lines by indicating the failure of the Chart to take account directly of the factor of working costs per unit sold.

I would draw attention however, to the fact that high working costs and excessive distribution losses are usually self evident and it is only natural that the Manager of an Undertaking would take steps to reduce these as part of his normal business. However, if the steps so taken result in excessive capital expenditure or in neglecting the essentials of Consumer service, the effect will in time show up on the chart.

On the subject of tariffs, I was glad to hear Mr. Sibson's remarks in support of his contention that charges should be made according to what the business will bear. While the reasons he gives for the prevalence of this theory are perfectly correct, I do not see any justification for

the continuance of the practice when an Undertaking is fully developed as long as the tariff design and application takes into account the load factor of the installation or of the consumer class.

It is not suggested in the Paper that the limit of generation capital expenditure should be £6 per consumer as stated by Mr. Sibson. This was mentioned as the probable annual charge on a capital expenditure of £60 per consumer. As pointed out by several speakers however, there is considerable danger in accepting any figure such as this based on the averaged returns of some 55 Undertakings for the past 20 years, without taking into account all the factors in a specific case in conjunction with the altered value of the £ today.

The Provincial Authorities in the Union might well be asked to investigate the system adopted in Bulawayo and other Rhodesian Undertakings for expenditure on capital items ex revenue. Apparently our Rhodesian friends see less reason to "pass the buck" to posterity than we are constrained to do in the Union.

I agree with Mr. Eastman that the terms "efficiency" or even "figure of economic merit" do not indicate quite what we are aiming at in making these comparisons, and further that the chart is more useful as a means of comparing progress from year to year in one Undertaking rather than in comparing different Undertakings with one another.

While the Standard Form of Accounts referred to by Mr. Eastman is used fairly extensively by our Municipalities in the Union, this still does not ensure that the statistics shown on our Year Book tables are truly comparable. The matter has now been dealt with at this Convention and it is hoped that these tables will be of greater value to us all in the near future.

The determination of tariffs requires considerable experience and care in regard to the effect any one tariff may have upon others or upon the financial results of the Undertaking. However, I do not agree with the implication made by Mr. Eastman in regard to the charge for water heating which was below the cost of generation. I should say that 1d. generation cost was high due to the need for further load development and that the Undertaking probably felt the need to develop a cooking load. We all know that housewives are loath to install electric stoves unless they can be assured of a reliable and cheap method of obtaining hot water. On the other hand this provides an argument for an "off Peak" or High Load Factor Tariff and in general it is not wise to specify "Water Heating" as such in the tariff itself unless it is a temporary tariff only.

While I agree with Mr. Eastman and Councillor Millar on the subject of the Control of Stores and Meter reading, the arguments of Mr. Muller and Mr. Kinsman are also sound. If the Municipal administrative machine is such that it is more convenient for these functions to be carried out by the Treasurer it must be made perfectly clear that this is a service which must be performed for and financed by the Electricity Department and treated as such.

Mr. Mitchell mentioned the effect of expensive generating plant due to high coal costs. This bears out the argument that the generating plant and civil works for same should be excluded from the factor "Units sold per £ of capital cost" and only the ordinates on the left hand side of the chart should be used.

He also mentions the reduced cost of supplying a block of flats, though such buildings are seldom found in a town unless there is a fairly widespread distribution system elsewhere to feed industrial sites, etc. Mr. Muller and Mr. Sibson have also referred to this question of density of load and the cost of rural or peri-urban supplies. These factors all make the study of the chart more interesting and instructive and help one in deciding which is "chalk" and which is "cheese".

Mr. Muller mentions the question of the joint reading of water and electricity meters. More often than not the water meters are read quarterly which rather discounts this argument. The water department usually employs a special staff to detect leaks and wastage but a properly trained team of electricity meter readers can be a most valuable asset in the electricity department in bringing to light, not only faulty meters, but also cases of danger, damage, theft, illegal wiring, etc., besides promoting a high degree of consumer good will. Who

has ever heard of a business undertaking or even a rent-collector, employing their bank to conduct their outside services?

Councillor Millar is, I feel, rather unnecessarily concerned over the reference to the transfer of an Undertaking to the Electricity Supply Commission. No such step need be contemplated if the Undertaking is fulfilling its obligations to supply electricity to all who are prepared to pay for it. The reference to generation by a central body is of course another matter which depends, or should depend, only on the question of the economics of generation in bulk.

It is refreshing to hear from Mr. Stevens that showrooms, and even the provision of trading facilities, have not been relegated to the background in these days where many Undertakings are becoming hide bound with a "Take it if you can get it" policy owing to continued shortages of manpower and materials.

My sympathy goes out to Mr. Halle in his efforts to isolate the profits and losses incurred in the course of his dual responsibilities, with the added worry that his City Treasurer might not hold himself responsible for replacements following the ravages of the dogs in Pietermaritzburg. Perhaps this is one centre where the Meter Readers and the Bus Conductors would fare better under the aegis of the Treasury.

Mr. McDonald's Contributed Item is very much appreciated and draws my attention to a somewhat serious error in the original Paper. Mathematicians might turn in their graves at the system which I actually adopted in making up a chart consisting of a series of straight lines, but it can be shown that a Logarithmic Scale can be used as the base of the chart for "units per month" and then if the minimum and probable average prices per unit are indicated on the vertical scale, straight lines can be drawn parallel to one another for a series of values of maximum demand and the intermediate points in the vertical scale are then "manipulated" to agree with the results required. This provides a scale which is more open in the centre than at the top or bottom. In the same way this vertical scale can be marked off to give load factors varying from 100% at the bottom to, say, 10% at the top for any given Power Factor.

Mr. H. J. GRIPPER, Port Elizabeth:

Mr. President, may I remind you about the point raised about gas? Mr. Petersen, Acting City Gas Engineer, Port Elizabeth, is here now.

PRESIDENT:

I would like to ask Mr. Petersen to address the Convention as to the point he has in mind, about Gas and Electricity outlets.

Mr. C. F. PETERSEN, Port Elizabeth:

When I was asked to attend this meeting I did so with a certain amount of trepidation, rather like Daniel going into the Lion's den. However, I was cheered by the fact that the relations between the gas department and the electricity undertaking are very friendly. In Port Elizabeth, where the electricity department has a particular problem, I believe the polite name for it is "load shedding", we are even more friendly because we are very much in the same boat. This particular point that has been raised is not a very important one, but it takes up a rather unnecessary amount of time settling individual items. The regulations which cause a certain amount of discussion are in the Standard Regulations for the Wiring of Premises, and I think the most important one reads like this: "209-02: Distribution Boards shall not be installed within six feet of a drain or bath or any damp situation or abnormal atmosphere or in the near vicinity of fusible water plugs (such as Fire Sprinklers) or gas mains or fittings without the permission of the Engineer". That is a point that has come up once or twice. The real criterion is what is the "near vicinity"? Because that is very open to criticism. Our difficulty is when in a small kitchenette, in a flat for example, by the time our electrical friends have put their distribution board in a nice convenient position, the consumer comes along and asks for a gas cooker and we find that it is virtually impossible to put it in the kitchen without coming nearer than six feet. Well, that is not the intention of the Regulation, I am sure.

The question of abnormal atmosphere is I think not enirely due to gas. It implies of course that we always leave a gas tap open. Well, that is not so, it is a slight

exaggeration. After all when the gas is turned off there is no abnormal atmosphere.

Regarding the other question, viz., the proximity of gas and electricity on the same machine, well, I cannot recall the exact regulations applying to that, but there again in industrial concerns, in some places, it is absolutely necessary. We have furnaces driven by machines and motor driven ironing machines heated by gas, and I am afraid that the regulation has rather been glossed over up to the moment.

The other question of danger of explosion or fire. This, I think, refers to the possibility of an electric motor or switch which is not sealed and is likely to emit a spark. Well, again, all I can say is that under normal conditions there is no gas present, that is only under abnormal conditions, and it is not only electricity that can cause a spark, but anyone who comes along and lights a match such as people have been known to do to find where the gas leaks. On the question of the distance from the point of sparking to the position of a leak, we should be very much happier if the electric spark could be next to the gas leak in which case it would light the leak and probably cause a small fire at the most. On the other hand, if it were placed in the next room, and the leak becomes progressively larger a considerable amount of gas percolates throughout the house, mixes with air, makes an explosive mixture, and we have a lovely explosion. I think it is very much safer to have the light right away. Hence the case of distance does not apply.

I very much appreciate being able to come here. I am sure this regulation is only a question of wording, so that we may clear up those rather open expressions "in the near vicinity" and "without permission of the engineer" which at present result in every installation having to be inspected personally. I hope that in due course you will formulate some adequate regulation in this regard.

PRESIDENT:

Thank you, Mr. Petersen. Delegates on the particular committees concerned, will no doubt investigate and submit their findings. I now pass on to Item 8(ix) on the Agenda—Statistical Tables—for your consideration.

STATISTICAL TABLES

Mr. C. KINSMAN, Durban:

Mr. President, Gentlemen,

I must apologise for the delay in putting forward the Sub-Committee's proposals regarding the revision of the Statistical Tables. I have distributed prints embodying the Sub-Committee's proposals which have already had the consideration of the Executive; no doubt there will be a crop of amendments forthcoming at this meeting.

Considerable discussion took place and many suggestions were put forward, the following members taking part in the discussion:—A.R. Sibson, Bulawayo; H. J. Gripper, Port Elizabeth; D. J. R. Conradie, Ficksburg; J. L. van der Walt, Krugersdorp; J. E. Mitchell, Salisbury; G. J. Muller, Bloemfontein; Frank Stevens, Ladysmith.

Mr. A. R. SIBSON, Bulawayo:

Mr. President, may I suggest that we are not getting anywhere with this discussion, but this print is the first draft I have seen, so none of us had time to study it, and I do not think you can hope to get any satisfactory solution by trying to vote on the proposal just submitted. I do suggest that we should not postpone it for another year. I therefore propose that we all study the proposals of the committee and the President can set a definite time, put such a time limit to it in which we can submit our comments, if any, to the Executive, and that they be given power to sum up the various comments and decide and finalize on the table. Do not bring it back again next year! But I do think as we have not had time to study the table, some of us are making wild suggestions perhaps not seeing that they have been included somewhere else, and it is much better to give us time to study the chart and put forward our proposals within a month, two months, or any time you like and that thereafter the Executive will have power to act to frame the table and put it into operation.

Mr. C. KINSMAN, Durban:

I appreciate Mr. Sibson's proposal and suggest that the Convention adopt his suggestion.

It was finally decided to invite all members to submit written proposals and comments to Mr. C. Kinsman, Convener of the Sub-Committee, within three months. The Executive would then deal with the matter on the lines suggested by Mr. Sibson.

PRESIDENT:

I am pleased we have come this morning to an agreement to effect a change to the Tables, which will be available to us in the future. Thank you particularly, Mr. Kinsman, for the labour you have put into this matter. We will now continue with item 8(x) of the Agenda of the Convention, viz., Coal Supplies.

Mr. H. A. EASTMAN, Cape Town:

Coal Supplies for Municipal Power Stations

Still greater difficulty was experienced by the owners of Municipal power stations between the middle and the end of the year 1948 than in previous years in that most Municipal power stations were faced on more than one occasion with the prospect of having to curtail output because their reserves of coal had fallen to within 1½ days normal consumption. Fortunately in every case it was found possible at the last moment to avoid this calamity.

It is understood that the Railway Administration has received additional trucks in the interim and it is well known that the Government recognises the vital importance of so arranging matters that supplies of electricity are not curtailed because of shortage of coal arising from shortage of trucks.

In November last your Executive Council suggested that a deputation representing all interested parties similar to that which interviewed the responsible Minister on the same question in October, 1947, should do so again to impress upon him the difficulties which electricity supply undertakings may be expected to experience in the 1949 winter in obtaining sufficient supplies of coal. It was found impossible to convene such a meeting, but on the 11th March, 1949, at an interview with the Minister of Economic Affairs he made it clear to me that the Government realised the importance of ensuring that sufficient supplies of coal are made available to power stations and indicated that the Government would take adequate steps to safeguard the position against curtailment of output from power stations.

A crushing plant is being installed at the Landau Colliery for the purpose of crushing round coal for the production of "peas" for power station consumption. The crushing plant is stated to be capable of producing "peas" at the rate of 400,000 tons per annum and the Government proposes to appoint a Committee to allocate the output of coal from the collieries including the output from this crushing plant with a view to avoiding the hazards to electricity supply experienced hitherto in shortage of "pea" coal.

PRESIDENT:

Thank you very much, Mr. Eastman. We, who do generate and are stationed a long way from the coalfields, know the difficulties we were placed in at times during the last year, and it is gratifying to know that we have such an able member on the Executive who can get busy with the Ministers concerned and who has done so much to make it relatively possible now for us not to worry so much, although I suppose we will still have occasional concern when trucks are diverted for other National uses. The critical position that we experienced at the end of last year wherein I, on behalf of the City Council here, was unable to get tenders for coal, I consider will not come up again. It was a very critical position indeed, and we thank you Mr. Eastman for all your interest and effort on our behalf.

The next item on the Agenda is item No. 9: Appointment of Auditors.

It is usual that the Annual Meeting of our Convention make this appointment, and I would advise that Messrs. Savory & Co., of Johannesburg, are the present auditors. I would like someone to make a recommendation.

Mr. A. R. SIBSON, Bulawayo:

I propose Messrs. Savory & Co. be appointed.

PRESIDENT:

Thank you, Mr. Sibson. Are all agreed?

MEMBERS:

Agreed.

PRESIDENT:

Thank you. I must apologize for not following the items on the Agenda in their order. We will now ask the Secretary and Treasurer to read his Annual Report for last year. Item 5 on the Agenda.

ANNUAL REPORT

To the President and Members of the Association

Gentlemen,

I have the honour and pleasure of submitting to you the Annual Report, together with the Revenue and Expenditure Account and Balance Sheet for the financial year ended 31st August, 1948.

Twenty-Second Convention, 1948

The twenty-second Convention of the Association was held in East London from the 11th to the 14th May, 1948. A total of 241 members, delegates and visitors attended the Convention, which, if not a record, must very nearly approach it.

It is pleasing to be able to record, from remarks passed by members, delegates and visitors, that the Convention was an unqualified success socially and from a business point of view.

The Papers presented were, as usual, of a high standard and of material interest to Council and Engineer Members as well as delegates and visitors, which will be reflected in the Proceedings, not only by the Papers but also by the discussions thereon.

It is an appropriate moment at this stage to express the appreciation and thanks of the Association and all those who attended the Convention, to the Mayor and Council of East London for the entertainment and facilities provided and to those officials who assisted in making our stay in East London most enjoyable.

1949 Convention

An invitation has been received from the City Council of Port Elizabeth to hold the next Convention in Port Elizabeth during the month of May, 1949, which has been accepted by your Executive and unanimously approved at the East London Convention in May, 1948.

Membership

The following members were elected during the year under review:—

New Council Members

Alberton, Barberton, Brakpan, Brits, Edenvale, Gatooma, Graaff-Reinet, Harrismith, Livingstone, Newcastle, Odendaalsrus, Potchefstroom, Que Que, Somerset West, Zastron.

New Engineer Members

K. B. Barlow, Town Electrical Engineer, Livingstone; V. E. O. Barratt, Municipal Electric Engineer, Graaff-Reinet; R. W. Barton, Town Electrical Engineer, Edenvale; E. N. Buckerfield, Municipal Electrical Engineer, Somerset West; J. R. Cherry, Municipal Electrical Engineer, Randfontein; T. de Wit, Engineer in Charge, Brits; D. J. R. Conradie, Town and Electrical Engineer, Ficksburg; J. A. Mathews, Municipal Electrical Engineer, Uitenhage; F. G. McDonald, Assistant City Electrical Engineer, Pietermaritzburg; H. A. McIntyre, Municipal Electrical Engineer, Middelburg, Transvaal; J. E. Mitchell, City Electrical Engineer, Salisbury; G. E. Mossop, Town and Electrical Engineer, Vrede; G. M. Reyeneke, Municipal Electrical and Water Engineer, Springfontein; L. Roode, Town and Electrical Engineer, Potgietersrust; R. Q. Solomon, Borough Electrical Engineer, Vryheid; W. E. L. Woolridge, Town Electrical Engineer, Harding.

The comparative figures of membership for the years 1947 and 1948 are as follows:—

	1947	1948
Honorary Members ...	4	4
Council Members ...	76	88
Engineer Members ...	82	86
Associate Members ...	1	—
Associates	24	29

Council Membership

It will be noted that the nett increase in Council Membership is twelve, whereas actually sixteen new Council Members were enrolled, the difference of four being accounted for by resignations, two due to the Undertakings being taken over by the Electricity Supply Commission, one about to be taken over by the Commission, and the fourth due to purely domestic reasons.

Engineer Membership

Whilst the total number of new Engineers enrolled is shown as sixteen, the nett increase for the year under review is only four; this is due to retirements under the age limit and resignations from Muni-

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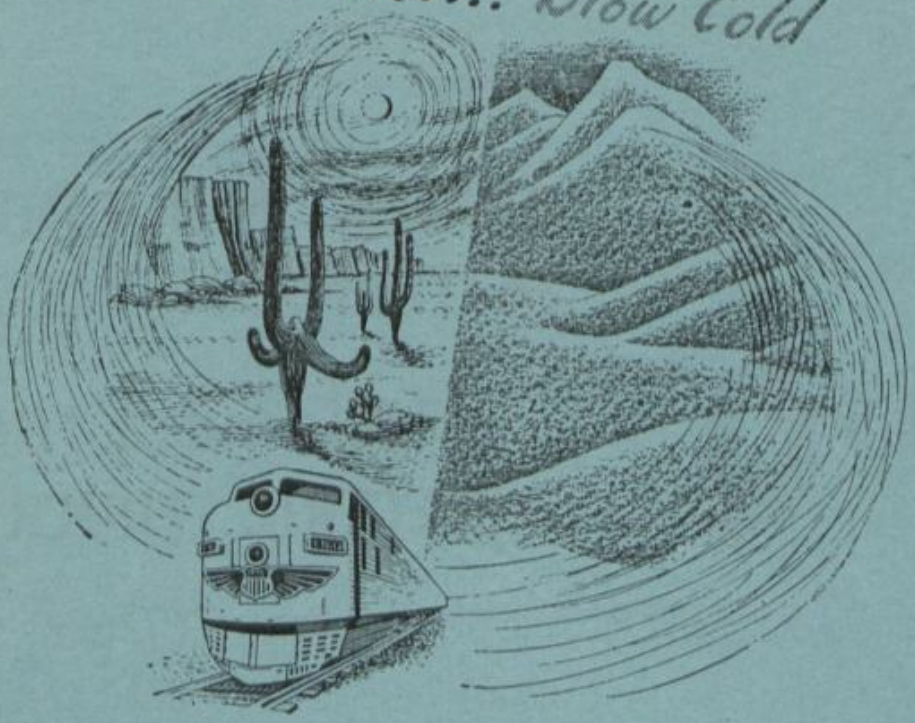

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ASSOCIATION OF MUNICIPAL ELECTRICITY UNDERTAKINGS OF SOUTHERN AFRICA

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st AUGUST, 1948

Audit Fees		£6 8 0		
Bank Charges		7 0 10		
Insurance		2 9 0		
Printing and Stationery		14 18 11		
Postages, Telegrams, etc.		21 3 1		
Rent		48 0 0		
Secretarial Expenses		83 7 9		
Secretary's Salary		231 6 8		
Telephone		9 19 5		
Executive Committee Expenses		9 0 6		
Subscriptions		10 10 0		
Donations—World Power Conference		10 0 0		
Depreciation—Furniture and Fittings		9 6 0		£463 10 2
I.M.E.A.				
Subscriptions Paid		2 2 2		
Less—Received		1 4 0		0 18 2
Convention Expenses:				
Travelling Expenses, etc.		60 0 1		
Reporting		56 0 6		
Cost of Printing Proceedings		377 9 3		
		493 9 10		
Less—Sales Proceedings	£180 0 0			
Advertising	226 15 0			
	406 15 0			
Less—Commission on Advertising	40 1 0			
		366 14 0		126 15 10
Balance—being excess of Income over Expenditure				272 2 10
				£863 7 0

Subscriptions			£814 16 0
Interest Accrued:			
Union Loan Certificates	£34 19 9		
United Building Society—Fixed Deposit	13 11 3		
		48 11 0	
			£863 7 0

ASSOCIATION OF MUNICIPAL ELECTRICITY UNDERTAKINGS OF SOUTHERN AFRICA

BALANCE SHEET, 31st AUGUST, 1948

Creditors				£35	7 11
Proceedings paid for in advance	£35	5	0		
Other	0	2	11		
Accumulated Funds				1,319	11 0
Balance, 31st August, 1947	£1,047	8	2		
Add—Excess of Income over Expenditure for year ended 31st August, 1948 ...	272	2	10		
A. FODEN, *Chairman.*					
A. T. TAYLOR, *Secretary.*					
				£1,354	18 11

Presidential Badge				£1	0 0
Nominal Valuation					
Furniture and Fittings				83	15 0
At cost, *less* depreciation.					
Investments				1,225	15 3
At cost, including Interest accrued—					
Union Loan Certificates	£612	4	0		
United Building Society—Fixed Deposit	613	11	3		
Cash at Bank				44	8 8
				£1,354	18 11

To the Members of the Association of Municipal Electricity Undertakings of Southern Africa.

We report that we have examined the above Balance Sheet with the books and vouchers of the Association for the year ended 31st August, 1948; that we have satisfied ourselves of the existence of the securities; and certify that, in our opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of affairs of the Association as at 31st August, 1948, according to the best of our information and the explanations given to us and as shown by the books of the Association.

JOHANNESBURG, 30th September, 1948.

SAVORY & COMPANY,
Incorporated Accountants,
Auditors.

cipal service. In some cases, as will be noted by the increased number of Associates, the Engineers have decided to transfer to membership as Associates, whereas in other cases, due to personal reasons, they have intimated they do not desire to continue that membership, and in the remaining cases, it has not been possible to contact them after they have left the Municipal service.

Associate Members

The last member under this heading has been transferred to Engineer membership, he being the Assistant to the Chief Electrical Engineer of the Undertaking concerned.

I once again must take this opportunity of strongly appealing to members when changing their occupation or address to notify the Secretary of such changes, so as to facilitate keeping in touch with them and keeping a record of members and finally to save unnecessary correspondence.

Financial

From the Balance Sheet, it will be noted that revenue for the year exceeded expenditure by £272 2s. 10d., and cash at Bank amounted to £44 8s. 9d.

For the information of members, it should be pointed out here that during the year under review, £600 was placed on Fixed Deposit with the United Building Society and furniture was acquired to the value of £65 15s., both of which items are reflected in the Balance Sheet.

I wish to take this opportunity of thanking Advertisers and Council Members, on behalf of the Executive and Members, for their financial support and the keen interest shown in the Association's welfare.

In conclusion, my thanks is due to the President and Members of the Executive Council for their advice, assistance and the courtesy at all times extended to me.

I remain,

Mr. President and Gentlemen,

Yours faithfully,

A. T. TAYLOR,

Secretary and Treasurer.

In regard to the financial side there is only one point which I wanted to make. Our working expenses for the year were £591 4s. 2d., showing a surplus of £272 7s. In that particular expenditure there are items totalling £493 9s. 10d. expended on travelling expenses, reporting and cost of printing Proceedings. The cost of the printing of Proceedings amounted to £377 9s. 3d. Sales of Proceedings amounted to £180, and advertising £186 14s., showing that with the sale of Proceedings and advertising in the journal we have very nearly recovered the cost of the printing of the Proceedings.

PRESIDENT:

Thank you, Mr. Secretary. Will someone move the adoption of the Report.

Mr. C. KINSMAN, Durban:

I should very much like to have the privilege of formally moving the adoption of this Report and I want to express our very grateful thanks for the very energetic work put in by the Secretary during the year. One could not know unless one were in close contact with Mr. Taylor his very energetic following up of this field for new members. He is most assiduous in that, and I think that to a very large extent the increase of our membership is due to Mr. Taylor. So for that, and the reasons I earlier mentioned, I have much pleasure in moving the adoption of the Report and Accounts with very hearty vote of thanks and appreciation to the Secretary for his services.

PRESIDENT:

The Convention will now adjourn until Friday morning at 9.30.

The Convention adjourned at 12.30 p.m.

The Convention resumed on Friday, 20th May at 9.30 a.m. in the Feathermarket Hall.

PRESIDENT:

We will now resume the Convention proceedings. I have pleasure in calling on Mr. Milton—who wishes to bring to our notice certain matters concerning the costs of crude oil—to speak.

Mr. MILTON, Electricity Supply Commission:

Mr. President, Gentlemen. You will recall that I raised the question at the last Convention of the rising cost of crude oil. At that time the Government was increasing the price of crude oil by 1d. per gallon.

They were, however, exempting paraffin from a similar increase on the grounds of its incidence on the cost of living. The point which I put to the meeting at that time was that the increase in cost of crude oil by the 1d. per gallon then proposed would also increase the cost of living just as the increase would have had had it been applied to paraffin. Therefore the arguments which had been accepted as justifying the exemption of paraffin from that increase, might equally well be applied to a similar increase in the cost of diesel oil. A resolution was adopted by the Convention requesting the Executive to consider the matter and to take such action as it considered necessary. Since then there have been and are still to be further increases. On the 1st of April there was an increase of 1½d. per gallon, and as from the 2nd of May of this year there is to be a further increase of 1½d. per gallon, on diesel gas oil. On the heavy diesel oil the increases were 2d. and 1d. respectively on the same dates.

There has also been an increase in the cost of lubricating oil, and that increase in cost over the periods to be considered amounts to 8d. per gallon. Those of you who are operating crude oil stations, will appreciate that this increase in the cost of fuel is so appreciable that it results in an increase in the cost per unit, which can readily be applied as an adjustment of the tariffs to your users. In other words it is not like the relatively low incidence of increased coal costs, which of necessity must be passed on in the form of a coal surcharge, because being of the order of say ·04 or ·05 of a penny per unit (in other words a tenth of a halfpenny).

In the case of diesel oil stations, and I include in these remarks the relatively large diesel stations, it is my opinion that these increases can be expressed as of the order of ·8d. per unit to 1d. per unit sold. In the most efficient of the oil engine stations it would be difficult to arrive at a figure of increase in cost of as low as ½d. per unit.

Many of the Municipalities, with the permission of the Provincial Administration, when there was talk of an increase in the cost of crude oil visualized reasonable increases and provided for the contingency by obtaining permission to increase their tariffs by 10% in some cases, and in other cases up to 15%. That 10% or 15% on their tariffs today is quite inadequate, and with the rising costs of fuel of the order with which we are faced, I would express the view that municipalities should make provision for an increase in tariff of the order of 25% to 50% above the basic tariffs which were adopted in the first place, viz., the pre-war tariffs.

These figures of increase in the cost of oil when looked at by, shall we say, the ordinary commercial man who is not using the crude oil for the production of electricity, do not seem to be large figures but the increase in cost of crude oil from August, 1939, to May, 1949, has been 8½d. per gallon on a basic cost (that is the cost in 1939) of 5½d., in other words the increase in cost of crude oil has exceeded 100% at the local source. I grant you that the high relative figures representing increase in cost and the high percentages are based on the "source". Railage rates of course increase the cost for crude oil as delivered to a station, so that at the point of use, you do not get such high percentages of increased cost, but nevertheless one must have regard to the effect of those increases in price on the cost of production of electricity.

Most of the diesel oil stations are in the class of, shall we say, small stations, which are developing the use of electricity in a community and that development ultimately results in a change to steam usage. We are therefore dealing with undertakings which should receive every support in their development. The majority of them are working on very small margins between revenue and expenditure. If those margins are disturbed by increases such as those I have described, municipal schemes making a small profit can degenerate into undertakings operating at a substantial deficit.

I feel therefore that this Association would be well advised to take this matter up very strongly with the Government with a view to obtaining relief from the increase in cost of crude oil used for generation, a relief which the Government was previously prepared to apply in respect of the users of paraffin to avoid increased cost of living. Such users are not situated in electricity undertakings areas of supply and the differentiation cannot have been on economic grounds.

Mr. President, as I am only an Associate I cannot put forward a motion, but I trust that members will be sufficiently interested to speak to the point and put forward a motion for your action.

PRESIDENT:

Thank you, Mr. Milton. We all know of course, that the Supply Commission is concerned with the interests of both the consumer and the supplier of electricity throughout the Union, and we are very thankful for Mr. Milton coming along and putting this to us. Is there any further discussion from any member of our Organisation on this matter?

Mr. A. T. TAYLOR, Secretary:

I would like to mention here that the Association did take the matter up with the powers that be, and apart from our taking it up, another organisation of municipal engineers also took the matter up with the Department of Commerce and Industries and I just recently had a reply, to the effect that the Department of Commerce and Industries considers it is a matter for the municipal electricity undertakings concerned to meet this increase through adjustments in the rates charged by them for electrical current.

Mr. P. C. ASSELBERGS, Barberton:

Mr. President, Barberton is one of those towns having a fairly large crude oil station where the price increase will be felt heavily. As Mr. Milton has said, the increase in generating cost is very considerable. The total price increase of fuel of 2½d. per gallon works out at approximately ·2d. per unit sold. Comparing this with a large steam generating station this increase approximates the total generating cost of a modern steam station.

Apparently it is not known what the price increase is due to. Is it an increase in import duties, railage or extra profit for the oil companies? Perhaps a representative of one of the oil companies could enlighten us. The prices of all petroleum products in America are falling according to the newspapers, and an increase in South Africa seems wholly unjustified.

Following upon Mr. Milton's suggestions I would formally propose that this Association make strong representation in the proper quarters.

Councillor E. C. PIKE, Matatiele:

Mr. President, representing one of the smaller municipalities, I would like to endorse very much those words spoken by Mr. Milton. We find that with this new increase of 4d. a gallon in lubricating oil and 1d. a gallon in diesel oil it has made a terrific difference to our present financial situation. We work at the moment on a very, very small profit basis, and I can assure you that this increase in price will make a difference of over £125 deficit to our Council.

With those few remarks I take great pleasure in seconding the proposal put forward by Barberton that this Association take up this matter very seriously with the Government.

Mr. C. R. HALLE, Pietermaritzburg

Mr. President, I do not know whether this will interest you at all but at our last Transport Engineers meeting in Germiston I brought up the subject of the possibility of the Government dropping a little of their customs duty on fuel oil. As you know the transport undertakings are in a pretty bad mess and I think it would be wise if you see the small municipalities getting in the same trouble with their electrical undertakings, that you find out how much of this increase in cost of crude oil is due to customs duty. The point in question is that the Government pays no rates on buildings in our cities, and they might be offered the option of paying those rates or helping cities by easing up on the customs duty of the necessary fuel for transport and electricity. They are having it both ways at the moment and I think if you come in line with what we are doing on transport, asking them to ease up on their customs duty on these things, we may get somewhere, though as far as I know at the moment they have given us a negative reply in transport.

PRESIDENT:

Is there one of the Councillor delegates interested in the financial side of their undertaking who would care to make a comment on this proposal?

Is there a member of any one of the Oil Companies here who would care to address the Convention?

Mr. G. PHILLIPS, Shell Oil Co.:

I am here as a technical representative. I fear I cannot discuss the matter of prices.

PRESIDENT:

Is there any further discussion on this matter or any amendment to the proposition?

Mr. G. J. MULLER, Bloemfontein:

Mnr. die President, Here, ek meen dat ons vereeniging heel wat grond sal he om hierdie saak by die betrokke Departement aanhangig te maak. Dit kom my voor asof hulle nie konsekwent gehandel het nie. Mnr. Milton het daar duidelik op gewys dat die rede wat aangegee is vir die weglating van paraffin leweskoste was. Nou soos u sien, sal dit volgens Mnr. Milton nodig wees om ± 25% verhoging van elektrisiteitstariewe in die betrokke munisipaliteite te hê. Daardie tariewe is net so veel 'n kwessie van leweskoste vir die inwoners van daardie dorp as die gebruik van paraffin. Om die waarheid te se ek glo nie dat daar so veel aan paraffin uitgegee word in die gemiddelde dorp as aan elektrisiteit nie. Paraffin mag baie gebruik word in plekkies waar daar geen elektrisiteit is nie, maar in dorpe waar daar wel elektrisiteit is, vernamelik dorpe wat so ver gevorder is dat hulle in 'n mate verwarming en kookgeriewe aanbied, vir hulle is dit 'n aanmerkelike vermeerdering in hulle koste van bestaan, en as dit 'n goeie rede was om paraffin uit te sluit dan sal dit 'n baie goeie en misskien 'n swaarder rede in hierdie geval wees omdat dit 'n aanmerklike verhoging van die maandelikse rekening meebring. So ver as ek sien, is die verhoging te wyte aan invoerbelasting. Nou 'n invoerbelasting mag gehef word bloot om inkomste vir die staat te wen, dit mag gehef word om invoer te beperk, of dit mag gehef word om plaaslike produksie aan te moedig. In die eerste plaas glo ek nie dat die staat se finansies ryker of armer gaan word deur hierdie invoerbelasting op olie vir die kragstasies of vir kraggebruik ontwikkel vir elektrisiteit aanmerklik te verminder of heeltemaal weg te neem. Maar die kwessie van invoerbeperking, ja, in daardie opsig word ook niks tot stand gebring nie omdat die land niks anders aanbied nie. Daar is nie 'n produksie in ons eie land wat hulle wil beskerm nie en dit kom my dus voor dat ons vereniging as hy die saak skerp genoeg opnee en die ondersteuning van al die munisipaliteite as liggame het, dat ons tog 'n hel wat vordering sal kan maak met die minister as dit onder sy persoonlike aandag kom en nie onder die aandag van die departement nie.

PRESIDENT:

Is there any more discussion on this matter? Then I put the proposition to this meeting "that all are agreed to make representations concerning these increased costs."

MEMBERS:

Agreed.

PRESIDENT:

We will now go back to item 8(viii) on the Agenda and have the report on Overhead Lines and Code of Practice

Overhead Lines and Code of Practice

Mr. R. W. KANE, Johannesburg:

As stated in Mr. Fraser's report at the last Convention, held at East London, copies of the final draft of the Code of Practice were submitted to members of the Executive Committee of this Association for comment and four replies were received. These were forwarded to the Code of Practice Drafting Sub-Committee, where they received full consideration together with comments from other bodies represented on the Main Committee.

Arising from the various comments received, amendments were made to the final draft and a revised final draft was then submitted on the 16th February last to the Main Committee who agreed unanimously that the amended Code be submitted to the Council of the South African Institute of Electrical Engineers with a recommendation that it be printed and suitably advertised. This recommendation was adopted by the Council who have delegated to the Drafting Sub-Committee the duty of investigating ways and means of publishing the document without sustaining financial loss.

PRESIDENT:

Thank you, Mr. Kane.

Is it agreed that this report be received?

MEMBERS:

Agreed.

PRESIDENT:

Thank you. Now I will call on Mr. Downey to give us his report on Item 8(vii) on the Agenda—S.A. Standards Institution.

Mr. J. C. DOWNEY, Springs:

Mr. President, Gentlemen, meetings of the Institution are held regularly every month when reports of the Sectional committees are dealt with. Numerous draft specifications and Codes of Practice are received and commented upon, and where necessary Codes of Practice and specifications are drawn up for use in South Africa. A specification of particular interest to members of this Association is the specification for Creosoted Wooden Telephone, Telegraph, Electric Light and Power Transmission Poles which will be ready for issue shortly.

While I am here, Mr. President, may I convey to you from Mr. Monk, the Chairman of the Sectional Electrical Engineering Committee of the S.A. Standards Institution, his greetings and good wishes for a successful year in office.

PRESIDENT:

Thank you, Mr. Downey.

Is that report received?

MEMBERS:

Yes.

PRESIDENT:

Thank you.

Mr. Eastman has now something to say to us on a very interesting matter concerning "Conditions of Contract" and I have now much pleasure in asking Mr. Eastman to address the Convention.

Mr. H. A. EASTMAN, Cape Town:

Mr. President and Gentlemen, arising out of the comments in the discussion which we had on the standardization of forms of statistics in which mention was made of the diversity of ideas on the compilation of accounts for electricity undertakings, it occurred to me that you may be interested to know that there is at the present time a movement on foot to standardize accounts for electricity undertakings, and that the matter is under consideration by the Association of City Treasurers and Accountants, and will be submitted to its Convention to be held later in this year. Now this is a matter in which we many years ago as an Association took the initiative and in point of fact standardized a method of keeping electricity accounts which were approved by the Provincial Auditors of the four Provinces and which were published first by us in our own Proceedings, and were in fact issued by the Cape Provincial Council in exactly the same form as we ourselves devised. Doubtless since then new viewpoints have been brought to bear on what are the most acceptable methods of keeping accounts and Treasurers have been dealing with it and that matter will be settled soon. Doubtless many of us have had close contact with Treasurers on matters relating to Conditions of Purchase and Conditions of Tendering. In Cape Town, for instance, we have for some time been discussing with the City Treasurer's staff the standardization of conditions of purchase and of tendering applicable to the whole of the municipality, and I dare say, much of the same sort of discussions have been taking place from time to time in other municipalities. This matter will also be brought up at the City Treasurers' Conference to be held later in the year. I have submitted to the Executive Council of our Association certain proposals to be submitted to that conference, but as this question is of great interest to us as Engineers (and purchasers of materials and Superintendents of contracts) it seemed to me that as an Association, we should be given an opportunity of submitting our views on the matter for consideration at the Conference. In that way it might be possible to obtain uniformity in these matters throughout the municipalities which we represent. At our Executive Council meeting this morning it was suggested that I should let you know the position so that perhaps we may receive some suggestions for incorporation in those now being drafted for consideration by the City Treasurers Association.

PRESIDENT:

Is there any other speaker who would like to touch on this important matter of "Conditions of Contract". You will note by Mr. Eastman's remarks that he was one of the initial movers in the matter of trying to accomplish something to get a standardized form of "Conditions of Contract". We are all in trouble at times with con-

ditions of contract and tenders, and so on, and it is very useful to know that Mr. Eastman has been looking after us in this regard for years past. The decision of the Executive, as you have heard, is to submit this matter to the authorities that be and tell them that we as an Organisation, as an Institution, have been on the job rather earlier than the City Treasurers thought was necessary before the matter was taken up.

Any further question on that point?

Mr. P. C. ASSELBERGS, Barberton:

Mr. President, I do not want to speak on standardisation of condition of tenders; but hearing Mr. Eastman speak on this subject I was again reminded of yesterday's discussion after Mr. Eastman's remarks on reading of meters, control of stores, etc.

Mr. Eastman's point of view was yesterday, and is again today, that of the larger municipality. He mentions the work done by the Institute of Municipal Treasurers and Accountants. The Town Clerk of Barberton happens to be a member of the committee working on the Standardisation of Accounts and I happen to know that he has pointed out to that Committee that whatever they have done so far is entirely unsuitable for small municipalities.

The point that I want to make, Mr. President, is that problems such as standardization of accounts and tenders are usually worked out by the larger municipalities because they are more centrally situated and usually have a more experienced staff. The results obtained are therefore always adapted to the larger municipality and invariably entirely unsuitable for the smaller ones, that have a smaller staff, and out of necessity different methods of administration.

I would suggest that the smaller towns be represented on a committee working out proposals which will eventually affect all municipalities from the largest to the smallest.

PRESIDENT:

Thank you. The Convention will now adjourn for tea.

Convention adjourned at 10.30 a.m.

Convention resumed at 11.00 a.m.

PRESIDENT:

We have now come to the heading under:

GENERAL

Is there anyone who would like to discuss any matter under General?

Mr. H. J. GRIPPER, Port Elizabeth:

Mr. President, Ladies and Gentlemen, in the proposed Regulations, the standard regulations for the wiring of premises, there is a clause headed "Starters", or rather two clauses which leave it to the Supply Authority to decide upon the type of starter which is to be used for a particular size of motor and it is felt by many that some standardization would be useful. This applies particularly to our friends who have to sell motors in, say, Port Elizabeth, Cape Town or Johannesburg where the starting requirements vary at present.

I would like to propose, Mr. President, that the Executive Council of this Association should give serious thought to drawing up a Code of Practice rather than a Safety Regulation in regard to the type of starter to be used in relation to the size of motor and the installation. It is appreciated that it might be risky to permit the starting of a 10 H.P. motor direct-on-line in a small installation whereas it would have no serious effect on the distribution system in the case of a comparatively large installation. My proposal therefore, Mr. President, is that the Executive be requested to draw up a standard Code of Practice based on a limiting value of kVA for any motor over 3 H.P. during the starting and accelerating period which should not exceed the value obtained from the formula

$$\left(20+\frac{500\ P}{R}\right)$$

where P is the maximum load in Kilovolt Amperes for which the consumers service mains are wired and for the time being equipped and R is the rated full load speed of the motor in revolutions per minute. The value of P would be determined by the Supply Authority when the requirements of the installation are known or otherwise it may be assumed to be not greater than 50% of the total kVA load to be connected.

The proposal therefore Mr. President is briefly this:

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"That with these considerations before them, the Executive Committee should make some recommendation to all undertakings which will cover the starting conditions of motors whether they be small motors or large and whether they be installed in a small installation or a large one."

Thank you, Mr. President.

PRESIDENT:

Is there anyone to second that proposal?

Councillor F. O. RAPSON, Ladysmith:

I second that proposal.

PRESIDENT:

Is that agreed?

MEMBERS:

Agreed.

PRESIDENT:

I just want to hold the Convention up for a moment or two to propose that we again, this year, have a collection to show our appreciation of the work undertaken by our good ladies looking after our tea and cakes. There is a lot to be said for their organisation in that they do work for the betterment of the Community. Our particular ladies here use their surplus funds for good causes and in this case for the Polio Fund and Red Cross or any matter which necessitates immediate relief. I will ask you to pass the hat around and to donate something for the purpose.

We are nearing the end of the Convention, and I want to take this opportunity of thanking you, one and all for your attendance, for your tolerance to me whilst occupying the Chair throughout the week, and also to say thank you very much for all the courtesy that you have extended to me.

It is a great privilege for us to have the representatives of the Government—Labour and Engineering Departments—Electricity Supply Commission, Railways and Harbours, Post Office, Public Works Department, factory and large commercial interests representatives, with us, and if I omit to mention any particular one, I hope they will excuse me as it is difficult to enumerate them all.

I do regard the week's work that I have put in as having a real heartening effect on me. I did not know when I started it whether I would be able to do it with the measure of satisfaction that was warranted. However, we have come to this, the closing session, and I have enjoyed every moment of the deliberations of this Convention, and therefore it is with gratitude indeed that I thank you for attending and for your support and interest.

To Mr. Kinsman I offer my thanks for his services in deputising for our President overseas and for his investiture of me in the Chair. Thank you, Mr. Kinsman, for all you have done for this Convention and for me.

To the City Council I offer my thanks for all they have done to make the Convention in any way happy and convivial. The Council did play a big part in that issue and I offer them my personal thanks, and I think the thanks of this Convention. (Hear, Hear).

To the Wool Exchange who allowed us their magnificent chamber, one of the nicest halls I have ever had the privilege of speaking in, we thank them sincerely and heartily for offering us that hall, and the facilities embodied in that hall, for the week now closing.

The ladies at the end of the hall, who have done a magnificent job, I thank very cordially for their services.

Our Secretary and stenographer who are going through a gruelling time, as usual, to get down all that is said by the various speakers and in the time limit given them to do it, we thank for all their efforts and achievements.

In respect to our programme we could not allow this to pass without saying a word of special credit and commendation for Mr. Gripper for his Paper (Applause). His Paper did bring forward many views, not subscribed to by himself, nor do I know that I subscribe to all the views, but it was an excellent Paper, and I thank him for all the time and energy he must have devoted to put the Paper in the form in which it was received by us. Thank you, Mr. Gripper.

To my own electricity staff—those who have had to do anything of this nature will know that my part of the business is really very small compared to the part that others have undertaken. Mr. Gripper made all

the arrangements including the hotel bookings, which took him hours in the evening and night to complete so that this Convention could be the success, which I think it has been. We thank Mr. Gripper very cordially for all the labour and energy he has put into this work.

To my departmental staff—Mr. Davies for his untiring work throughout the Convention in seeing to the wants and enquiries of delegates; Miss Oertel for her special work in recording and typing the minutes of the Executive Meetings; and the other members of the staff for all their help in the typing and forwarding of all "Papers" to the members of this Convention some weeks ago, and during the week they have kept their eyes on me to see that I was available and fully prepared so that I should not go astray—I thank them all most sincerely.

Now any member of the Convention may speak if he or she may desire.

Mr. F. J. C. CASTELYN, Bloemfontein:

Meneer die President, geagte here, ek is baie dankbaar dat ek hier by sluiting 'n paar woorde mag sê, en ek voel dat my eerste plig is om 'n onbestrede mosie van dank voor te stel aan ons geagte President, vir die bekwame wyse waarop hy hierdie samekoms gelei het.

Ons was aangenaam verras om die verrigtinge hier by te woon. Dit is van hoog tegniese aard en 'n mens wat vir die eerste keer hier kom, staan verstom vir die omvang van die werk wat hier gedoen word. Ek het onder die indruk gekom dat hierdie Konvensie 'n besonder groot diens bewys aan munisipaliteite, aan die stadsrade in ons land, en onder leiding van ons bekwame President, het die werk hier pragtig gevorder en is daar goeie werk verrig. Ons moet hom daarvoor baie, baie bedank. Sy organisasie was puik. Ek het al heelwat in my lewe—en my lewe was al tamelik lank—organisasies gesien, maar hierdie organisasie wat u van stapel gestuur het was puik. Daar was nie die minste stoornis nie. Alles van begin tot end het van deeglikheid getuig. Ons wil hom geluk wens met sy organisasie en ons wil hom verseker dat ons hiervandaan gaan met baie aangename herinneringe aan die "Baai". Dit is wat ons hom noem, daar in die Platteland. Port Elizabeth is „Die Baai". Ons het nooit geweet wat ons het nie, maar ons sal huistoe gaan en kan u verseker dat ons baie aangename herinneringe met ons saamneem. Ons het hier gesien waar die beste baai is.

Ons sal ons plig versaak as ons hier nie melding maak nie van Sy Edelë Raadslid Young en sy Munisipaliteit nie. Ons sê hom baie hartlik dank vir die mooi manier waarop hulle ons verwelkom het, moeite gedoen het en niks gespaar het nie, en hul stad vir ons oopgestel het. Ons kan u verseker dat ons dit baie, baie hoog waardeer en alles ten volle geniet het en ek is net jammer dat alles so gou verby gegaan het. Ons het elke oomblik geniet en wat ons meeste van alles geniet het was gisteraand in die skemerte. Ons het sy toespraak geniet, ons het alles geniet, en ons wil ons waardering betuig vir wat ons so vriendelik van sy hand kon geniet.

Meneer, die President, mag ik tog nog 'n paar indrukke wat ek gekry het by hierdie konferensie vertel. Afrikaans sukkel nog altyd met die tegniese benaminge en woorde, maar ek hoop dat die dag nie meer ver geleë is dat ons sal saampraat in ons moedertaal. Ons kry moeilikhede met die tegniese benaminge maar ek hoop dat Afrikaans ook hier in die nabye toekoms sy volle plek saal inneem naas ons ander taal waarvoor ons die grooste respek het.

Wel, Meneer die President, met 'n paar woorde wil ek nog eens sê ons het ons verblyf hier ten volle geniet en ons hoop dat ons nie kortkom om u te laat verstaan dat ons baie, baie dankbaar is. Ons gaan huistoe met aangename herinneringe aan die gasvryheid, sodanig dat ons ons bes sal doen om nie een van die byeenkomste in die toekomste mis nie, dat a.s. jaar daaronder in bananaland ons weer alle gesigte sal sien. Here raadslede, ek weet nie hoeveel hier van u is nie, u weet ek is heeltemal 'n vreemdeling, maar my indruk is dat hier 'n klompie raadslede is, ek wil u vra of ons a.s. jaar tog nie die geleenthéid sal kry om nog 'n paar woorde te sê want die enigste wat ons nou gekry het was die watermeter en die ligmeter, wat op die beste van tye tog maar 'n lelike en moeilike ding is.

Ek moet Mnr. Gripper geluk wens met daardie Memorandum wat hy aan ons voorgelê het, ek wil nie daaroor praat nie want ek sien daar is nie tyd nie, maar hy

was so wyd dat enigeen daaroor kan praat behalwe politiek en godsdiens. Dit is 'n deeglike stuk werk wat daë en ure van sy tyd moes geneem het, ons wil ons hartelike dank aan hom betuig.

Meneer die president, nogmaals baie dankie, ons het dit ten volle geniet en ons sal altyd graag hier wil kom en die indruk wat ons hier gekry het sal altyd vir ons baie aangenaam bly.

Mr. W. H. MILTON, Electricity Supply Commission:

Mr. President, on behalf of the Commission I wish to express our thanks for the invitation to send delegates to this Convention. Mr. De Villiers, the Chief Engineer (Electrical) of the Commission, who was not able to attend this morning, has also asked me, on his behalf to convey to you and your Council the thanks of the Commission for the most generous hospitality to which we have been treated. I wish also to express my great appreciation of the way in which you have conducted the Convention, the organisation of which will redound to your credit.

Mr. C. KINSMAN, Durban:

Mr. President, other speakers have referred to the hospitality we have enjoyed in Port Elizabeth, but I have been particularly struck by the very full publicity and the very true accounts of our Proceedings that have appeared in the local Press. Some of us feel that the photos reproduced have been somewhat libellous, but I for one dare not say what one sees in the Press is not true, so we saw ourselves in the Press as others see us. I do feel that our appreciation of the publicity given to us by the local Press should be recorded.

Mr. J. RUSSEL, S.A.I.E.E.:

I am speaking on behalf of the S.A. Institute of Electrical Engineers. I think it was a very successful meeting from which I will carry away a very pleasant memory.

I would like to thank you for the invitation to this meeting, and I wish to thank the Mayor and Corporation for the hospitality that I have enjoyed and finally I want to offer Mr. Bradley personally my congratulations on the steady and sincere manner in which he has presided over the Conference. I wish to congratulate him on his chairmanship which I hope will be happy and successful right through the year.

Mr. C. H. CLUTTERBUCK, Electricity Control Board:

On behalf of the Electricity Control Board I thank you for extending an invitation to attend your Convention, and I wish also to express my appreciation of the opportunities offered for inspecting some of the industries in Port Elizabeth, particularly those producing electrical material.

Mr. H. J. NETHERSOLE, Johannesburg:

On behalf of the commercial firms who you so kindly invited to attend this Convention I would like to add our heartfelt thanks. Also I would like to thank your Mayor and Council for extending to us the hospitality which has been given to your delegates and also to those commercial firms in Port Elizabeth who have so kindly included us in their invitation to visit their works.

Mr. E. VIVIAN PERROW:

Mr. President, I wish to take the opportunity as Chairman of the Safety Precautions Committee of thanking you and your Association for the invitation to be present at this Convention, which I may say I have enjoyed very much.

I have also been asked to express the regrets of Mr. Joubert, the President of the Institution of Certificated Engineers, at his inability to be present at this Convention, and as he asked me to represent him I wish to extend to you greetings from that body, and it is very much appreciated that you are a member of long standing of the Institution.

In your remarks at the opening of the Convention you referred to our very long and close association, and whilst your remarks are very much appreciated, I would like to say again how pleased I am to have seen you installed as President of this Association and trust that you and your Association will have a very successful year.

Mr. R. J. BATES, Aberdare Cables:

I wish to express my thanks for the kind invitation to attend this Convention. I was very pleased to be able to show delegates the factory on Tuesday and help to entertain them in Port Elizabeth.

Mr. A. T. RODWELL, Johannesburg:

On behalf of the Old Brigade, Honorary Members and Past Presidents, I would like to say how very much we appreciate these Conventions. Many of us do not now take an active part in the discussions; we, of necessity, leave this to the younger members who are still actively engaged on electricity undertakings. We are keenly interested in the discussions, which have been of a high order, and have very much enjoyed meeting our old colleagues and friends.

We wish you a pleasant and successful year of office, Mr. President, knowing that you and your Council will worthily uphold the traditions of our Association.

Mrs. BRADLEY read a letter to the Convention from Mrs. J. S. Young (the Mayoress) which was greeted with applause.

Councillor G. BLAKE, Stellenbosch:

Ek wil net my dank betuig en sê dat dit 'n baie groot voorreg vir my was om namens Stellenbosch hierdie konferensie van al die elektrotegniese ingenieurs in Suid-Afrika hier in Port Elizabeth te kan bywoon, en ek is seker daarvan dat as Engels- en Afrikaans sprekendes van die Unie van Suid Afrika in so 'n goeie gees kan saamwerk, dat daar geen rede is waarom die saamwerking tussen die Engels- en Afrikaans sprekendes nie kan lei tot 'n groter Suid-Afrika, nie.

Other speakers who expressed their appreciation included Mr. O. J. Alexander for the S.A. Bureau of Standards, Mr. W. Fenwick for the E.S.C. Rand Undertaking and Mr. E. R. J. Smith for the S.A. Cable Makers Association.

PRESIDENT

Now it is my very pleasant duty, in the absence of the Mayor, who is otherwise engaged this morning, to ask the Deputy Mayor to speak on his behalf. And also, as you know, our Deputy Mayor is a member of our Executive, so he has got the dual reins this morning so that he can use either or both.

Councillor J. C. K. ERASMUS, Deputy-Mayor:

Mr. President, Ladies and Gentlemen, on behalf of his Worship, and also as Chairman of the Electricity Committee of the local council it is my duty, and it is not a very pleasant duty, to close this Conference. It was I, last year in East London, who was deputized to invite you to Port Elizabeth, and I said then that I hoped we could vie, or at least try to vie, with the hospitality which other centres have offered you in the past. From the expressions here this morning, it is obvious that we did our best and that our efforts were appreciated. I can also, in another capacity, express the appreciation of the Wool Exchange that you took advantage of the facilities they offered you. I can assure you that as representing the premier industry in Port Elizabeth, that is the Wool Industry, we are very pleased to have other people here who also produce something!

But Mr. President, I could not sit through much of this Conference, I had other duties to attend to, but I did think very kindly of the other councillor-delegates who had to sit through these proceedings day by day. You know, Mr. President, when we are delegated to these various Conferences, there are "Engineers", there are "Parks", "Treasurers" and "Town Clerks", and all the other things that officials think of to hold conferences about, we Council members do understand something of what is going on. After all we know what a bridge is, we know what a gutter, or park or a flower is, or even some of the things the Treasurers talk about, we have a sort of speaking familiarity with some of those subjects, but when it comes to electricity I am afraid we have to simulate an interest which is in inverse proportion to our knowledge of the particular subject. I am afraid that when they talk about kilovolt-amps and such like things it represents a very mysterious gogga to me. I think some of my other Councillor delegates are in the same position and my sincere sympathy goes out to them for the patience and tolerance that they evinced.

The undertaking of this Association represents, I always think, the most important municipal activity. In most towns, certainly in Port Elizabeth, you represent the largest individual ratepayer and I think the fact that you always hide your light under the bushel, seems strange to me. If I were in the position of contributing to the rates to the extent that some of you do, I would have a lot more to say in the direction of policy than is unfortun-

ately the case with the electrical engineers. They seem to be quiet, unassuming people who are only known by name when there is a breakdown or a shortage of coal.

His Worship last night told you all about the amenities of our city. We did our best, we gave you the weather as it sometimes is, and as it should be. I leave you to judge which is the usual and which is the abnormal. I understand that some of you have come to the conclusion that you are not very good sailors, others are doubting their dancing abilities after the "Stardust" and others I know from friends of mine in town, are not so sure of their spiritual capacities!! However, as someone said yesterday, these Conventions are not a holiday or vacation, it certainly has not been to some of you, there has been some hard work on committees and other things, but I do hope—in fact I am sure—that most of you enjoyed yourselves.

I, now on behalf of the City Council, want to thank Mrs. Bradley and her helpers for what they have done to make your stay as pleasant as possible. You know menfolk, when we draw up a programme of entertainment **it** is always rather stereotyped; we always have a function, enough time for a drink and then another function. From what I hear Mrs. Bradley has been working at this for a long time, they kept everyone pleasantly occupied. We are grateful to her, she has done a job of work which you cannot tell anyone to do, it was only because she was very keen to do it and she wanted to extend the hospitality which is typical I hope, of Port Elizabeth. We are very grateful to you, Mrs. Bradley, and your women helpers and I hope you will tell them of our very sincere appreciation.

Now Mr. President this morning in committee and before, and even last year in committee, I heard centres actually fighting as to who would be our host for the next year. That is a very happy tribute to this Association and the members who make up the body of this Conference. We will not see you all again soon, which is rather a pity, but we will see quite a lot of some of you. We will have the whole of the Electricity Supply Commission down here, and lots of other engineers connected with the big developments going on here. We will have our own local electricity conventions for the next three or four years and I hope when you rally here again, we shall have a very nice hall for you and some more factories we can take you to for the opening. The fact that you now all depend on Port Elizabeth for your cables and many other supplies will mean that you will not forget us.

Meneer die President, dit was vir ons aangenaam om julle hier te verwelkom, dit was besonder aangenaam om julle hier te he, dit is nie so aangenaam om vaarwel te se nie, maar al wat ek kan se is dat ek hoop dat hierdie konferensie weer baie gou in Port Elizabeth sal vergader.

PRESIDENT:

Mr. Deputy Mayor, many thanks indeed for those kind and very able remarks. It is rather embarrassing for me to have to stand up now, I do not know whether I am blushing or not blushing, but I should be if I am not. Thank you sincerely for your speech and I know you speak on behalf of your colleagues in the City Council. I appreciate very much indeed those very kind remarks regarding myself and I thank you for your expression of thanks which you have directed to the people of Port Elizabeth, and perhaps particularly the factories and industrial organisations operating at the North End, who have placed themselves so kindly and generously at the disposal of Conference members during the week. We look back with pride to the opening of Messrs. Aberdare Cables' new factory and we have very pleasant memories of our visit on this special occasion. Ladies and Gentlemen, I thank you all most sincerely, and I hope to have the pleasure of seeing you all again at the next Convention at Pietermaritzburg next year. Goodbye and totsiens.

SOCIAL FUNCTIONS

The social functions arranged for the Convention were of a high order, and included an unusual "outing" when, by special invitation to the whole Convention, we visited and took part in the official opening of the new Cable Factory of Messrs. Aberdare Cables of South Africa, Ltd., on the afternoon of Tuesday, the 17th May. After Dr. Donges, the Minister of Posts and Telegraphs, had performed the opening ceremony, in the presence of some four hundred and fifty people, a conducted tour

through the Factory proved most interesting and instructive when the latest processes concerned with cable manufacture could be seen and appreciated. Following this all the guests were very lavishly entertained with refreshments including a Buffet Supper, and it was evening before we were all safely back in our hotels. The Association's thanks are recorded to Messrs. Aberdare Cables, Ltd. for their invitation and hospitality to all our members and their wives.

During the morning of Wednesday, 18th May, 1949, a bus tour of the city was arranged by Mrs. Bradley. Seventy of the Convention ladies took part in the drive and were joined by the Mayoress for morning tea in the delightful surroundings of the swimming bath enclosure in St. George's Park.

On Thursday morning the 19th May another circular bus drive, through Walmer and along the Marine Drive back to the city, with a stop at Schoenmakers Kop for morning tea, was thoroughly enjoyed by some eighty ladies and their friends. ("General" discussion, with far too many interjections, seemed to be the cause of much hilarity on these bus rides).

In the afternoon, by the courtesy of the South African Railways and Harbours Administration, about a hundred of the delegates and their wives, were taken on a tug trip around the harbour and "out to sea" along the coast beyond Summerstrand. The weather was ideal, the delegates proved their "salt" and were not so easily disturbed or put off their balance as some people would have us believe.

In the evening a Mayoral Reception in the form of a Cocktail Party was held in the City Hall where the Mayor and Mayoress (Councillor and Mrs. John S. Young) received the guests with the usual cordial welcome that symbolises the City of Port Elizabeth. The Mayor expressed his pleasure in being given the opportunity to entertain the Convention and wished us continued progress and success. The President responded on behalf of the Association and thanked the Mayor and the City Council for their generous hospitality, remarking that the party was the most largely attended for some years and so indicated the popularity of Electrical Engineers and their Councillors. Again it was very late in the evening before some of us got back to the hotel.

"Happy times indeed" was the report received from all the members of the Convention through the social functions and we thank all those responsible who helped in any way to make the Convention so enjoyable and so successful.

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