MEMBERS OF THE

Electricity Supply Commission.

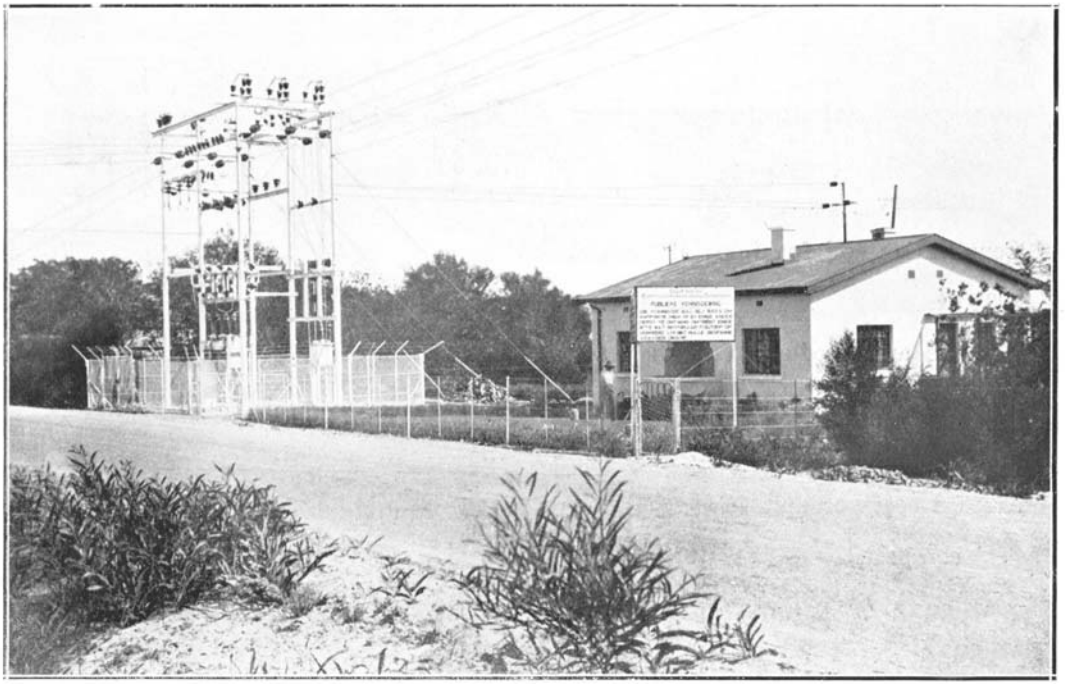
DR. HENDRIK JOHANNES VAN DER BIJL (Chairman).

ALBERT MICHAEL JACOBS.

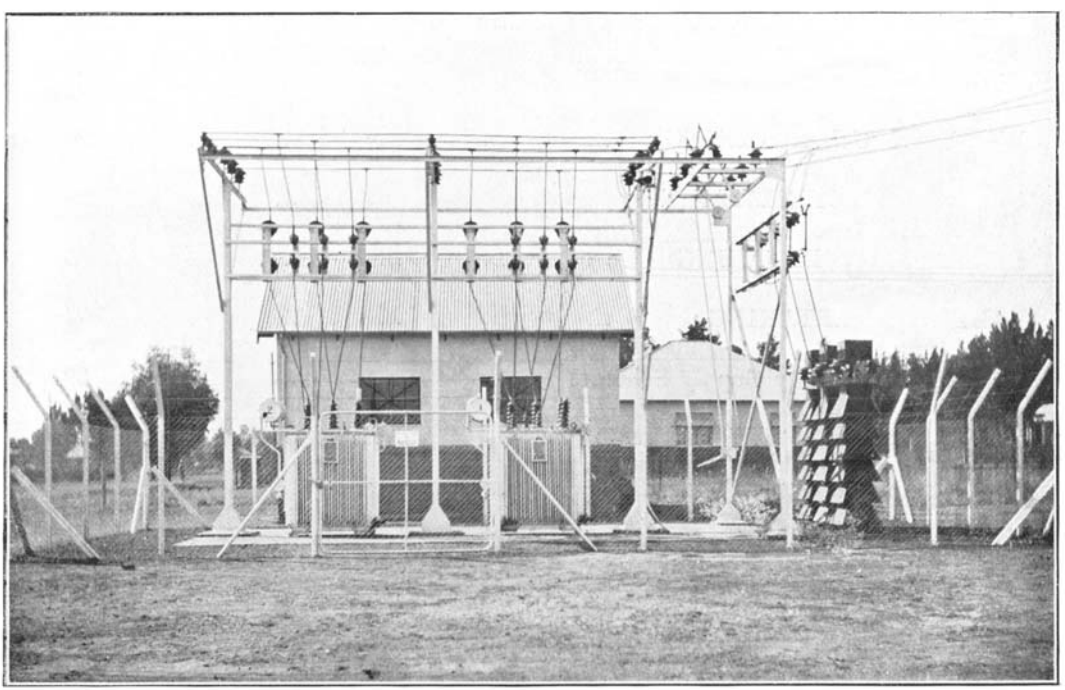
KARL GUNDELFINGER.

GEORGE GOODBAN ELLIOTT.

Durban Undertaking: Aerial View of Congella Power Station.



Capetown Undertaking: Switching Point and Linesman's Cottage on 33,000 volt System.



Natal Central Undertaking: Step-Down Sub-Station at Newcastle.

CONTENTS.

Electricity Supply Commission.

Electricity House,
82, Marshall Street,
Johannesburg.

June, 1932.

To the Honourable
The Minister of Mines and Industries,
Pretoria.

SIR,

In conformity with the provisions of Section 14 of the Electricity Act, 1922, the Commission has the honour to submit its Ninth Annual Report, covering its operations for the year ended 31st December, 1931, together with a brief review of its activities up to May, 1932.

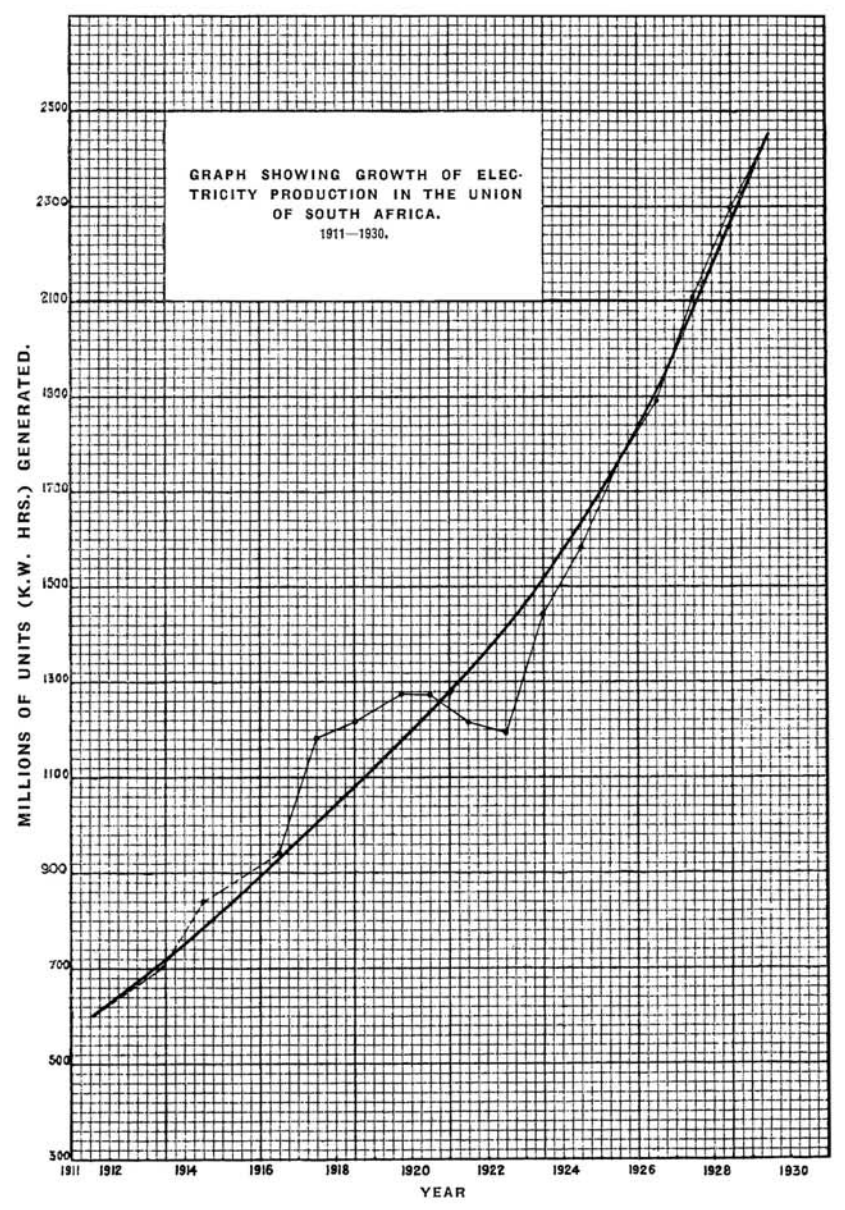
The Commission's principal business is the production, distribution and supply of electricity from its five Undertakings, which are as follows:—

Name of Undertaking.	Capacity of Main Generating Sets. Kilowatts.	Date of Commencement of Supply.
Natal Central	60,000 ...	March, 1926
Witbank	100,000 ...	May, 1926
Capetown	*30,000 ...	May, 1926
Durban	†36,000 ...	July, 1928
Sabie	1,350 ...	November, 1925

During the year under review the Commission's Undertakings have been in continuous and satisfactory operation. With two exceptions, to which reference is made later in this Report, there has been an increase in output to meet the requirements of existing and new consumers of all classes.

* A 20,000 kilowatt generating set is on order for installation at the Salt River (Capetown) Power Station. This will bring the installed capacity of that station up to 50,000 kilowatts.

† The installation of an additional 12,000 kilowatt generating set at the Congella (Durban) Power Station was completed in May, 1932, the installed capacity of that station now being 48,000 kilowatts.


GRAPH SHOWING GROWTH OF ELECTRICITY PRODUCTION IN THE UNION OF SOUTH AFRICA.
1911—1930.
MILLIONS OF UNITS (K.W. HRS.) GENERATED.
2500
2300
2100
1900
1700
1500
1300
1100
900
700
500
300
1911
1912
1914
1916
1918
1920
1922
1924
1926
1928
1930
YEAR

The world-wide depression which made itself increasingly felt in South Africa during 1931, and the period of financial stringency which set in towards the end of that year, have tended to retard development in the electricity business, but not to the same extent as in most spheres of business and commercial activity. Electricity is becoming increasingly an essential in the well-being and development of the community, the recognition of its advantages in both the domestic and industrial spheres continues to spread, and, in spite of the effect of present financial and economic circumstances, there is evidence of steady progress in the demand for, and output of, electricity in South Africa. So far as the Commission itself is concerned, on one of its Undertakings an additional 12,000 kilowatt turbo-alternator and two boilers have recently been installed and brought into commercial operation, and on another an additional 20,000 kilowatt turbo-alternator and additional boiler plant are on order. Extensions to the Commission's transmission and distribution systems are constantly proceeding, and these various developments are referred to in greater detail later in this report.

The growth of electricity production in South Africa during the last 20 years is illustrated in the graph reproduced on the opposite page, from which it will be of interest to note the more rapid rate of development during the past decade.

Constitution and functions of Commission.

Before dealing with the Commission's operations during the year 1931, it would probably be opportune again briefly to review the constitution of the Commission, its functions and duties and its relationship to the Government and the Electricity Control Board, as there still appears to be some misconception in these respects. The Commission and its activities have often been misrepresented, and statements have been made regarding its affairs which are based either upon false premises or upon incomplete knowledge of the facts.

The Commission is a statutory public body, constituted under the Electricity Act, 1922, as a body corporate, whose members are appointed by the Governor-General. The Commission is charged by statute with certain functions, the principal of which are the production, distribution and supply of electricity and the co-ordination of existing undertakings so as to promote economy and efficiency in electricity production and supply in South Africa. So far as the Commission's Undertakings are concerned, two fundamental principles are laid down; firstly, that the Under-

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takings shall be operated, as far as practicable " neither at a profit nor at a loss," and, secondly, that, financially, each Undertaking must be treated separately.

The Commission is required by statute to report to, and obtain the approval of, the Minister of Mines and Industries before establishing or acquiring an undertaking, and, in common with other electricity undertakers, must obtain a licence (or permit) from the Electricity Control Board.

In the operation of its Undertakings, the Commission, as a public body, but representing no particular group of persons or interests, has as its objective a cheap and reliable supply of electricity in the interests of each and all of its consumers. The Commission operates strictly on business lines, is outside political control and, except in the matter of tariffs falling within the jurisdiction of the Electricity Control Board, is vested with complete responsibility for the conduct of its own affairs.

This was, of course, a fundamental objective of the Electricity Act, 1922, viz., to safeguard the national interest in power supply without incurring the disabilities of direct state enterprise in a highly specialised business. This objective was achieved by combining the advantages of private enterprise and public ownership in the person of the Electricity Supply Commission.

From the point of view of the public as a whole, the two aspects of the affairs of the Commission, as a public utility concern, which are of most interest are the price of electricity sold by the Commission and the financial results of its activities.

As regards the first of these points, the Commission's standard tariffs are public property and are published annually in the Government Gazette and in local newspapers in the respective areas of supply of the several Undertakings. As regards the second point, the Commission's Annual Report, which is laid upon the table, and distributed to Members, of both Houses of Parliament, and also circulated publicly and to the press, contains, inter alia, detailed audited statements and accounts, including Balance Sheet, Redemption and Reserve Fund Accounts and separate Revenue and Expenditure Accounts in respect of each Undertaking,

together with the report thereon of the two Auditors, appointed by the Governor-General in terms of Section 13 of the Electricity Act, 1922.

A more careful study of the facts and figures published each year in the Commission's Annual Reports would, doubtless, remove much of the misapprehension that exists as regards its activities and would provide the answer to critics of the policy laid down in the Electricity Act, 1922.

1931 Results.

The figures of primary interest in connection with the operation of the Commission's Undertakings for the year 1931 are :—

Total Capital Expenditure at 31st December, 1931,		**£8,295,582**
Total Revenue		**£1,029,915**
Total Production Costs (including Capital Charges, Reserve Fund Contributions, etc.)		**£1,032,224**
Total Capacity of Main Generating Sets	(kilowatts)	**227,350**
Total Electricity Sales	(units)	**867,086,269**
Average Cost per Unit Sold		0·286d.
Total Coal Consumption	(tons)	**770,191**
Number of Consumers		1,955
Total Area of Supply (approx.)	(square miles)	11,000

Revenue and Production Costs, 1931.

The total revenue for the year 1931, viz., £1,029,915 (which excludes interest earned on investments in respect of the Redemption and Reserve Funds, credited to those Funds) is made up as follows :—

SALES OF ELECTRICITY.	Amount. £	% of Total.	Average Price per Unit Sold.
(a) Traction Supplies (converted to direct current)	385,803	38·0%	0·813d.
(b) Bulk Supplies	488,616	48·1%	0·170d.
(c) Industrial and Mining Supplies ...	123,607	12·1%	0·480d.
(d) Domestic and Lighting Supplies ...	18,130	1·8%	3·230d.
Total	**£1,016,156**	**100·0%**	**0·281d.**
(e) Other Revenue	13,759		
GRAND TOTAL ...	**£1,029,915**		

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Total	**£1,016,156**	**100·0%**	**0·281d.**
(e) Other Revenue	13,759		
GRAND TOTAL ...	**£1,029,915**		

There are numerous factors which influence the average price per unit to different classes of consumers and which must be taken into account in making comparisons of revenue and prices per unit between one class of consumer and another. Some of the more important factors are mentioned hereunder.

(a) Traction Supplies:

Electricity is supplied to the South African Railways and Harbours Administration for traction purposes from two of the Commission's Undertakings, viz., the Natal Central and Capetown Undertakings. These supplies are transmitted over relatively long distances (duplicate transmission lines and/or cables generally being provided to secure greater reliability) and sub-stations are provided by the Commission at intermediate points where the supply is converted from alternating to direct current, the supplies being delivered by the Commission to the Railway Administration on the railway track as direct current. Conversion costs alone represent about 25% of the cost per unit of the railway traction supplies.

(b) Bulk Supplies:

The comparatively low average price of bulk supplies, viz., 0·170d. per unit, is due to the predominating influence of the loads of two large consumers supplied under favourable conditions, viz., The Victoria Falls and Transvaal Power Company, Limited, and the Durban Corporation. These two supplies are delivered by the Commission at the power stations (Witbank and Congella respectively); i.e., no transmission costs are involved so far as the Commission is concerned. The plant load factors are both relatively high and, in the case of Witbank, coal is obtained from collieries adjoining the power station, the cost of transportation (most of which is carried out with the Commission's own locomotive and in its own hopper trucks) being reduced to a minimum.

(c) Industrial and Mining Supplies:

This item includes consumers supplied under a variety of conditions as to load characteristics and situation, and with loads ranging from a few hundred units per annum up to twenty million units per annum.

The average consumption by the Commission's industrial and mining consumers in 1931 was at the rate of over 600,000 units per

consumer per annum, compared, for example, with an average of 732 units per consumer per annum in the case of domestic and lighting consumers.

(d) Domestic and Lighting Supplies:

The price per unit of electricity for domestic and lighting supplies is almost invariably higher than in the case of supplies for power purposes, due to the relatively small consumption of individual consumers, to the comparatively high costs involved in house to house distribution and service and, in many cases, to the incidence of the lighting load.

The total production costs for the year 1931, viz., £1,032,224, are made up as follows:—

	Amount. £	% of Total.	Cost per Unit Sold.
Generation	341,020	33·0%	0·094d.
Distribution	38,585	3·8%	0·011d.
General Expenses	89,733	8·7%	0·025d.
Interest and Redemption	469,199	45·4%	0·130d.
Reserve Fund	93,687	9·1%	0·026d.
Total	**£1,032,224**	**100·0%**	**0·286d.**

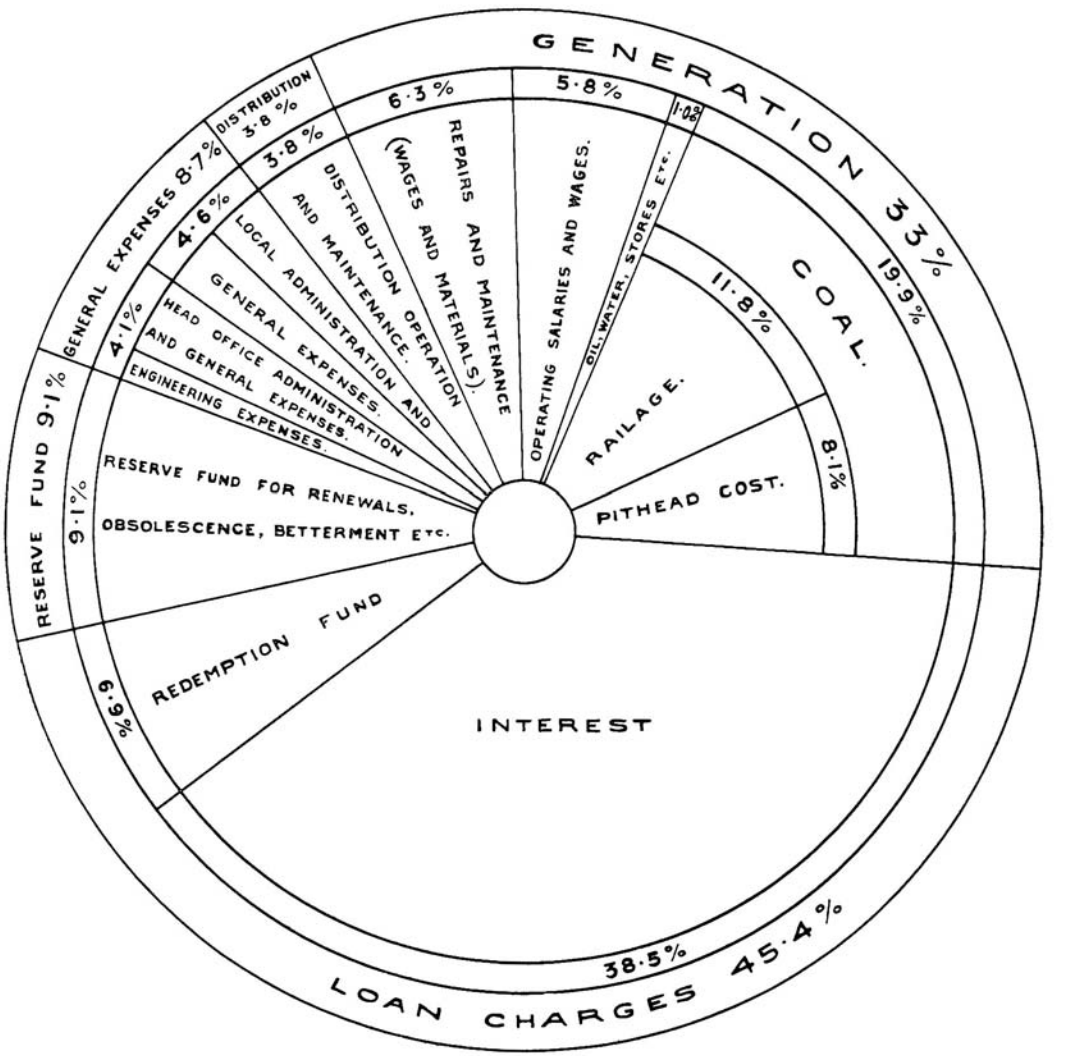
A diagram showing the subdivision of the Commission's total production costs during the year 1931 is reproduced on the following page.

The balance representing the excess of total revenue over production costs (excluding Reserve Fund) for the year 1931 amounts to £91,378. The balance (surplus) brought forward from the year 1930 amounted to £10,005, so that the total surplus on Revenue Accounts at the end of the year 1931 amounted to £101,383. Amounts aggregating £93,687 were set aside to the Reserve Fund, leaving a balance (surplus) of £7,696, which has been carried forward to the year 1932.

It might perhaps be desirable again to state that the Commission's objective is to achieve, as nearly as practicable, a balance between the revenue and total production costs of each of its Undertakings, in compliance with the principle laid down in the Electricity Act, 1922, viz., that the Commission's Undertakings shall be operated, as far as possible, "neither at a profit nor at a loss."

Electricity Supply Commission.

DIAGRAMMATIC SUBDIVISION OF TOTAL PRODUCTION COSTS DURING THE YEAR 1931.



NOTE.—Under the heading "General Expenses" is included miscellaneous expenditure such as maintenance of quarters, stores expenses, assessment rates, wayleaves, rents, insurance, audit expenses, pension fund contributions, legal expenses, etc.

Capacity of Main Generating Sets.

The total capacity of the main generating sets in the Commission's five power stations at the end of the year 1931 amounted to 227,350 kilowatts. Since that date, the installation of an additional 12,000 kilowatt turbo-alternator in the Congella (Durban) Power Station has been completed and an order placed for a new 20,000 kilowatt set for the Salt River (Capetown) Power Station. These extensions will increase the total capacity of the Commission's generating plant to 259,350 kilowatts (348,000 h.p.). The initial installations in these five power stations, the construction or acquisition of which was completed within the past six years, was 175,350 kilowatts, so that the increase in generating plant capacity (when the Salt River Power Station extension is completed) will amount to 84,000 kilowatts, representing an increase of 48% within a matter of seven years.

Electricity Sales, 1931.

The Commission's total electricity sales during the year 1931 amounted to 867,086,269 units, a decrease of 22,525,655 units, or approximately 2½%, as compared with the year 1930. This decrease is due, firstly, to a reduction of over 17½ million units (representing 17·3%) in the supply to the Railway Administration for electric traction purposes on the Natal main line, and, secondly, to a reduction of about 15½ million units (representing 2½%) in the output of the Witbank Power Station owing to circumstances affecting loading conditions, coal supplies and certain other factors being less favourable than during the previous year. These reductions, totalling over 33 million units per annum, were partially offset by increases, aggregating about 11 million units, in other directions.

The following statement shows the units sold to all consumers during the past six years:—

UNITS SOLD.

Year.	Natal Central Undertaking.	Witbank Undertaking.	Capetown Undertaking.	Durban Undertaking.	Sabie Undertaking.	**Total.**
1926 ...	719,666	160,031,213	280,242	—	727,401	**161,758,522**
1927 ...	104,206,235	439,061,722	5,811,836	—	1,938,940	**551,018,733**
1928 ...	114,213,037	464,267,213	31,038,697	15,563,460	2,829,888	**627,912,295**
1929 ...	123,911,774	543,091,138	47,945,690	78,873,576	3,176,173	**796,998,351**
1930 ...	117,075,484	618,951,364	49,772,016	99,228,000	4,585,060	**889,611,924**
1931 ...	101,131,880	603,359,113	52,109,958	103,899,765	6,585,553	**867,086,269**

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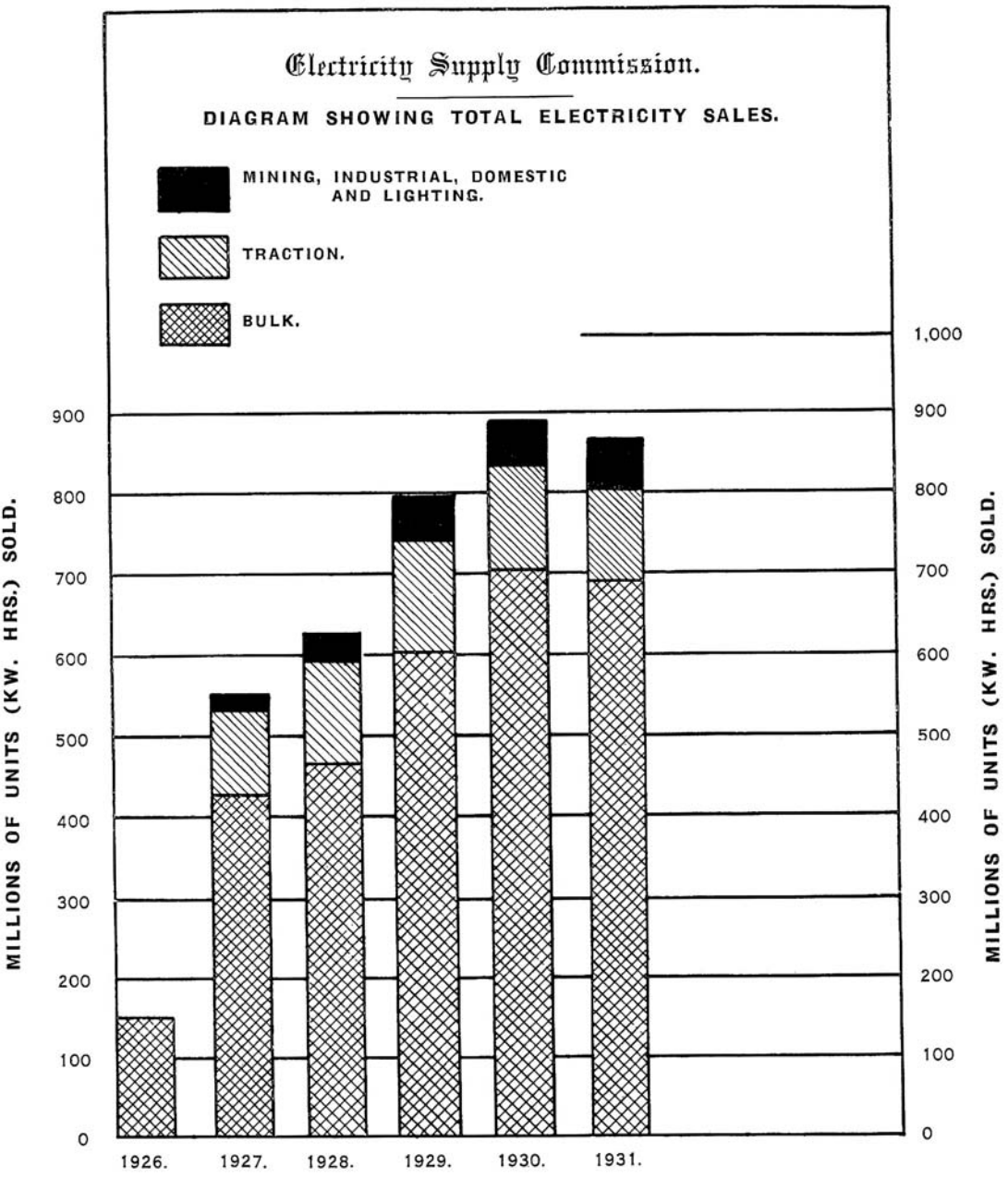
Electricity Supply Commission.
DIAGRAM SHOWING TOTAL ELECTRICITY SALES.
MINING, INDUSTRIAL, DOMESTIC AND LIGHTING.
TRACTION.
BULK.
MILLIONS OF UNITS (KW. HRS.) SOLD.
0
100
200
300
400
500
600
700
800
900
1,000
1926.
1927.
1928.
1929.
1930.
1931.

The distribution of the units sold during 1931 as between the various classes of consumers was as follows:—

UNITS SOLD, 1931.

Undertaking.	Traction.	Bulk Supplies.	Industrial and Mining.	Domestic and Lighting.	Total.
Natal Central ...	83,977,666	14,116,283	2,759,198	278,733	**101,131,880**
Witbank ...	—	565,983,059	36,834,801	541,253	**603,359,113**
Capetown ...	29,890,260	6,094,868	15,597,837	526,993	**52,109,958**
Durban ...	—	103,899,765	—	—	**103,899,765**
Sabie ...	—	—	6,585,553	—	**6,585,553**
Totals ...	**113,867,926**	**690,093,975**	**61,777,389**	**1,346,979**	**867,086,269**

A chart showing the progress of electricity sales to the different classes of consumers year by year is reproduced on the opposite page.

Average Cost per unit sold, 1931.

The average cost per unit sold in 1931 from all the Commission's Undertakings was 0·286d., as compared with 0 270d. in 1930 and 0·298d. in 1929.

Figures representing the average cost per unit sold from one Undertaking, or an aggregate of several Undertakings, are liable to give rise to misunderstandings, particularly when attempts are made to make comparisons. There is no simple basis for comparison of electricity costs and prices as between one Undertaking and another, or as between one class of consumer and another. The most familiar and commonly used unit of measurement of electricity is the electrical "unit" or kilowatt-hour, which is used in the majority of cases (either alone or otherwise) as a unit of measurement for electricity tariffs. Hence the prevalence of comparisons between costs or prices "per unit." Although apparently simple, such comparisons, without considerable qualification, are delusive, and are a fruitful source of misconception amongst those unfamiliar with the factors governing electricity supply costs.

In this respect, the Commission's five Undertakings themselves afford an excellent example, and it is proposed briefly to recapitulate the principal factors responsible for the wide variations in the average cost per unit as between one Undertaking and another. These factors are:—

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In this respect, the Commission's five Undertakings themselves afford an excellent example, and it is proposed briefly to recapitulate the principal factors responsible for the wide variations in the average cost per unit as between one Undertaking and another. These factors are:—

(a) The relationship between

(i) power station expenditure, and

(ii) expenditure involved in transmission, distribution and, in the case of supplies for railway traction purposes, conversion from alternating to direct current;

(b) the cost of coal (due mostly to railage);

(c) the ratio of the maximum demand to the installed capacity of the generating sets; and

(d) the load factor, i.e., the ratio of the average demand to the maximum demand.

The comparative figures, in these respects, for each of the Commission's Undertakings are as follows:—

Undertaking.	Approximate Proportion of Capital Expenditure.		Cost of Coal per ton (2,000 lbs.)	Ratio of Maximum Demand to Installed Capacity.	Load Factor.	Average Cost per Unit Sold.
	Power Station.	Transmission, Distribution & Conversion.				
Natal Central ...	42·2%	57·8%	8/3	41·4%	49·0%	0·749d.
Witbank ...	94·2%	5·8%	2/2	91·5%	75·4%	0·126d.
Capetown ...	57·6%	42·4%	23/4	53·4%	37·6%	0·993d.
Durban ...	100 %	—	14/2	63·3%	52·0%	0·394d.
Sabie ...	80·3%	19·7%	Hydro	85·2%	67·4%	0·504d.

The significance of some of these figures will perhaps not be fully appreciated, and it might be of advantage to give illustrations of the effects of some of the factors. For example, for one penny's worth of coal consumed, 41 units were sold at Witbank, 12 at Natal Central, 8 at Durban, and 3½ at Capetown; and for each kilowatt of installed capacity, 6,034 units were sold at Witbank, 4,878 at Sabie, 2,886 at Durban, 1,737 at Capetown, and 1,685 at Natal Central.

There are, of course, other detailed circumstances and conditions to be taken into account in making comparisons of cost as between one Undertaking and another, but sufficient has been said to indicate the importance of the qualifications which must be made in such comparisons.

During the year 1931, the coal consumed at the Commission's four steam-using power stations, amounting in total to 770,191 tons, was as follows:– Coal Consumed, 1931.

Power Station.	COAL CONSUMED. Tons. (2,000 lbs.)	Per Unit Generated. Lbs.	Per Unit Sent Out. Lbs.	B.T.U.'s. Average per lb. of Coal.	Average per Unit Sent Out.	Thermal Efficiency on Units Sent Out.
Colenso (Natal Central) ...	86,456	1·51	1·62	12,380	20,100	17·0 %
Witbank	559,289	1·73	1·85	11,424	21,130	16·14%
Salt River (Capetown) ...	45,249	1·62	1·72	13,030	22,400	15·3 %
Congella (Durban)	79,197	1·38	1·52	12,660	19,200	17·8 %

The total cost of coal in 1931, as delivered at these four power stations, was £205,753, of which £122,427, i.e., almost 60 per cent., represents railage and sidings charges. Omitting Witbank, where practically no railage is involved, railage and sidings charges represent approximately 83 per cent. of the cost of coal.

With effect from 9th November, 1931, a special temporary surcharge in the railage on coal was made by the Railway Administration, which, in respect of coal for the Colenso, Salt River and Congella Power Stations, involves an increase in railage charges of 10d. per ton. This represents an increase at the rate of nearly £9,000 per annum on the cost of coal at these three power stations.

The number of consumers being supplied with electricity from the Commission's Undertakings as at 31st December, 1931, was 1,955, an increase of 297 during the year. Consumers.

The following table shows the number of consumers of the various classes on each Undertaking at the end of the year 1931:—

Undertaking.	Traction.	Bulk Supplies.	Industrial and Mining.	Domestic and Lighting.	**Total.**
Natal Central	1	7	20	199	**227**
Witbank	—	2	31	403	**436**
Capetown	1	4	46	1,238	**1,289**
Durban	—	1	—	—	**1**
Sabie	—	—	2	—	**2**
Totals	**2**	**14**	**99**	**1,840**	**1,955**
Units Sold to Each Class of Consumer expressed as a Percentage of Total Units Sold	13·1%	79·6%	7·1%	0·2%	100%

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The major portion of the Commission's output is supplied in large blocks of power, as will be evident from the foregoing.

The following is a list of the Municipalities and other urban local authorities which obtain their electricity supplies from the Commission:—

CAPE.	TRANSVAAL.	NATAL.
Paarl.	Witbank.	Durban.
Stellenbosch.	Middelburg.	Pietermaritzburg.
Malmesbury.		Mooi River.
Bellville.		Estcourt.
Goodwood.		Colenso.
Parow.		Ladysmith.
Durbanville.		Glencoe.
Kuils River.		Newcastle.

Indirectly, electricity from the Commission's Undertakings is supplied to a number of other urban local authorities, and at Capetown the Commission's and the City Council's Undertakings are inter-connected.

Financial.

The Report of the Auditors and the Commission's Balance Sheet as at 31st December, 1931, are embodied in Annexure "A" to this Report.

As will be observed from the Balance Sheet, Loan Capital remains unchanged at £8,000,000. This amount is made up of two loans of £3,000,000 and £5,000,000 from the Treasury, redeemable not later than 31st December, 1954 and 1979 respectively.

The Commission's Redemption Fund, in respect of the £3,000,000 loan, redeemable not later than 1954, stands at £267,133, as compared with £184,918 as at 31st December, 1930. The amount in the Redemption Fund is in excess of the statutory requirements, the basis of valuation being that set out in the Schedule to the Electricity Act, 1922, as amended by the Financial Adjustments Act, 1930. This excess is due to the fact that contributions from revenue for loan redemption purposes were commenced prior to the date of commencement of the loan, viz., 1st January, 1930, and to the fact that Redemption Fund investments have been made yielding rates of interest higher than that specified as the basis for the statutory valuation of the Fund.

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As regards the £5,000,000 loan, as mentioned in the Commission's last Annual Report, the Financial Adjustments Act, 1930, makes provision for deferring contributions from revenue to the Redemption Fund in respect of that loan until 1940.

The Commission's Reserve Fund at 31st December, 1931, stands at £344,268, as compared with £247,701 at the close of the year 1930.

Separate accounts in respect of both Redemption and Reserve Funds are embodied in Annexure "A" to this Report.

The Commission's Capital Expenditure increased from £8,083,558 in 1930 to £8,295,582 as at 31st December, 1931. Net revenue during construction and other amounts appropriated in reduction of capital expenditure total £364,138, leaving a net expenditure on capital account amounting to £7,931,444. A Schedule of Expenditure on Capital Account is embodied in Annexure "A" to this Report.

The Commission's Auditors, in paragraph (4) of their Report, draw attention to the fact that Redemption Fund investments appear in the Balance Sheet at cost, viz., £272,622, although this is in excess of the market price of the securities concerned, as at 31st December, 1931. Details of these investments are given in a statement embodied in Annexure "A" to this Report, from which it will be observed that the Redemption Fund moneys are invested in Government and Government-guaranteed securities. Whilst it is true that the market prices of these securities, or such of them as were quoted, as at 31st December, 1931, were below the cost at which they appear in the Commission's Balance Sheet, it should be borne in mind that the Commission has no intention at present of realising the investments and that, with the return of more normal times, Government and Government-guaranteed securities will undoubtedly appreciate. In any case, as stated by the Auditors and as mentioned earlier in this Report, the amount available in the Redemption Fund is in excess of statutory requirements even after taking into account depreciation in the market value of these securities.

In paragraph (3) of their Report the Auditors also comment upon the amount set aside by the Commission to its Reserve Fund in respect of the Natal Central and Capetown Undertakings, and

express the view that the amount set aside in respect of the year 1931 is inadequate. The Auditors' remarks in this respect are linked up with the fact that the Natal Central and Capetown Undertakings have been financed by the Commission from the £5,000,000 loan redeemable in 1979 and in respect of which no redemption contributions from revenue are required to be made until 1940, and whilst the desirability, in these circumstances, of building up a larger Reserve Fund is manifest, there are several considerations which should be taken into account in this respect.

In the first place, up to and including the year 1929, the Commission set aside contributions from the revenue of the Natal Central and Capetown Undertakings to a fund for the repayment of advances received from the Treasury, which advances were consolidated into loans as at 31st December, 1929. The amount of these contributions, with accrued interest, as at that date, was £218,751, and this amount was appropriated in reduction of the capital expenditure on these two Undertakings.

In the second place, it is the Commission's policy to maintain its Undertakings in a high state of efficiency and to carry out regular and complete overhauls of its plant and equipment so as to eliminate, as far as practicable, breakdowns or accidents resulting in extensive repairs or replacements and involving large withdrawals from Reserve Fund.

In the third place, in the matter of Reserve Funds, some regard must be had, inter alia, to the desirability of keeping costs as low as practicable during the initial stages in order to promote development. In the matter of development, although the Natal Central and Capetown Undertakings were established primarily in connection with railway electrification requirements, and although no other loads were contracted for when these Undertakings were commenced, the Commission has been successful in building up, during the past five years, loads from other consumers in the Natal Central and Capetown areas yielding a total revenue of over £95,000 per annum. It is upon development such as this that the success of electricity undertakings depends, and it cannot be achieved without economy and efficiency throughout the organisation.

It has, therefore, been the Commission's policy, in making provision for setting aside contributions to its Reserve Fund, to

take into account, not only the dictates of prudent finance, but also the benefits accruing from development in the output of its Undertakings, which incidentally increases the revenue of the Undertakings out of which to set aside larger amounts to Reserve Fund. It is the Commission's intention to increase Reserve Fund contributions as the loads on the Undertakings develop, and the ultimate wisdom of this policy will, the Commission is confident, make itself increasingly evident as time goes on.

In this connection it should be remembered that new electricity undertakings are sometimes carried on at a loss, or without dividends or reserve funds, during the initial stages, extending in some cases over a period of years. The Commission's Undertakings have been supplying electricity for only six years, and, viewed from this point of view and bearing in mind that the Commission has been financed entirely by advances and loans on which interest has been paid (the equivalent of debentures, in the case of an ordinary company), its financial position cannot be regarded as other than satisfactory.

Revenue and Expenditure Accounts in respect of each of the Commission's five Undertakings are embodied in Annexure "A" to this Report. These individual accounts speak for themselves and do not call for particular comment.

Tariffs.

The standard tariffs for the supply of electricity from the Commission's Undertakings and the conditions attaching thereto are embodied in the respective Licences and Permit granted to the Commission by the Electricity Control Board. These prices are subject to adjustment from time to time in terms of the Electricity Act, 1922, and the standard prices for the time being in force are published annually by the Commission in the Gazette and in newspapers circulating in the areas of supply of the respective Undertakings.

Annexure "B" to this Report embodies the standard prices at present in force. It will be observed that these prices generally take the form of multi-part tariffs, and they are subject to variation, in terms of Section 26 of the Electricity Act, 1922, depending upon the situation, extent and characteristics of the load. Even in cases where the same tariff applies to two or more consumers, the average price per unit varies with each consumer's load factor and in some instances also with the extent and power factor of the load.

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The standard prices are designed for application to comparatively large consumers and are not suitable for small supplies, such as lighting and domestic uses. In such cases the tariffs, which are subject to the approval of the Electricity Control Board, are based on the standard prices, in respect of the Undertaking concerned, plus the additional costs of house to house reticulation.

Staff.

The staff employed by the Commission as at 31st December, 1931, as compared with the previous year, is as follows:—

	1930.	1931.	Difference.
Europeans	332	390	+ 58
Non-Europeans	336	274	− 62
Total ...	**668**	**664**	**− 4**

The foregoing figures exclude the staff employed at the Commission's Witbank Power Station, which is operated, on the Commission's behalf, by The Victoria Falls and Transvaal Power Company, Limited.

Foreseeing the general trend of events in South Africa, the Commission, as from December, 1930, discontinued grade increments to all members of its staff in receipt of emoluments of £400 and upwards per annum. Since December, 1931, the limit of £400 per annum mentioned above has been reduced to £250 per annum.

In the Commission's last Annual Report reference was made to the trial being given to the employment of white labour, in place of natives, on certain classes of unskilled power station work. The policy of utilising white labour is being pursued and gradually extended, so far as economically practicable, but, as will be appreciated, is not without its attendant problems, such, for example, as housing accommodation and the difficulty of maintaining a fixed staff at comparatively low wages.

The initial white labour experiment was made at the Colenso Power Station and, as a matter of public interest, the following summary of a recent report of the Commission's Local Manager at Colenso is published:—

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With the assistance of the Labour Department, the selection of a suitable type of man has been facilitated, and few discharges have been necessary; but a large number of changes have taken place, due mostly to the men obtaining more remunerative employment elsewhere.

At present 40 labourers are employed, the average duration of service of these men being eight months. (The experiment was commenced some 12 months ago.)

Owing to lack of housing accommodation, single men only are employed at present, and they are accommodated in the wood and iron construction quarters at a nominal charge. A mess has also been organised providing a plain but nourishing diet, the average cost being £2 per man per month, which is paid by the men.

In common with other lower-paid members of the staff, the labourers are admitted to membership of the Recreation Club and Medical Society at reduced subscriptions, and enjoy all the facilities and benefits provided by those institutions.

The rates of pay range from 8d. per hour (about £6 16s. per month) to commence with, up to 10d. per hour (about £8 11s. per month) after three months' service, and the deductions for mess, rent and subscriptions to the Club and Medical Society amount to £2 16s. 3d. per month.

The 40 men now employed have displaced a much larger number of natives, and the actual cost of white labour shows a saving as compared with native labour after taking into account the saving in compound expenses and the rents obtained from the wood and iron buildings previously unoccupied.

The change over has not been an easy matter, and the ultimate success has only been brought about by determination to give the scheme a fair trial. Very strict supervision and discipline has had to be enforced, and it is emphasised that "it is insufficient merely to replace natives by white men without careful selection of men, the strictest supervision and judicious investigation into the types of work likely to make a change economically advantageous."

Whilst local circumstances and conditions at Colenso are, in several important respects, more favourable to the employment of white labour than obtain elsewhere, the success of the experiment at Colenso has been due in large measure to the efforts of the Local Manager and his administrative staff, whose services in this matter are, needless to say, appreciated by the Commission.

General.

The operations and developments of the individual Undertakings are reviewed in the following pages. Reference is also made therein to the Commission's work, in an advisory capacity, to the Administrators of the several Provinces in relation to Municipal electricity supply schemes.

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NATAL CENTRAL UNDERTAKING.

The Natal Central Undertaking comprises a Power Station at Colenso, with an installation of 60,000 kilowatts, transmission lines extending northwards to Newcastle and southwards to Cato Ridge, thirteen main sub-stations for converting the supply from alternating to direct current for railway traction purposes, and a number of other subsidiary transmission and distribution lines and sub-stations at various points in the Commission's area of supply along this section of the route of the Natal main line of railway.

The capital expenditure on the Natal Central Undertaking to 31st December, 1931, was £3,463,695.

Worl Resu 1931.

The units generated at the Colenso Power Station during the year 1931 total 114,583,860. The units sent out from the power station total 106,628,719, and the maximum half-hourly demand was 24,860 kilowatts, the load factor being 49·0 per cent.

The thermal efficiency of the power station on units sent out was 17·0 per cent.

The units sold during the year 1931 total 101,131,880, a decrease of 15,943,604, or 13½ per cent. as compared with the year 1930. This decrease is due to the reduction in the requirements of the Railway Administration for traction and other purposes, as is illustrated hereunder:—

	Units Sold.		Increase or Decrease.	
	1930.	1931.	Units.	%
Railway Administration ...	103,813,549	86,118,581	−17,694,968	−17%
Other Consumers ...	13,261,935	15,013,299	+ 1,751,364	+13%

The supply to the Administration for traction purposes only has declined from 110,960,117 units in 1929 to 83,977,666 units in 1931, a reduction of 26,982,451 units, or nearly 25 per cent., in the last two years. This reduction is to a large extent a reflection of the falling-off in railway traffic on the Natal main line, and naturally reacts upon the cost per unit to the Railway Administration.

It is, however, gratifying to record a continuance of the progressive increase in sales to consumers other than the Railway Administration. These consumers include Municipalities and other local authorities purchasing electricity in bulk from the Commission, industrial concerns, domestic and other smaller consumers; and the development in the requirements year by year, since the supply was commenced, is reflected hereunder:—

Year.	Units Sold.
1926	719,666
1927	1,894,952
1928	5,712,004
1929	10,719,177
1930	13,261,935
1931	15,013,299

The financial results of the operation of the Natal Central Undertaking for the year 1931 are given in Annexure "A" (Account No. 3) to this Report.

Extension of Railway Electrification.

Reference was made in the Commission's last Annual Report to the extension of railway electrification in Natal from Mason's Mill, the southern terminus of the original electrification scheme, to Cato Ridge. In order to meet the Railway Administration's requirements on this section, the Commission has erected a new sub-station at Thornybush with an installation of two 2,000 kilowatt motor generator sets, one of which was transferred from the Estcourt sub-station, where three units were originally installed. The supply to the Thornybush sub-station is transmitted from the Pietermaritzburg sub-station by means of a 33,000 volt overhead transmission line carried on the railway track structures, this portion of the work having been carried out by the Railway Administration, on the Commission's behalf.

The supply of electricity for traction purposes from the Thornybush sub-station for the extended electrification scheme was commenced in February, 1932, and full electric working between Pietermaritzburg and Cato Ridge was introduced about the end of that month. Co-operation between the Administration and the Commission in the construction programme resulted in the work of the respective parties on this extension being completed practically simultaneously.

Other Extensions.

Coincidently with the extension of the Commission's transmission system from Pietermaritzburg to Thornybush, arrangements were made for a transmission line, carried on the railway track structures, to be erected from Thornybush to Cato Ridge. Electricity is being supplied to the Railway Administration from this line for station and yard lighting, etc., at stations en route, and negotiations are at present proceeding for the establishment of several small distribution schemes at intermediate points for the supply of electricity to domestic and small power consumers, farmers, etc.

In October, 1931, a small distribution scheme was completed at Waschbank, the Commission having undertaken house-to-house distribution in this village. The supply is obtained from the Wessels Nek sub-station by means of a 6,600 volt transmission line, carried on the railway track structures, between Wessels Nek and Waschbank. At the end of the year 1931, twenty consumers were being supplied from this scheme.

WITBANK UNDERTAKING.

The Witbank Undertaking comprises a power station at Witbank, with an installation of 100,000 kilowatts (which is interconnected with the power supply system of The Victoria Falls and Transvaal Power Company, Limited, on the Witwatersrand), and transmission and distribution systems radiating from the power station throughout the Witbank district.

The Witbank Power Station is operated, on the Commission's behalf, by The Victoria Falls Company, which takes a large block load of power from Witbank to supplement the supply from its four power stations serving the Witwatersrand area. Operated, as it is, as a base load station at a high load factor, principally with "duff" coal from the adjoining collieries, the Witbank Power Station is producing electricity under very favourable conditions, and the overall cost per unit of output ranks amongst the lowest in the world.

The capital expenditure on the Witbank Undertaking to 31st December, 1931, was £2,095,114.

Working Results, 1931.

The units generated at the Witbank Power Station during the year 1931 total 643,292,677. The units sent out from the power station total 604,202,986, and the hourly maximum demand was 91,469 kilowatts, the load factor being 75·4 per cent. The thermal efficiency of the Witbank Power Station on units sent out was 16·14 per cent.

As compared with the previous year, the output at Witbank has decreased by 15,295,245 units, representing about $2\frac{1}{2}$ per cent. This reduction is due to a combination of circumstances affecting both turbine and boiler efficiencies. Loading conditions, affecting machine load factors, have been less favourable, and sufficient quantities of "duff" coal have not been available, necessitating the purchase and crushing of large coal, which has affected coal grading. These various circumstances and conditions are undergoing investigation.

The units sold from the Witbank Undertaking in 1931 total 603,359,113, of which 37,812,854 units were supplied to consumers

in the Witbank district. The development of sales in this district, since the supply was commenced in 1926, is reflected in the following table:—

Year.	Units Sold.
1926	499,057
1927	13,389,333
1928	19,950,004
1929	29,731,115
1930	34,962,217
1931	37,812,854

The financial results of the operation of the Witbank Undertaking for the year 1931 are given in Annexure "A" (Account No. 4) to this Report. The balance of revenue over expenditure realised on the working of the Undertaking during the year amounted to £22,308, which, together with the amount of £7,898 brought forward from the year 1930, gave a total balance (surplus) of £30,206. An amount of £22,000 was set aside to Reserve Fund and the remainder of £8,206 has been carried forward to the year 1932.

Consumers.

In June, 1931, the supply of electricity was commenced to a further colliery in the Witbank area. Negotiations are in progress with other prospective consumers and for the extension of the Commission's distribution system in the Witbank Municipal Area to make the supply available in certain outlying portions of the Township.

CAPETOWN UNDERTAKING.

The Capetown Undertaking comprises a power station at Salt River, with an installation of 30,000 kilowatts, a transmission system feeding five sub-stations on the Capetown-Simonstown line, for converting the supply from alternating to direct current for traction purposes on that line, and a transmission system with step-down sub-stations and distribution networks in the Paarl, Malmesbury and Stellenbosch Districts of the Cape Rural Area eastwards of Capetown.

The Salt River Power Station is inter-connected with the Capetown City Council's Dock Road Power Station, these two stations being operated in parallel in terms of co-operative interchange arrangements between the Commission and the Council.

The capital expenditure on the Capetown Undertaking to 31st December, 1931, was £1,658,299.

Working Results, 1931.

The units generated at the Salt River Power Station during the year 1931 total 55,812,732. The units sent out from the power station total 52,715,044, and the maximum half-hourly demand was 16,020 kilowatts, the load factor being 37·6 per cent. The thermal efficiency of the power station on units sent out was 15·3 per cent.

The units sold during the year 1931 total 52,109,958, an increase of 2,337,942, or 4·7 per cent., as compared with the year 1930. The units supplied to the Railway Administration for traction purposes on the Capetown-Simonstown line total 29,890,260; an increase of 1,617,206, or about $5\frac{3}{4}$ per cent. as compared with the previous year. Other supplies to the Administration at Capetown show a slight decline, but there has again been an increase of over $5\frac{1}{2}$ per cent. in the supplies from the Commission's system in the Cape Rural Area. The development of sales on this system since the supply was commenced in 1926 is shown in the following table:—

Year.	Units Sold.
1926	280,242
1927	4,690,009
1928	9,767,699
1929	11,231,658
1930	13,182,512
1931	13,917,803

The financial results of the operation of the Capetown Undertaking for the year 1931 are given in Annexure "A" (Account No. 5) to this Report. The balance of revenue over expenditure realised on the working of the Undertaking during the year amounted to £17,498, which, together with the amount of £774 brought forward from the year 1930, gave a total balance (surplus) of £18,272. An amount of £21,067 was set aside to Reserve Fund, leaving a net deficit, as at 31st December, 1931, of £2,795, which has been carried forward to the year 1932.

Amendment of Licence.

On 29th October, 1931, application was made by the Commission to the Electricity Control Board for certain amendments to the standard prices set out in the Commission's Licence in respect of the Capetown Undertaking. The principal features of the amendments proposed were the alteration of the basis of the demand charges from annual maximum demand to monthly maximum demand, and the introduction of sliding scales in the case of both demand and unit charges. The former feature was, as mentioned in the Commission's last Annual Report, introduced on the Natal Central and Witbank Undertakings with effect from January, 1931.

The Electricity Control Board granted the Commission's application, the amendments taking effect as from the commencement of the year 1932. Coincidently, the Board approved of several modifications to the Commission's tariffs for domestic and other consumers on the several reticulation systems in the Cape Rural Area.

The whole of these alterations were designed to encourage the use of electricity and promote development in sales to both large and small consumers. Although the full effect of the tariff revisions is not likely to be felt immediately, particularly on account of the prevailing depression, the Commission is confident of a steady expansion of load in this area.

Eerste River Farmers' Scheme.

In December, 1931, a commencement was made with the construction of a transmission and distribution system extending from Eerste River to Firgrove on both sides of the main road and railway line to Somerset West, for the supply of electricity principally to wine farmers in this area for domestic, wine-pressing and other power purposes.

The supply of electricity in this area was commenced in February, 1932, and there are now 49 consumers, including, in addition to wine farmers, a farming college, a winery and a number of residences and other properties using electricity for domestic and lighting purposes. Applications from a number of new consumers have been received since the scheme was completed and several small extensions are being made.

This is one of the first "Rural Electrification" Schemes inaugurated in South Africa, where, with but few exceptions, distances are too great, and density of population and power requirements too low, to make such schemes economically practicable.

On the Eerste River scheme, the consumers' initial requirements are comparatively small, but the Commission is confident that, as consumers come to recognise the advantages of electricity in the various uses to which it can be applied, considerable development in the load will ensue.

Extension of Salt River Power Station.

During the year under review, negotiations have been proceeding between the Commission and the Capetown City Council regarding the best means of meeting the increasing requirements of the Council's and the Commission's consumers. The Council's electricity requirements have been increasing rapidly during the past two years, and the combined resources of the Council's Dock Road Power Station and the Commission's Salt River Power Station will, it is anticipated, be inadequate to meet the total 1933 winter load.

Various alternative schemes for dealing with the developments at Capetown were considered. In order, however, to secure the maximum efficiency and maximum benefit to the consumers of both parties, it became apparent that, both technically and financially, the right course to pursue was for the resources of the Dock Road and Salt River Power Stations to be "pooled," and for the two stations, which are already inter-connected, to be operated as a single producing unit. Whilst the principle involved in this scheme was readily accepted by both the Commission and the Council, the

negotiations in regard to the details were inevitably somewhat protracted, as will be appreciated by those who have had experience in the business of electricity production and are acquainted with the large number of detailed considerations entering into an arrangement of this nature. Heads of Agreement were concluded between the two parties in February, 1932, embodying the main principles of the scheme, and a final agreement was completed on 23rd April-30th May, 1932.

This Agreement provides, inter alia:—

(a) For the "pooling" of the Salt River and Dock Road Power Stations and for their operation as a single producing unit, the objective being to secure the most economic overall results for the benefit of consumers of both parties;

(b) for the immediate extension of the Salt River Power Station by the installation of a new 20,000 kilowatt turbo-alternator and additional boiler plant, and for such further plant extensions as may be required from time to time to meet the combined requirements of the two parties, the situation of such further extensions being left for determination when the time comes;

(c) for the measurement of the supply sent out to the systems of the respective parties, which incidentally are interconnected at several points, and for the apportionment of the costs of production incurred at the two "pooled" power stations.

This agreement is symbolic, not only of the policy of co-ordination in electricity production which was one of the objectives of the Legislature when the Electricity Act, 1922, was passed, but also of the spirit of co-operation which has existed between the Capetown City Council and the Commission since the inception of the Commission in 1923.

As already mentioned, a 20,000-kilowatt turbo-alternator is being installed at the Salt River Power Station, and the new steam-raising plant will comprise four boilers, each of a normal

capacity of 100,000 lbs. of steam per hour at a pressure of 425 lbs. per square inch. The new set will generate at a pressure of 33,000 volts, instead of 11,000 volts, which is the existing generation pressure. This additional plant will be accommodated in the existing turbine and boiler houses, in which space was provided for extensions in the original construction programme.

Orders for the additional plant have been placed, and it is hoped that it will be available for service during the winter of 1933.

DURBAN UNDERTAKING.

The Commission's Durban Undertaking supplies electricity in bulk to the Durban Corporation and comprises a power station at Congella with an installation of 48,000 kilowatts. The steam raising plant comprises eight boilers, six of a normal capacity of 60,000 lbs. of steam per hour and two of a normal capacity of 120,000 lbs. of steam per hour. The boilers at the Congella Power Station are fired with pulverised coal.

The capital expenditure on the Durban Undertaking to 31st December, 1931, was £964,736.

Working Results, 1931.

The units generated at the Congella Power Station in 1931 total 114,437,030. The units sent out from the power station total 103,899,765 and the maximum half-hourly demand was 24,860 kilowatts, the load factor being 52·0 per cent. The thermal efficiency of the power station on units sent out was 17·8 per cent.

The units supplied to the Durban Corporation during the year 1931 total 103,899,765, i.e. the same as the "units sent out," delivery of the supply being taken by the Corporation at the power station. The increase in the supply, as compared with the year 1930, was 4,671,765 units, or 4·7 per cent.

The financial results of the operation of the Durban Undertaking, for the year 1931, are given in Annexure "A" (Account No. 6) to this Report. The balance of revenue over expenditure realised on the working of the Undertaking during the year amounted to £10,913, which, together with the amount of £1,337 brought forward from the year 1930, gave a total balance (surplus) of £12,250. An amount of £10,000 was set aside to Reserve Fund and the remainder of £2,250 has been carried forward to the year 1932.

Extension of Congella Power Station.

Reference was made in the Commission's last Annual Report to the revised agreement entered into with the Durban Corporation based upon a maximum demand of 30,000 kilowatts and an output of 115,000,000 units as from April, 1932, and in terms of which the Commission was proceeding with the installation of an additional 12,000 kilowatt turbo-alternator and two additional boilers at the Congella Power Station.

The installation of this additional plant has been completed and the revised agreement between the Commission and the Corporation took effect as from 1st May, 1932. The commencement of this agreement brought into force, with the approval of the Electricity Control Board, a substantially reduced tariff based, of course, upon the Corporation's increased load requirements.

SABIE UNDERTAKING.

The Sabie Undertaking, which is the Commission's only hydro-electric scheme, comprises a power station on the Sabie River, in a gorge about eight miles downstream from Sabie Township, with an installation of 1,350 kilowatts, and a 22,000 volt transmission line from the power station to a sub-station situated near the township where the supply is delivered to consumers. The whole output of the Undertaking is supplied to two mining companies operating in the Sabie District.

The capital expenditure on the Sabie Undertaking to 31st December, 1931, was £106,293.

The units generated at the Gorge Power Station during the year 1931 total 6,886,900. The units sent out from the power station total 6,787,200 and the half-hourly maximum demand was 1,150 kilowatts, the load factor being 67·4 per cent.

The units sold from the Sabie Undertaking during 1931 total 6,585,553, an increase of 1,999,493 units, or 44 per cent., as compared with the year 1930.

The reason for the considerable increase in the output from this Undertaking during the past two years was explained in the Commission's last Annual Report, viz., that during the year 1930 the Commission's two consumers at Sabie, who had previously generated a considerable portion of their electricity requirements themselves at power stations of their own, decided to draw the whole of their requirements from the Commission's Undertaking.

The development in the output from this Undertaking and the marked effect thereof upon the average price per unit, which is most noticeable in the case of hydro-electric schemes, are reflected in the subjoined table:—

Year.	Units sold.	Average price per unit.
1929	3,176,173 ...	1·041d.
1930	4,585,060 ...	0·717d.
1931	6,585,553 ...	0·505d.

The financial results of the operation of the Sabie Undertaking for the year 1931 are given in Annexure "A" (Account No. 7) to this Report. The balance of revenue over expenditure realised on

the working of the Undertaking during the year was £1,388, which, after deducting the deficit of £4 brought forward from the year 1930, gave a net balance (surplus) of £1,384. An amount of £1,350 was set aside to Reserve Fund and the remainder of £34 has been carried forward to the year 1932.

MUNICIPAL ELECTRICITY SUPPLY SCHEMES.

Up to 31st December, 1931, 216 municipal electricity schemes have been reported on by the Commission in terms of Section 38 of the Electricity Act, 1922, and supplementary reports upon tenders have been submitted in respect of 97 schemes.

During the year 1931 the following schemes, of which five were new schemes, were reported upon by the Commission, viz:—

CAPE.

*Fransch Hoek	Middelburg
Graaff Reinet	*Port Alfred
Hopefield	Porterville
*Kingwilliamstown	*Queenstown
*Kuruman	†Tarkastad
Mafeking	†Tulbagh

TRANSVAAL.

Brakpan	Nelspruit
Coligny	Piet Retief

ORANGE FREE STATE.

Bothaville	Winburg
Kroonstad	

NATAL.

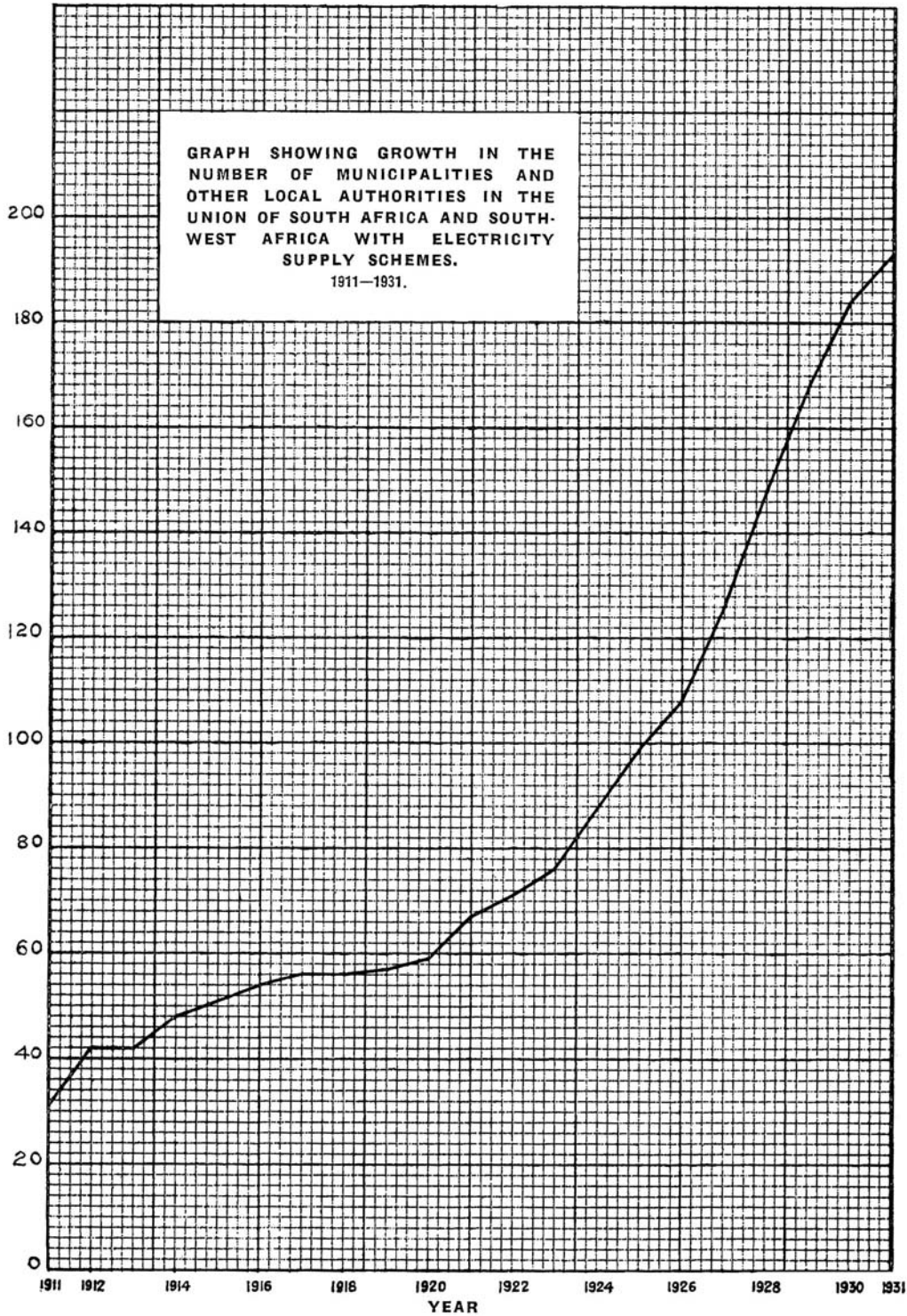
Vryheid

SOUTH-WEST AFRICA.

Windhoek

* Report on Tenders only. † Supplementary Report.

Of the total of 216 municipal electricity schemes reported upon by the Commission up to the end of the year 1931, 98 were new schemes.


GRAPH SHOWING GROWTH IN THE NUMBER OF MUNICIPALITIES AND OTHER LOCAL AUTHORITIES IN THE UNION OF SOUTH AFRICA AND SOUTH-WEST AFRICA WITH ELECTRICITY SUPPLY SCHEMES.
1911—1931.
200
180
160
140
120
100
80
60
40
20
0
1911
1912
1914
1916
1918
1920
1922
1924
1926
1928
1930
1931
YEAR

The following table shows the total numbers of Local Authorities in the respective Provinces in the Union and in South West Africa, and the numbers in each case which have established, or are in course of establishing, electricity supply schemes:—

LOCAL AUTHORITIES IN UNION AND SOUTH-WEST AFRICA.

	Cape.	Transvaal.	O.F.S.	Natal.	S.-W. Africa.	Total.
No. of Municipalities	128	24	61	9	8	230
No. of Other Local Authorities	127	63	7	36	8	241
Total ...	**255**	**87**	**68**	**45**	**16**	**471**
Local Authorities with Electricity Supply Schemes.						
Local Authorities Generating and Distributing Electricity:						
Established	62	17	27	7	2	115
Under Construction or Tenders called for	—	1	—	1	—	2
Total ...	**62**	**18**	**27**	**8**	**2**	**117**
Local Authorities Purchasing Bulk Supplies and carrying out their own Distribution:						
Established	15	24	2	9	—	50
Under Construction	—	—	—	—	—	—
Total ...	**15**	**24**	**2**	**9**	**—**	**50**
Cases in which Supply and Distribution undertaken by Third Parties:						
Established	9	4	—	12	3	28
Under Construction	—	—	—	—	—	—
Total ...	**9**	**4**	**—**	**12**	**3**	**28**
Total Schemes Established	86	45	29	28	5	193
Total Schemes under Construction ...	—	1	—	1	—	2
Grand Total ...	**86**	**46**	**29**	**29**	**5**	**195**

There has, particularly during the past decade, been a comparatively rapid increase in the number of Local Authorities in the Union and South West Africa enjoying the amenities of electricity supply. This is illustrated in the graph reproduced on the opposite page.

ACCOUNTS.

The Commission submits for the year 1931, as Annexure "A" to this Report:—

The Report of the Auditors.

Balance Sheet.

Schedule of Expenditure on Capital Account.

Statement showing the Investments of the Redemption Fund.

Account No. 1: Redemption Fund Account.

Account No. 2: Reserve Fund Account.

Revenue and Expenditure Accounts in respect of

Account No. 3: Natal Central Undertaking.

Account No. 4: Witbank Undertaking.

Account No. 5: Capetown Undertaking.

Account No. 6: Durban Undertaking.

Account No. 7: Sabie Undertaking.

TARIFFS.

Annexure " B " to this Report embodies the standard prices in force in respect of the Commission's several Undertakings.

GENERAL.

The Commission submits, for the year 1931, as Annexure " C " the following statements:—

No. 1: Summary of principal plant and equipment installed.

No. 2: Summary of principal plant and equipment in course of installation or on order.

No. 3: Statement showing the price or rent of land or rights or interest in or over land and other property acquired or hired by the Commission.

UNION STATISTICS.

By the courtesy of the Department of Census and Statistics, the Commission is able to publish some interesting information (extracted from the 1929/1930 Industrial Census) bearing upon the production and distribution of electricity in the Union. This information is embodied in Annexure " D " to this Report.

I have the honour to be,

Sir,

Your obedient servant,

CHAIRMAN.

ANNEXURE "A": ACCOUNTS.

The Report of the Auditors.

Balance Sheet.

Schedule of Expenditure on Capital Account.

Statement Showing Investments of Redemption Fund.

Account No. 1: Redemption Fund Account.

Account No. 2: Reserve Fund Account.

Revenue and Expenditure Accounts in respect of:

Account No. 3: Natal Central Undertaking.

Account No. 4: Witbank Undertaking.

Account No. 5: Capetown Undertaking.

Account No. 6: Durban Undertaking.

Account No. 7: Sabie Undertaking.

THE REPORT OF THE AUDITORS.

Johannesburg,
3rd June, 1932.

The Chairman and Members,
Electricity Supply Commission,
Johannesburg.

GENTLEMEN,

We have completed the Audit of the Books and Accounts of the Commission and have to report as follows:-

CHARGES TO CONSUMERS AT NATAL CENTRAL AND CAPETOWN UNDERTAKINGS.

(1) Arrangements exist at these two Undertakings by which consumers, other than the South African Railways and Harbours Administration, have been charged on agreed bases and the balance of the cost of running the Undertakings has been in effect charged to the Railways, in the case of the Natal Central Undertaking by charging the Administration the exact monthly balance of cost and, in the case of the Capetown Undertaking, by adjusting periodically a fixed charge to cover the balance of cost of operation.

The effect of this is that any profit or loss on the Undertakings is ultimately absorbed in alteration of price charged to the Administration alone. The arrangements referred to above are, we are informed, of a temporary character, and have received the approval of the Electricity Control Board.

WITBANK UNDERTAKING.

(2) Differences of opinion have arisen between the Commission and The Victoria Falls and Transvaal Power Company in connection with the interpretation of the Agreement for the operation of the Witbank Station. The results of an ultimate settlement cannot at this stage be estimated, but in the Balance Sheet of the Commission, the Victoria Falls Company appears as owing a sum of approximately £1,300 more than that admitted by the Company. No provision has been made for an amount, if any, which may have to be allowed by the Commission to the Company.

DEPRECIATION AND OBSOLESCENCE OF PLANT.

(3) In accordance with an understanding between the Commission and the Treasury, the Loan Capital as specified in the Balance Sheet was allocated as follows:—

Loan No. 1: £3,000,000 to the Witbank, Durban and Sabie Undertakings.

Loan No. 2: £5,000,000 to the Natal Central and Capetown Undertakings.

In terms of Section 3 of the Financial Adjustments Act, 1930, these two loans are redeemable as follows:—

(1) The No. 1 Loan, £3,000,000, in not more than 25 years from 1st January, 1930.

(2) The No. 2 Loan, £5,000,000, in not more than 50 years from 1st January, 1930, provided that no provision shall be made for redemption before the year 1940.

During the year under review the provision made for the redemption of the No. 1 Loan, when taken in conjunction with the amount placed to Reserve Fund for the Witbank, Durban and Sabie Undertakings is, in our opinion, fully adequate to cover reasonable depreciation and risk of obsolescence.

In the case of the Natal Central and Capetown Undertakings, however, the redemption period of which only commences in 1940 and extends to 1979, a further period of 48 years must elapse before the total minimum amount to be provided for loan redemption is sufficient to cover the total cost of the present plant.

Under these circumstances any provision for depreciation and obsolescence at the present time can only be made through the Reserve Fund at these Undertakings.

The Reserve Fund is limited by Section 9 of the Act to a contribution of 3 per cent. in each year and 15 per cent. in all at any one time, on the loan moneys invested in each Undertaking, and further, in terms of the Act the Reserve Fund is available for purposes additional to the replacement of worn-out and obsolete machinery. During 1931 only slightly over 1 per cent. has been set aside for Reserve Fund at these two Undertakings, and in view of the circumstances, as explained above, we cannot regard the provision made during the year under review as adequate. We understand, however, that the intention is progressively to increase the Reserve Fund rate in the future.

INVESTMENTS OF REDEMPTION AND RESERVE FUNDS.

(4) These investments appear in the Balance Sheet at cost. In view of the fall in the market price of Government and other similar stocks, the market value at 31st December last was less than the cost price.

After allowing for the fall in value of the investments, the assets of the Redemption Fund are in excess of the amount required in the Fund at 31st December, 1931, to redeem the No. 1 Loan in terms of the Act.

HEAD OFFICE ADMINISTRATION AND ENGINEERING EXPENSES.

(5) As contemplated in Section 11 (2) of the Electricity Act, the Commission has, as previously, made an allocation of overhead and administration charges as between the various undertakings.

GENERAL.

(6) As the result of our Audit of the Books and Accounts of the Commission for the year 1931, and, subject to the foregoing remarks, in terms of Clause 13 (4) of the Electricity Act 1922, we certify as follows:—

(a) We have found the accounts of the Commission to be in order.

(b) The accounts issued present a true and correct view of the financial position of the Commission and of its transactions and of the results of trading.

(c) Due provision has been made for the redemption and repayment of moneys borrowed in view of the circumstances as explained in this report.

(d) The value of the assets of the Commission is correctly stated.

(e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 9 as prescribed.

(f) All our requirements and recommendations as Auditors have been complied with and carried out.

Yours faithfully,

ALEX. AITKEN & CARTER.
B. HALSEY.

Electricity Supply Commission.

Incorporated under the Electricity Act, 1922.

BALANCE SHEET at 31st DECEMBER, 1931.

Loan Capital			£8,000,000	0 0
Treasury of the Union of South Africa:				
Loan No. 1, redeemable not later than 31st December, 1954	£3,000,000	0 0		
Loan No. 2, redeemable not later than 31st December, 1979	5,000,000	0 0		
Sundry Creditors and Credit Balances			117,640	1 9
Pension Fund			29,108	2 10
Redemption Fund (Loan No. 1)			267,132	17 9
Reserve Fund			344,267	15 8
Balance on Revenue Accounts			7,695	19 3
Witbank Undertaking	8,206	2 6		
Durban Undertaking	2,250	12 0		
Sabie Undertaking	34	1 7		
	10,490	16 1		
Less—Capetown Undertaking	2,794	16 10		
			£8,765,844	17 3

NOTE.—In addition to the Liabilities shown above, the Commission is committed to the extent of approximately £77,000 for the completion and extension of its Undertakings. Also £3,334 chargeable against Reserve Fund.

Expenditure on Capital Account—				
Land and Rights	£79,274	11 0		
Building and Civil Works	2,384,247	15 6		
Machinery and Plant	5,706,390	3 10		
Miscellaneous Equipment	125,669	14 7		
			£8,295,582	4 11
Less—Net Revenue during Construction	145,387	12 2		
Provision made prior to Financial Adjustments Act, 1930, for repayment of advances, appropriated in reduction of Capital Expenditure	218,750	12 10		
			364,138	5 0
			7,931,443	19 11
Stores and Materials			86,387	17 8
Sundry Debtors and Debit Balances			84,977	6 2
Investments			19,873	0 4
Union of South Africa Treasury Bills—with Interest Accrued.				
Cash on Current Account			20,091	16 6
Investment of Redemption Fund (Loan No. 1)			272,621	19 9
Investment of Reserve Fund			350,448	16 11
Amount invested in Municipal and Union of South Africa Local Stocks	348,520	5 3		
Interest Accrued	1,928	11 8		
			£8,765,844	17 3

H. J. VAN DER BYL, Chairman.
A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY,
} Auditors.

Electricity Supply Commission.

SCHEDULE OF EXPENDITURE ON CAPITAL ACCOUNT to 31st December, 1931

Expenditure in connection with Electricity Undertakings.	Total to 31st December, 1930.	Year ended 31st December, 1931.	Total to 31st December, 1931.
NATAL CENTRAL UNDERTAKING:			
Land and Rights	£17,542 13 6	£799 6 6	£18,342 0 0
Buildings and Civil Works	781,427 1 5	7,220 1 11	788,647 3 4
Machinery and Plant	2,587,187 9 0	43,393 15 7	2,630,581 4 7
Miscellaneous Equipment	21,636 9 9	4,488 9 7	26,124 19 4
	£3,407,793 13 8	£55,901 13 7	£3,463,695 7 3
Less—			
Net Revenue during Construction	2,396 7 0	Dr. 185 16 6	2,210 10 6
Provision made prior to Financial Adjustments Act, 1930, for repayment of advances, appropriated in reduction of Capital Expenditure	200,767 19 10	—	200,767 19 10
	£3,204,629 6 10	**£56,087 10 1**	**£3,260,716 16 11**
WITBANK UNDERTAKING:			
Land and Rights	£8,896 8 9	£139 10 5	£9,035 19 2
Buildings and Civil Works	563,376 4 8	1,213 7 5	564,589 12 1
Machinery and Plant	1,470,689 6 10	5,725 12 9	1,476,414 19 7
Miscellaneous Equipment	44,595 2 10	477 17 1	45,072 19 11
	£2,087,557 3 1	£7,556 7 8	£2,095,113 10 9
Less—Net Revenue during Construction ...	103,459 19 11	Dr. 11 5 0	103,448 14 11
	£1,984,097 3 2	**£7,567 12 8**	**£1,991,664 15 10**
CAPETOWN UNDERTAKING:			
Land and Rights	£21,025 15 10	£671 13 0	£21,697 8 10
Buildings and Civil Works	623,454 0 10	Cr. 1,537 5 2	621,916 15 8
Machinery and Plant	971,290 18 1	5,727 12 11	977,018 11 0
Miscellaneous Equipment	34,933 10 6	2,732 10 7	37,666 1 1
	£1,650,704 5 3	£7,594 11 4	£1,658,298 16 7
Less—			
Net Revenue during Construction	19,695 16 10	Dr. 4,214 1 3	15,481 15 7
Provision made prior to Financial Adjustments Act, 1930, for repayment of advances, appropriated in reduction of Capital Expenditure	17,982 13 0	—	17,982 13 0
	£1,613,025 15 5	**£11,808 12 7**	**£1,624,834 8 0**
DURBAN UNDERTAKING:			
Land and Rights	£29,682 18 0	£6 5 0	£29,689 3 0
Buildings and Civil Works	314,743 16 7	28,526 15 10	343,270 12 5
Machinery and Plant	474,188 16 7	110,705 1 4	584,893 17 11
Miscellaneous Equipment	6,326 19 11	555 7 1	6,882 7 0
	£824,942 11 1	£139,793 9 3	£964,736 0 4
Less—Net Revenue during Construction ...	15,764 10 10	Dr. 642 15 6	15,121 15 4
	£809,178 0 3	**£140,436 4 9**	**£949,614 5 0**
SABIE UNDERTAKING:			
Land and Rights	£510 0 0	—	£510 0 0
Buildings and Civil Works	65,799 12 7	£23 19 5	65,823 12 0
Machinery and Plant	37,785 13 9	Cr. 304 3 0	37,481 10 9
Miscellaneous Equipment	2,504 5 7	Cr. 26 9 9	2,477 15 10
	£106,599 11 11	Cr. £306 13 4	£106,292 18 7
Less—Net Revenue during Construction ...	9,124 15 10	—	9,124 15 10
	£97,474 16 1	**Cr. £306 13 4**	**£97,168 2 9**
HEAD OFFICE:			
Furniture and Office Equipment	**£5,960 7 5**	**£1,485 4 0**	**£7,445 11 5**
SUMMARY:			
Land and Rights	**£77,657 16 1**	**£1,616 14 11**	**£79,274 11 0**
Buildings and Civil Works	**2,348,800 16 1**	**35,446 19 5**	**2,384,247 15 6**
Machinery and Plant	**5,541,142 4 3**	**165,247 19 7**	**5,706,390 3 10**
Miscellaneous Equipment	**115,956 16 0**	**9,712 18 7**	**125,669 14 7**
	£8,083,557 12 5	**£212,024 12 6**	**£8,295,582 4 11**
Less—			
Net Revenue during Construction	**150,441 10 5**	**Dr. 5,053 18 3**	**145,387 12 2**
Provision made prior to Financial Adjustments Act, 1930, for repayment of advances, appropriated in reduction of Capital Expenditure	**218,750 12 10**	—	**218,750 12 10**
	£7,714,365 9 2	**£217,078 10 9**	**£7,931,443 19 11**

Johannesburg,
30th May, 1932.

A. E. HARTE, C.A. (S.A.),
Chief Accountant.

Electricity Supply Commission.

STATEMENT SHOWING DETAILS OF INVESTMENTS ON BEHALF OF THE REDEMPTION FUND IN RESPECT OF THE £3,000,000 TREASURY LOAN (LOAN No. 1) AS AT 31st DECEMBER, 1931.

£78,710	Union of South Africa 5% Loan 1935	£78,611	12	3
£186,000	Union of South Africa 4½% Local Registered Stock, 1953	175,020	0	0
£40,000	South African Iron and Steel Industrial Corporation, Limited, 5 per cent. Guaranteed First Mortgage Registered Debentures, 1946/71 (Balance of £23,900 since paid.)	16,000	0	0
Interest Accrued		2,990	7	6
		£272,621	19	9

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Electricity Supply Commission.

Account No. 1.

Dr. **Redemption Fund Account for the Year ended 31st December, 1931** Cr.

in respect of £3,000,000 Treasury Loan (Loan No. 1) redeemable not later than the 31st December, 1954.

To **Balance as per Balance Sheet**				£267,132 17 9
Witbank Undertaking	£211,257	6	9	
Durban Undertaking	41,765	15	11	
Sabie Undertaking	13,938	0	1	
Head Office	171	15	0	
				£267,132 17 9

By **Balance at 31st December, 1930, brought forward** ...				£184,918 4 9
Witbank Undertaking	£154,520	6	1	
Durban Undertaking	20,327	16	9	
Sabie Undertaking	10,070	1	11	
,, **Amounts Contributed during the year out of Revenue** ...				71,906 15 4
Witbank Undertaking	48,352	9	0	
Durban Undertaking	20,068	0	9	
Sabie Undertaking	3,317	18	0	
Head Office	168	7	7	
,, **Interest Earned on Investments**				10,307 17 8
Witbank Undertaking	8,384	11	8	
Durban Undertaking	1,369	18	5	
Sabie Undertaking	550	0	2	
Head Office	3	7	5	
				£267,132 17 9

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

We hereby certify that we are satisfied both as to the correctness of the Accounts and Books of the Redemption Fund and as to the Maintenance of the Fund at the amount required by the Schedule to the Electricity Act, 1922, as amended by Section 3 of the Financial Adjustments Act, 1930.

ALEX. AIKEN & CARTER,
B. HALSEY, } Auditors.

Electricity Supply Commission.

Account No. 2.

Dr. **Reserve Fund Account for the Year ended 31st December, 1931.** Cr.

To **Expenditure during the Year on Replacements and Betterment**							£10,840 19 1
Natal Central Undertaking				£4,514	1	11	
Witbank Undertaking				3,566	17	1	
Capetown Undertaking				1,391	12	3	
Durban Undertaking				480	5	11	
Sabie Undertaking				888	1	11	
,, **Balance as per Balance Sheet**							344,267 15 8
Natal Central Undertaking				162,961	0	4	
Witbank Undertaking				93,076	15	11	
Capetown Undertaking				64,156	11	8	
Durban Undertaking				19,302	1	1	
Sabie Undertaking				4,771	6	8	
							£355,108 14 9

By **Balance at 31st December, 1930, brought forward** ...							£247,700 15 0
Natal Central Undertaking				£121,600	15	8	
Witbank Undertaking				70,818	2	2	
Capetown Undertaking				42,018	11	7	
Durban Undertaking				9,163	9	8	
Sabie Undertaking				4,099	15	11	
,, **Amounts set aside during the Year as per Revenue Accounts**							93,687 3 0
Natal Central Undertaking				39,270	1	9	
Witbank Undertaking				22,000	0	0	
Capetown Undertaking				21,067	1	3	
Durban Undertaking				10,000	0	0	
Sabie Undertaking				1,350	0	0	
,, **Interest Earned on Investments**							13,720 16 9
							£355,108 14 9

Johannesburg,
30th May, 1932.

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Electricity Supply Commission.

NATAL CENTRAL UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1931. **Cr.**

Generation of Electricity.					
To Operation—					
Fuel	£35,796	13	5		
Water, Oil, Waste and Stores	1,062	19	6		
Salaries and Wages	15,412	0	8		
Other Expenses	235	16	2		
,, Maintenance—					
Stores	4,564	19	7		
Salaries and Wages	10,124	0	1		
Other Expenses	566	17	9		
				£67,763	7 2
,, Electricity Purchased				89	16 2
Distribution of Electricity.					
,, Operation and Maintenance—					
Stores	1,791	8	7		
Salaries and Wages	14,629	18	10		
Other Expenses	2,351	5	7		
				18,772	13 0
General Expenses.					
,, Local Administration and Technical Management	6,057	10	3		
,, General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	8,461	6	7		
,, Head Office Administration and General Expenses	8,150	12	0		
,, Engineering Expenses	3,400	0	0		
				26,069	8 10
				112,695	5 2
,, Interest				163,760	10 1
,, Amount set aside to Reserve Fund				39,270	1 9
				£315,725	17 0

By Sales of Electricity—					
Traction Supplies	£267,487	4	11		
Bulk Supplies	32,759	3	1		
Industrial Supplies	9,598	5	3		
Domestic and Lighting Supplies	2,198	7	3		
				£312,043	0 6
,, Other Revenue				3,682	16 6
				£315,725	17 0

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY, } Auditors.

Electricity Supply Commission.

WITBANK UNDERTAKING.

Revenue Account for the Year ended 31st December, 1931.

Dr.				Cr.			
Generation of Electricity.				By Sales of Electricity—			
To Operation—				Bulk Supplies		£261,174 11 4	
Fuel	£61,105 11 0			Industrial and Mining Supplies		45,519 11 5	
Water, Oil, Waste and Stores	5,389 4 4			Domestic and Lighting Supplies		3,895 9 2	
Salaries and Wages	21,817 14 1						£310,589 11 11
Other Expenses	719 16 0			,, Other Revenue			4,474 14 11
,, Maintenance—				,, Expenditure incurred during 1930 on exceptional repairs transferred to Reserve Fund			1,898 4 1
Stores	11,141 11 0						
Salaries and Wages	11,892 7 9						
Other Expenses	5,529 14 7						
		£117,595 18 9					
Distribution of Electricity.							
,, Operation and Maintenance—							
Stores	704 15 2						
Salaries and Wages	2,564 14 3						
Other Expenses	418 6 1						
		3,687 15 6					
General Expenses.							
,, Local Administration and Technical Management	7,540 11 10						
,, General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	4,042 16 7						
,, Administration, Engineering and General Expenses of Operating Party (The Victoria Falls and Transvaal Power Co., Ltd.)	6,666 13 0						
,, Head Office Administration and General Expenses	3,544 19 4						
,, Engineering Expenses	1,839 0 7						
		23,634 1 4					
		144,917 15 7					
,, Interest		101,384 2 10					
,, Redemption Fund		48,352 9 0					
,, Balance, being:							
Amount set aside to Reserve Fund	22,000 0 0						
Amount carried down	308 3 6						
		22,308 3 6					
		£316,962 10 11					£316,962 10 11
To Balance as per Balance Sheet		£8,206 2 6		By Balance at 31st December, 1930, brought forward			£7,897 19 0
				,, Amount brought down			308 3 6
		£8,206 2 6					£8,206 2 6

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY,
} Auditors.

Electricity Supply Commission.

Account No. 5.

CAPETOWN UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1931. **Cr.**

Generation of Electricity.					
To Operation—					
Fuel	£52,767	18	10		
Water, Oil, Waste and Stores	1,061	6	11		
Salaries and Wages	9,125	15	0		
Other Expenses	131	15	1		
,, Maintenance—					
Stores	2,058	10	5		
Salaries and Wages	6,945	12	4		
Other Expenses	178	13	10		
				£72,269	12
,, Electricity Interchanged (Balance)				73	11
Distribution of Electricity.					
,, Operation and Maintenance—					
Stores	1,480	17	6		
Salaries and Wages	10,951	10	7		
Other Expenses	3,135	14	7		
				15,568	2
General Expenses.					
,, Local Administration and Technical Management	5,826	9	6		
,, General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	7,908	11	3		
,, Head Office Administration and General Expenses	6,712	5	2		
,, Engineering Expenses	2,800	0	0		
				23,247	5
				111,158	12
,, Interest				83,408	9
,, Amount set aside to Reserve Fund				21,067	1
				£215,634	3
To Balance brought down				£3,568	9
				£3,568	9

By Sales of Electricity—					
Traction Supplies	£118,315	12	3		
Bulk Supplies	23,687	18	2		
Industrial Supplies	54,633	7	2		
Domestic and Lighting Supplies	12,035	19	4		
				£208,672	16
,, Amount Recovered from the South African Railways and Harbours Administration, being interest on Capital rendered idle consequent upon the closing of the Sea Point Line				2,609	7
,, Other Revenue				783	10
,, Balance carried down				3,568	9
				£215,634	3
By Balance at 31st December, 1930, brought forward				£773	12
,, Balance as per Balance Sheet				2,794	16
				£3,568	9

A. E. HARTE, C.A. (S.A.), Chief Accountant

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY, } Auditors.

Electricity Supply Commission.

DURBAN UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1931. **Cr.**

Generation of Electricity.					
To Operation—					
Fuel	£56,082	13	1		
Water, Oil, Waste and Stores	1,056	18	3		
Salaries and Wages	11,762	15	3		
Other Expenses	396	15	5		
,, Maintenance—					
Stores	3,527	9	5		
Salaries and Wages	7,934	8	5		
Other Expenses	604	9	3		
				£81,365	9 1
General Expenses.					
,, Local Administration and Technical Management	3,709	13	1		
,, General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	2,788	10	3		
,, Head Office Administration and General Expenses	5,993	1	9		
,, Engineering Expenses	2,500	0	0		
				14,991	5 1
				96,356	14 2
,, Interest				43,954	4 4
,, Redemption Fund				20,068	0 9
,, Balance, being:					
Amount set aside to Reserve Fund	10,000	0	0		
Amount carried down	913	9	0		
				10,913	9 0
				£171,292	8 3
To Balance as per Balance Sheet				£2,250	12 0
				£2,250	12 0

By Sales of Electricity—					
Bulk Supplies				£170,994	11 11
,, Other Revenue				297	16 4
				£171,292	8 3
By Balance at 31st December, 1930, brought forward				£1,337	3 0
,, Amount brought down				913	9 0
				£2,250	12 0

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY,
} Auditors.

Electricity Supply Commission.

SABIE UNDERTAKING.

Revenue Account for the Year ended 31st December, 1931.

Dr.				Cr.			
Generation of Electricity.				By Sales of Electricity—			
To Operation—				Mining Supplies		£13,855	19 3
Water, Oil, Waste and Stores	£28 12 3			,, Sundry Revenue		12	10 0
Salaries and Wages	1,600 4 5						
,, Maintenance—							
Stores	163 13 11						
Salaries and Wages	36 18 0						
Other Expenses	32 14 0						
		£1,862	2 7				
Distribution of Electricity.							
,, Operation and Maintenance—							
Stores	75 2 5						
Salaries and Wages	405 5 3						
Other Expenses	76 4 1						
		556	11 9				
General Expenses.							
,, Local Administration	189 3 6						
,, General Expenses (including Maintenance of Quarters, Insurance, Pension Fund Contributions, Reserve for Doubtful Debts, etc.)	469 9 1						
,, Head Office Administration and General Expenses	799 1 8						
,, Engineering Expenses	333 6 7						
		1,791	0 10				
		4,209	15 2				
,, Interest		4,952	12 9				
,, Redemption Fund		3,317	18 0				
,, Balance, being:							
Amount set aside to Reserve Fund	1,350 0 0						
Amount carried down	38 3 4						
		1,388	3 4				
		£13,868	9 3			£13,868	9 3
To Balance at 31st December, 1930, brought forward		£4	1 9	By Amount brought down		£38	3 4
,, Balance as per Balance Sheet		34	1 7				
		£38	3 4			£38	3 4

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,
30th May, 1932.

Referred to in our Report of June 3rd, 1932.

ALEX. AIKEN & CARTER,
B. HALSEY, } Auditors.

ANNEXURE "B": TARIFFS.

EMBODYING—

The standard prices in force in respect of the Commission's several Undertakings.

ANNEXURE "B": TARIFFS.

The standard prices in force on the Commission's several Undertakings are subjoined. These prices and the conditions attaching thereto are more fully set out in the Licences and Permit granted to the Commission by the Electricity Control Board, and are subject to alteration in terms of the Electricity Act, 1922.

Generally speaking, the standard prices are applicable to the supply of three-phase alternating current at standard pressures to consumers whose notified maximum demand is not less than 25 kilovolt amperes, and are subject to variation, in terms of Section 26 of the Electricity Act, 1922, having regard to the situation, extent and conditions of load.

NATAL CENTRAL UNDERTAKING.

(a) A charge of £25 per annum, plus

(b) a charge of 8s. 4d. for each kilovolt ampere of the maximum demand supplied in each month, plus

(c) a charge of 0·3d. for the first million units supplied in each year,
a charge of 0·2d. for the next two million units supplied in each year,
a charge of 0·15d. for all additional units supplied in each year.

WITBANK UNDERTAKING.

(a) A charge of £25 per annum, plus

(b) a charge of 8s. 4d. for each kilovolt ampere of the maximum demand supplied in each month, plus

(c) a charge of 0·045d. for each unit supplied.

CAPETOWN UNDERTAKING.

(a) (i) A charge of 13s. 7d. per month for each of the first 250 kilovolt amperes of the maximum demand supplied in each month;

(ii) a charge of 12s. 3d. per month for each of the next 250 kilovolt amperes of the maximum demand supplied in each month;

(iii) a charge of 8s. 4d. per month for each additional kilovolt ampere of the maximum demand supplied in each month;

plus

(b) (i) a charge of 0·5d. per unit for the first 100,000 units supplied in each month;

(ii) a charge of 0·4d. per unit for the next 200,000 units supplied in each month;

(iii) a charge of 0·3d. per unit for all additional units supplied in each month.

DURBAN UNDERTAKING.

(a) A charge of £4 4s. for each kilowatt of the maximum demand supplied in each year, plus

(b) a charge of 0·175d. for each unit supplied.

SABIE UNDERTAKING.

By arrangement with the consumers, the total production costs of this Undertaking are apportioned between consumers in proportion to the number of units supplied to each consumer month by month, the average cost during 1931 being 0·505d. per unit.

ANNEXURE "C."

EMBODYING—

Statement No.

1. Summary of principal plant and equipment installed as at 31st December, 1931.

2. Summary of principal plant and equipment in course of installation or on order at 31st December, 1931.

3. Statement showing the price or rent of any land or rights or interest in or over land or any other property acquired or hired by the Commission.

Electricity Supply Commission.

STATEMENT No. 1.

Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1931:—

GENERATING PLANT.

No. of Sets.	Capacity each, Kilowatts.	Total Capacity, Kilowatts.	
5	20,000	100,000	
7	12,000	84,000	
3	10,000	30,000	
2	6,000	12,000	
1	1,000	1,000	(House Turbine)
3	450	1,350	
1	300	300	(House Turbine)
Total 22		**228,650**	

BOILER PLANT.

No. of Boilers.	Capacity in lbs. of steam per hour (normal rating). Each.	Total.
16	70,000	1,120,000
20	60,000	1,200,000
Total 36		**2,320,000**

TRANSMISSION LINES AND CABLES.

	88,000 volts. Route Miles.	33,000 volts. Route Miles.	21,000 volts. Route Miles.	12,000 volts. Route Miles.	6,600, 3,300 and 2,200 volts. Route Miles.	380/220 volts. Route Miles.	Total Route Miles.
Overhead Lines .	275	220	74	—	27	63	**659**
Cables	—	30	10	8	7	2	**57**
Total	**275**	**250**	**84**	**8**	**34**	**65**	**716**

TRANSFORMERS.

(Step-up and Step-down.)

	Kilovolt Amperes.
Total capacity installed	**378,051**

CONVERTING SUB-STATIONS.

Type.	No. of Sub-stations.	No. of Sets.	Rating Kilowatts.
Motor Generators	13	22 1	44,000 150
Rotary Converters	5	10	20,000
Total	**18**	**33**	**64,150**

Note.—Two rotary converters removed from Three Anchor Bay Sub-station, following the closing down of the Sea Point Line, are stored and are not included in the above figures.

STAFF QUARTERS.

	Brick Buildings.	Wood and Iron Buildings.	Total.
Married Staff Quarters	81	16	**97**
Single Staff Quarters	9	1	**10**
Total	**90**	**17**	**107**

Electricity Supply Commission.

STATEMENT No. 2.

Summary of principal plant and equipment in course of installation or on order as at 31st December, 1931:—

GENERATING PLANT.

No. of Sets.	Capacity each, Kilowatts.	Total Capacity, Kilowatts.
1	12,000	12,000

BOILER PLANT.

No. of Boilers.	Capacity in lbs. of steam per hour (normal rating). Each.	Total.
2	120,000	**240,000**

TRANSMISSION LINE AND CABLES.

	6,600 volts. Route Miles.
Overhead Lines	25
Cables	—
Total	**25**

TRANSFORMERS
(Step-up and Step-down).

	Kilovolt Amperes.
Total capacity in course of installation or on order	5,466

CONVERTING SUB-STATIONS.

1 Motor Generator Set of 2,000 kw. rating.

Electricity Supply Commission.

STATEMENT SHOWING THE PRICE OR RENT OF ANY LAND OR RIGHTS OR INTERESTS IN OR OVER LAND OR ANY OTHER PROPERTY ACQUIRED OR HIRED BY THE COMMISSION DURING THE YEAR 1931.

(See Eighth Annual Report for Rights or Interests in or over Land Acquired prior to 1931.)

Area.			Farm or Lot.	District.	Title.	Purchase Price or Rental.	Acquired From.	Purpose for Which Required.
Acres.	Roods.	Perches.						
				NATAL CENTRAL UNDERTAKING.				
—	3	0	Lot 8, Vaalkop	Pietermaritzburg	Freehold	£11 5 6	F. J. Hardman	Substation Site, Thornybush.
—	1	9	Lot 9, Vaalkop	Pietermaritzburg	Freehold	5 0 0	C. H. Keel	Substation Site, Thornybush.
—	2	11	Ordnance Land, No. 1686	Pietermaritzburg	Freehold	46 6 9	Government of the Union of South Africa	Substation Site, Pietermaritzburg.
			De Kroon, No. 1505	Klip River	Servitude of Right-of-Way in Perpetuity		W. H. Ries J. J. de Jager	Power Conductors.
			Gerts Erfenis, Carnarvon	Dundee	Servitude of Right-of-Way in Perpetuity	11 10 0	S. M. Coughlan	Power Conductors.
			Vlei Poort	Klip River	Servitude of Right-of-Way in Perpetuity	5 15 0	H. A. Greenhough	Power Conductors.
			Subdivision A Rocky Spruit	Klip River	Servitude of Right-of-Way in Perpetuity	19 10 0	Estate of late H. Caister	Power Conductors.
			Subdivision 9 Kopy Aleen	Klip River	Servitude of Right-of-Way in Perpetuity	4 15 0	N. Maysela	Power Conductors.
			Subdivision 12 Kopy Aleen	Klip River	Servitude of Right-of-Way in Perpetuity	3 10 0	S. Mavuga	Power Conductors.
			Subdivision 15 Kopy Aleen	Klip River	Servitude of Right-of-Way in Perpetuity	3 10 0	J. Kunene	Power Conductors.
			Loch Lomond, Remainder Gardens	Klip River	Servitude of Right-of-Way in Perpetuity	8 10 0	A. Gama J. Nkabinde J. Radebe I. Masabo	Power Conductors.
			Roy Point	Klip River	Servitude of Right-of-Way in Perpetuity	10 10 0	Estate of late J. Parkes	Power Conductors.
			Ballengeich No. 3229	Klip River	Servitude of Right-of-Way in Perpetuity	25 0 0	S.A. Carbide and By-Products, Limited	Power Conductors.
			Lot 47 Gardens	Klip River	Servitude of Right-of-Way in Perpetuity	2 15 0	M. Nxumalo	Power Conductors.
				WITBANK UNDERTAKING.				
Morgen.	Sq. Roods.	Sq. Feet.						
			Klipfontein No. 60	Witbank	Servitude of Right-of-Way in Perpetuity	£15 0 0	Estate of late H. P. Holtshauzen	Power Conductors.
			Smaldeel No. 70	Witbank	Servitude of Right-of-Way for 10 years	200 0 0	W. C. Botha	Power Conductors.
			Heuvelfontein No. 48	Witbank	Servitude of Right-of-Way for 10 years		J. H. Visage	Power Conductors.
—	16	29	Oogiesfontein No. 65	Witbank	Servitudes in Perpetuity		North Oogies (Witbank) Collieries, Limited	Substation Site and Power Conductors.
				CAPETOWN UNDERTAKING.				
			Windheuvel	Malmesbury	Servitude of Right-of-Way in Perpetuity	£20 0 0	M. N. Smuts	Power Conductors.
			Lot 5 adjoining Olyvenhout	Wellington	Servitude of Right-of-Way in Perpetuity	75 0 0	C. E. Bergh	Power Conductors.
			Oakdale	Wellington	Servitude of Right-of-Way in Perpetuity	15 0 0	H. H. Boock	Power Conductors.
			De Grendel A	Malmesbury	Servitude of Right-of-Way in Perpetuity	50 0 0	A. J. de Kock	Power Conductors.
			De Grendel J	Malmesbury	Servitude of Right-of-Way in Perpetuity	25 0 0	J. S. S. de Kock	Power Conductors.
			Lot LO, Paerelse Pont	Wellington	Servitude of Right-of-Way in Perpetuity	50 0 0	P. G. Louw	Power Conductors.
			Paerelse Pont	Wellington	Servitude of Right-of-Way in Perpetuity	50 0 0	N. H. Louw	Power Conductors.
			New Lovenstein	Bellville	Servitude of Right-of-Way in Perpetuity	£1 per annum	Estate of late W. H. Sturk	Power Conductors.

ANNEXURE "D."

EMBODYING—

Statistics relating to the production and supply of electricity in the Union of South Africa.

STATISTICS RELATING TO THE PRODUCTION AND SUPPLY OF ELECTRICITY IN THE UNION OF SOUTH AFRICA.

Extracted from the 1929/30 Industrial Census and Published by courtesy of the Department of Census and Statistics.

UNITS GENERATED.

Province.	Local Authorities.	Other Producers.	Total.
Cape	116,324,447	83,019,032	**199,343,479**
Transvaal	137,460,499	1,776,203,530	**1,913,664,029**
O.F.S.	19,302,881	23,308,657	**42,611,538**
Natal	37,828,640	260,207,620	**298,036,260**
Totals	**310,916,467**	**2,142,738,839**	**2,453,655,306**

CONSUMERS AND SALES.

	Province.				
	Cape.	Transvaal.	O.F.S.	Natal.	Total.
Total No. of Consumers ...	71,551	72,107	10,870	28,751	**183,279**
Total Units consumed ...	171,811,279	1,652,071,734	38,835,720	245,864,348	**2,108,583,081**
Domestic Consumers ...	66,437	63,717	9,595	26,327	**166,076**
Units sold to Domestic Consumers	39,612,404	52,329,355	4,919,235	44,893,592	**141,754,586**
Average Units sold per Domestic Consumer ...	596	821	513	1,705	**854**

INSTALLED CAPACITY OF PLANTS.

Capacity.	No. of Power Stations.	Total Installed Capacity. Kilowatts.
50,000 kw. and over	4	251,700
20,000 kw. and over and below 50,000 kw.	11	319,800
10,000 kw. and over and below 20,000 kw.	1	16,500
5,000 kw. and over and below 10,000 kw.	5	33,550
1,000 kw. and over and below 5,000 kw.	28	46,034
Below 1,000 kw.	165	33,212
Total	**214**	**700,796**

SIZE AND TYPE OF GENERATING UNITS.

Size of Sets.	Steam Turbines.	Steam Reciprocating Engines.	Oil Engines.	Gas Engines.	Water Wheels and Turbines.	Total No. of Sets.
(1) AC Plants:						
Below 250 kw.	—	68	43	18	16	**145**
250 kw. and over, but below 1,000 kw. ...	14	54	—	—	8	**76**
1,000 kw. and over, but below 5,000 kw. ...	54	3	—	—	—	**57**
5,000 kw. and over ...	49	—	—	—	—	**49**
(2) DC Plants:						
Below 250 kw.	2	97	92	51	10	**252**
250 kw. and over, but below 1,000 kw. ...	3	29	—	—	—	**32**
1,000 kw. and over, but below 5,000 kw. ...	—	2	—	—	—	**2**

FUEL CONSUMED.

Type of Fuel.	Quantity (Tons=2,000 lbs.)	Cost £
Coal	2,949,495 ...	1,229,133
Other Fuel	— ...	66,680

COAL CONSUMPTION.

Average Coal Consumption per Unit Generated.	No. of Undertakings.
Under 2 lbs.	9
2 lbs. and over, but under 3 lbs.	19
3 lbs. and over, but under 4 lbs.	13
4 lbs. and over, but under 6 lbs.	26
6 lbs. and over, but under 8 lbs.	14
8 lbs. and over	55

TRANSMISSION AND DISTRIBUTION LINES.

System.	Route Miles. Overhead Lines.	Route Miles. Cables.	Total.
D.C.—All voltages	892	536	**1,428**
A.C.—Below 2,000 volts	2,391	1,274	**3,665**
2,000 volts to 11,000 volts	419	991	**1,410**
Above 11,000 volts	1,132	127	**1,259**
	4,834	2,928	**7,762**

TRANSFORMERS.

Total installed capacity ... ... 1,530,743 K.V.A.

Total number of persons employed in the electricity industry (generation and distribution) 8,984

Total salaries and wages paid for the year £1,322,283