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22nd annual report

1ST SEPTEMBER 1970 — 31ST AUGUST 1971



TNB
HD9685
.L45
1971

HEAD OFFICE BUILDING

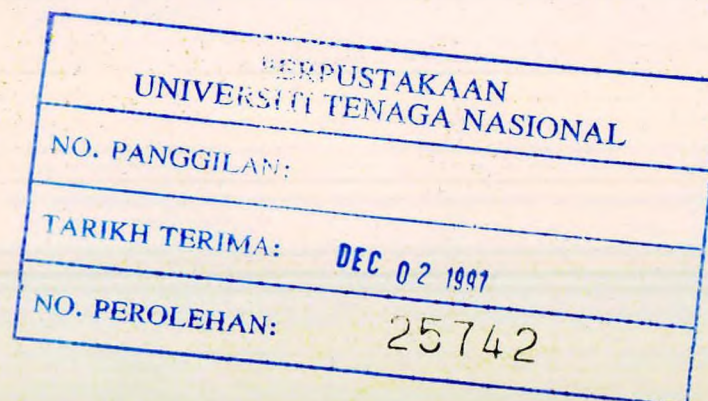
national electricity board

OF THE STATES OF MALAYA

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25742

ACTION WILL BE TAKEN AGAINST ANY
STAFF WHO UNDERLINES WORDS, MAKES
NOTES IN THE MARGINS OR DISFIGURES
OR DAMAGES BOOKS IN ANY WAY.

THE BOARD

CHAIRMAN

Y.B. Dato Kurnia Jasa Haji Osman bin Talib, S.P.M.P., D.P.M.Ps (up to 31.12.1970).

Y.B. Tan Sri Abdul Aziz bin Zain, P.S.M., D.J.M.K., P.M.K., P.J.K. (from 1.3.1971).

DEPUTY CHAIRMAN & GENERAL MANAGER

Y.M. Raja Tan Sri Zainal bin Raja Sulaiman, P.S.M., J.M.N., J.P., F.I.E. (M).

MEMBERS

Y.B. Tan Sri T. H. Tan, P.M.N., C.W.E., M.P.

Encik P. P. Narayanan

Encik Chan Keong Hon, J.S.M., A.M.N., S.M.S., P.J.K.

Encik Chong Hon Nyan, J.M.N. (up to 16.1.1971)

Encik Tan Toh Hong

Encik Abdul Razak bin Yusof, S.M.T., J.P.

Encik Mohd. Jumah bin Mat Satir, J.P.

Dr. Nik Hussein bin Abdul Rahman

Encik Lim Sun Hoe (from 1.12.1970)

Encik Bhupinder Singh (from 17.1.1971)

Encik Kim Kok Kwang (from 17.1.1971)

Y.M. Raja Tan Sri Zainal bin Raja Sulaiman, P.S.M., J.M.N., J.P., F.I.E. (M) was appointed Temporary Chairman of the Board from 1.1.1971 to 28.2.1971.

GENERAL MANAGER & DEPUTY CHAIRMAN

Y.M. Raja Tan Sri Zainal bin Raja Sulaiman, P.S.M., J.M.N., J.P., F.I.E. (M)

CHIEF**ENGINEERING DIVISION**

Deputy General Manager (Engineering)	– Chan Khee Pok, B.Sc. (Eng.), C. Eng., F.I.E.E. F.I.E. (M)
Chief Engineer (Transmission & Distribution)	– Wong Kin Hong, B.E.E., C. Eng., M.I.E.E., F.I.E. (M)
Chief Engineer (Generation)	– A. Ramanath, B. Sc. (Eng.), C. Eng., F.I.E.E. M.I. Mech. E, F.I.E. (M)
Deputy Chief Engineer (Generation)	– M. Rajendra, C. Eng., M.I.E.E. M.I.E. (M)
Deputy Chief Engineer (Meters Protection & Test)	– Lye Fah Yew, C. Eng., M.I.E.E. M.I.E. (M) (Until 23.8.71) Leong Yoke Kow, B. Sc., C. Eng., M.I.E.E.
Deputy Chief Engineer (Distribution)	– Y.M. Tengku Daud bin Tengku Besar Burhanuddin, P.J.K., D.L.C., M.I.E. (M)
Deputy Chief Engineer (Planning & Construction)	– Tan Ghee Soon, B.E. (M & E), F.I.E. (M)
Commercial Manager	– Chan Beng Kong, C. Eng., M.I.E.E., M.I.E. (M)
Senior Engineer (Head Office)	– Lee Siaw Phin, B.E., C. Eng.; M.I.E.E.; M.I.E. (M), M.I.E. (Aust.)
Chief Civil Engineer	– Fong Thin Yiew, B.E., C. Eng., M.I.C.E., M.I.E. (M), M.I.W.E.,
Area Managers	– Wong Wai Kheong, C. Eng., M.I.E.E., M.I.E. (M) – Loong Sow Toong, D.F.H., M.I.E. (M) (Until 15.2.71) – A. Rajadurai, C. Eng., M.I.E.E., M.I.E. (M) – Wan Daud bin Wan Ibrahim, B. Sc. (Eng.) C. Eng., M.I.E.E., M.I.E. (M) – Rajinder Singh, C. Eng. M.I.E.E., M.I.E. (M)

EXECUTIVE OFFICERS OF THE BOARD

PERSONNEL DIVISION

Assistant General Manager — Abu Zarim bin Haji Omar,
P.J.K., D.L.C., C.Eng., M.I.E.E., F.I.E. (M)

FINANCIAL DIVISION

Financial Controller — Chan Kai Foo, A.A.S.A.

ADMINISTRATIVE DIVISION

Secretary — Mohd. Hashim bin Amin

INSPECTORATE DIVISION

Chief Electrical Inspector — R. Sathasivam, C. Eng., M.I.E.E.
M.I.E. (M) (Until 26.8.71)

Auditors to the Board

MESSRS. PRICE WATERHOUSE & CO., KUALA LUMPUR.

MESSRS. HANAFIAH, RASLAN, MOHAMAD & PARTNERS, KUALA LUMPUR.

Consultants to the Board

PRINCIPAL CONSULTANTS

MESSRS. PREECE, CARDEW AND RIDER, BRIGHTON, U.K. AND KUALA LUMPUR.

CIVIL ENGINEERING CONSULTANTS

MESSRS. BINNIE AND PARTNERS, LONDON AND KUALA LUMPUR.

MESSRS. FREEMAN, FOX AND PARTNERS, LONDON.

MESSRS. SIR BRUCE WHITE, WOLFE BARRY AND PARTNERS, LONDON.

FUNCTIONS AND FINANCIAL POLICY OF THE BOARD

The Board is under a statutory duty to promote the generation of electrical energy with a view to the economic development of West Malaysia and to secure the supply of such energy at reasonable prices. It has a duty also, to advise the Minister, charged with responsibility for electricity, on all matters relating to its generation and use. The Board is required to manage and operate electrical installations transferred to, acquired or established by the Board. In the field of legislation the Board is entrusted with the duty of making regulations for the generation and use of energy. To enable it to carry out its duties, the Board is vested with wide powers empowering it to construct and operate supply lines and stations, to generate and sell energy and to acquire electrical plant and property.

It is the duty of the Board as an organisation providing service to the public, to ensure that its revenue, after meeting all outgoings including depreciation and interest on capital, is utilised to finance a proportion of its capital development programme to meet the country's increasing demand for electricity. The high rates of growth in the capital intensive field of electricity supply necessitate the deployment of almost all of the balance of its revenue towards meeting the capital development programme.



Lembaga Elektrik Negara
KUALA TINGGI

New office in Kuantan, Pahang.

board's system

MAJOR STATISTICS

INSTALLED GENERATING CAPACITY

THERMAL	420.0	MW
HYDRO	265.4	MW
DIESEL	39.9	MW

AREA SERVED

THE ELEVEN STATES OF WEST MALAYSIA
EXCEPT PENANG ISLAND AND PART OF
THE STATE OF PERAK

TRANSMISSION LINES

275	KV	45.30	miles
132	KV	514.31	miles
66	KV	311.13	miles

CONSUMERS SERVED

CENTRAL AREA	147,394
NORTHERN AREA	143,893
SOUTHERN AREA	142,930
EASTERN AREA	70,458

DECLARED CONSUMERS VOLTAGE

240V	+ 5%	SINGLE PHASE
	- 10%	
415V	+ 5%	THREE PHASE
	- 10%	

FIXED ASSETS

\$1,063,640,021

SUBSTATIONS

NO. OF SUBSTATIONS	2,584
TRANSFORMER CAPACITY	2,886 MVA

OWNERSHIP

\$164,719,000 ORDINARY STOCKS HELD BY
GOVERNMENT OF MALAYSIA
\$3,000,000 ORDINARY STOCKS HELD BY
STATE GOVERNMENT OF PAHANG

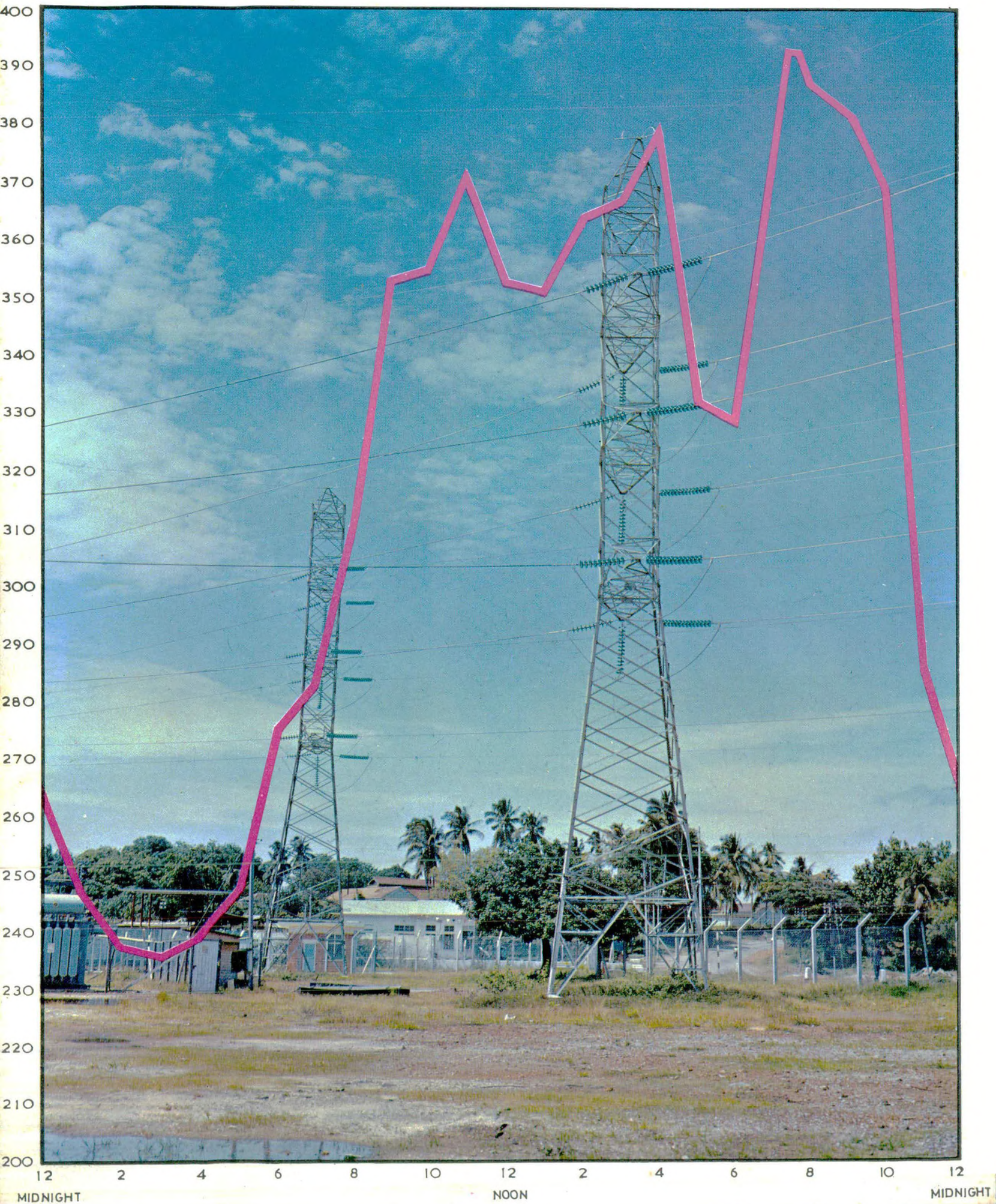
MAXIMUM DEMAND

WESTERN NETWORK 392.90 MW

UNITS SOLD

2,401,392,763 kWh

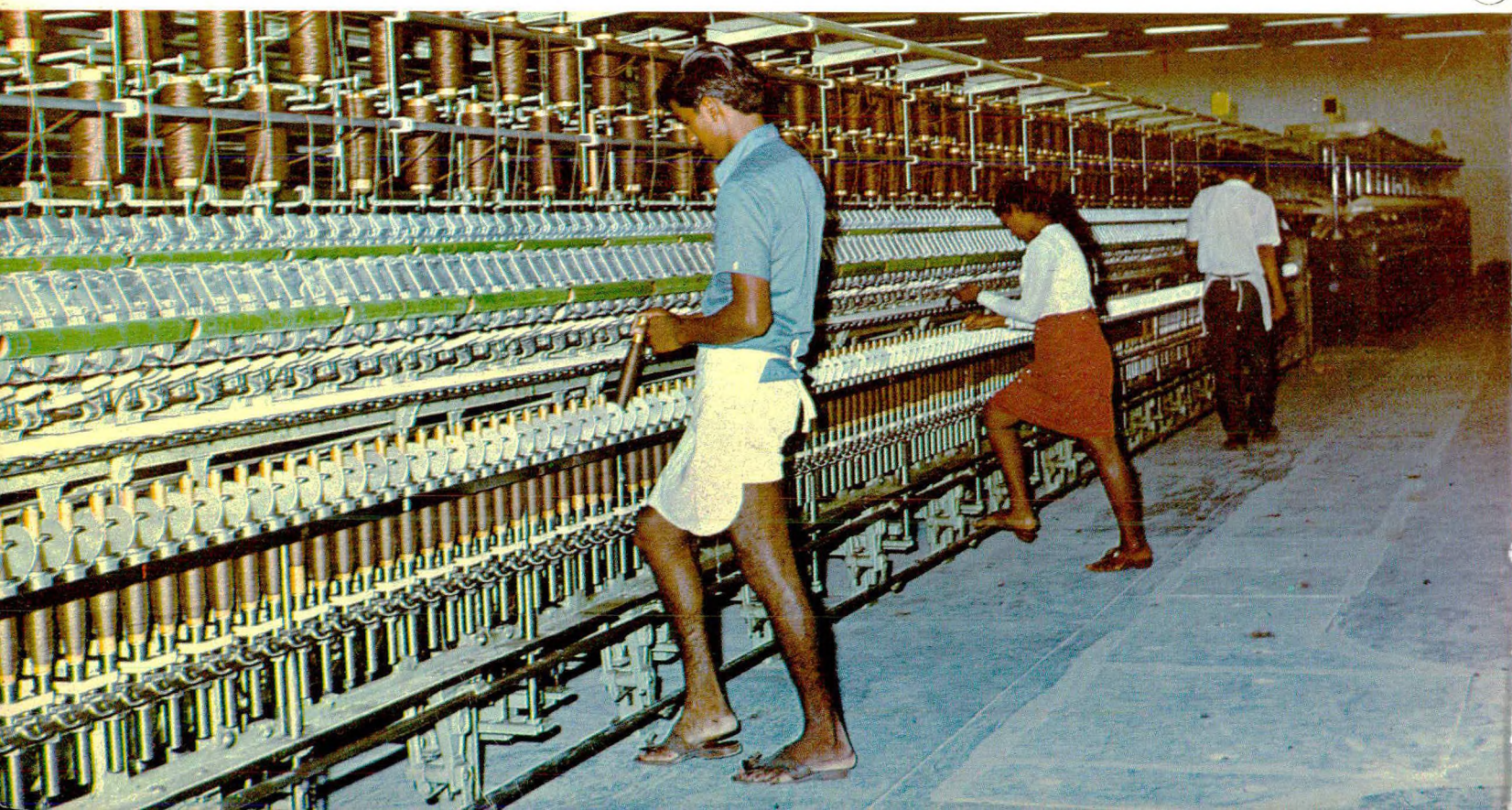
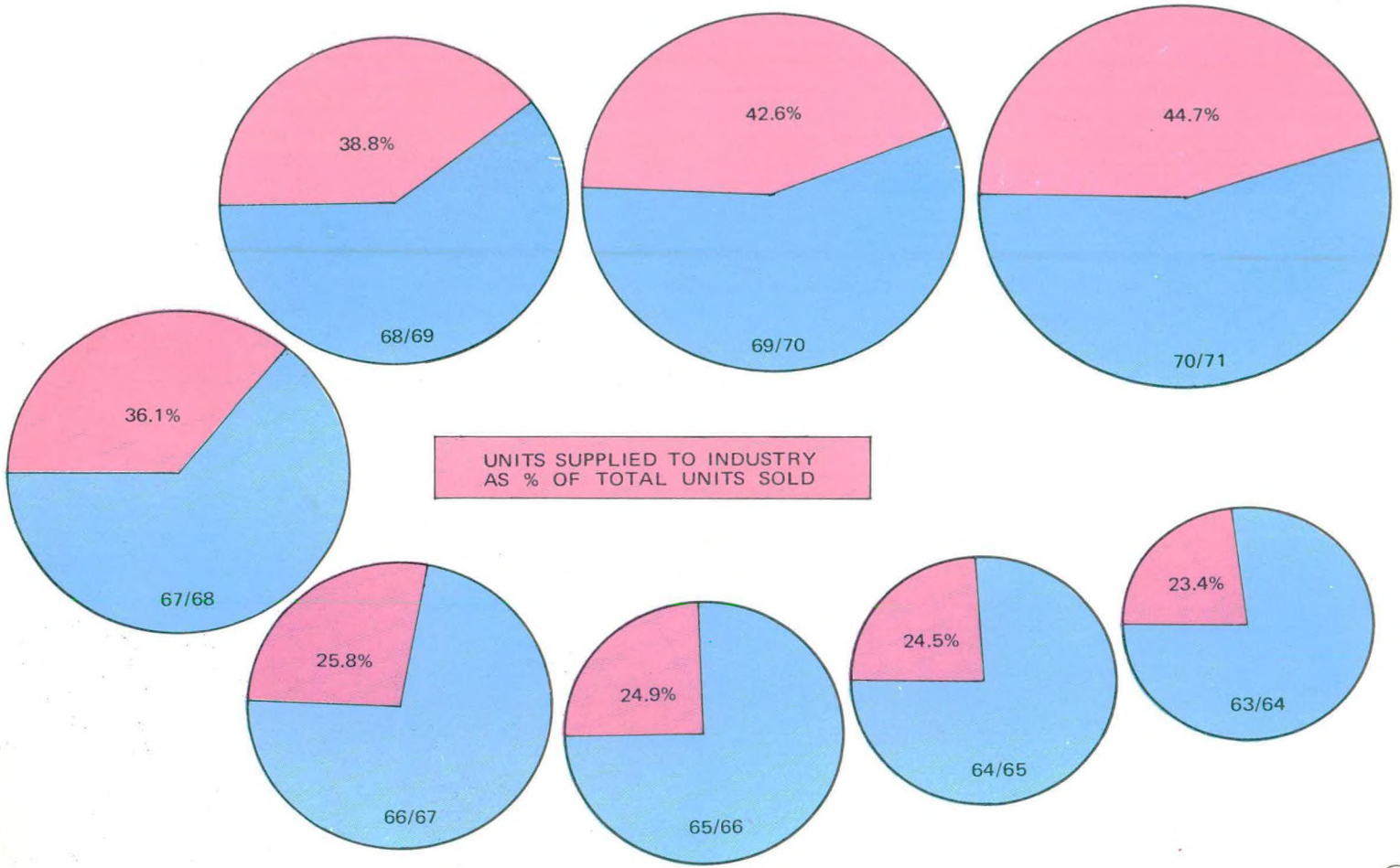
DAILY LOAD CURVE-WESTERN NETWORK

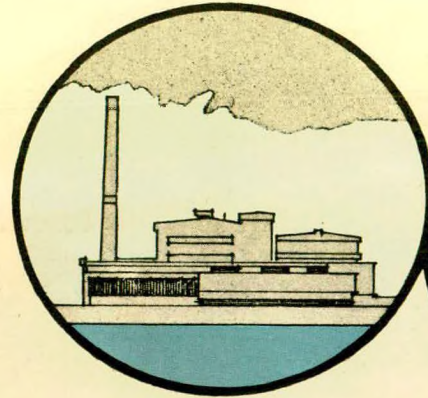


MAJOR POWER STATIONS

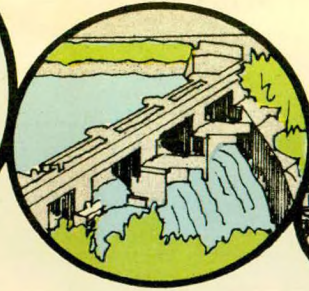


power for industry





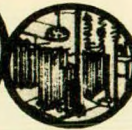
THERMAL STATION
UNITS
5,411,600



HYDRO STATION
UNITS
1,845,000



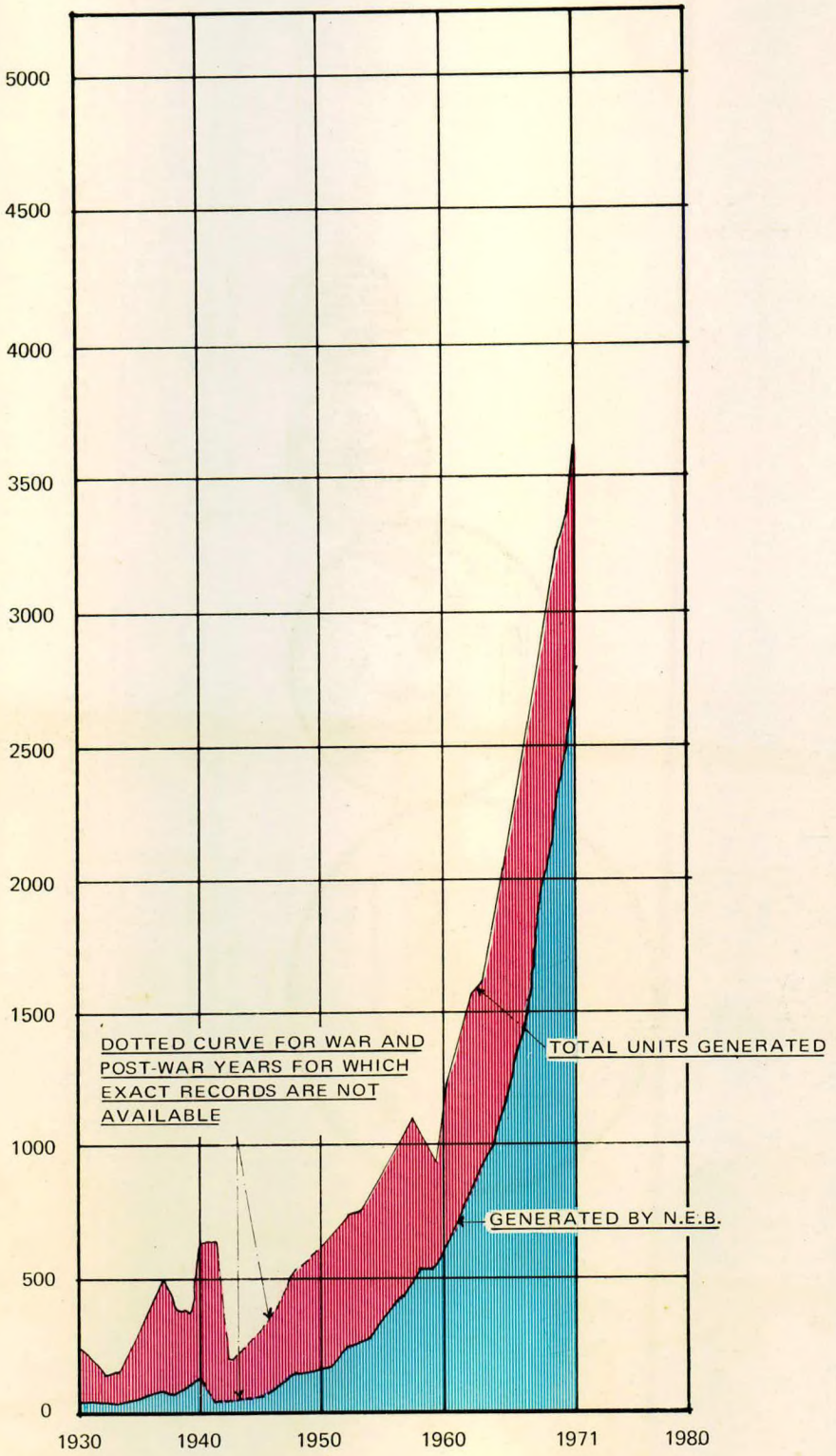
DIESEL
STATION
UNITS
355,900



PURCHASED
UNITS
282,400

AVERAGE UNITS GENERATED/PURCHASED PER DAY

GROWTH OF GENERATION OF ELECTRICITY IN WEST MALAYSIA 1930-1971



generation

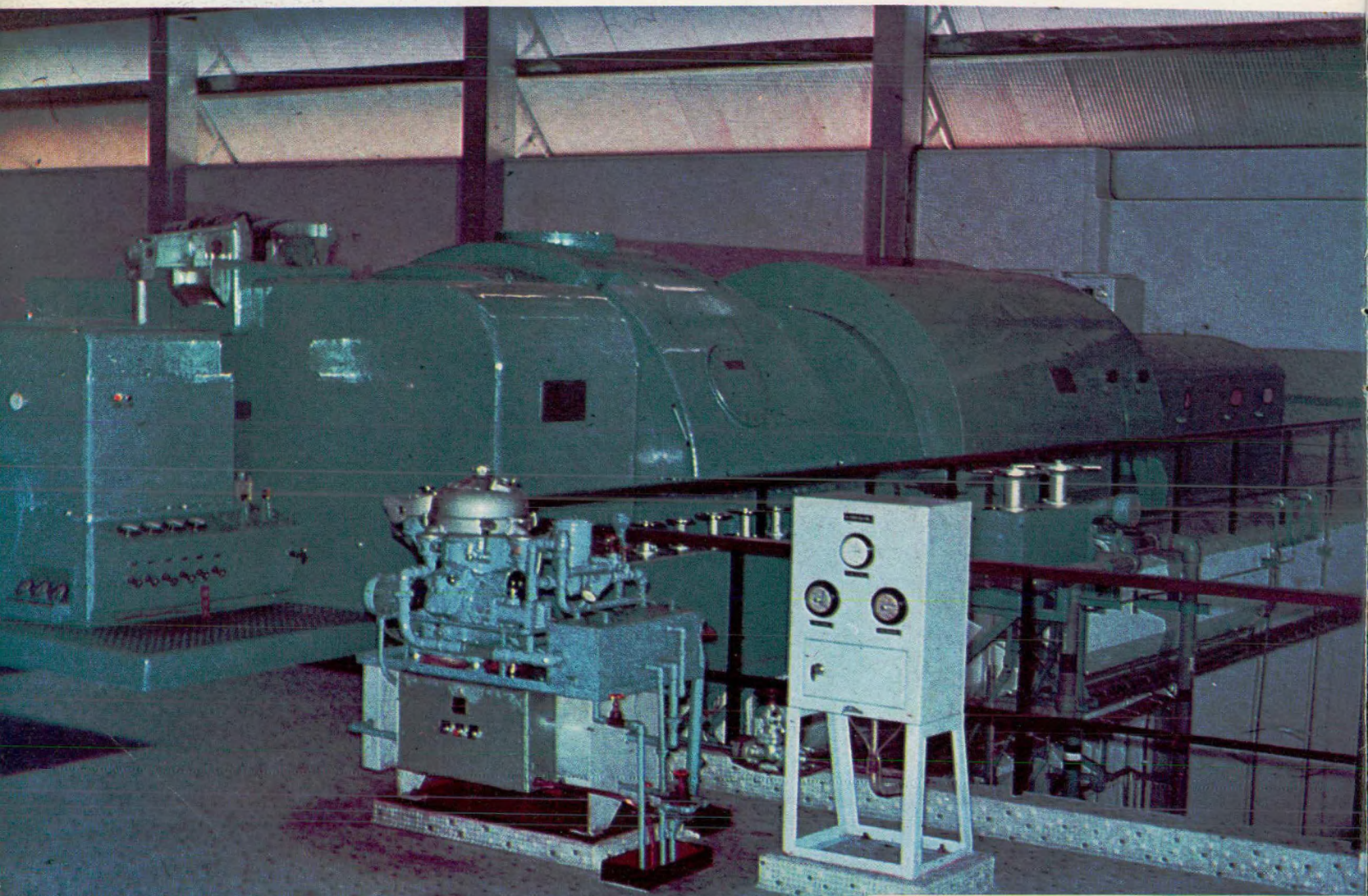
The thermal and hydro power station connected to the Western Network generated a total of 2,530,576,584 units during the year, representing 10.0% increase over the units generated during the previous year. The overall network load factor for the year was 73.52%. For the thermal stations the overall thermal efficiency on a units generated basis was 28.05%.

The second stage of the Prai Power Station has been completed with the commissioning of the No.3 30 MW unit in February 1971, thus increasing the installed capacity of the station to 90 MW.

The installed capacity of Sultan Ismail Power Station was also increased to 90 MW with the commissioning of a 30 MW unit on 8th June 1971.

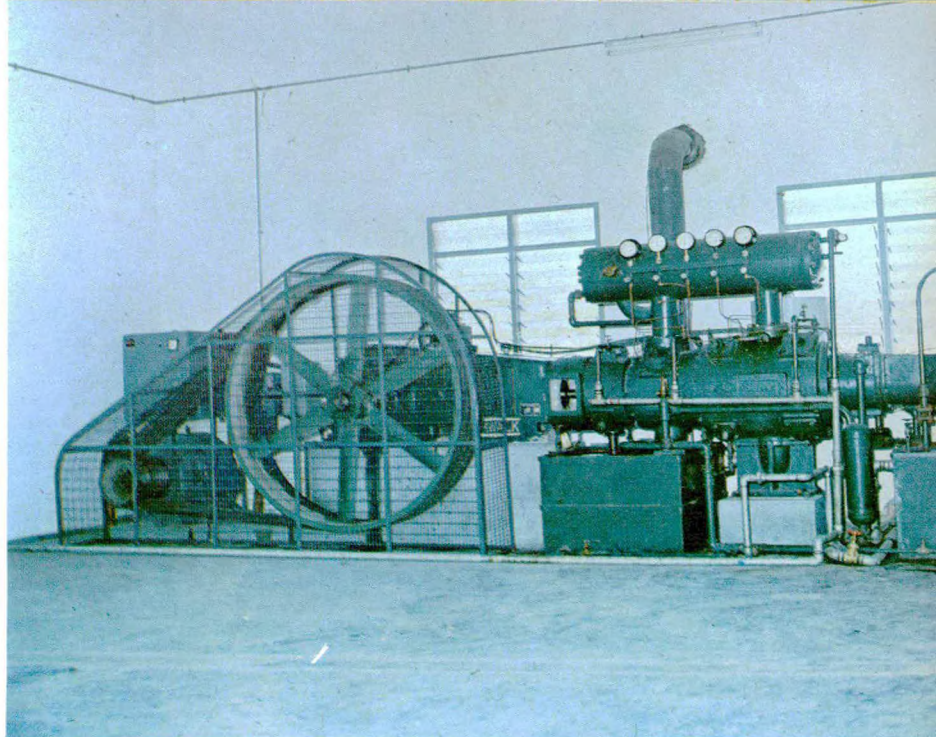
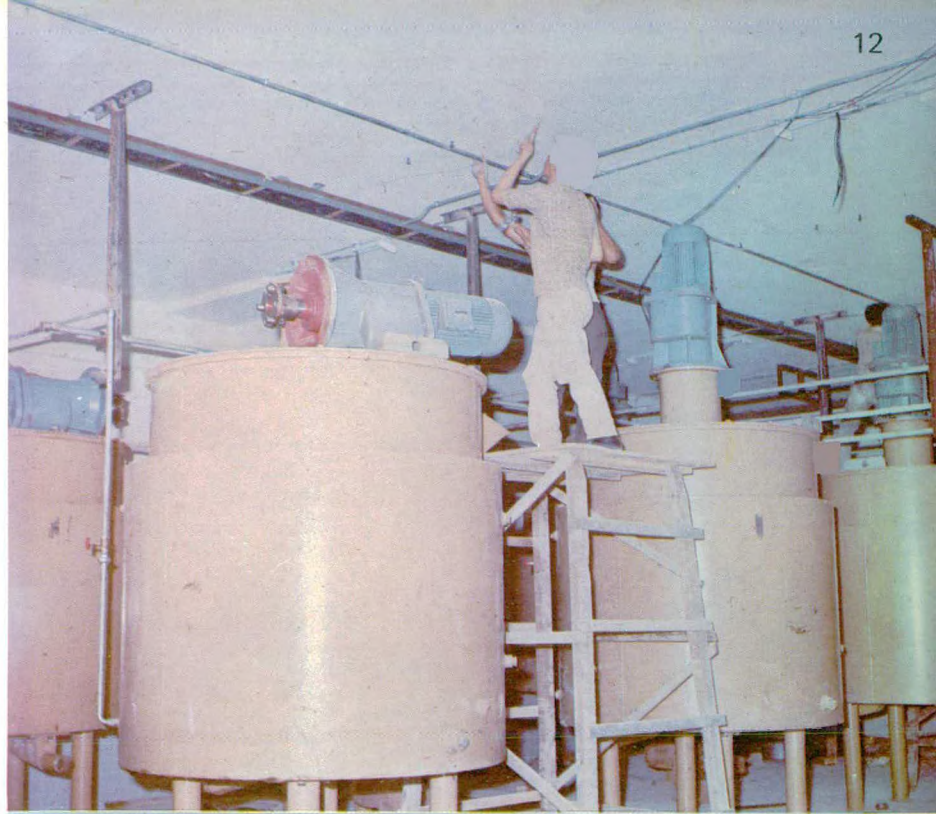
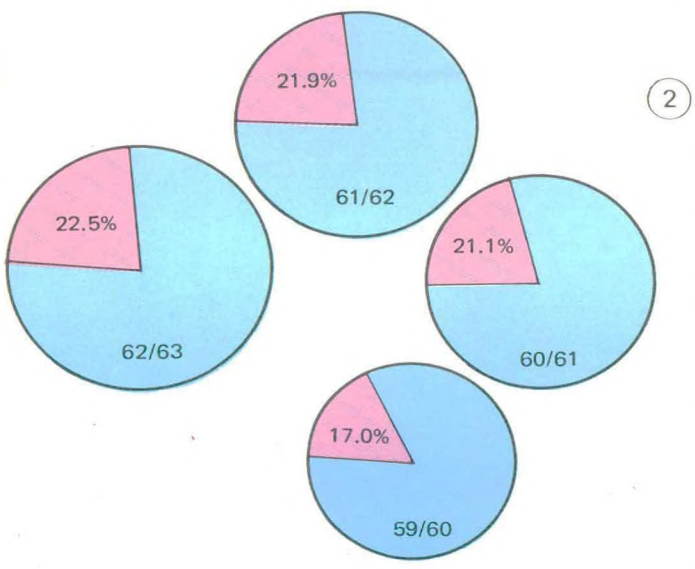
In respect of Tuanku Ja'afar Power Station Stage II work on the erection of boilers and turbo-alternators for No.3 and No.4 60 MW units is in progress, and the No. 3 unit is expected to be ready for commissioning by January, 1973. The planning of the third stage consisting of three 120 MW units is well underway, and orders for the three 120 MW turbo-alternators and the associated boilers have been placed.

In order to meet the rising demand for electric power in the East Coast three 2,800 kW diesel sets have been ordered this year for Kuantan, Kuala Trengganu and Kota Baharu.



New 30MW Turbo-Alternator Set commissioned at Sultan Ismail Power Station, Johor

In the year 1959/60 units sold to industry (excluding mining) were 92,557,972 kWh representing 17% of 544,904,807 kWh total units sold. While the total units sold have since increased by about 4½ times to 2,398,866,215 kWh the units sold to industry has increased 11½ times to 1,071,507,186 kWh representing 44.7% of the total units sold.



- 1. Textile Factory
- 2. Chocolate Factory
- 3. Oxygen Acetylene Plant
- 4. Rubber Mill

4



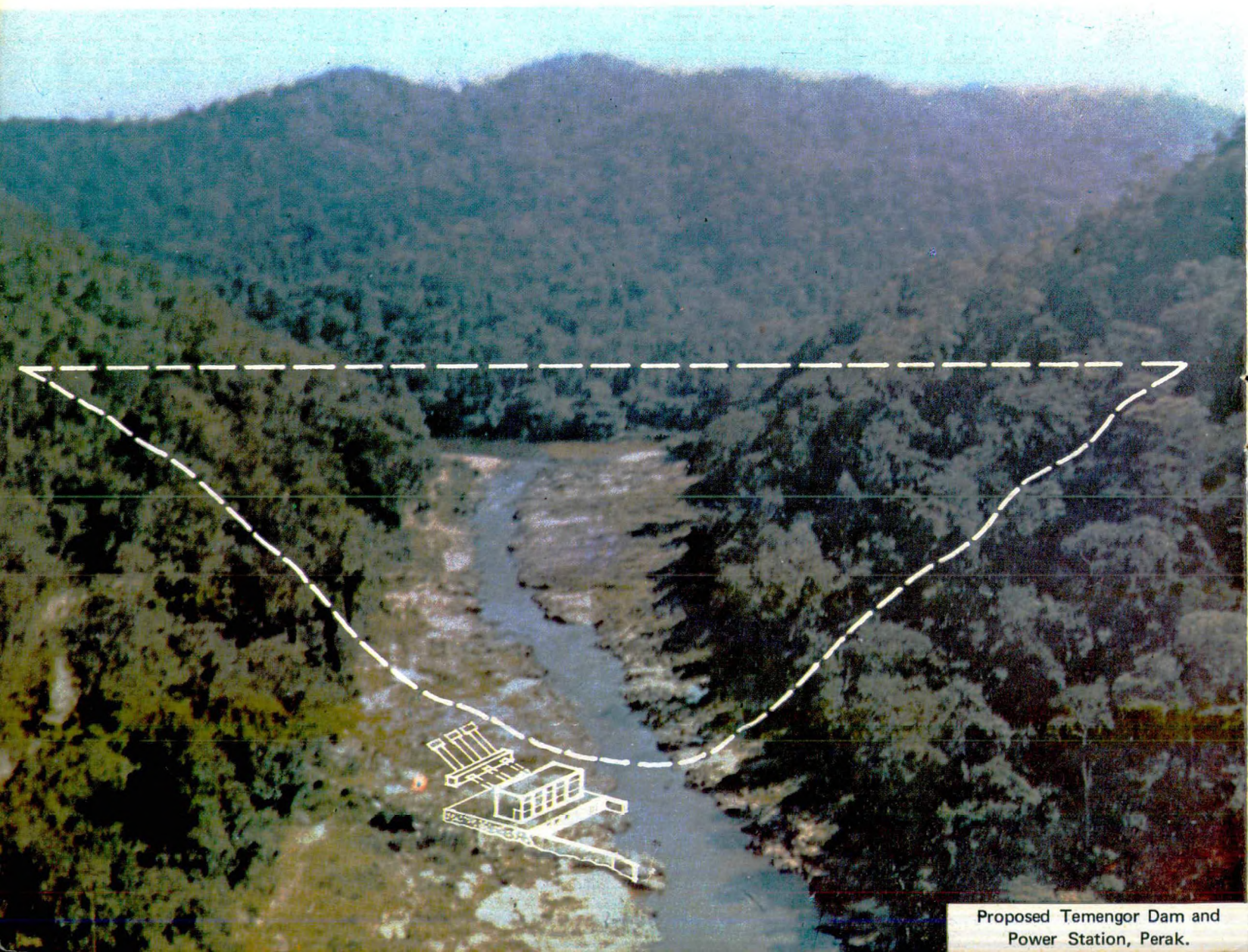
Tuanku Ja'afar Power Station,
Port Dickson, Negeri Sembilan.

hydro electric development

Following the offer of the soft loan of Canadian \$50 million by Canada, the Board decided to proceed with the appointment of the consultant for the Temengor Project in Perak and an Engineering Services Agreement for the design and construction of the project was signed with Messrs. Shawinigan Engineering Co. Ltd. of Canada. The cost of the engineering services for the Temengor Project will be paid out of the Canadian Soft Loan Funds under a Malaysian/Canadian Inter-Government loan agreement. Messrs. Shawinigan Engineering Co. Ltd. were requested to commence engineering work for the Temengor Project in November, 1970 and a basic programme of engineering, procurement and construction was developed to meet the on-power date of November, 1977.

Tenders for the Subsurface Investigations contract were called during the year and the contract was awarded to Messrs. Malaysian Soil Investigation Sendirian Berhad of Kuala Lumpur. By the end of the period under review, the contractor had completed mobilization and was ready to commence drilling and other subsurface work in the Project area.

Investigations of potential hydro-electric schemes, particularly those in the West Pahang region continued. Intensive preliminary studies into the potential of a hydro-electric scheme on the Sungai Tembling, immediately upstream of Kuala Tahan, are being undertaken with a view to preparing a report on the power and energy capability of the scheme and also the possible flood control capacity of the reservoir.



Proposed Temengor Dam and Power Station, Perak.

HYDRO-ELECTRIC DEVELOPMENT IN WEST MALAYSIA.



Transmission and Distribution

Transmission

The maximum demand for the Board's Western Network was 392.90 MW for the year ended 31st August, 1971, an increase of 8.3% over the previous year.

A 132 kV single circuit transmission line is being constructed from Segambut Substation in Kuala Lumpur to Bentong, Mentakab and Raub, which would receive bulk supply in the third quarter of 1972, in place of the diesel station supply. The line would be extended from Mentakab to Kuantan and Pekan by 1974 and 1975 respectively. On the proposed 66 kV line from Gemas to Segamat preliminary route survey has been carried out and it is anticipated that the line would be completed by 1973.

Work on stringing the second 132 kV circuit transmission line between Prai, Parit Buntar, Taiping and Papan is in progress, and by 31st August, 1971 the sections between Prai/Parit Buntar and Parit Buntar/Taiping have been completed. The remaining section Taiping/Papan is scheduled for completion by March, 1972.



132 kV Transmission Line between Kuala Lumpur and Bentong Under Construction

In conjunction with the installation of the 3rd and 4th 60 MW sets at Tuanku Ja'afar Power Station, work is underway to step up the existing 132 kV transmission system between Port Dickson and Kuala Lumpur (South) to 275 kV operation by October, 1972.

Plans have been finalised to construct 275 kV double circuit lines from Papan to Woh and from Kuala Lumpur (South) to Rawang by 1974, but initially to be operated at 132 kV. In addition plans have been drawn up to construct a 132 kV double circuit line from Woh to Lumut by 1975, a double circuit 275 kV or 132 kV line from Port Dickson to Malacca by 1976, and a 275 kV double circuit line from the Temengor Hydro Electric Scheme to Papan by 1977.

Transmission Lines Commissioned

66 kV O/H Single Circuit Scudai/Pontian Kechil

Length

20 miles

Substations Commissioned

Perak Carbide 132/11 kV (Temporary)

Pontian Kechil 66/11 kV

P.U.B. Waterworks, Pontian 66/6.6 kV

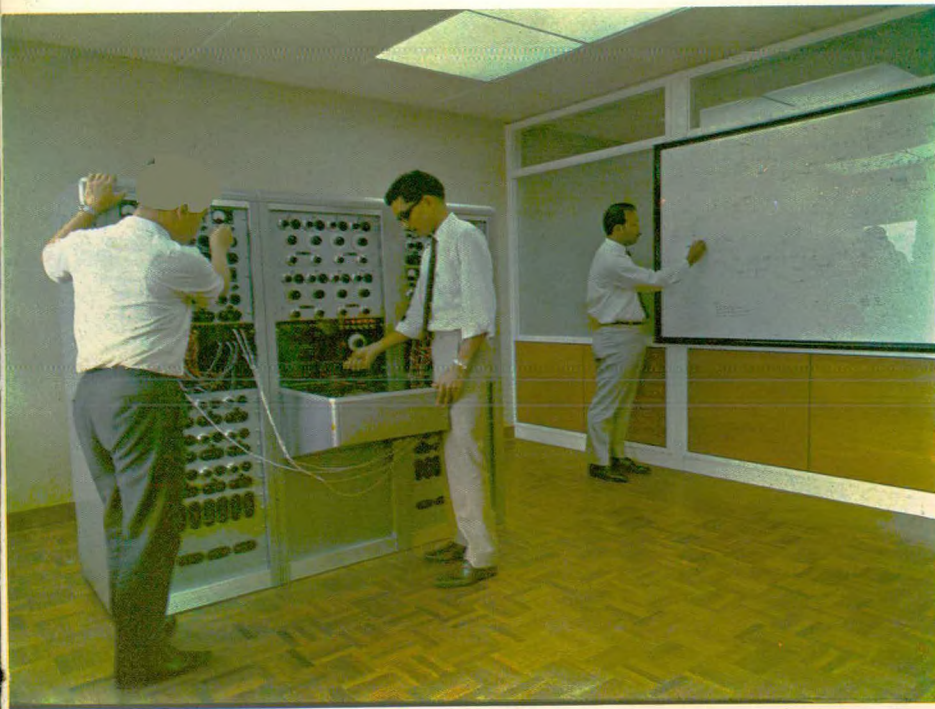
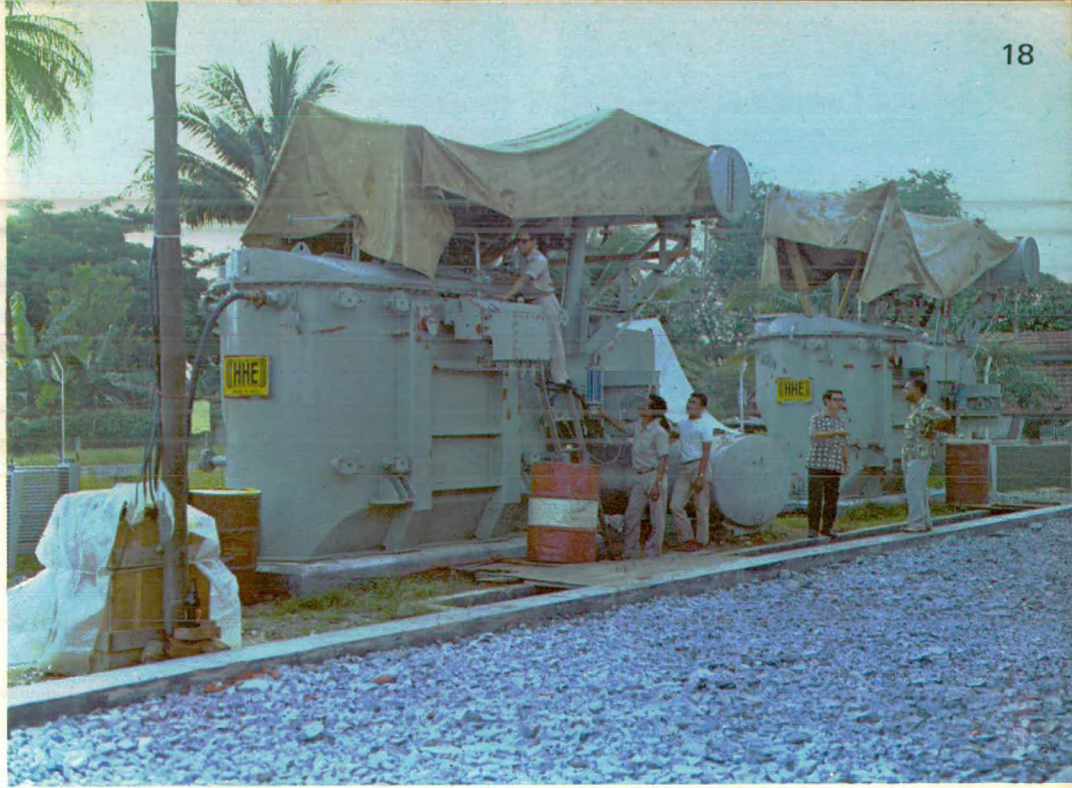
Capacity

1 x 7.5 MVA

1 x 1.83 MVA

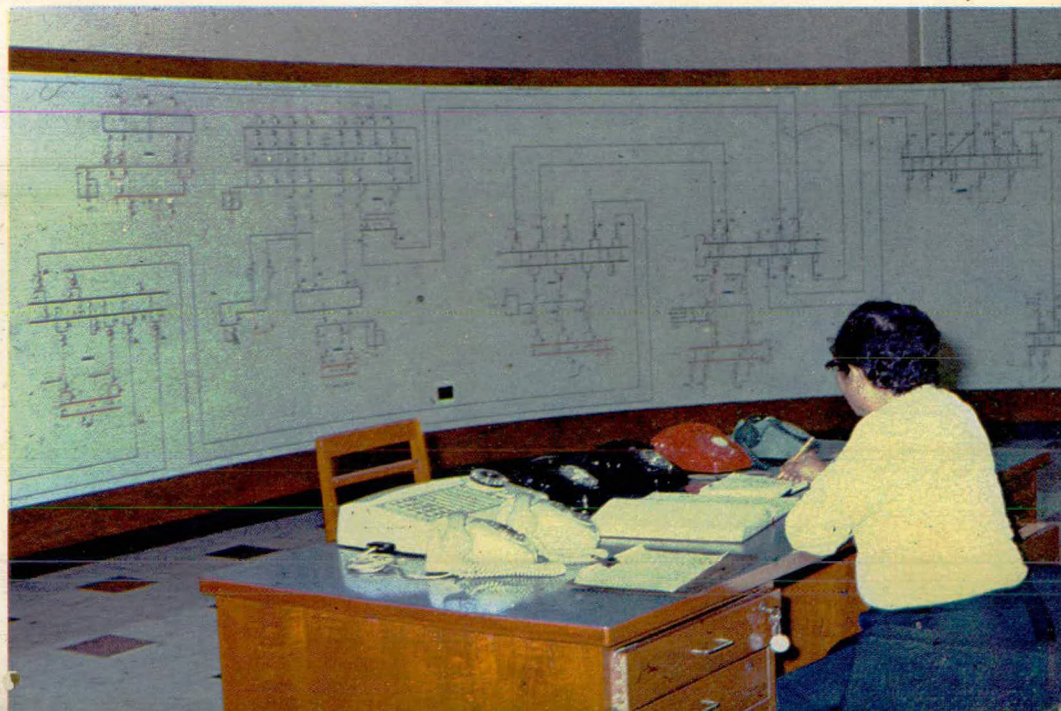
1 x 3 MVA

Installation of 2 x 7.5 MVA
132/11 kV Transformers at
Mentakab Bulk Substation,
Pahang.



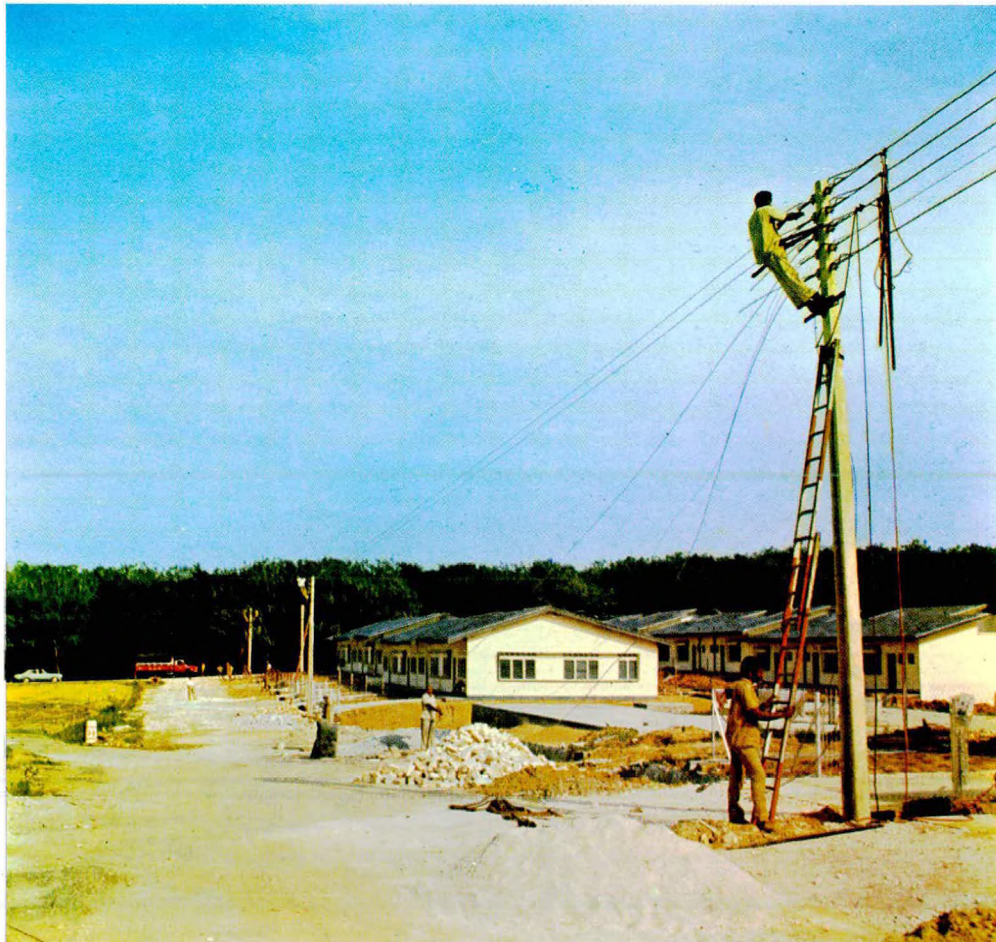
Engineers carrying out Power
Systems Studies on A.C. Network
Analyser, at Head Office.

Grid control centre at
Connaught Bridge, Klang,
Selangor.



HIGHLIGHTS OF DISTRIBUTION ACTIVITIES 1970/71

1. Supply given to Malaysian Steel Mill, Jalan Tandang, Petaling Jaya, with the installation of a 2 x 4 MVA 33/11 kV substation and laying of 49,977 yards of 11 kV and 1,423 yards of 33kV underground cables.
2. Commissioning of an additional 4 MVA 33/6.6 kV transformer at Batang Berjuntai substation.
3. Bulk supply was given to Senai and Kulai with the laying of a total of 18,000 yards of 11 kV cables and the installation of a 200 kVA 6.6/.4 kV substation at Senai and 500 kVA 6.6/.4 kV substation at Kulai.
4. A new 22/11 kV substation with 2 x 5 MVA transformers was constructed to feed the BBC Far East Station, and a new 22kV underground feeder, comprising 12,806 yards of 0.2 sq. in and 3,100 yards of 0.1 sq. in. cables, was laid from Sultan Ismail Power Station to BBC Substation.
5. In conjunction with the extension of bulk supply to Pontian, the H.V. distribution system at Pontian was converted from 6.6 kV to 11 kV operation.
6. On Stages II and III of the project to convert the distribution system at Kuantan from 6.6 kV to 11 kV operation, a total of 30,806 yards of 11 kV cables was laid.



Erection of Low Voltage Overhead
Mains to supply a Housing Estate.



Workmen carrying out street lighting maintenance on a Tower Wagon in Kuala Lumpur, Selangor.

Major Distribution Projects Planned

1. Taiping: 2 x 15 MVA 132/11 kV substation in Kamunting Industrial Estate to cater for extensive industrial development.
2. Kuala Lumpur: 2 x 15 MVA 33/11 kV substation in Jalan Ampat to supply proposed steel mill and other industries.
3. Petaling Jaya: 2 x 15 MVA 33/11 kV Substation in Sungai Way to meet industrial and commercial loads.
4. Johore Baharu: 1 x 5 MVA 22/6.6 kV Substation in Pasir Gudang to supply a wood chip plant.
5. Pekan: 4½ miles of 0.1 sq. in. 11 kV cable, from Pekan Power Station to Peramu Industrial Area.

Distribution Mains Commissioned

	<u>Length</u>
1. 33 kV O/H Line	9.91 miles
2. 11 kV U/G Cable	142.53 miles
3. 6.6 kV. U/G Cable	5.71 miles

Distribution Substations Commissioned

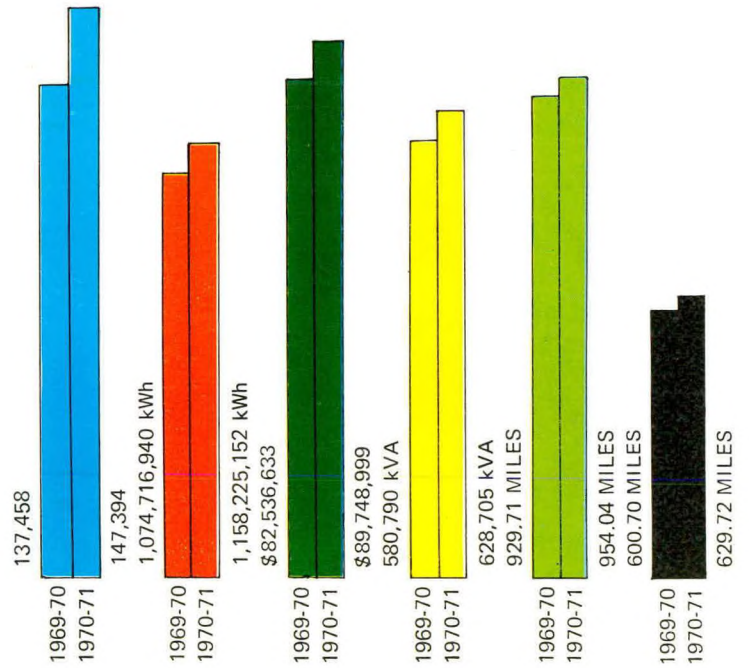
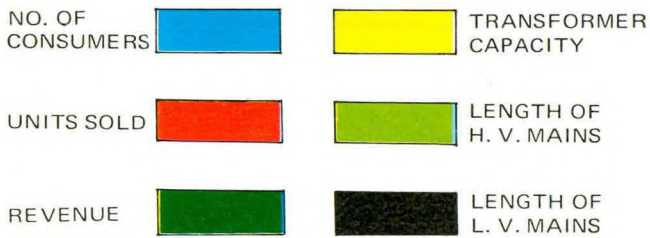
	<u>Capacity</u>
1. 33 kV S/S	9,400 kVA
2. 22 kV S/S	10,000 kVA
3. 11 kV S/S	93,182 kVA

central area



Districts
Klang
Kuala Lumpur

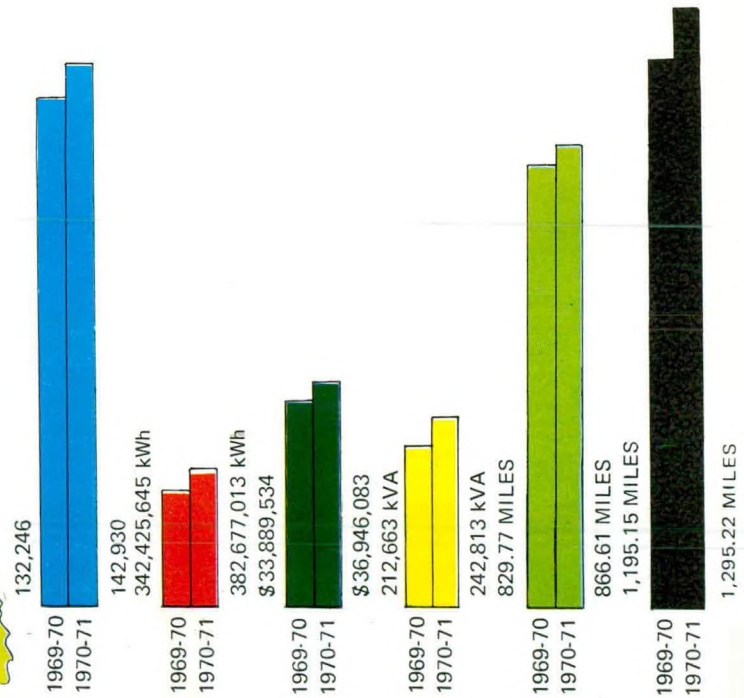
KEY



southern area

Districts

Batu Pahat
Johore Bahru.
Kluang
Malacca
Muar
Seremban

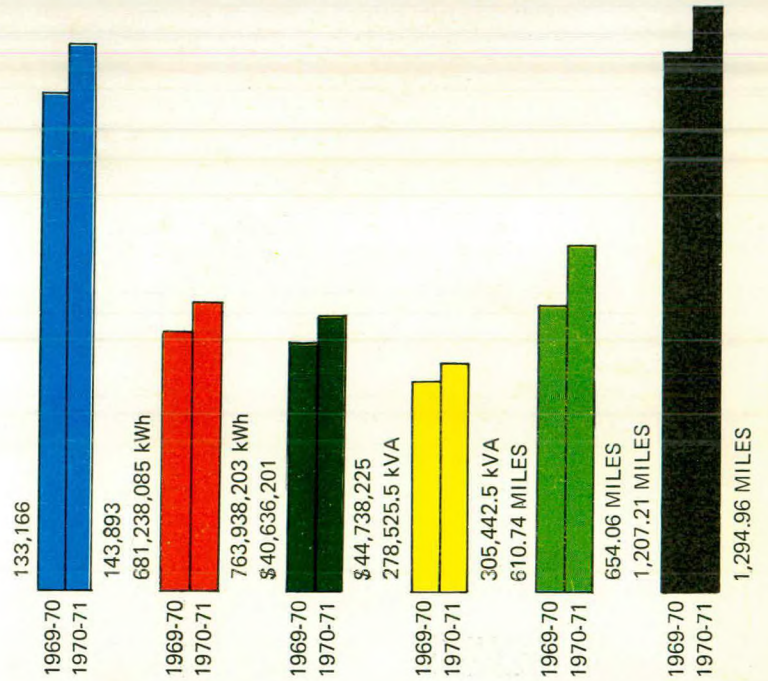


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northern area



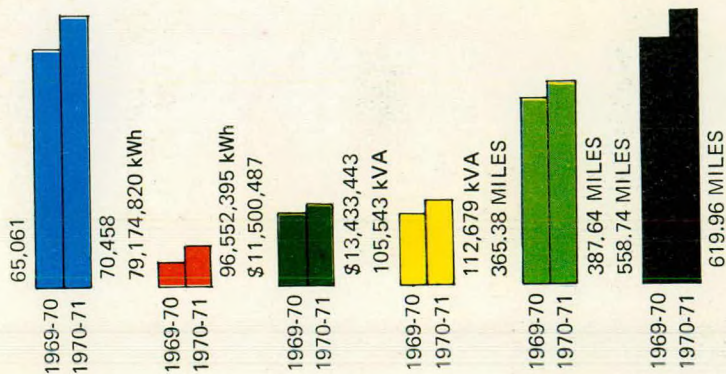
Districts
Alor Star
Butterworth
Ipoh
Taiping



eastern area



Districts
Kota Bharu
Kuala Trengganu
Kuantan
Raub



rura electrification

The implementation of the rural electrification projects for the financial year 1970/71 has been carried out satisfactorily. However, the severe floods which occurred in December, 1970 and January, 1971 did set back, to some extent, the progress of projects in areas affected by the floods.

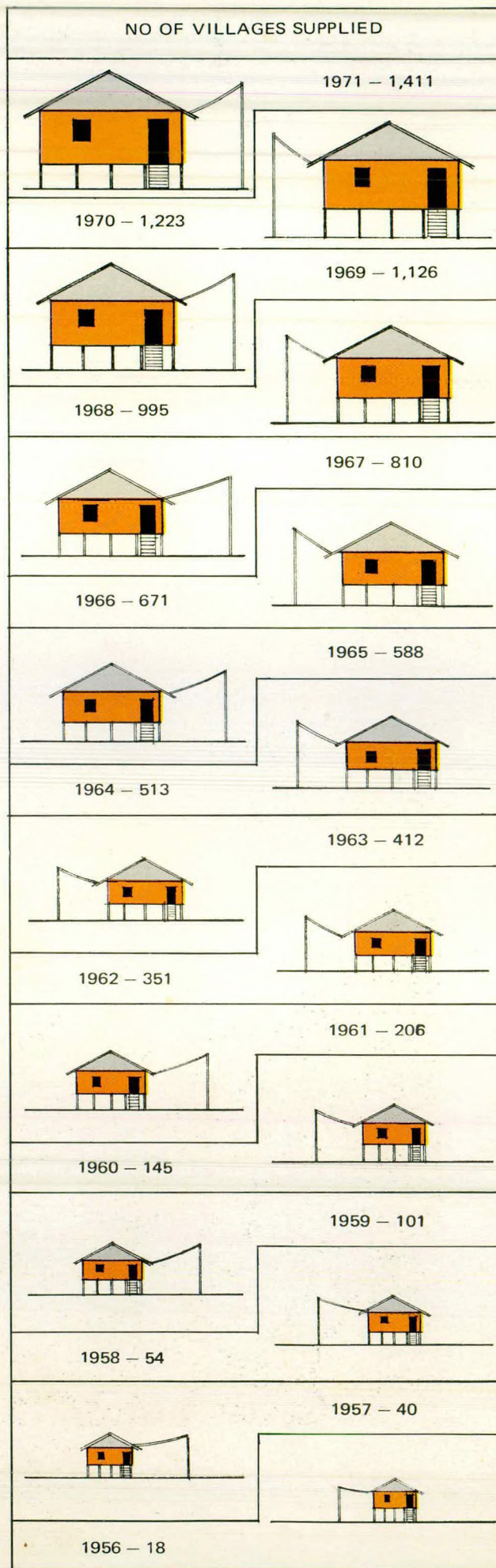
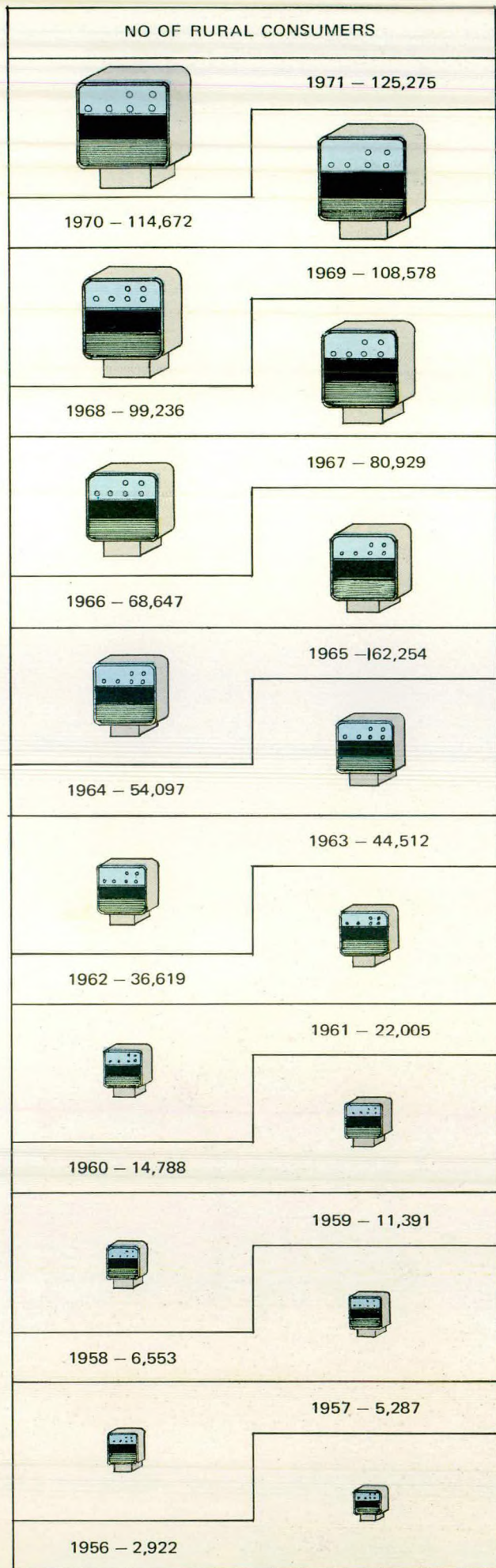
Rural electrification projects under the Second Malaysia Plan 1971–1975 were started during the year. A total of 140 projects are being implemented for the calendar year at a total cost of approximately \$5.3 million. Towards this cost the Federal Government contributed \$2.8 million, while several State Governments contributed a total of \$0.9 million, with N.E.B. contributing \$1.5 million and K.E.D. about \$0.1 million. An estimated total of 9,000 consumers would be given supply under these projects.

During the period under review 3 new rural stations were commissioned and 5 were closed down when bulk supply was extended to these stations. As at 31st August, 1971, the Board operated 71 rural stations with a total capacity of 2196.5 kW



A 33/.433 kV 50 kVA Pole Mounted
Substation supplying a Rural Village in Kuantan, Pahang.

PROGRESS ON RURAL ELECTRIFICATION 1956-1971



general administration

Staff and Staff Relations

The total number of personnel employed by the Board as at 31st August, 1971 was 9517, consisting of the following:

Senior officers – Division I	=	316
Technical – Division II to IV	=	1,838
Non Technical – Division II to IV	=	2,001
Industrial and Manual Group	=	5,362

As a result of claims for revision of salary and service conditions, the Government has directed that a Commission be set up to be known as the Salary Commission for Statutory and Public Bodies to consider and recommend principles to be adopted in determining salary scales and conditions of service.

Welfare

Whenever possible, the Board seeks the assistance of private practitioners to provide medical treatment for its staff. The number of doctors appointed by the Board at present is 41.

Two new holiday bungalows on existing land have been constructed at Port Dickson for Junior Officers. With the provision of a second bungalow in Penang the Board now have altogether nine holiday bungalows. During the year under review the number of Kilat Clubs has increased from 27 to 30.

The 15th N.E.B. Annual Federation Sports was held on 9th and 10th July, 1971 and performances showed considerable improvement. The Board's sporting teams participated in various competitions of the Malaysian Government Services Welfare and Recreational Council winning trophies in Golf, Cricket, Hockey, Athletics, Badminton and Relay. Best Kept Quarters Awards were presented to 24 officers, 6 from each Area, at the Annual Federation Sports.

On 31st August, 1971 there were 2,737 employees on the Pensionable Establishment and 2,867 employees were members of the Widows' and Orphans' Provident Fund. The membership of the Kilat Death Levy Fund had increased from 3,495 members to 4,066 members by August, 1971.

The Board's Assisted Home Ownership Scheme first granted assistance for the purchase of houses to its staff in 1958, and since then loans amounting to a total of \$14,657,622 have been given to 342 employees.

The membership of the National Electricity Board Co-operative Thrift and Loan Society increased from 3,327 to 3,448 and the total subscriptions at the close of the financial year stood at \$4,052,819.

New holiday bungalow
for Junior Officers
at Port Dickson,
Negeri Sembilan.





D.Y.M.M. Sultan of Johor confers the Pingat Ibrahim Sultan Pangkat Yang Kedua (P.I.S. II) medal to the Senior District Manager, Johor Bahru, Encik Ismail bin Ahmad on the occasion of the Royal Highness's 76th Birthday.

During the year, Honours were bestowed on members of the Board's staff as follows:—

- (a) Encik Ismail bin Ahmad, Senior District Manager, Johore Bahru was awarded the Pingat Sultan Ibrahim Pangkat Yang Kedua (P.I.S. II) by His Royal Highness the Sultan of Johore on the occasion of his Royal Highness's birthday on 28th October, 1970.
- (b) Encik Abdullah bin Salam, Staff No. 6743, Meter Reader, Kuantan was awarded the Pingat Jasa Kebaktian (P.J.K.) by His Royal Highness the Sultan of Pahang on the occasion of His Royal Highness's birthday on 29th May, 1971.
- (c) Encik T. S. Arumugam, Staff No. 10189, Labourer, Muar was awarded the Pingat Pangkuan Negara (P.P.N.) by D.Y.M.M. Seri Paduka Baginda Yang Di Pertua Agong in 1970.
- (d) Encik Mahadi bin Yusoff, Staff No. 12749, (Store) Kota Bharu was awarded the Gelaran P.B. (Pingat Bakti) by His Royal Highness the Sultan of Kelantan on the occasion of His Royal Highness's birthday on 10th July, 1971.
- (e) Encik P. Gunalan, Staff No. 7873, Pupil Engineer, Connaught Bridge Power Station was awarded the Pingat Jasa Kebaktian (P.J.K.) by His Royal Highness the Yang Di Pertuan Besar, Negeri Sembilan on the occasion of His Royal Highness's birthday on 19th July, 1971.
- (f) Encik Rajinder Singh, Staff No. 406, Area Manager, Southern Area, Malacca was awarded the Pingat Bakti Masyarakat (P.B.M.) by the Governor of Malacca on the occasion of His Excellency's birthday on 9th August, 1971.

Staff Training

The Board spent about \$3 million on education and training during the year under review.

Summary of the programmed training is given below:—

Category of Personnel	At beginning of year	Intake During Year	Passed out	Resigned/ Withdrawn	At end of year
Engineering students:					
Overseas	120	43	4	4	155
Malaya	6	—	1	—	5
Technical College students	40	18	8	1	49
Pupil Engineers	36	7	22	—	21
Administrative cadets	—	—	—	—	—
Pupil Chemist	2	—	2	—	—
Pupil Accountant	—	2	—	—	2
Shift Engineer Trainees	11	—	—	1	10
Technical Cadets	18	9	2	4	21
Technician Cadets	2	—	—	—	2
Control Room Operator Trainees	4	—	2	—	2
Central Apprenticeship	226	66	22	7	263
Board Apprentices					
Other Miscellaneous					— About 200 on training throughout the year.

As part of its development programme the Board had also sponsored its serving officers to attend short training courses and seminars, locally and overseas, as summarized below:—

<u>Training</u>	<u>Category of Personnel</u>	<u>Number given training</u>
<u>Within the Board:</u>		
Supervisory Management Training	Supervisory Staff	40
Clerical Courses	Clerical Staff	32
<u>At Local Institutions:</u>		
Malayan Institute of Management — seminars	Senior Officers	64
National Productivity Centre	Union Executives	3
Fire Fighting Courses	All grades	13
Outward Bound School	Trainees	15
<u>Overseas:</u>		
Seminars, Symposium and Study Tours	Senior Officers	27
— do —	Junior Officers	1
Colombo Plan Award (Post Graduate Course)	Senior Officers	2
Industrial training facilities extended to students from Universities and colleges as well as to personnel from Government and other bodies:—		
<u>Nature of Training</u>	<u>Category of Personnel</u>	<u>Number</u>
Industrial Training	Engineers and Technicians	18
Vacation Training	Students	18
Industrial Training	Undergraduates	25
Post Graduate Training	Engineering Graduates	3

Long Service and Meritorious Service Awards

A total of 252 members of the staff received long service and meritorious service awards. 4 members of the public and 2 Board staff were awarded gold medallions for life-saving acts.

Library

The Library continued to be well patronised throughout the year. Over 400 volumes were added to the Library during the year making a total of 2,601 volumes catalogued by the end of the year. A total of 59 journals and periodicals were subscribed in the year. There were 1,361 members using the Library during the year.

Public Relations

The Board organised press conferences for the General Manager and other senior officers to publicise the Board's developments and activities and these were given wide coverage both in the local newspapers, radio and television, and also through local and foreign publications.

Three pamphlets were published and these were distributed to various organisations. Pamphlet No. 9 were on "The Planning and Construction Department" and "The Highlights of Power Development in West Malaysia", pamphlet No. 10 dealt with "Transmission System Planning" and "What You Should Know About Short Circuits", while pamphlet No. 11 dealt with the Official Opening of the new office at Kuantan, Pahang.

Bahasa Malaysia

The use of Bahasa Malaysia as the media of correspondence between the various departments is still being encouraged. Reports have shown that the percentage of letters written in Bahasa Malaysia has improved considerably. Classes are also held to help the staff to pass their Bahasa Malaysia Examinations.

Staff Magazine

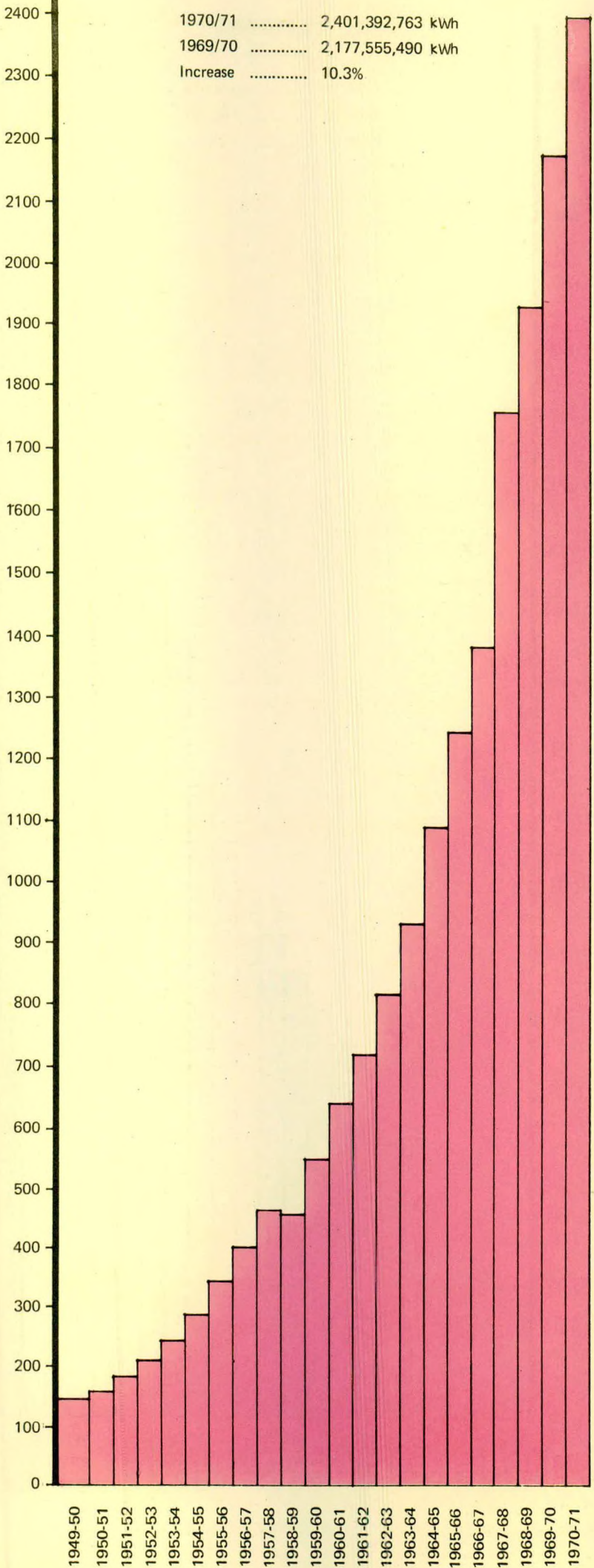
The staff magazine "Tenaga" continues to maintain its high standard and nearly 90% of the reports and articles are written in Bahasa Malaysia. The magazine has also started the "New Spelling System" produced by the Dewan Bahasa dan Pustaka as the official spelling system from March 1971.

Land Requirements

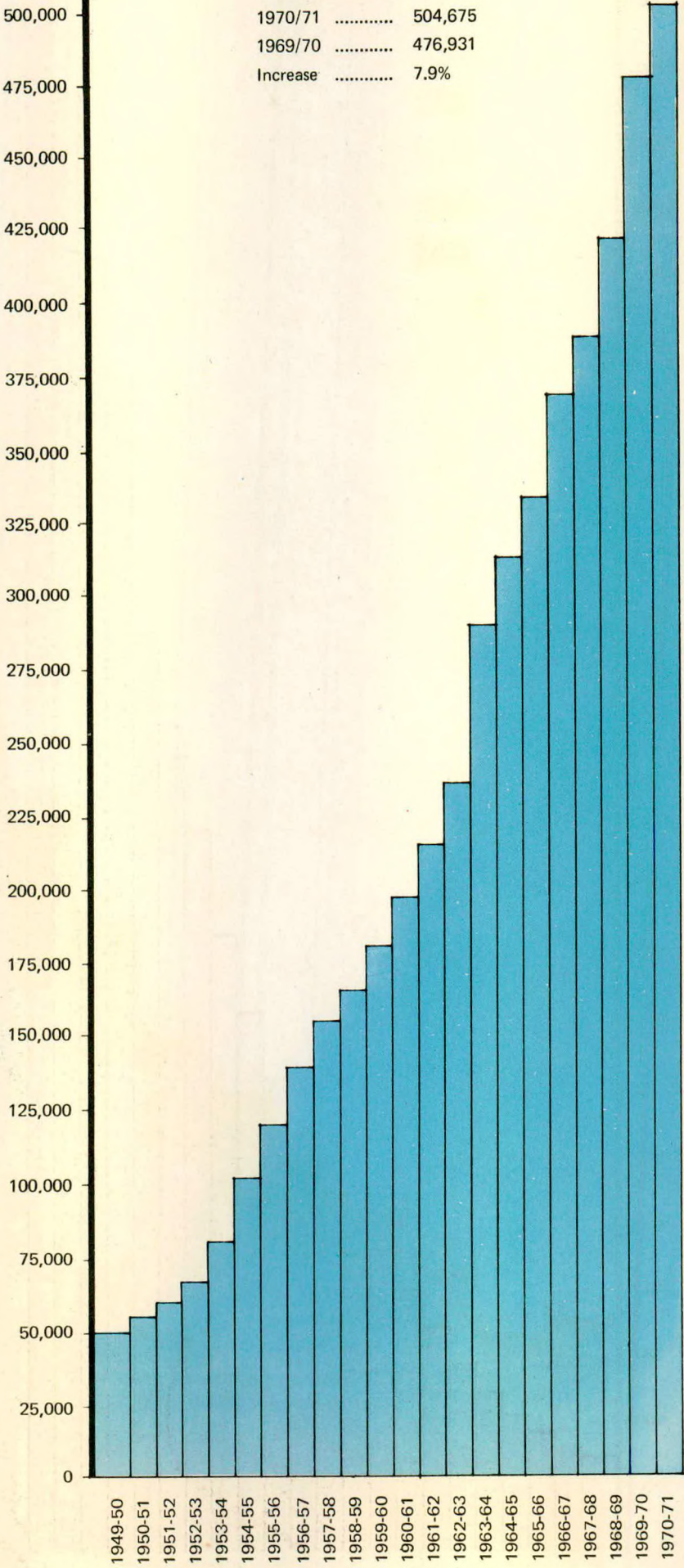
During the year, notices as required by the provisions of the Electricity Ordinance 1949 were served on landowners for the procurement of land as reserves for the proposed transmission lines traversing over 40 miles in Kedah and Perak.

Enquiries by the Collectors of Land Revenue were heard in the States of Kedah and Perak to dispose off objections from landowners to the Board's proposed entry into their land for the purpose of constructing the 275 kV and 132 kV transmission lines from Woh to Papan and Alor Star to Kepala Batas. 171 sites were purchased, leased or acquired for the purposes of building offices, quarters and sub-stations.

UNITS SOLD PER ANNUM IN MILLIONS

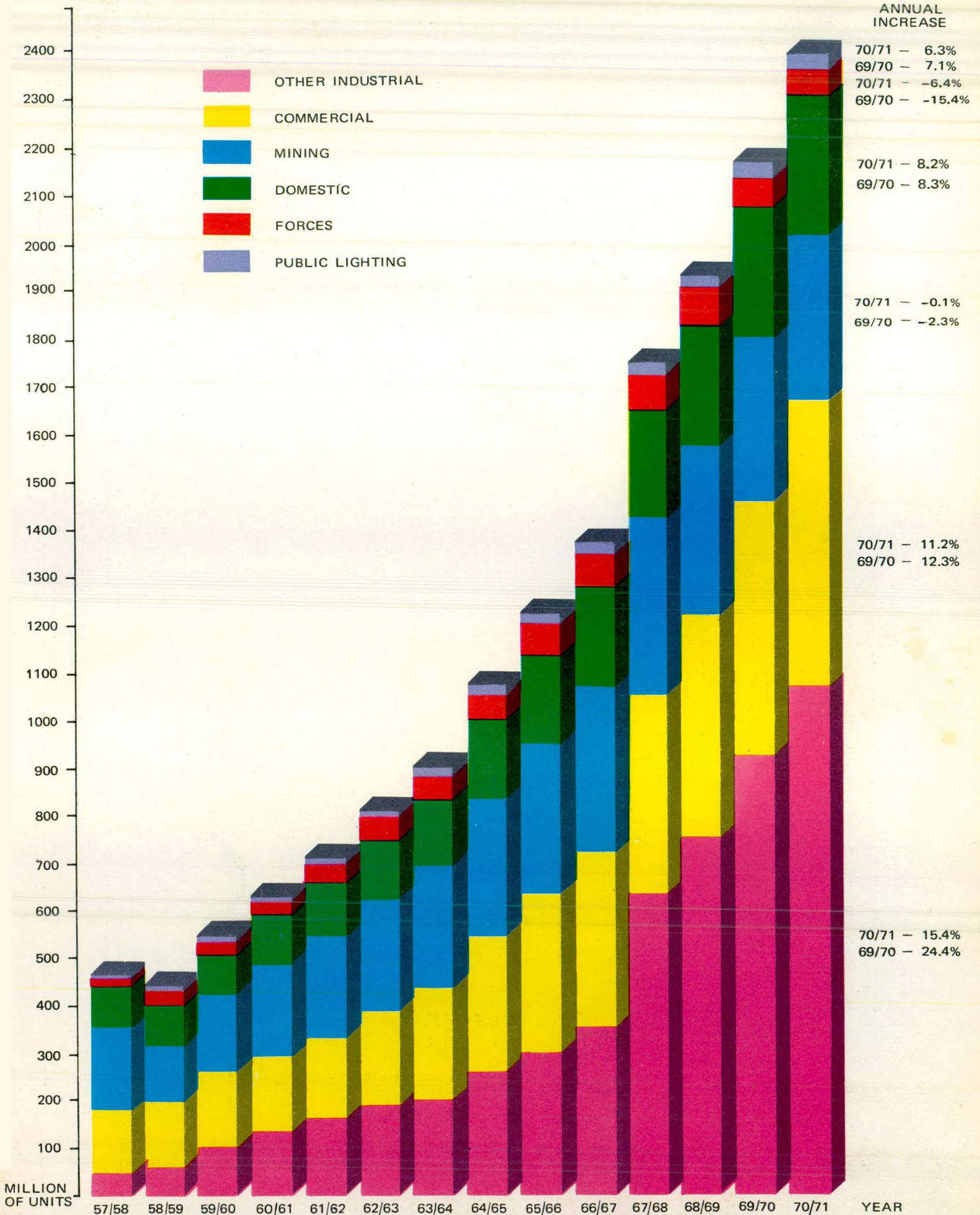


NUMBER OF CONSUMERS

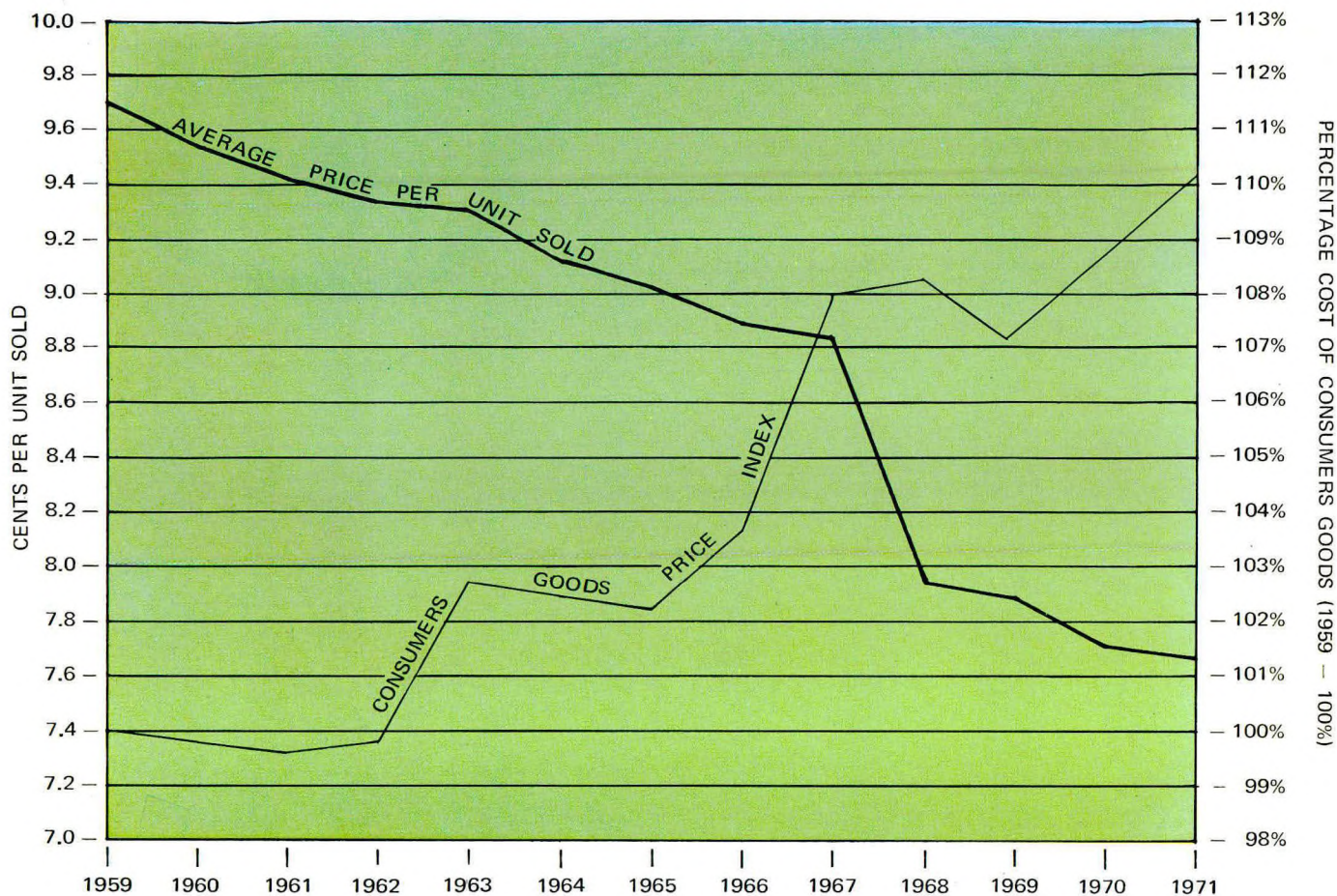


1970/71 504,675
1969/70 476,931
Increase 7.9%

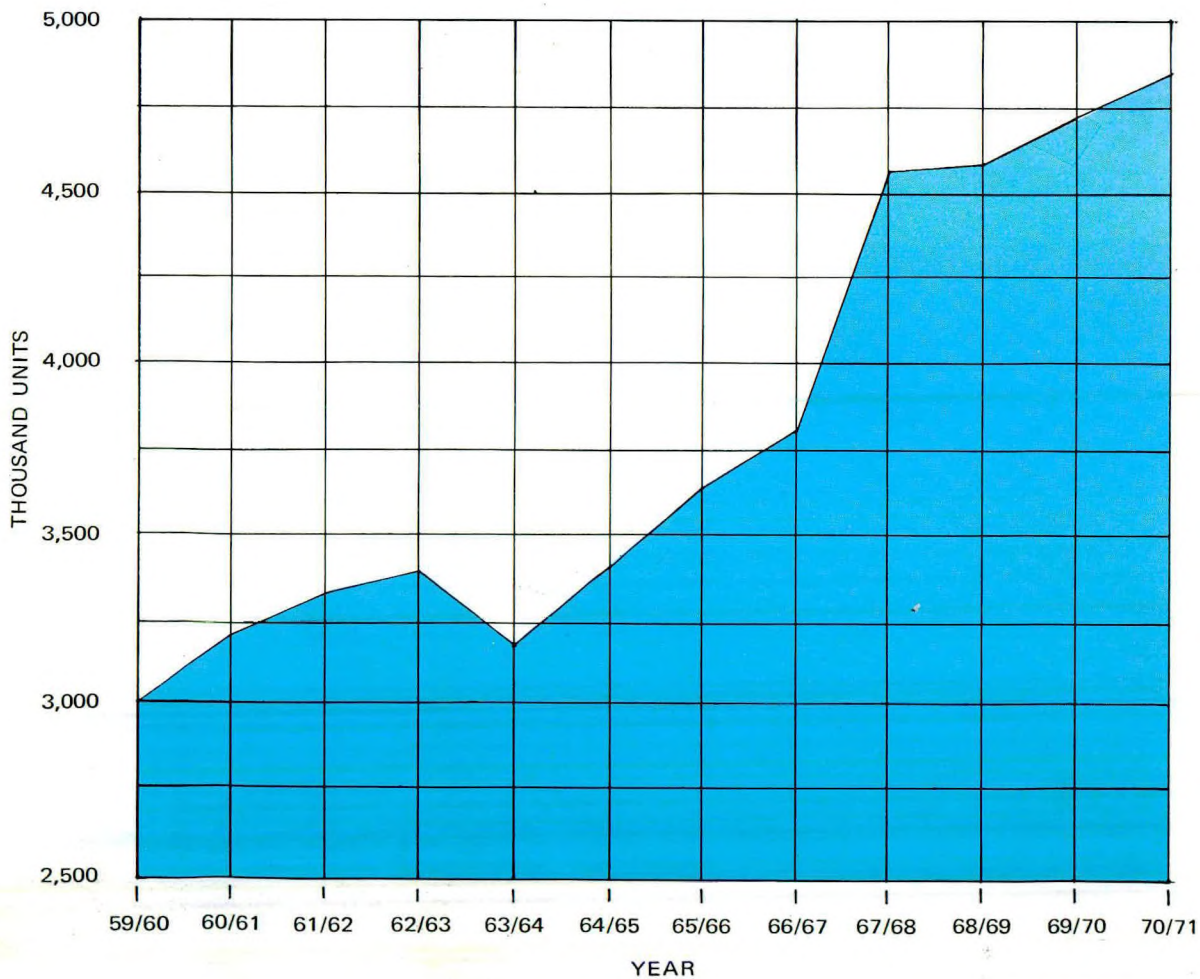
TOTAL UNITS SOLD DIVIDED INTO CONSUMER GROUPS



AVERAGE PRICE PER UNIT SOLD IN COMPARISON WITH CONSUMERS GOODS PRICE INDEX



UNITS SOLD PER CONSUMER



finance

Financial Results

Income from sales of electricity for the year increased by 9.7% to \$184,866,750 (\$168,562,855) and other income by 40.1% to \$10,383,702 (\$7,413,394). Total income for the year was thus \$195,250,452 (\$175,976,249) a 11.0% increase. Operating expenses including depreciation increased by 6.2% to \$114,852,518 (\$108,187,079) leaving an operating surplus of \$80,397,934 (\$67,789,170). Deducting interest payable \$32,884,804 (\$34,249,336) from the operating surplus, and setting aside a provision of \$3,000,000 for taxation the balance was \$44,513,130 (\$33,539,834) which was transferred to reserves and retained solely to finance Board's capital programme.

Interest on Ordinary Stock

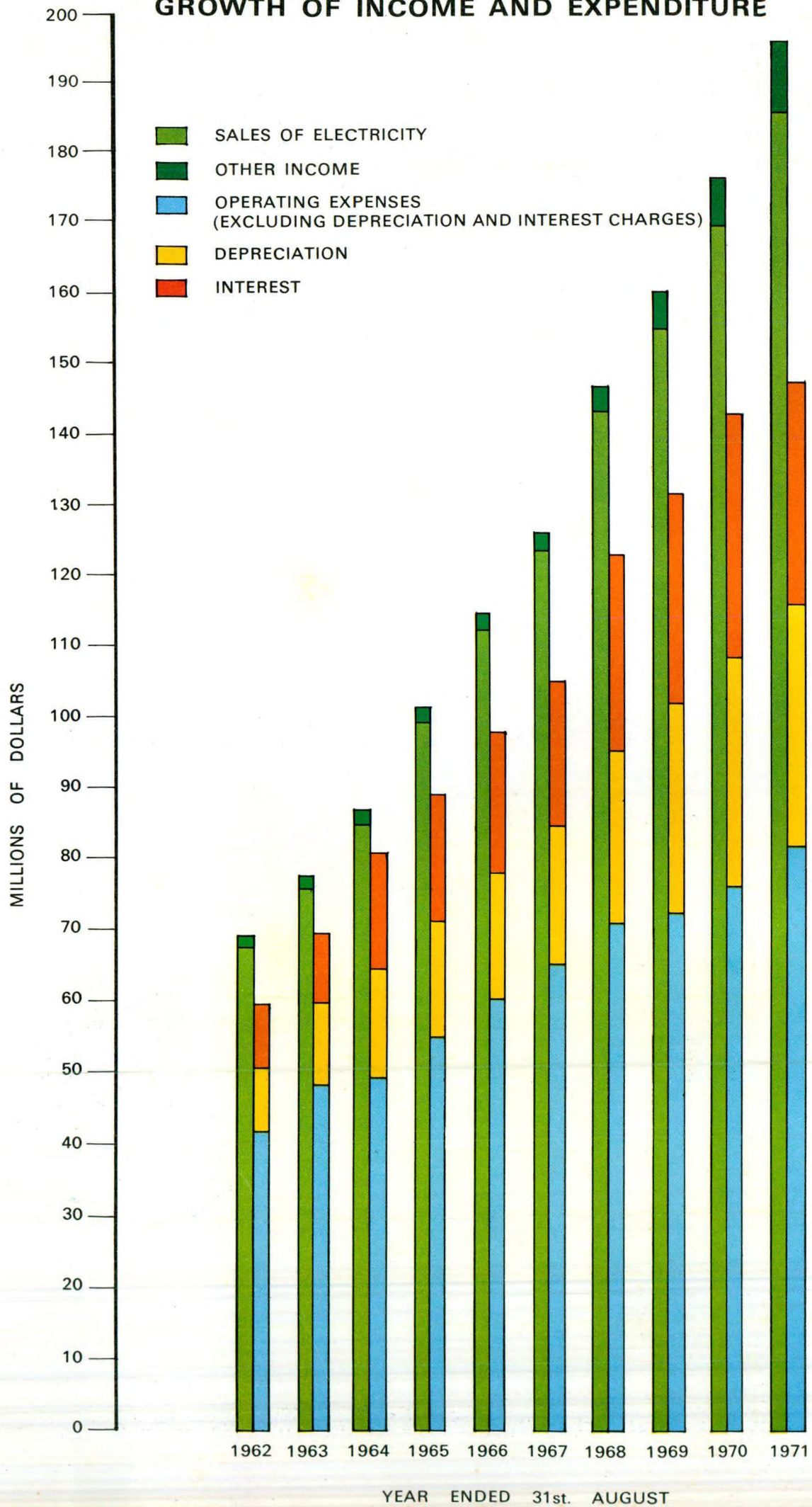
The Board declared an interest rate of 5 per cent per annum for the year on its ordinary stock of \$167,719,000 (\$167,719,000) and the amount of interest declared totalled \$8,385,950 (\$8,385,950).

Capital Expenditure

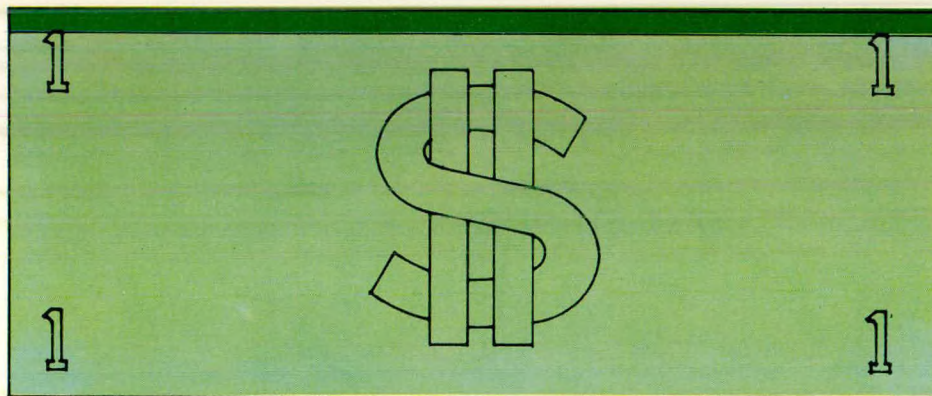
Capital expenditure for the year amounted to \$63,053,258 (\$46,992,628). The capital expenditure brought the total investment of the Board in fixed assets (property and plant) including work in progress to \$1,063,640,021 (\$1,004,375,159). Financing of the 1971 capital expenditure was done in part with funds generated internally and in part from external borrowings from the World Bank (IBRD) and the Government of Malaysia.

(Figures shown in brackets refer to corresponding items for the previous year)

GROWTH OF INCOME AND EXPENDITURE



INCOME 1970 - 1971



5.3 ¢ OTHER INCOME

94.7 ¢ SALES OF ELECTRICITY

+

EXPENDITURE 1970 - 1971

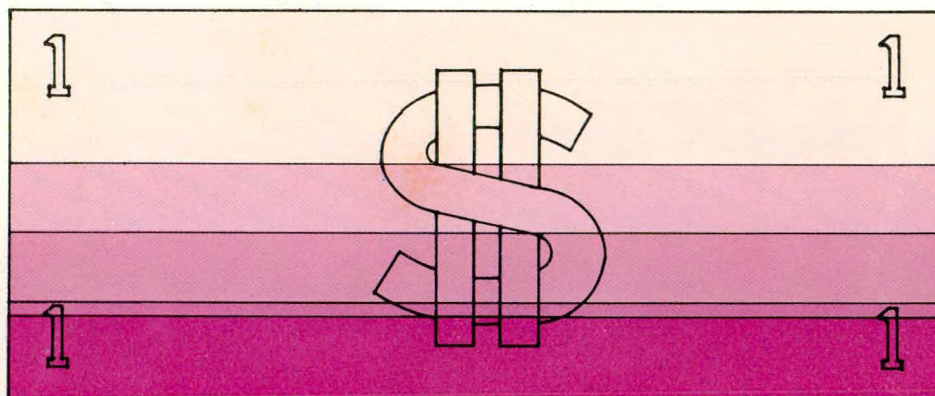
41.6 ¢ OPERATING EXPENSES

17.2 ¢ DEPRECIATION

16.8 ¢ INTEREST

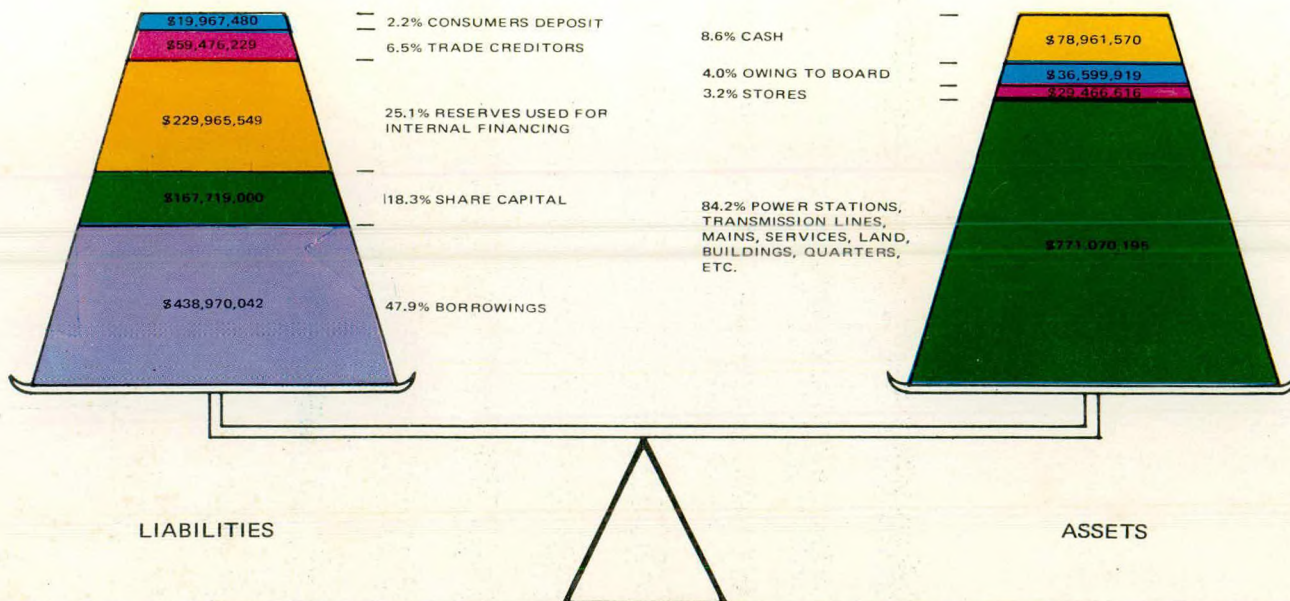
1.6 ¢ INCOME TAX

22.8 ¢ INTERNAL FINANCING



DIRECT TAXES OTHER THAN INCOME TAX PAID BY THE BOARD IN 1970-71 (including fuel oil tax, diesel oil tax, payroll tax, surtax and custom duties) AMOUNTED TO \$11,497,000 OR 14.2% OF OPERATING EXPENSES LESS DEPRECIATION.

+



HOW THE BOARD STOOD FINANCIALLY ON 31-8-1971.

+

REVENUE ACCOUNT FOR THE YEAR ENDED 31ST AUGUST 1971

with comparative figures for the year ended 31st August 1970

1970			1971		
Cents per unit sold	\$		\$	\$	Cents per unit sold
7.74	168,562,855	Income from sales of electricity	184,866,750		7.70
0.34	7,413,394	Other income	10,383,702		0.43
8.08	175,976,249			195,250,452	8.13
		Less: Operating expenses			
2.41	50,292,892	Generation	53,731,805		2.33
4.15	3,567,455	Electricity purchased in bulk	3,878,750		4.21
2.47	53,860,347		57,610,555		2.40
0.35	7,636,620	Transmission	7,874,000		0.33
1.08	23,571,786	Distribution	25,282,313		1.05
0.13	2,799,374	Consumers' service	2,964,439		0.12
0.26	5,560,572	Meter reading, billing and collection of accounts	5,943,299		0.25
0.17	3,595,887	Training and welfare	3,671,436		0.15
0.16	3,506,718	Administration	3,658,328		0.15
0.35	7,655,775	General expenses	7,848,148		0.33
4.97	108,187,079			114,852,518	4.78
3.11	67,789,170			80,397,934	3.35
		Less: Interest payable on			
0.38	8,385,950	Ordinary stock	8,385,950		0.35
1.19	25,863,386	Borrowings	24,498,854		1.02
1.57	34,249,336			32,884,804	1.37
1.54	33,539,834	Net revenue before tax	47,513,130		1.98
—	—	Less: Provision for taxation	3,000,000		0.13
1.54	33,539,834	Balance of net revenue used to finance capital requirements	44,513,130		1.85
		Transferred to			
1.47	32,039,834	Capital development account	42,913,130		1.79
0.07	1,500,000	General reserve	1,600,000		0.06
1.54	33,539,834		44,513,130		1.85

The Notes on the Accounts form an integral part of these accounts

BALANCE SHEET AS AT 31ST AUGUST 1971

25742

with comparative figures as at 31st August 1970

1970 \$	NET ASSETS	1971 \$	\$
	Fixed Assets		
1,004,375,159	Property, plant and equipment at cost	1,063,640,021	
<u>224,266,343</u>	Less: Provision for depreciation	<u>255,192,852</u>	
780,108,816		808,447,169	
35,338,326	Less: Balance of consumers' contributions account	<u>37,376,974</u>	
<u>744,770,490</u>			771,070,195
	Current Assets		
3,553,665	Fuel at cost	3,131,000	
22,482,303	Stores at cost	26,335,616	
1,172,036	Rechargeable work in progress at cost	1,513,678	
17,569,305	Debtors	22,197,994	
9,297,957	Staff advances	11,844,114	
401,087	Payments in advance	1,044,133	
54,326,623	Cash at banks	78,904,745	
<u>51,695</u>	Cash in hand	<u>56,825</u>	
108,854,671			<u>145,028,105</u>
853,625,161			916,098,300
	Less: Current Liabilities		
	Creditors, accrued liabilities and short-term retentions on capital contracts	59,476,229	
44,720,714	Consumers' deposits	<u>19,967,480</u>	
<u>18,201,424</u>			<u>79,443,709</u>
62,922,138			
<u>790,703,023</u>			<u>836,654,591</u>
	FINANCED AS FOLLOWS		
167,719,000	Ordinary stock	167,719,000	
	Reserves used in the Board's business		
168,652,419	Capital development account	211,565,549	
16,800,000	General reserve	18,400,000	
<u>437,531,604</u>	Borrowings	<u>438,970,042</u>	
790,703,023			836,654,591

The Notes on the Accounts form an integral part of these accounts

TAN SRI ABDUL AZIZ BIN ZAIN
ChairmanRAJA TAN SRI ZAINAL BIN RAJA SULAIMAN
General ManagerCHAN KAI FOO
Financial Controller

NOTES ON THE ACCOUNTS

31st August 1971

These notes supplement the figures in the Revenue Account and Balance Sheet and form an integral part thereof. The Report of the Auditors appears on page 40.

Note 1 – CONVERSION OF OTHER CURRENCIES INTO MALAYSIAN DOLLARS

Borrowings in foreign currencies have been converted into Malaysian dollars at rates of exchange ruling at the dates of the loan agreements. Other liabilities in foreign currencies have been converted at rates approximating those ruling at 31st August 1971.

At 31st August 1971 there was a contingent liability of approximately \$8,070,546 representing the excess of the Board's liability for repayment of loans in foreign currencies calculated at rates of exchange ruling at 31st August 1971, over the Malaysian dollar equivalent of the loans included in the Board's accounts.

Note 2 – ORDINARY STOCK

Of the amount of \$167,719,000 of issued ordinary stock, \$164,719,000 is held by the Government of Malaysia and \$3,000,000 by the State Government of Pahang.

Note 3 – RESERVES

The Board has only two reserves, namely a capital reserve, i.e. the Capital Development Account, and a revenue reserve, i.e. the General Reserve. The Board's policy is to make such annual contribution to General Reserve as will maintain the General Reserve at an amount approximately equal to 10 per cent of annual income from sales. The balance of revenue available after the contribution has been made to General Reserve is then placed to Capital Development Account thus reinvested to finance a substantial part of the Board's capital expenditure.

Note 4 – BORROWINGS \$438,970,042

Borrowings at 31st August 1971 comprised the following loans:

			<u>Repayment Period</u>
Government of Malaysia	– 5 per cent	\$ 37,721,728	1955–2019
	– 5¾ "	9,035,648	1965–1980
	– 6 "	35,463,823	1964–1988
	– 6½ "	3,273,351	1976–1995
Commonwealth Development Corporation	– 6¼ "	44,475,075	1961–1985
Commonwealth Development Finance Company Limited	– 6¼ "	3,447,179	1970–1979
Employees Provident Fund Board	– 6 "	9,622,261	1971–1982
International Bank for Reconstruction and Development			
Loan 210 MA	– 5¾ "	63,661,215	1964–1983
Loan 350 MA	– 5½ "	140,384,672	1968–1988
Loan 458 MA	– 6 "	77,483,505	1970–1986
Loan 579 MA	– 6½ "	13,590,766	1973–1988
Loan 700 MA	– 7 "	810,819	1975–1990
		\$438,970,042	

Repayment of the loans from the Commonwealth Development Corporation, Commonwealth Development Finance Company Limited, Employees Provident Fund Board and International Bank for Reconstruction and Development is guaranteed by the Government of Malaysia.

Note 5 – LAND

Included in the fixed assets is the sum of \$22,016,957 for land. This amount is made up as follows:

Freehold land	\$13,452,235
Leasehold land	\$ 8,564,722

Included in the cost of freehold land is the sum of \$1,017,800 in respect of land taken over from Government under Section 29 of the Electricity Ordinance for which it has still not been possible to obtain satisfactory titles.

Note 6 – INCOME FROM SALES OF ELECTRICITY

As in previous years the amount credited to revenue account represents charges for electricity calculated on the meter readings taken during the year to 31st August and revenue from unread consumption of electricity to 31st August 1971 has not therefore been included in the accounts.

AUDITORS' REPORT

ACCOUNTS FOR THE YEAR ENDED 31ST AUGUST 1971

REPORT OF THE AUDITORS APPOINTED UNDER SECTION 25(2)
OF THE ELECTRICITY ORDINANCE 1949 TO AUDIT THE ACCOUNTS
OF THE NATIONAL ELECTRICITY BOARD OF THE STATES OF MALAYA

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Board so far as appears from our examination of those books and proper returns adequate for the purposes of our audit have been received from district offices which were not visited by us.

We have examined the foregoing Revenue Account and Balance Sheet which are in agreement with the books of account and returns. In our opinion and to the best of our information and according to the explanations given to us, the Balance Sheet, together with the Notes annexed thereto, gives a true and fair view of the state of the affairs of the Board as at 31st August 1971 and the Revenue Account gives a true and fair view of the results of its operations for the year ended on that date.

Kuala Lumpur
31st March 1972

PRICE WATERHOUSE & CO.,
Chartered Accountants,
Certified Public Accountants (Malaysia).

administration of electricity ordinance

During the year under review the Electrical Inspectorate functioned satisfactorily.

Private and Public Licensed Installations

The total number of Public Licences in operation as at 31st August, 1971 was 132. During the year one Public Licence was issued and seven Public Licences were cancelled making a nett decrease of six over the previous year. The Public Licences cancelled are as follows:—

- (1) Senai, Johore — The Board extended supply on 1.12.1970. Licence cancelled.
- (2) Merbau Pulas, Kedah — The Board extended the supply on 1.4.1971. Licence cancelled.
- (3) Lubok Buntar, Kedah — The Board extended the supply on 9.4.1971. Licence cancelled.
- (4) Kulai, Johor — The Board extended the supply on 1.3.1971. Licence cancelled.
- (5) Sungai Lallang, Kedah — The Board extended the supply on 1.10.1970. Licence cancelled.
- (6) Labu Estate, Negeri Sembilan (Restricted Public Licence) — The N.E.B. is supplying electricity to the consumers of this Licensee. Licence has therefore been cancelled.
- (7) Tronoh Mines, Perak — The Company's dredging operation stopped and the supply lines over State Land dismantled. Licence cancelled.

Four new Private Licences were issued and two Private Licences were cancelled bringing the total number of Private Licensed installations to 123.

Registered Installations

There was a moderate increase in the number of Private Registered Installations during the year. Forty-seven new installations were registered and 24 installations had their registration cancelled making a nett increase of 23. The total number of registered installations operating as at 31st August, 1971 was 811.

Electrical Accidents and Electrical Fires

There were 89 electrical accidents involving 104 persons including 23 deaths. One animal was also killed. The main cause of the electrical accidents were again traced to carelessness, ignorance, faulty apparatus and unauthorised extensions. Sixty-eight fires were reported of which 15 were caused by electrical faults.

Infringement of Electricity

Five court cases under the Electricity Ordinance were instituted during the year. Two cases resulted in conviction. The remaining cases together with 6 brought forward from the previous year will be carried out for further action in the coming year.

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Examinations for Chargemen, Wiremen and Electrical Engineers were conducted at intervals throughout the year. Results of the examinations held were as follows:-

<u>Examinations</u>	<u>Certificates Issued Without Examination</u>	<u>Total No. of Applications Approved</u>	<u>Passed</u>	<u>Failed</u>	<u>Absent</u>
Electrical Engineer Grade I	—	9	2	5	2
Electrical Engineer Grade II	—	22	5	10	7
Chargeman	—	164	72	87	5
Chargeman (Removal of Restriction)	—	87	38	44	5
Wireman	—	241	81	124	36
Wireman (Removal of Restriction)	—	114	41	53	20
Total	—	637	239	323	75

ELECTRICAL ACCIDENTS

