ELECTRICITY SUPPLY BOARD · IRELAND

39th ANNUAL REPORT

for the year ended 31st March 1966 including report on Fisheries



Board Members

T. MURRAY, B.A., *Chairman*

HENRY KENNEDY, M.A., D.Sc.

C. GORDON LAMBERT, B.A., B.Comm., A.C.A.

T. MacMAHON, B.E., B.Sc.

B. Ó CEARBHAILL, B.A., LL.B.

J. A. RYAN

J. C. TONGE, F.C.W.A.

Secretary

J. G. GARGAN, B.L., F.A.C.C.A.

Chief Engineer

A. HARKIN, M.E., M.I.E.E., M.I.Mech.E.

Chief Accountant

L. J. BARRY, F.A.C.C.A.

ELECTRICITY SUPPLY BOARD · Lower Fitzwilliam Street · Dublin 2 · IRELAND

Pr. 8763

GWEEDORE
CLADY
Letterkenny
CATHALEEN'S FALL
CLIFF
Sligo
BELLACORICK
ARIGNA
Shankill
Dundalk
Carrick-on-Shannon
Castlebar
Drybridge
LANESBOROUGH
Athlone
Maynooth
Finglas
NORTH WALL
LEIXLIP
RHODE
Francis St.
PIGEON HO.
PIGEON HO. B.
SCREEB
SHANNON BRIDGE
Inchicore
ALLENWOOD
FERBANE
RINGSEND
Galway
Derryfrench
PORTARLINGTON
Carrick mines
Milltown
GOLDEN FALLS
Portlaoise
POLLAPHUCA
Carlow
Ennis
MILTOWN-MALBAY
Arklow
Shelton Abbey
ARDNACRUSHA
Thurles
Kilkenny
Dooradoyle
TARBERT
Cahir
Wexford
Waterford
GREAT ISLAND
Tralee
Mallow
Dungarvan
Knockraha
CAHIRCIVEEN
Kilbarry
CARRIGADROHID
INNISCARRA
MARINA
Douglas
Haulbowline
Whitegate
Raffeen
Dunmanway

General Outline of the

GENERATION and TRANSMISSION SYSTEMS

31st March, 1966

HYDRO STATIONS
STEAM STATIONS
STEAM STATIONS PROJECTED
220 KV TRANSFORMER STATION
220 KV TRANSFORMER STATIONS PROJECTED
110 KV TRANSFORMER STATIONS
110 KV TRANSFORMER STATIONS PROJECTED
220 KV LINES
110 KV LINES
110 KV LINES PROJECTED
OTHER HIGH VOLTAGE LINES

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COVER — The lights of Dublin: A view from Busaras

TO THE MINISTER FOR TRANSPORT AND POWER

REPORT of the ELECTRICITY SUPPLY BOARD
LOWER FITZWILLIAM STREET
DUBLIN 2

The Board presents the Annual Report and Accounts for the year ended 31st March, 1966, in accordance with Section 7 (4) and Section 32 (1) of the Electricity (Supply) Act, 1927.

During the year the demand for electricity continued to show a substantial rate of increase amongst all categories of consumers. The total output for the year was 3,546 million units which was 306 million units over the previous year, a rise of 9·45%.

Fuel costs represent a high proportion of total annual expenditure but the amount actually spent under this heading in any particular year depends to a great extent on weather conditions. Had average climatic conditions prevailed, the accounts for the year would have shown a deficit of the order of £800,000 instead of the surplus of £240,000 which actually emerged. The heavy rainfall which occurred resulted in greatly increased output from the hydro-electric stations and this, taken in conjunction with increased production from oil stations, enabled the Board to avoid the estimated deficit and finish the year with a small surplus.

There has been no increase in electricity charges for almost six years, despite the heavy increases in the meantime in the material and labour costs. This fortunate position can be attributed to the economies arising from the commissioning of larger and more efficient generating units, the consistent maintenance of a high standard of operational efficiency and the introduction of new techniques and methods to help offset increasing costs. A stage has now been reached, however, where mounting costs can no longer be counterbalanced by economies and an increase in charges during 1966-67 is inevitable if the Board is to fulfil the statutory obligation imposed on it to balance its accounts and if it is to maintain the sound

financial reputation which has characterised its operations up to the present. An application for an increase of approximately 7% in electricity charges has accordingly been submitted in compliance with the provisions of the Prices Acts, 1958 and 1965.

The increases in the consumption of electricity reflect a more extensive utilisation of electrical appliances in both urban and rural homes and indicate a rise in industrial and commercial activity. Sales of electricity to urban domestic consumers increased by 95 million units (11%); to rural domestic consumers by 40 million units (12%); to motive power users by 94 million units (10·7%) and to commercial users by 63 million units (10·5%).

The utilisation of electric storage radiators showed a very satisfactory growth rate. Sales of current to domestic users increased by 13·5 million units (21·4%) and to commercial users by 9 million units (7·4%). There are now almost 22,000 electric night storage central heating installations in operation.

In the field of public lighting, the Board's Advisory Bureau has contributed to substantial improvements. A gradual change over to mercury and sodium type lighting is bringing higher standards of illumination and, consequently of road safety, at little extra cost to the local authorities concerned.

The scheduled installation of a new 60 MW generating unit at the Ringsend station was completed. In the year ahead, a further 60 MW installation at Ringsend and a 40 MW installation at Lanesborough in Co. Longford are expected to be commissioned. These three new units will increase electricity output by 650 million units per year.

At Great Island in Co. Wexford and Tarbert in Co. Kerry, site work on two new generating stations continued and construction schedules are being maintained. At Great Island, site work was almost completed and structural work was well under way. These new stations will provide an extra capacity of 240 MW for the system in the period 1968–70. Preliminary site work for the Pigeon House 'B' station was carried out. This station, which is planned for an ultimate development of 1,000 MW, will add 240 MW to the system by 1972. This 480 MW of new plant will enable the Board to provide a further 2,000 million units per year to its customers by that date.

Electricity supplied to the system during the year was provided as follows:

	million units sent out	percentage
hydro	931	27·6
peat (sod)	325	9·7
peat (milled)	551	16·3
coal (native)	78	2·3
oil/coal	1,487	44·1

Generation from native sources was 55·9% of total output.

The section from Cork to Shannonbridge of the new 220 kV link between Cork and Maynooth was completed and has operated satisfactorily. The section between Shannonbridge and Maynooth was also constructed and is being operated at 110 kV pending completion of the transformer station at Maynooth. It is expected that the complete link will be in commission at 220 kV in 1967.

A number of extensions and replacements of the 110 kV network were also carried out.

In last year's report it was stated that the expenditure of £1,600,000 on the extension and strengthening of the distribution networks in the Dublin Nos. 1 and 2 Districts would be required to maintain a satisfactory supply position. Slightly more than this sum was spent this year on jobs which included the provision of 3 new 38 kV stations and 156 new 10 kV and 5 kV stations. In other Districts expenditure on non-rural distribution networks amounted to £1,400,000 while almost £1,900,000 was spent on similar work in rural areas.

On November 17th, a severe blizzard caused widespread damage to the transmission and distribution networks. Repair crews were deployed to the districts affected to expedite the restoration of normal services; this objective was achieved very rapidly and earned widespread praise for the work of the line crews concerned. The damage caused by the storm was the most severe in the Board's history and the final cost of repairs was approximately £110,000.

The Board's objective to maintain a first-class service to all its customers is still hindered by a shortage of skilled staff. The demand for such staff, in both the private and public sectors of the industry, is unusually high. The Board is making every effort to meet its needs by training a large number of apprentices of whom there were 700 in 1965–6, compared with 280 in 1960. It is hoped

that this problem will be overcome as these apprenticeships are completed.

Because of the heavy demands on capital required to maintain standards of supply and service to existing customers by the provision of new generating stations and the strengthening of the Board's overhead and underground networks, the capital available for rural electrification post-development work has been below the level of previous years.

At the end of the year, the total number of rural areas in which post development work had been completed was 267 and work was in progress in a further 49. During the year, 9,882 new rural customers were connected to the networks. The deficit on the Rural Revenue Account for the year amounted to £1,316,000.

Revenue from sales of electricity totalled £24,077,000 an increase of £1,590,000 over the previous year (7·1 %). Turn-over tax, which so far has not been passed on to the Board's consumers, amounted to £293,000 on these sales.

The summarised revenue and expenditure figures in respect of the year's operations are:

	Year ended 31st March, 1966	Preceding year
	£	£
Gross revenue (including miscellaneous revenue)	24,160,850	22,572,233
Less working expenditure on wages, fuel and other materials, overheads and turn-over tax	13,059,553	12,898,296
Balance	£11,101,297	£9,673,937
From this balance the following charges are met:—		
Interest (net)	4,923,486	4,414,992
Provision for plant renewal	4,183,000	3,829,000
Capital redemption	1,751,658	1,520,482
	£10,858,144	£9,764,474
Leaving residue	£243,153 (surplus)	£90,537 (deficit)

Taking credit for installations profits and allowing for the deficits on merchandise and fisheries, the result for the year as shown in the Net Revenue Account (No. 8) is a surplus of £240,794.

A credit balance of £103,091 has been brought forward from 1964–65 and, after writing off £67,886, the cost of issuing £6 million of 7% E.S.B. Stock 1986–91 in February last, there remains a balance of £275,999 which is carried forward to next year.

INDUSTRIAL RELATIONS

Industrial relations continued to be disturbed in the country as a whole and this unsettled situation was reflected in the electricity supply industry. In May, 1965, a threat of strike by manual workers, who had rejected an award by the Manual Workers' Tribunal led to intervention by the Labour Court. In January, 1966, a threatened strike by draughtsmen, who had rejected an award by the General Employees' Tribunal, was again followed by the intervention of the Labour Court. At the end of the year, industrial relations were still disturbed and since then the strike of mechanical fitters took place. Experience has shown all too clearly that Tribunal or Labour Court awards which cast the Board in the unwilling role of pace-setter do not make for harmonious relationships either within the E.S.B. or in the community generally.

The Board hopes that a better atmosphere and machinery for settling disputes may evolve from the new Department of Labour and from the proposed amendments to the Industrial Relations and Trade Unions Acts. So far as the electricity supply industry is concerned it is the earnest wish of the Board to achieve by agreement a situation in which this most essential service will be freed from the threat of interruption by strike action.

NORTH-SOUTH ELECTRICITY CO-OPERATION COMMITTEE

The Committee appointed by the Minister for Transport and Power and the Minister of Commerce for Northern Ireland to investigate the scope for cross-border co-operation between the electricity supply systems North and South completed its report and submitted it to the Ministers.

STAFF

At 31st March, 1966, the numerical strength of the Board's regular staff was 7,062. In addition, there was a temporary staff of 2,211.

The Board again wishes to record its appreciation of the efficient manner in which the staff performed their duties.

(Signed) *T. Murray*, CHAIRMAN
Henry Kennedy
C. Gordon Lambert
T. MacMahon
Breandán Ó Cearbhaill
J. A. Ryan
J. C. Tonge

(Signed) *J. G. Gargan*, SECRETARY
5th July, 1966.

CAPITAL

The value of the capital assets brought into commission was £8,728,740 of which £1,890,108 related to rural electrification. The total investment in assets in productive use at 31st March, 1966, was:

	£
Generation	62,422,328
Transmission	16,297,205
Distribution (includes rural £36,502,266)	68,236,846
Premises, equipment, transport, etc.	4,373,924
	£151,330,303

In addition, expenditure of £13,304,150 had been incurred on new capital works still under construction at the end of the year. Accordingly the fixed capital investment is over £164,600,000.

BORROWING POWERS

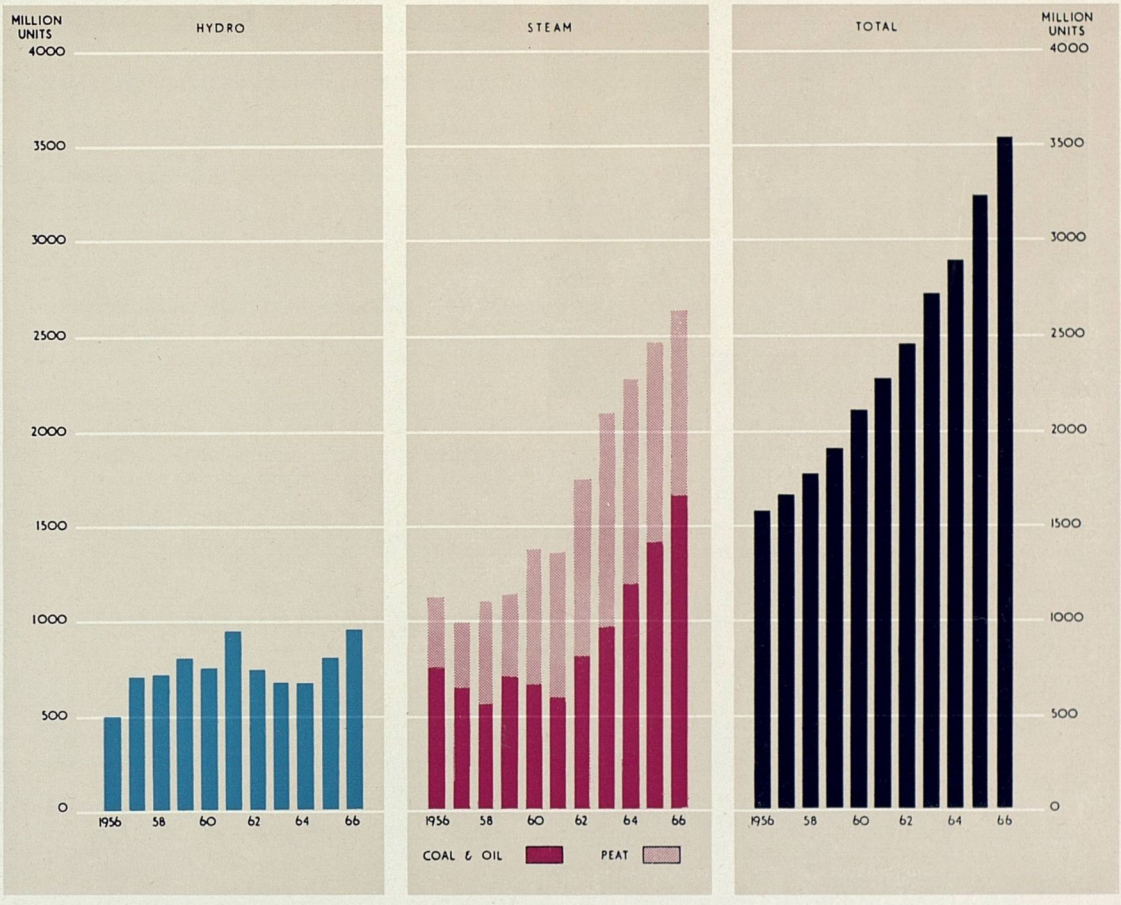
The capital requirements for the year were provided from internal resources, by temporary advances from the Trustees of the Superannuation Funds and from the proceeds of an issue in March, 1965, of £6 million E.S.B. 6% Stock 1984/89. To assist in financing the future capital programme, a further issue of £6 million E.S.B. 7% Stock 1986/91 was made in February, 1966. The Stock was issued at par and was fully subscribed on the day of issue.

The Electricity (Supply) (Amendment) Act, 1965, authorises a capital expenditure not exceeding £225 million for general purposes, excluding rural electrification. At the 31st March, 1966, the Board had approved expenditure totalling £175,124,617 of which £114,828,037 represented electricity assets in commission, the balance £60,296,580 representing either work in progress or work approved.

The legislative limit to expenditure on rural electrification is £42 million inclusive of the subsidy for rural electrification provided by the State. At the 31st March, 1966, the amount approved was £37,919,534 of which £36,502,266 represented assets in commission and £1,417,268 work in progress or approved.

ELECTRICITY PRODUCTION

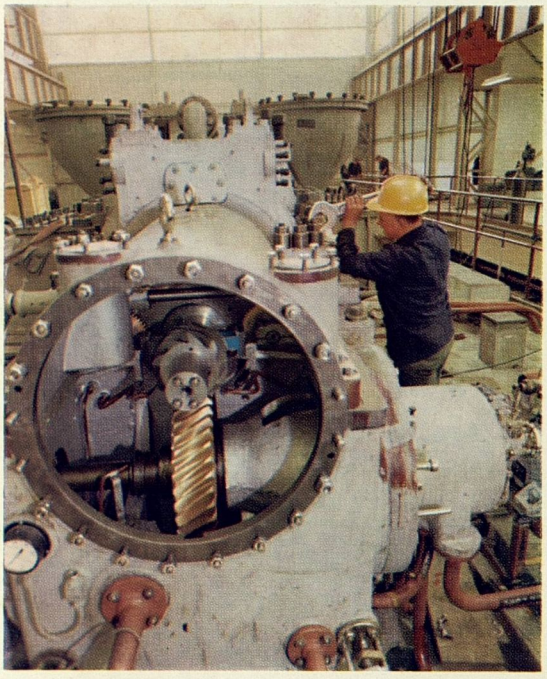
The diagram below illustrates the output of the generating stations each year since 1956.



INCREASE IN UNITS GENERATED

The units generated (and purchased) showed an increase of 306 million (9·4%) over the preceding year. The annual load factor on the basis of units generated was 49·6%, compared with 48·9% last year.

An analysis of the cost of generation appears in the Electricity Production Account (No. 1).



Front end of new turbo generator being installed at Ringsend Generating Station

A further 60 MW oil fired unit at Ringsend was commissioned during the year, bringing the total installed capacity of the Board's generating stations at the 31st March, 1966, to:

	MW
hydro plant	219
steam plant (sod peat)	117·5
steam plant (milled peat)	250
steam plant (oil/coal)	483
	1,069·5

This total includes 90 MW of old stand-by plant at Pigeon House and the four 5 MW stations designed to burn hand-cut peat.

The following additional generating plant, amounting to 580 MW was under construction or planned.

RINGSEND STATION, Dublin City

Oil

Installation of the third 60 MW unit was well advanced. Scheduled completion date, autumn, 1966.

GENERATION

LANESBOROUGH STATION, Co. Longford

Milled Peat

Erection of the 40 MW unit was complete and pre-commissioning tests were in progress. Scheduled commissioning date, May, 1966.

GREAT ISLAND STATION, Co. Wexford

Oil

Work on the erection of the boiler for the first of the two 60 MW units, comprising the first development, had commenced. Turbine erection was due to begin in the autumn.

Scheduled completion dates: 1967/68 for no. 1 unit and 1968/69 for no. 2 unit.

TARBERT STATION, Co. Kerry

Oil

Site development work was virtually complete. Orders for the turbines and boilers for the initial development of two 60 MW units were placed and manufacture had commenced.

Scheduled completion date 1969/70.

PIGEON HOUSE "B" STATION, Dublin City

Oil

Tenders for the turbines and boilers for the two 120 MW units of the first development were received and were being examined.

Scheduled completion dates: 1970/71 for no. 1 unit and 1971/72 for no. 2 unit.



Erection of new turbo alternator set, Ringsend

WATER STORAGE AND RIVER CONTROL

The inflows at the hydro stations varied between 116% and 129% of the long term average flows and were amongst the highest on record. The important hydrometric figures at the hydro stations are given in Appendix 9.

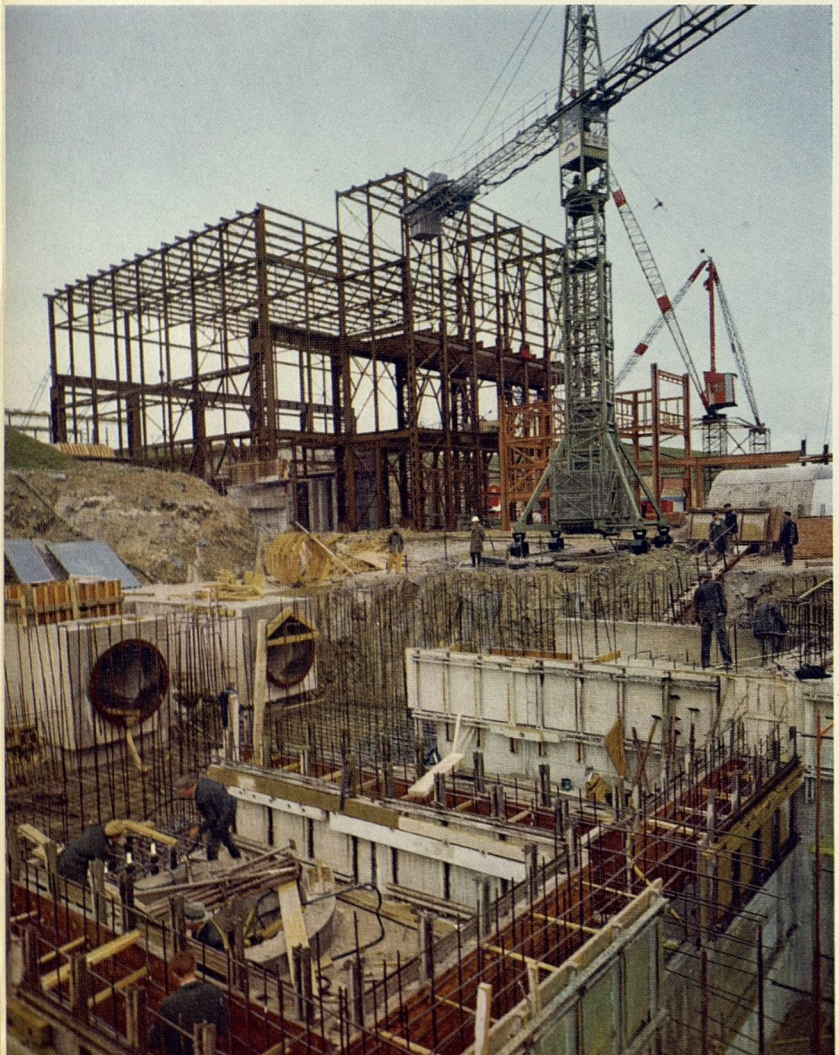
The total average inflows for the calendar year 1965 were:

	m^3/sec.
River Shannon at Killaloe	222·9
River Liffey at Pollaphuca	11·3
River Liffey at Leixlip	19·0
River Erne at Ballyshannon	117·1
River Lee at Inniscarra	27·3
River Clady at Gweedore	4·4

WATER POWER INVESTIGATIONS AND HYDROMETRIC SURVEY

The collection of hydrometric data on the Rivers Shannon, Liffey, Erne, Lee and Clady was continued. Data were also collected with a view to the investigation and possible later development of further water power resources.

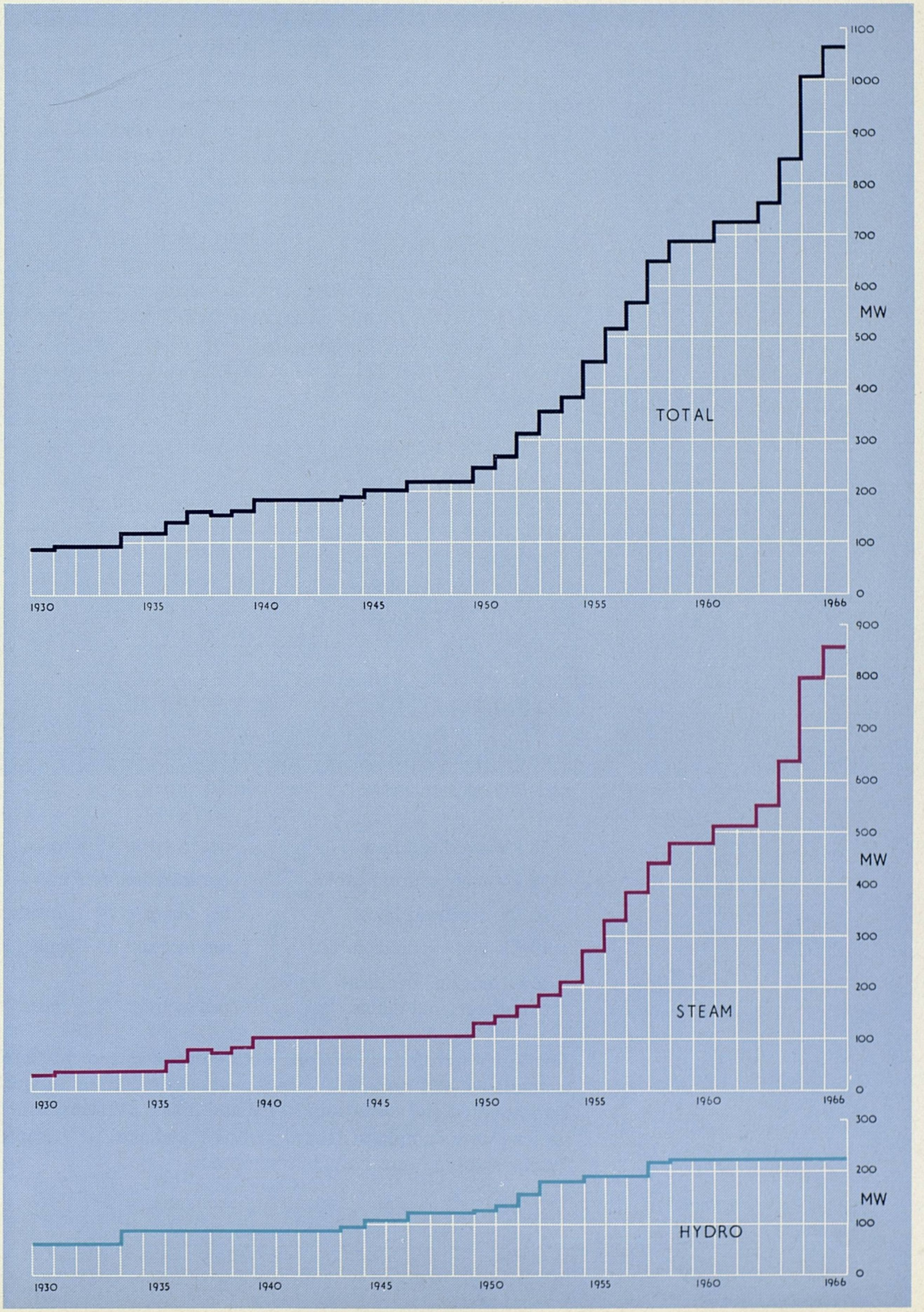
Preliminary comparative studies had indicated that the Turlough's Hill—Lough Nahanagan site appeared to be the most attractive potential pumped storage site in Co. Wicklow. The necessary further detailed investigations of scheme design for this project were well advanced at the end of the year.



Great Island generating station under construction

GENERATION CAPACITY

1930—1966



MAIN TRANSMISSION SYSTEM

The first section of the new 220 kV supergrid, comprising a 100 mile line with terminal stations at Cork and Shannonbridge, was placed in commission. Erection of the second section from Shannonbridge to Dublin was completed and the line was placed in operation at 110 kV, pending completion of the major 220 kV station which is being erected near Maynooth to cater for the needs of Greater Dublin.

Eighty-four miles of 110 kV line were erected. The re-arrangement of the lines to Whitegate oil refinery, which included a new line from Carrigaline crossing at high level over Cork Harbour, was completed. Supply was extended to Tynagh mines, Co. Galway. Two new 110 kV stations were placed in operation and major extensions to four stations were completed. Transformer capacity was increased in seven 110 kV stations. The pipe-type compression 110 kV underground cable between Ringsend and Finglas was placed in commission.

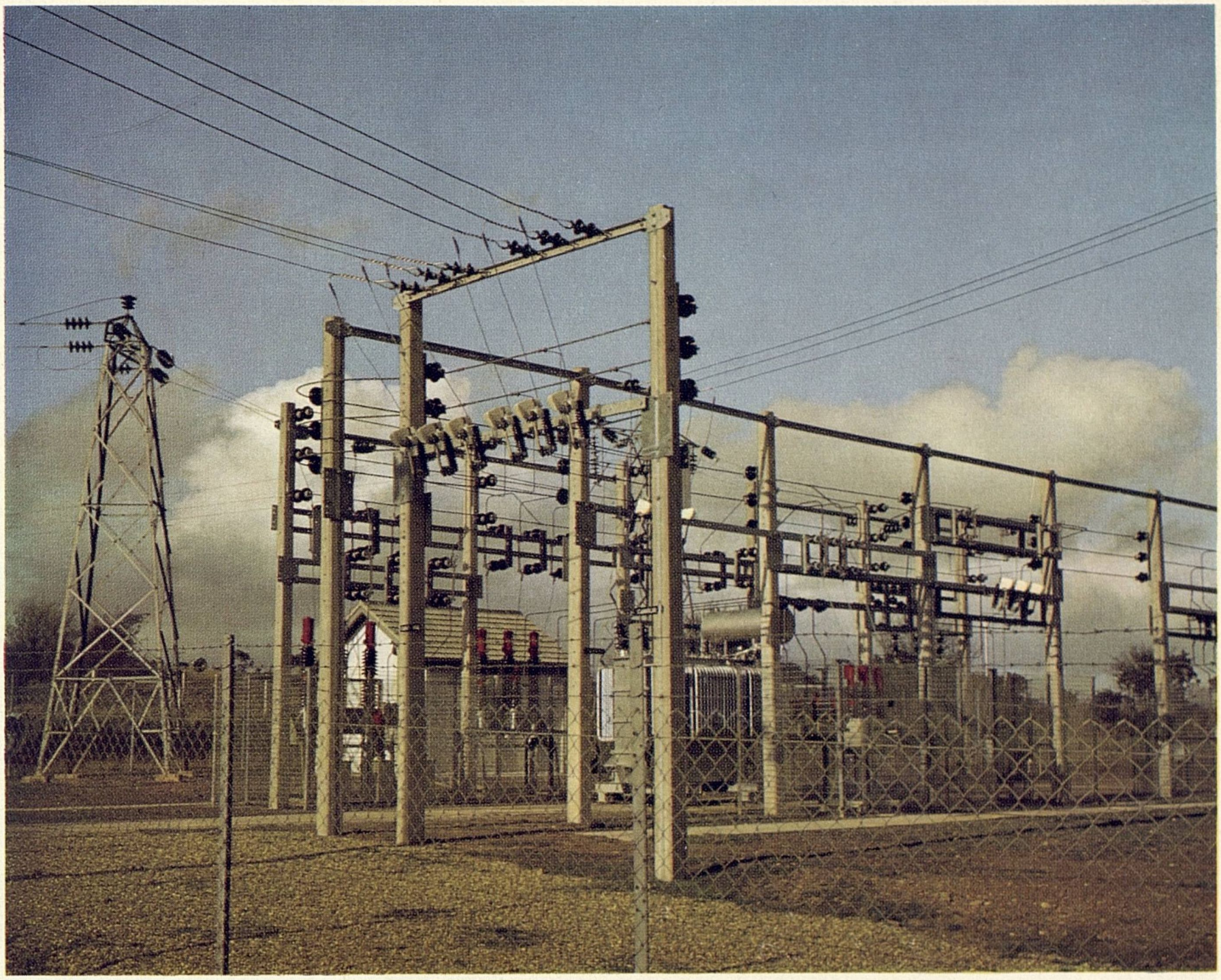
Research and development work were carried out into various matters affecting the performance of the transmission system. These included the mechanism of conductor burn-down and the protection of transformers from damage by lightning or by switching surges.

DISTRIBUTION SYSTEM

The following extensions and alterations to the high tension and low tension networks were carried out:

38 kV overhead lines	net increase 15·8 miles
38 kV underground cables	net increase 6·5 miles
10 kV overhead lines	net increase 24·1 miles
10 kV underground cables	net increase 45·2 miles
low tension overhead and underground mains	net increase 78·5 miles

Ten 38 kV transformer stations were completed and put into commission and one 38 kV station was retired from service. Two hundred and twenty-six 10 kV and nine 5 kV transformer stations were completed; fourteen 10 kV and one 5 kV transformer stations were retired from service.



38 kV transformer station, Gorey



Spring Show —
Modernised country kitchen



All-electric kitchen —
Dromoland Castle Hotel

SALES OF APPLIANCES

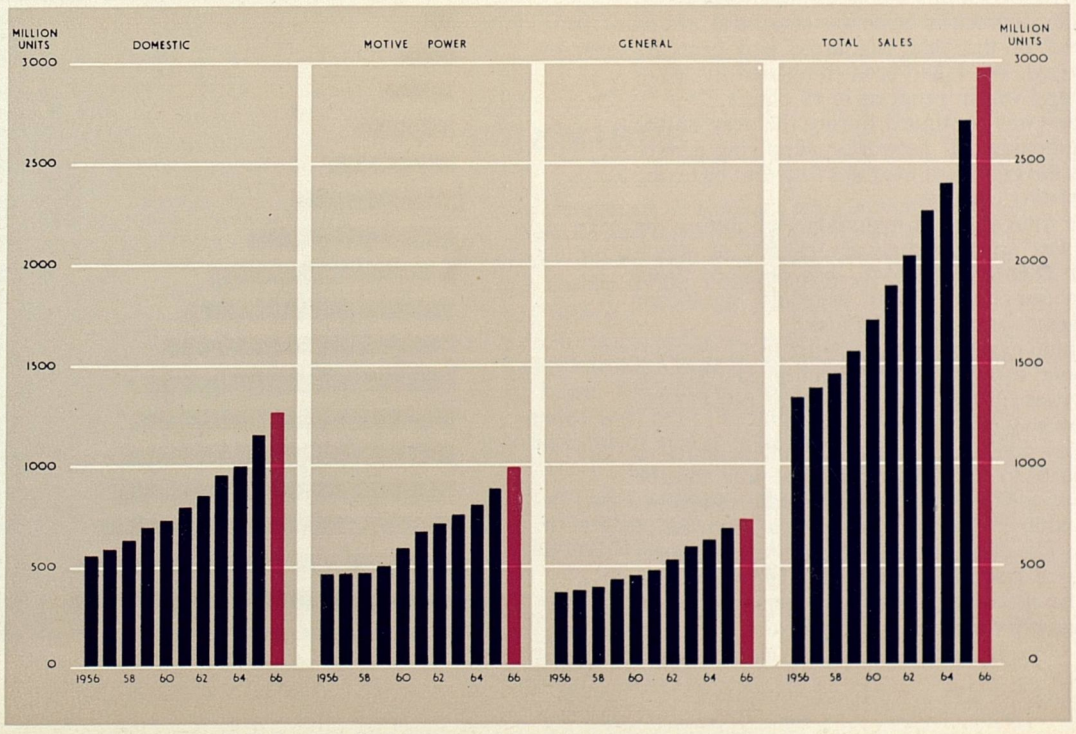
Sales of appliances on the Merchandise Trading Account amounted to £1,528,927 compared with £1,578,881 last year. The gross profit was £269,121 representing a rate of 17·6%. The Merchandise Trading Account, having been charged with overhead expenses and interest on working capital, showed a deficit of £26,988.

CONSUMERS' INSTALLATIONS

The value of installation contracts completed amounted to £739,714 compared with £596,663 for last year. The gross profit amounted to £146,368 representing a rate of 19·8%. The Installations Trading Account, having been charged with overhead expenses and interest on working capital, showed a net profit of £46,371.

ANALYSIS OF UNITS SOLD

The following diagram illustrates the analysis of units sold, from 1956 to 1966.





E.S.B./Bord Failte Guesthouse Course for farm housewives at An Grianan

RURAL ELECTRIFICATION

During the year 9,882 new rural consumers were connected and the total number of consumers as a percentage of the premises in the 792 rural areas in the country rose to 83·5.

The recanvass of rural areas under the revised post-development scheme was continued and by the end of the year 374 areas had been re-canvassed. Work had been completed in 267 of these and was in progress in 49 others.

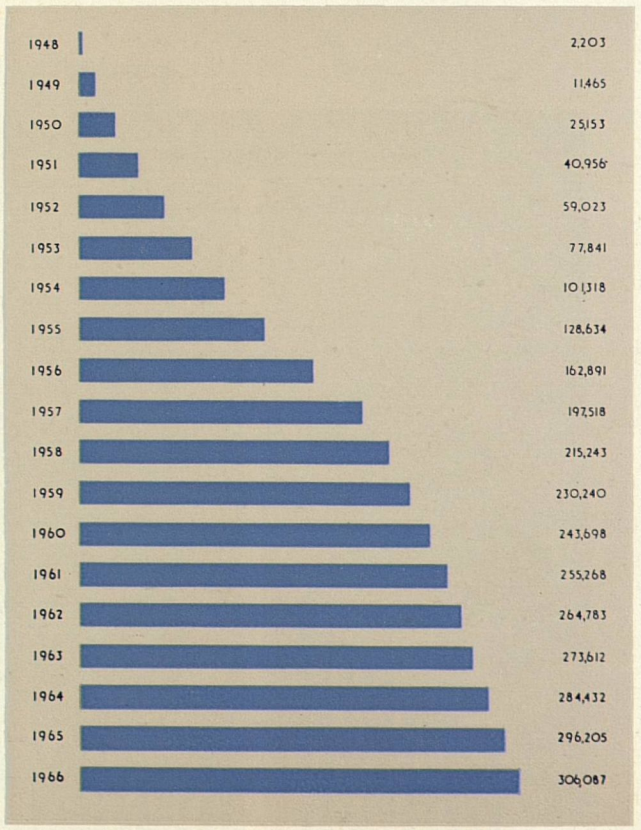
Work was continued during the year on the strengthening of networks supplying groups where the growth of load was found to be taxing the existing capacity.

The total value of materials used during the year was approximately £1,033,500 of which about £868,000, or 84%, was obtained from native suppliers. There were no significant changes in prices of materials.

Capital expenditure amounted to £1,895,317. The total invested in the Scheme at 31st March, 1966, was £37,783,893 of which £10,413,826 was by way of subsidy.

Rural consumers used 663 million units as compared to 602 million units last year and the average consumption was 2,097 units as against 1,971 units in the preceding year, an increase of 6·4%. The average used by domestic consumers increased from 1,233 units to 1,338 units. The revenue earned was £6,877,813, representing an average price per unit of 2·49d.

The following diagram illustrates the cumulative total of consumers connected, under the Rural Electrification Scheme, as at 31st March each year from 1948 to 1966 :—



The expansion in the dairying industry and the emphasis on high quality milk production resulted in an increasing demand for piped water supplies. This was reflected in increased sales of pumps for individual and group supplies, and also of water heaters.

As a service to the dairying industry the Board commissioned an instructional film on milk production, dealing with the factors which contribute to the production of clean milk. The film evoked keen interest among the groups of farmers to whom it was shown. Copies are available for showing to interested groups.

The number of installations of electrically warmed floors for the rearing of young pigs continued to increase.

In view of the sustained increase in the numbers seeking holiday accommodation in farmhouses, the Board and Bord Failte jointly sponsored courses for the owners of holiday farmhouses. These courses, which were again held in the headquarters of The Irish Countrywomen's Association at An Grianan, Termonfeckin, Co. Louth, attracted an attendance of over one hundred. The Board, with the co-operation of The Irish Countrywomen's Association, also sponsored at An Grianan a house-keeping course, a home economics course for girls from pilot farm areas and a course for Macra na Tuaithe leaders.

The Board again received the fullest co-operation from the various authorities and organisations interested in the development of the uses of electricity in rural areas.

SUPERANNUATION SCHEMES AND TRIBUNALS

The number of contributing members in the General Employees' Superannuation Scheme at the end of the year was 2,254 and in the Manual Workers' Superannuation Scheme 3,225.

The Manual Workers' Tribunal, established under the Electricity Supply Board (Superannuation) Act, 1942, dealt with twenty-two cases during the year and the General Employees' Tribunal, established under the Electricity (Supply) (Amendment) Act, 1949, dealt with twenty-five cases.

PREMISES

New consumer-service centres were opened at Kanturk and Cootehill, extensions were completed at seven other centres and improvements to a further eighteen were under construction or planned. Plans were also being prepared for the improvement of consumer service in Dublin by the establishment of main supply depots in the North and South City areas.

A substantial addition to storage facilities generally was made by the purchase of premises adjoining the Board's Polefield at East Wall Road, Dublin. Tenders for the replacement of the buildings at Lower Fitzwilliam Street, Dublin, have been sought with the proviso that it is intended at present to build to ground floor level only. Development proposals elsewhere, mentioned in last year's report, were still at the planning stage.

Thirty houses were built for staff at Ferbane, Shannonbridge and Great Island generating stations ; seventy other houses were under construction or planned for Ferbane, Bellacorick, Great Island and Tarbert generating stations.



ACCOUNTS 1965-1966

Consumers' service, Fleet Street

Electricity Production Account for the Year ended 31st March, 1966

	Fuel	Operating Expenses	Maintenance and Repair	Supervision and Local Administration	Works Cost	Per Unit Sent Out 1964/65		Depreciation and Renewals	Interest and Capital Repayments Allocation	Total	Per Unit Sent Out	1964/65 Total	1964/65 Per Unit Sent Out
GENERATION	£	£	£	£	£	Pence	Pence	£	£	£	Pence	£	Pence
Coal/Oil													
North Wall	177,036	66,986	38,498	10,250	**292,770**	·689	·719	93,000	120,481	**506,251**	**1·192**	**586,777**	**1·130**
Marina	792,532	116,988	74,982	22,704	**1,007,206**	·391	·482	182,000	261,418	**1,450,624**	**·563**	**1,409,759**	**·720**
Ringsend	1,020,325	167,182	116,592	28,853	**1,332,952**	·424	·481	319,000	529,996	**2,181,948**	**·694**	**1,696,723**	**·669**
Arigna	224,029	39,321	22,393	6,755	**292,498**	·897	·868	30,000	46,334	**368,832**	**1·131**	**377,429**	**1·084**
					2,925,426	·452	·529			**4,507,655**	**·696**	**4,070,688**	**·759**
Sod Peat (Machine)													
Portarlington	431,244	72,009	62,857	13,182	**579,292**	1·232	1·142	53,000	68,253	**700,545**	**1·490**	**828,948**	**1·338**
Allenwood	511,142	78,782	75,245	14,304	**679,473**	1·236	1·122	79,000	102,065	**860,538**	**1·565**	**960,984**	**1·382**
Lanesborough	177,085	36,839	21,250	7,583	**242,757**	1·054	·912	32,000	51,964	**326,721**	**1·418**	**470,169**	**1·104**
					1,501,522	1·201	1·078			**1,887,804**	**1·510**	**2,260,101**	**1·299**
Milled Peat													
Ferbane	571,585	109,782	72,794	21,280	**775,441**	·985	·923	182,000	291,735	**1,249,176**	**1·587**	**1,345,433**	**1·415**
Rhode	509,919	76,716	48,269	17,735	**652,639**	·834	·754	148,000	233,946	**1,034,585**	**1·322**	**1,106,710**	**1·137**
Bellacorick	80,213	53,064	38,635	11,037	**182,949**	1·565	1·139	81,000	128,779	**392,728**	**3·360**	**480,401**	**2·000**
Shannonbridge	335,867	51,822	17,843	10,268	**415,800**	·690	—	87,000	136,024	**638,824**	**1·060**	**60,661**	—
					2,026,829	·885	·865			**3,315,313**	**1·448**	**2,993,205**	**1·332**
Sod Peat (Hand-won)													
Four 5 MW Stations	117,121	50,984	28,173	5,461	**201,739**	1·918	1·923	45,000	72,613	**319,352**	**3·037**	**332,208**	**2·975**
Stand-by													
Pigeon House	7,718	69,623	33,051	13,499	**123,891**	—	—	67,000	78,016	**268,907**	—	**459,327**	—
TOTAL—FUEL STATIONS	4,955,816	990,098	650,582	182,911	**6,779,407**	·668	·742	1,398,000	2,121,624	**10,299,031**	**1·014**	**10,115,529**	**1·043**
Hydro													
Shannon	—	62,495	86,561	25,496	**174,552**	·103	·115	54,000	229,143	**457,695**	**·270**	**463,297**	**·301**
Erne	—	34,878	52,762	14,337	**101,977**	·073	·091	83,000	334,896	**519,873**	**·371**	**524,436**	**·439**
Liffey	—	21,011	24,495	8,259	**53,765**	·196	·358	24,000	76,144	**153,909**	**·560**	**161,295**	**·935**
Lee	—	18,504	15,783	6,362	**40,649**	·093	·120	54,000	237,794	**332,443**	**·762**	**330,803**	**·997**
Clady	—	6,461	4,343	862	**11,666**	·176	·156	10,000	57,170	**78,836**	**1·187**	**76,621**	**1·143**
TOTAL—HYDRO STATIONS	—	143,349	183,944	55,316	**382,609**	·099	·120	225,000	935,147	**1,542,756**	**·398**	**1,556,452**	**·471**
TOTAL—ALL STATIONS	4,955,816	1,133,447	834,526	238,227	**7,162,016**	·510	·584	1,623,000	3,056,771	**11,841,787**	**·844**	**11,671,981**	**·898**
TRANSMISSION	—	53,142	158,581	103,510	**315,233**	—	—	428,000	736,582	**1,479,815**	—	**1,235,108**	—
	4,955,816	1,186,589	993,107	341,737	**7,477,249**	—	—	2,051,000	3,793,353				
Electricity purchased in bulk:										**15,938**	—	**14,809**	—
General Administration:									£				
Generation									623,200				
Transmission									227,947	**851,147**	—	**794,487**	—
Total Cost										**14,188,687**	**1·011**	**13,716,385**	**1·055**
Transferred to Revenue Accounts:									£			**10,299,123**	
Non-Rural									10,606,672			**3,417,262**	
Rural									3,582,015				
										14,188,687		**13,716,385**	

See note on Account No. 11

Electricity (Non-Rural) Revenue Account for the Year ended 31st March, 1966

No. 2

Dr.

	£	£	1964/65 £
Electricity Production Account		10,606,672	10,299,123
Distribution Charges:			
Operation and maintenance	1,342,945		
Reserve for depreciation and renewals	886,329		
Interest and capital repayments	1,398,816		
Supervision and local administration	909,882		
		4,537,972	4,143,346
General Administration:			
Salaries and wages	1,027,174		
Travelling expenses	51,356		
Stationery	27,836		
Telephones and postage	16,252		
Lighting and heating	16,327		
Rents and rates	29,370		
Insurance	95,780		
Professional fees	23,728		
Publicity	140,093		
Maintenance of office buildings and equipment	42,340		
Staff training	160,817		
Pensions	108,850		
Capital charges—general assets	279,951		
Provision for bad debts	20,078		
Sundry expenses	18,139		
	2,058,091		
Less apportionments charged to:			
Production Account	851,147		
Rural Revenue Account	409,622		
Capital Works and other accounts	217,376		
		579,946	567,833
Turnover Tax		237,224	221,642
Balance carried to Profit and Loss Account		1,237,794	823,360
See note on Account No. 11		£17,199,608	£16,055,304

Cr.

	£	1964/65 £
Electricity Charges	17,034,832	15,900,398
Meter and Other Charges	164,776	154,906
	£17,199,608	£16,055,304

Electricity (Rural) Revenue Account for the Year ended 31st March, 1966

No. 3

Dr.

	£	£	1964/65 £
Electricity Production Account		3,582,015	3,417,262
Distribution Charges:			
Operation and Maintenance	842,493		
Reserve for depreciation and renewals	1,182,671		
Interest and capital repayments	1,504,155		
Supervision and local administration	617,413		
		4,146,732	3,795,042
General Administration		409,622	384,619
Turnover Tax		55,645	51,990
See note on Account No. 11		£8,194,014	£7,648,913

Cr.

	£	1964/65 £
Electricity Charges	6,839,957	6,396,321
Meter and Other Charges	37,856	35,940
Balance, carried to Profit and Loss Account	1,316,201	1,216,652
	£8,194,014	£7,648,913

Profit and Loss Account for the Year ended 31st March, 1966

No. 4

Dr.	£	£	1964/65 £	Cr.	£	1964/65 £
Interest payable to the Minister for Finance	2,698,501			Interest and Capital Repayments :		
Interest on E.S.B. Stocks (*less* temporary investment earnings) and on funded loan	1,839,121			Production Account	3,793,353	*3,269,934*
Stock management and transfer charges	26,913			Non-Rural Revenue Account	1,398,816	*1,239,228*
Other interest	1,213,388			Rural Revenue Account	1,504,155	*1,441,936*
		5,777,923	*5,297,977*	Administration	216,951	*202,463*
Reserves:				Fisheries Account	5,674	*5,674*
Repayment of capital advances from the Minister for Finance	766,284			Installations Account	17,100	*14,100*
Repayment of funded loan	10,745			Merchandise Sales Account	18,600	*13,500*
Sinking fund provision for redemption of E.S.B. Stocks	976,062			Capital Works	576,365	*633,000*
		1,753,091	*1,521,858*			
		£7,531,014	*£6,819,835*		£7,531,014	*£6,819,835*
Balance, transferred from Rural Revenue Account		1,316,201	*1,216,652*	Balance, transferred from Non-Rural Revenue Account	1,237,794	*823,360*
Balance, carried to Net Revenue Account		243,153	—	Miscellaneous revenue	83,429	*84,668*
				Interest receivable	238,131	*218,087*
				Balance, carried to Net Revenue Account	—	*90,537*
		£1,559,354	*£1,216,652*		£1,559,354	*£1,216,652*

Preservation and Operation of Fisheries for the Year ended 31st March, 1966

No. 5

Dr.	£	1964/65 £	Cr.	£	1964/65 £
Preservation, operation and other direct costs	51,974	*44,775*	Sales of fish, letting of fishing rights and miscellaneous income	49,003	*35,002*
			Balance, carried down	2,971	*9,773*
	£51,974	*£44,775*		£51,974	*£44,775*
Balance, brought down	2,971	*9,773*	Balance, carried down	20,309	*26,195*
Salaries and sundry expenses	6,276	*5,344*			
Fishery rates	3,721	*3,610*			
Reserve for depreciation and renewals	3,000	*3,070*			
General overhead expenses and interest	4,341	*4,398*			
	£20,309	*£26,195*		£20,309	*£26,195*
Balance, brought down	20,309	*26,195*	Balance, carried to Net Revenue Account	21,742	*27,571*
Capital repayments	1,433	*1,376*			
	£21,742	*£27,571*		£21,742	*£27,571*

Installations Trading Account for the Year ended 31st March, 1966

No. 6

Dr. *Cr.*

	£	*1964/65* £		£	*1964/65* £
Cost value of work for which credit had not been taken at 31st March, 1965		250,648	*227,557*	Credit taken for contracts completed and charged	739,714	*596,663*
Cost of installation work carried out during the year		540,073	*523,209*			
Gross profit, carried down		146,368	*96,545*	Cost value of work for which credit has not yet been taken	197,375	*250,648*
		£937,089	£847,311		£937,089	£847,311
	£					
Salaries, wages and state insurance	51,553			Gross profit, brought down	146,368	*96,545*
Travelling expenses	5,813					
Sundry expenses	6,921					
General overhead expenses and interest, as apportioned	35,710					
		99,997	*88,629*			
Balance, carried to Net Revenue Account		46,371	*7,916*			
		£146,368	£96,545		£146,368	£96,545

Merchandise Trading Account for the Year ended 31st March, 1966

No. 7

Dr. *Cr.*

	£	*1964/65* £		£	*1964/65* £
Cost of goods sold		1,174,870	*1,193,262*	Sales	1,528,927	*1,578,881*
Direct costs in connection with sales		49,659	*49,545*			
Turnover Tax		35,277	*36,785*			
Gross profit, carried down		269,121	*299,289*			
		£1,528,927	£1,578,881		£1,528,927	£1,578,881
Direct salaries, wages, commission and travelling expenses	£ 162,018			Gross profit, brought down	269,121	*299,289*
Publicity	26,684			Balance, carried to Net Revenue Account	26,988	—
Rents, rates and maintenance of premises	24,268					
Other expenses and provisions	15,629					
General administrative expenses and interest, as apportioned	67,510					
		296,109	*269,163*			
Balance, carried to Net Revenue Account		—	*30,126*			
		£296,109	£299,289		£296,109	£299,289

Net Revenue Account for the Year ended 31st March, 1966

Dr.	£	£		*Cr.* £
Merchandise trading deficit	26,988		Balance transferred from Profit and Loss Account	243,153
Fisheries deficit	21,742		Installations trading profit	46,371
		48,730		
Balance carried down		240,794		
		£289,524		£289,524
Transfer to reserve for renewals, of credits (per contra) as additional provision for the renewal of plant		363,751	Balance brought down	240,794
E.S.B. Stock Issue expenses		67,886	Balance brought forward from last year's account	103,091
Balance carried forward		275,999	Credits arising consequent on the retirement of assets and the sale of scrapped material	363,751
		£707,636		£707,636

Statement of Repayable Capital and Redemption thereof to the 31st March, 1966

	Total Receipts to 31st March 1966	Redeemed			Balance Outstanding 31st March 1966
		Total to 31st March 1965	Redeemed during Year	Total to 31st March 1966	
	£	£	£	£	£
Minister for Finance:					
Advances under the Electricity (Supply) Acts and the Shannon Fisheries Act, 1935	**68,450,236**	8,434,825	766,284	9,201,109	**59,249,127**
Electricity Supply Board Stocks:					
5% redeemable 1966–1975	**10,000,000**	2,385,700	197,250	2,582,950	**7,417,050**
6% redeemable 1968–1978	**5,000,000**	561,843	56,490	618,333	**4,381,667**
6% redeemable 1982–1987	**12,000,000**	336,800	298,200	635,000	**11,365,000**
6% redeemable 1984–1989	**16,500,000**	223,200	377,940	601,140	**15,898,860**
7% redeemable 1986–1991	**5,750,190***	—	—	—	**5,750,190**
Funded Loans and Loan Stocks:					
Local Authority Undertakings	**756,021**	756,021	—	756,021	—
New Ireland Assurance Co. Ltd.	**500,000**	28,673	10,745	39,418	**460,582**
	£118,956,447	£12,727,062	£1,706,909	£14,433,971	**£104,522,476**

*£6,000,000 Stock issued. Further calls due on 6th April and 4th May, 1966

Statement of Capital Reserves at 31st March, 1966

No. 10

	£	£	1964/65 £
Non-repayable contributions from Minister for Finance under Electricity (Supply) Acts towards capital cost of supplying rural areas	10,413,826		
Other non-repayable contributions for capital works	2,160,858	**12,574,684**	*11,046,938*
Repaid capital, less intangible assets written off		**12,502,417**	*10,839,508*
Provision for depreciation, renewal and retirement of physical assets, together with proceeds of sale of assets, less physical assets retired		**49,667,578**	*44,756,264*
Total Capital Reserves		**£74,744,679**	*£66,642,710*

Statement of Capital Investment in Fixed Assets at 31st March, 1966

No. 11

	Total at 31st March, 1965, less retirements	Expenditure less retirements during year (a) and revision of classifications (b)	Total at 31st March, 1966, less retirements
	£	£	£
Generation	62,713,933	137,718 (a) (—) 429,323 (b)	**62,422,328**
Transmission	13,338,050	2,674,285 (a) 284,870 (b)	**16,297,205**
Distribution	63,178,921	4,913,472 (a) 144,453 (b)	**68,236,846**
General	4,054,257	206,958	**4,261,215**
Fisheries	102,959	9,750	**112,709**
	£143,388,120	£7,942,183	**£151,330,303**
Capital Works in Progress, including payments on account to contractors and others			**13,304,150**
Total Capital Investment in Fixed Assets			**£164,634,453**

Note:
The revision of classifications refers to the transfer of certain plant and equipment from Generation to Transmission and Distribution. The effect on capital charges is reflected in Accounts Nos. 1, 2 and 3.

Balance Sheet as at 31st March, 1966

Liabilities and Reserves			31/3/65
		£	£
Repayable Capital as per Statement No. 9		104,522,476	*100,334,495*
Capital Reserves as per Statement No. 10		74,744,679	*66,642,710*
		179,267,155	*166,977,205*
Loans under the Electricity Supply Board (Superannuation) Act, 1942		115,142	*32,143*
Short-Term Loan		2,858,981	*3,573,726*
Sundry Creditors		5,871,647	*5,895,687*
Electricity Supply Board Stock Sinking Funds (incl. interest due but unpaid)		667,872	*497,872*
Reserves:	£		
Contingencies reserve	1,500,000		
Plant, self-insurance—special risks	500,000		
Other reserves and provisions	75,800		
		2,075,800	*2,066,174*
Surplus: **per Net Revenue Account**		275,999	*103,091*
		£191,132,596	*£179,145,898*

Note:
At 31st March, 1966, contractual capital commitments amounted to approximately £8,000,000.

Signed: T. Murray, *Chairman*

J. G. Gargan, *Secretary*

Assets	£	31/3/65 £
Fixed Assets, as per Statement No. 11	164,634,453	*152,694,335*
Electricity Supply Board Stocks (nominal £2,695,038) at cost, held by the Munster and Leinster Bank Nominees Ltd. as depositaries of the Board	2,662,255	*2,969,994*
Sinking Fund Investments (nominal £666,500, market value £592,225) at cost	662,369	*492,368*
Stocks (at average cost), **Tools and Working Equipment** (at depreciated cost) **on Hand and in Transit**	6,988,663	*6,186,336*
Cost Value of Installation and Other Repayable Work in Progress	284,924	*305,966*
Sundry Debtors, after providing for bad and doubtful debts and including advances for goods not yet delivered	8,938,369	*8,462,005*
Temporary Cash Investment	6,500,000	*7,500,000*
Cash in Hand and with Banks	461,563	*534,894*
	£191,132,596	*£179,145,898*

Signed: L. J. Barry, *Chief Accountant*

AUDITORS' REPORT

As Auditors appointed by the Minister for Transport and Power, with the consent of the Minister for Finance, we have examined the foregoing Accounts and Balance Sheet which are in agreement with the books of account.

Allocations to the various Accounts, made by the Board's officials and approved by the Board, covering Overhead Expenses, Interest and Capital Repayments, and Costs of Generation, Transmission and Distribution have been made on the same basis as in the previous year. Additions have continued to be made to the Depreciation Reserve towards increased costs of renewals of physical assets, the original cost of which has already been fully provided.

In our opinion proper books of account have been kept and proper returns received from offices not visited by us. We have obtained all the information and explanations which we considered necessary for our audit.

In our opinion the foregoing Accounts and the Balance Sheet, give respectively a true and fair view of the outcome of the revenue operations of the Board for the year ended 31st March, 1966, and of the state of the Board's affairs as at that date.

KENNEDY, CROWLEY & CO.
Auditors

4 and 5 Westmoreland Street,
Dublin 2.
6th July, 1966

APPENDICES

No.

1 Number of consumers and other particulars relating to areas supplied by the Board

2 Growth of electricity sales and number of consumers

3 Analysis of units sold

4 Distribution at high tension of units generated

5 Generation load duration and integrated load duration curves

6 Generation statistics for the year and the number of units sent out in the preceding year

7 Monthly outputs generated (kWh x 10^6) and supply purchased

8 Particulars of generating plant

9 Performance of generating plant

10 Typical daily generation load curves

11 Transmission and distribution systems in commission at 31st March, 1966

12 Progress of the rural electrification scheme

13 Weekly generation (inside back cover)

NUMBER OF CONSUMERS AND OTHER PARTICULARS RELATING TO AREAS SUPPLIED BY THE BOARD

Appendix 1

Areas and Towns Supplied	Approximate population	No. of consumers at 31st March		Motive power Units sold year ended 31st March thousands	
	thousands	1966	1965	1966	1965
ATHLONE	**177·1**	**42,498**	**41,488**	**30,060**	**27,860**
Town	50·4	11,876	11,677	22,645	21,655
Rural	126·7	30,622	29,811	7,415	6,205
CORK	**302·1**	**80,802**	**78,393**	**141,679**	**133,767**
Town	167·3	48,091	46,837	125,254	118,442
Rural	134·8	32,711	31,556	16,425	15,325
DUBLIN No. 1	**485·7**	**135,705**	**134,492**	**169,101**	**158,570**
Town	485·7	135,705	134,492	169,101	158,570
DUBLIN No. 2	**306·0**	**92,584**	**88,429**	**160,012**	**149,483**
Town	229·3	74,555	70,724	138,104	131,024
Rural	76·7	18,029	17,705	21,908	18,459
DUNDALK	**227·0**	**55,684**	**54,375**	**115,515**	**115,383**
Town	75·2	20,366	19,961	90,635	91,198
Rural	151·8	35,318	34,414	24,880	24,185
GALWAY	**166·5**	**39,339**	**38,254**	**26,534**	**20,856**
Town	47·1	11,940	11,649	20,081	16,536
Rural	119·4	27,399	26,605	6,453	4,320
LIMERICK	**271·1**	**67,036**	**65,546**	**122,769**	**101,725**
Town	94·7	26,870	26,188	103,164	83,196
Rural	176·4	40,166	39,358	19,605	18,529
PORTLAOISE	**196·8**	**48,501**	**47,380**	**70,167**	**68,681**
Town	75·0	19,339	19,033	57,907	57,672
Rural	121·8	29,162	28,347	12,260	11,009
SLIGO	**252·0**	**64,645**	**62,834**	**18,823**	**17,708**
Town	46·3	12,749	12,551	9,224	8,160
Rural	205·7	51,896	50,283	9,599	9,548
TRALEE	**143·3**	**35,229**	**33,931**	**16,148**	**13,926**
Town	29·3	7,714	7,580	6,641	5,667
Rural	114·0	27,515	26,351	9,507	8,259
WATERFORD	**210·6**	**54,090**	**52,369**	**104,748**	**68,085**
Town	95·4	26,054	25,588	86,896	48,342
Rural	115·2	28,036	26,781	17,852	19,743
GROSS TOTALS	**2,738·2**	**716,113**	**697,491**	**975,556**	**876,044**
TOWN	1,395·8	395,259	386,280	829,652	740,462
RURAL	1,342·4	320,854	311,211	145,904	135,582

Appendix 2

GROWTH OF ELECTRICITY SALES AND NUMBER OF CONSUMERS

The following table shows, quinquennially from 1930 to 1950 and for each year since, the number of units generated and sold, the revenue, the average price per unit and the number of consumers.

Year ended 31st March	Units generated (and purchased) millions	Units sold millions	Revenue from sales of energy thousands	Average price in pence per unit sold	Total consumers
			£		
1930	60·948	43·177	478	2·66	48,606
1935	206·106	156·964	1,258	1·92	103,037
1940	406·999	318·552	1,946	1·47	172,545
1945	406·273	319·010	2,458	1·85	228,008
1950	784·776	626·174	4,774	1·83	310,639
1951	972·951	770·377	5,584	1·74	343,376
1952	1,032·697	835·326	6,531	1·88	372,743
1953	1,163·616	929·641	7,628	1·97	402,395
1954	1,295·520	1,051·746	8,517	1·94	435,985
1955	1,461·736	1,192·172	9,522	1·92	461,901
1956	1,573·150	1,306·642	10,465	1·92	509,546
1957	1,647·713	1,352·642	11,555	2·05	547,910
1958	1,774·821	1,424·645	12,903	2·17	570,345
1959	1,898·215	1,549·402	13,784	2·14	590,921
1960	2,096·027	1,692·154	14,724	2·09	610,946
1961	2,262·307	1,863·578	16,263	2·09	628,241
1962	2,453·001	2,005·098	17,731	2·12	642,753
1963	2,714·903	2,238·536	19,445	2·08	659,932
1964	2,900·829	2,375·947	20,383	2·06	678,054
1965	3,240·163	2,682·629	22,488	2·01	697,491
1966	3,546·157	2,953·304	24,077	1·96	716,113

Appendix 3

ANALYSIS OF UNITS SOLD

Class of supply	Units sold		Increase (millions)	Percentage increase
	Year ended 31st March, 1966 (millions)	Year ended 31st March, 1965 (millions)		
General domestic	1,253·316	1,131·677	121·639	10·7
General lighting	165·778	152·680	13·098	8·6
General heating, cooking and water heating	286·584	269·590	16·994	6·3
Night storage heating	215·778	192·940	22·838	11·8
Motive power	976·710	882·569	94·141	10·7
Public lighting	37·466	36·500	0·966	2·6
Miscellaneous	17·672	16·673	0·999	6·0
TOTAL	2,953·304	2,682·629	270·675	10·1

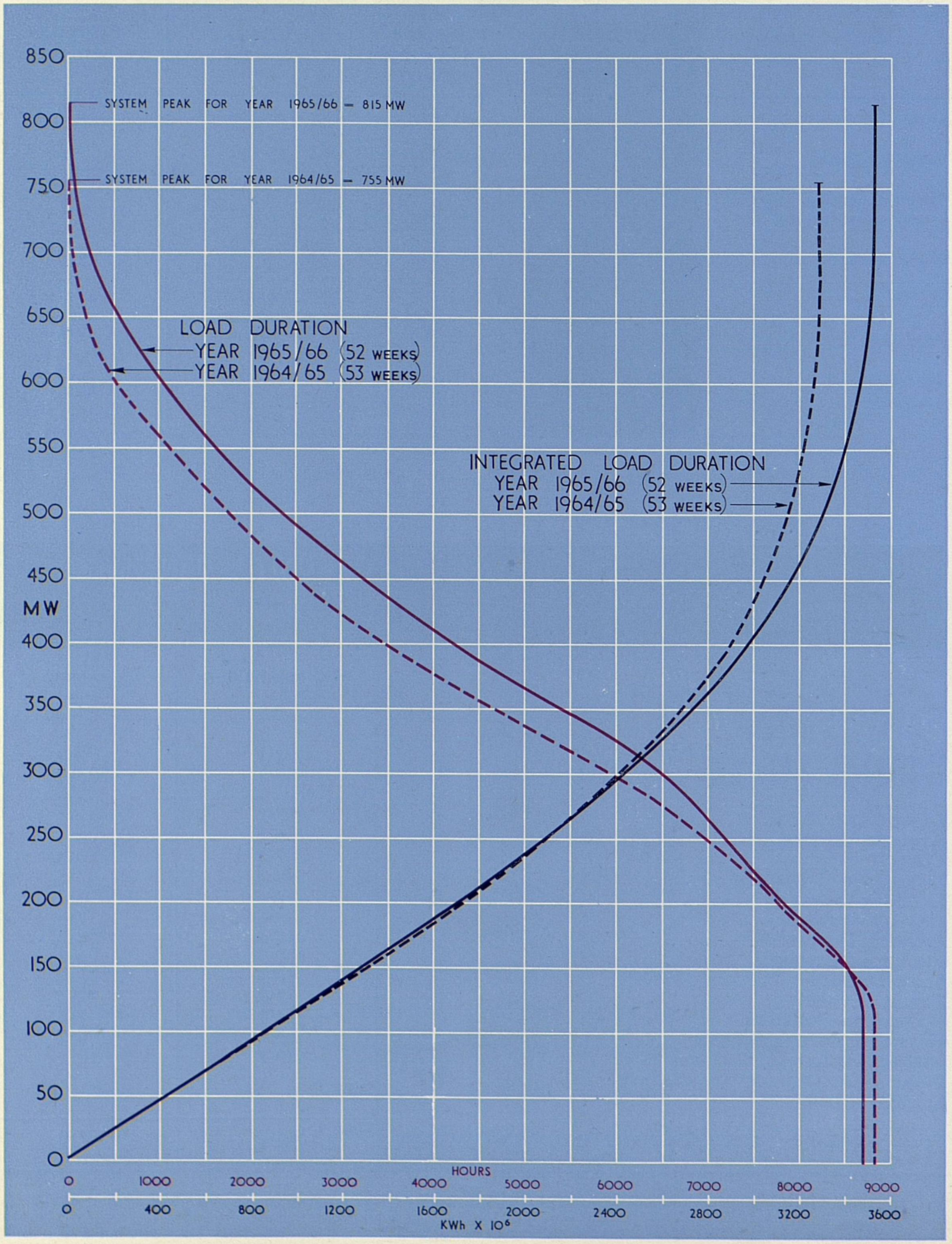
Appendix 4

DISTRIBUTION AT HIGH TENSION OF UNITS GENERATED
Year Ended 31st March, 1966

District		High tension units kWh × 10^6	Percentage of total
DUBLIN CITY 5 kV supply		132·1	3·7
DUBLIN CITY 10 kV supply		555·1	15·7
DUBLIN CITY TOTAL		687·2	19·4
ATHLONE DISTRICT		119·5	3·4
CORK DISTRICT		383·0	10·8
DUBLIN NO. 2 DISTRICT		549·5	15·5
DUNDALK DISTRICT		257·6	7·2
GALWAY DISTRICT		123·8	3·5
LIMERICK DISTRICT		312·8	8·8
PORTLAOISE DISTRICT		171·7	4·8
SLIGO DISTRICT		134·4	3·8
TRALEE DISTRICT		87·7	2·5
WATERFORD DISTRICT		263·1	7·4
Generating station auxiliaries		166·2	4·7
High tension losses (110 kV and 38 kV)		289·7	8·2
TOTAL GENERATION OF ALL STATIONS	3,537·7		
Supply Purchased	8·5		
TOTAL GENERATION OF ALL STATIONS PLUS SUPPLY PURCHASED		3,546·2	100·0

Appendix 5

GENERATION LOAD DURATION



GENERATION STATISTICS FOR THE YEAR AND THE NUMBER OF UNITS SENT OUT IN THE PRECEDING YEAR

Appendix 6

Station	Year ended 31st March, 1966			Year ended 31st March, 1965
	Generated million units	Station use million units	Sent out million units	Sent out million units
ARDNACRUSHA	411·050	3·114	407·936	361·413
CLIFF	97·427	0·680	96·747	81·997
CATHALEEN'S FALL	242·218	2·042	240·176	197·863
CARRIGADROHID	28·899	0·331	28·568	20·683
INNISCARRA	76·779	0·694	76·085	56·464
POLLAPHUCA	34·367	0·803	33·564	19·290
GOLDEN FALLS	12·794	0·162	12·632	7·895
LEIXLIP	19·665	0·149	19·516	13·230
CLADY	16·023	0·143	15·880	15·942
FERBANE	207·283	18·382	188·901	226·554
RHODE	204·619	15·668	188·951	231·071
BELLACORICK	30·555	2·987	27·568	57·154
SHANNONBRIDGE	155·240	10·083	145·157	18·587
PORTARLINGTON	121·174	8·739	112·435	147·546
ALLENWOOD	142·254	10·228	132·026	164·873
LANESBOROUGH	58·444	3·100	55·344	100·154
CAHIRCIVEEN	4·743	0·575	4·168	3·925
MILTOWN-MALBAY	1·898	0·317	1·581	2·143
SCREEB	0·962	0·214	0·748	2·125
GWEEDORE	20·408	1·441	18·967	18·014
PIGEON HOUSE	11·788	3·462	8·326	55·373
NORTH WALL	111·288	9·359	101·929	124·173
RINGSEND	797·796	41·001	756·795	598·944
MARINA	646·606	27·471	619·135	464·465
ARIGNA	83·402	5·012	78·390	82·600
PURCHASED	8·475	—	8·475	8·691
TOTALS	3,546·157	166·157	3,380·000	3,081·169
Maximum daily generation, million units			14·667	13·143
Maximum load generated in kW			815,000	755,000

MONTHLY OUTPUTS (kWh x 10^6) OF THE GENERATING STATIONS AND SUPPLY PURCHASED

Year ended 31st March, 1966

Appendix 7

(Month Calendar)	PEAT STATIONS											OIL/COAL STATIONS					Total of steam stations
												DUBLIN			CORK		
	Ferbane	Rhode	Bella-corick	Shannon-bridge	Port-arlington	Allen-wood	Lanes-borough	Cahir-civeen	Miltown-Malbay	Screeb	Gwee-dore	Pigeon House	North Wall	Rings-end	Marina	Arigna	
April	11·795	20·103	—	14·092	12·629	12·455	6·191	—	—	—	1·301	0·777	6·114	56·465	53·442	7·788	203·152
May	12·966	19·333	—	16·853	7·819	6·385	5·096	—	—	—	—	0·118	3·714	59·995	52·618	6·567	191·464
June	22·831	20·394	—	6·497	9·196	—	4·217	—	—	—	1·427	0·024	1·957	54·792	43·890	9·043	174·268
July	18·806	15·800	—	17·720	6·661	11·040	8·218	0·103	—	—	2·195	0·992	9·876	68·756	31·217	8·512	199·896
August	16·348	2·836	—	12·232	6·751	9·685	—	0·551	—	—	2·463	0·134	6·030	63·531	33·819	9·874	164·254
September	22·016	17·278	—	13·373	7·596	12·908	—	0·685	—	—	2·696	1·706	11·857	56·415	59·486	1·411	207·427
October	23·220	22·177	4·573	7·039	8·928	12·859	—	0·648	0·635	—	1·988	1·755	16·429	63·873	69·944	6·406	240·474
November	20·679	19·777	3·956	14·772	11·013	15·939	3·365	0·810	0·689	0·619	2·566	4·830	13·473	86·191	47·414	8·503	254·596
December	13·964	13·821	4·543	12·863	12·836	15·779	4·530	0·404	—	0·343	1·721	0·641	10·926	78·076	61·681	5·196	237·324
January	18·685	21·106	7·285	13·836	9·792	17·423	8·047	0·662	0·472	—	1·680	0·712	12·217	75·940	74·866	7·267	269·990
February	14·619	14·754	4·372	11·749	12·099	14·787	7·143	0·599	0·102	—	1·175	0·072	9·321	59·517	54·236	5·928	210·473
March	11·354	17·240	5·826	14·214	15·854	12·994	11·637	0·281	—	—	1·196	0·027	9·374	74·245	63·993	6·907	245·142
TOTALS	207·283	204·619	30·555	155·240	121·174	142·254	58·444	4·743	1·898	0·962	20·408	11·788	111·288	797·796	646·606	83·402	2,598·460

Month (Calendar)	HYDRO STATIONS										Total generation of all stations	Total supply purchased	Total generation and supply purchased
	River Shannon	River Erne		River Lee		River Liffey			River Clady	Total of hydro stations			
	Ardnacrusha	Cliff	Cathaleen's Fall	Carrigadrohid	Inniscarra	Pollaphuca	Golden Falls	Leixlip					
April	31·208	6·785	16·780	1·445	4·571	0·902	0·410	0·844	1·365	64·310	267·462	1·220	268·682
May	28·269	5·174	12·515	1·930	4·288	0·967	0·403	0·704	0·279	54·529	245·993	0·606	246·599
June	20·031	5·248	12·851	1·201	3·097	1·324	0·548	0·819	0·870	45·989	220·257	0·712	220·969
July	16·844	2·927	7·394	0·348	1·015	1·162	0·480	0·847	0·547	31·564	231·460	0·623	232·083
August	20·539	6·560	16·577	1·333	3·215	1·723	0·667	0·968	1·796	53·378	217·632	0·838	218·470
September	20·065	5·627	13·782	1·358	3·398	2·847	1·072	1·441	2·255	51·845	259·272	0·687	259·959
October	18·733	7·086	16·625	0·712	1·876	2·244	0·864	1·315	1·514	50·969	291·443	0·850	292·293
November	39·729	9·912	25·619	3·244	9·002	4·666	1·571	1·973	1·492	97·208	351·804	0·583	352·387
December	61·866	15·554	36·198	5·297	15·116	5·182	1·906	2·985	2·120	146·224	383·548	0·731	384·279
January	53·603	12·331	31·850	3·620	11·200	4·897	1·778	2·843	0·825	122·947	392·937	0·612	393·549
February	55·777	10·861	28·979	5·936	14·715	5·038	1·811	2·754	1·409	127·280	337·753	0·682	338·435
March	44·386	9·362	23·048	2·475	5·286	3·415	1·284	2·172	1·551	92·979	338·121	0·331	338·452
		97·427	242·218	28·899	76·779	34·367	12·794	19·665					
TOTALS	411·050	339·645		105·678		66·826			16·023	939·222	3,537·682	8·475	3,546·157

PARTICULARS OF GENERATING PLANT

Hydro Stations

Station	River	Catchment area km.²	Average available head metres	Average annual generation kWh × 10^6	Generating sets		Type of turbine
					No.	Capacity each kW	
ARDNACRUSHA	Shannon	10,400	28·3	310	3 1	20,000 25,000 **85,000**	Francis Kaplan
POLLAPHUCA	Liffey	309	48·7	45	2	15,000 **30,000**	Kaplan
GOLDEN FALLS		312	16·6		1	**4,000**	Propeller
LEIXLIP		843	17·3		1	**4,000**	Kaplan
CLIFF	Erne	4,320	12·1	275	2	10,000 **20,000**	Kaplan
CATHALEEN'S FALL		4,350	29·7		2	22,500 **45,000**	
CARRIGADROHID	Lee	610	15·4	77	1	**8,000**	Kaplan
INNISCARRA		790	31·9		1 1	15,000 4,000 **19,000**	
CLADY	Clady	80	57·8	13	1	**4,000**	Francis

Steam Stations

Station	Location	Generating Sets					Boilers			
		No.	Capacity each kW	Pressure Psi	Temp. °F	Type of cooling	No.	Capacity each k.lb./hour	Type of firing	Fuel type
Pigeon House	Dublin City	1 4	10,000 20,000 **90,000**	250	750	Estuarine	10	100	Mech. Stoker and Oil-fired	Coal and Oil
North Wall	Dublin City	3	16,000 **48,000**	400	800	Estuarine	4 3	40 165	Oil-fired	Oil
Portarlington	Co. Laoise	3	12,500 **37,500**	400	800	Tower	3	150	Mech. Stoker	Sod Peat
Allenwood	Co. Kildare	2	20,000 **40,000**	400	800	Tower	4	150	Mech. Stoker	Sod Peat
Marina	Cork City	2 1	30,000 60,000 **120,000**	600 1,150	850 950	Tidal River	3 1	200 550	P.F. and Oil-fired Oil-fired	Coal or Oil Oil
Ringsend	Dublin City	3 2	30,000 60,000 **210,000**	600 1,150	850 950	Estuarine	4 2	200 550	P.F. and Oil-fired Oil-fired	Coal or Oil Oil
Ringsend (under construction)		1	**60,000**	1,150	950		1	550	Oil-fired	Oil

Steam Stations

Station	Location	Generating Sets					Boilers			
		No.	Capacity each kW	Pressure Psi	Temp. °F	Type of cooling	No.	Capacity each k.lb./hour	Type of firing	Fuel type
Ferbane	Co. Offaly	3 1	20,000 30,000 **90,000**	400 900	800 950	Tower	3 1	220 285	P.F.	Milled Peat
Miltown-Malbay	Co. Clare	1	**5,000**	400	800	Tower	1	60	Mech. Stoker	Sod Peat
Screeb	Co. Galway	1	**5,000**	400	800	Sea	1	60	Mech. Stoker	Sod Peat
Cahirciveen	Co. Kerry	1	**5,000**	400	800	Tower	1	60	Mech. Stoker	Sod Peat
Gweedore	Co. Donegal	1	**5,000**	400	800	River	1	60	Mech. Stoker	Sod Peat
Arigna	Co. Roscommon	1	**15,000**	400	800	Lake	1	165	P.F.	Coal
Lanesborough	Co. Longford	1	**20,000**	400	800	River	1	220	Mech. Stoker	Sod Peat
Lanesborough (under construction)		1	**40,000**	900	950		1	380	P.F.	Milled Peat
Rhode	Co. Offaly	2 1	20,000 40,000 **80,000**	650 900	850 950	Tower	2 1	210 380	P.F.	Milled Peat
Bellacorick	Co. Mayo	2	20,000 **40,000**	650	850	Tower	2	210	P.F.	Milled Peat
Shannonbridge	Co. Offaly	1	**40,000**	900	950	River	1	380	P.F.	Milled Peat
Great Island (under construction)	Co. Wexford	2	60,000 **120,000**	1,150	950	Estuarine	2	520	Oil-fired	Oil
Tarbert (under construction)	Co. Kerry	2	60,000 **120,000**	1,150	950	Estuarine	2	520	Oil-fired	Oil
Pigeon House "B" (under construction)	Dublin City	2	120,000 **240,000**	1,800	995/995	Estuarine	2	835	Oil-fired	Oil

PERFORMANCE OF GENERATING PLANT

Year ended 31st March, 1966

Hydro-electric Stations

Station	River	Rainfall at station	Total inflow*	Discharge through sets	Water utilisation	Average available head	Water per unit generated	Installed capacity	Units sent out	Plant load factor	Total cost per unit sent out
		inches	m^3/sec	m^3/sec	%	metres	m^3	kW	kWh $\times 10^6$	%	pence
ARDNACRUSHA	Shannon	45·26	227·3	204·3	94·0	27·9	15·67	85,000	407·936	55·2	0·270
POLLAPHUCA	Liffey	45·99	12·2	10·9	100·0	49·3	10·01	30,000	33·564	13·1	0·560
GOLDEN FALLS		45·99	12·2	11·3	99·3	16·7	27·78	4,000	12·632	36·5	
LEIXLIP		36·34	17·3	16·4	88·3	17·3	26·43	4,000	19·516	56·1	
CLIFF	Erne	52·91	119·8	110·7	99·4	12·1	35·82	20,000	96·747	55·6	0·371
CATHALEEN'S FALL				114·0	96·0	29·5	14·84	45,000	240·176	61·4	
CARRIGADROHID	Lee	58·60	27·9	25·2	92·6	14·6	28·17	8,000	28·568	41·2	0·762
INNISCARRA		56·57	35·1	31·5	91·2	33·4	12·93	19,000	76·085	46·1	
CLADY	Clady	69·80	4·5	3·8	97·7	—	7·54	4,000	15·880	45·7	1·187

The percentage utilisation of the total discharge is exclusive of river compensation water and, in the case of the River Liffey, of the draw-off for the Dublin City water supply from Pollaphuca Reservoir which averaged 18·8 million gallons per day (1·0 m^3/sec).

Shannon and Erne rainfall represent average of catchment area.

**Based on discharge through sets.*

PERFORMANCE OF GENERATING PLANT

Year ended 31st March, 1966

Steam Stations

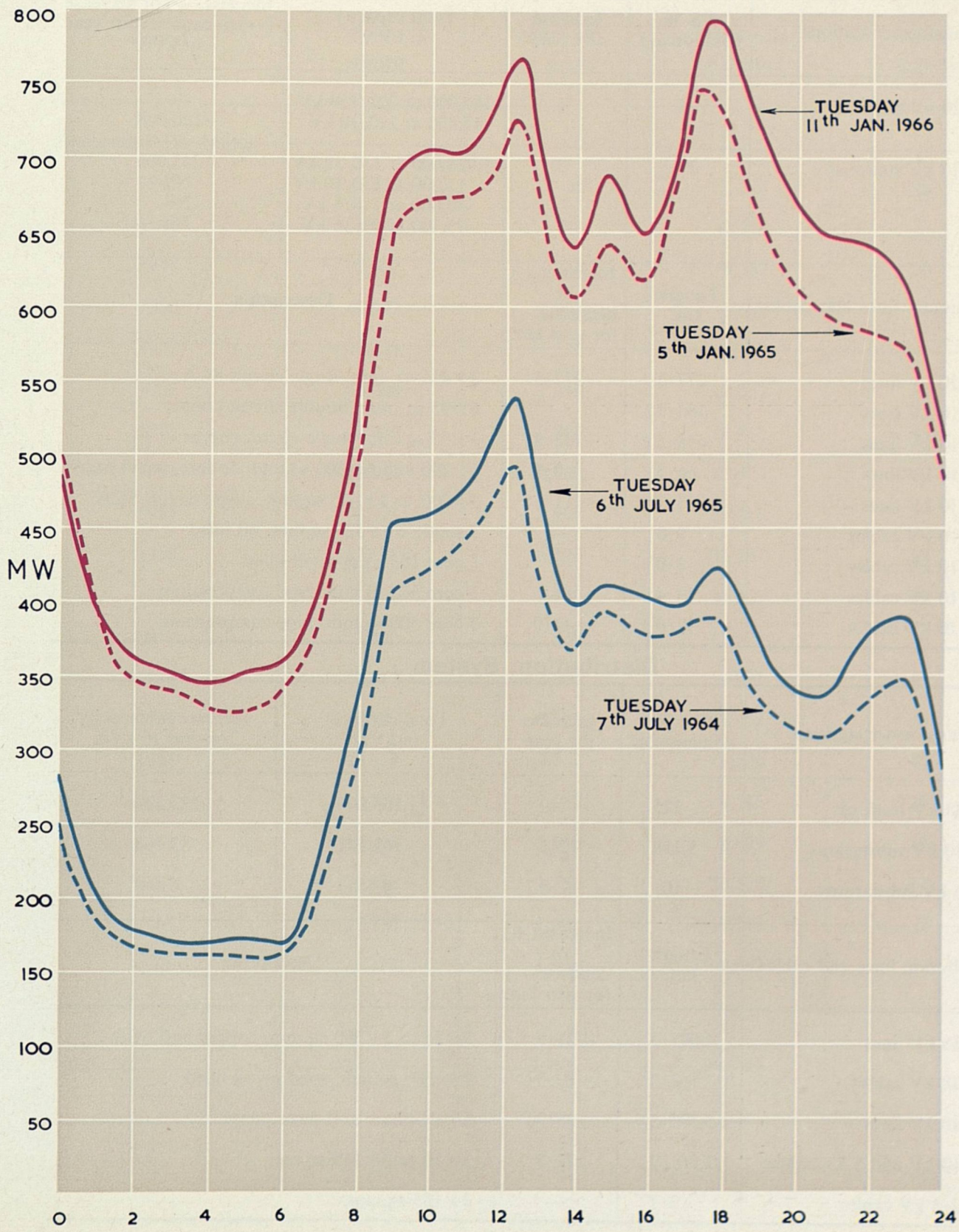
Station	Location	Installed capacity kW	Units sent out kWh × 10^6	Plant load factor %	Fuel type	Total fuel used tons	Total fuel cost £	Fuel cost per unit sent out pence	Total cost per unit sent out pence
Pigeon House (Stand-by Station)	Dublin City	90,000	8·326	—	Coal Oil	1,300 6,500	—	—	—
North Wall	Dublin City	48,000	101·929	26·5	Oil	38,300	177,036	0·417	1·192
Portarlington	Co. Laoise	37,500	112·435	36·9	Sod Peat	134,300	431,244	0·917	1·490
Allenwood	Co. Kildare	40,000	132·026	40·6	Sod Peat	160,100	511,142	0·930	1·565
Marina	Cork City	120,000	619·135	61·5	Coal Oil	— 175,700	792,532	0·307	0·563
Ringsend	Dublin City	210,000	756·795	47·2	Coal Oil	22,600 208,800	1,020,325	0·324	0·694
Ferbane	Co. Offaly	90,000	188·901	26·3	Milled Peat Oil	359,300 4,600	571,585	0·726	1·587
Four 5 MW Stations	West Coast	20,000	25·464	16·0	Sod Peat	42,900	117,121	1·114	3·037
Lanesborough	Co. Longford	20,000	55·344	33·4	Sod Peat	55,200	177,085	0·769	1·418
Arigna	Co. Roscommon	15,000	78·390	63·5	Coal Oil	48,700 300	224,029	0·686	1·131
Rhode	Co. Offaly	80,000	188·951	29·2	Milled Peat Oil	331,800 2,500	509,919	0·652	1·322
Bellacorick	Co. Mayo	40,000	27·568	8·7	Milled Peat Oil	50.000 500	80,213	0·686	3·360*
Shannonbridge	Co. Offaly	40,000	145·157	44·3	Milled Peat Oil	220,800 1,200	335,867	0·557	1·060

Milled peat figures in Ferbane, Rhode and Bellacorick are for equivalent standard fuel of 55% moisture content. Sod peat figures in Portarlington, Allenwood and Lanesborough are for equivalent standard fuel of 30% moisture content. Sod peat figures in the Four 5 MW Stations are actual tonnages as received. The outputs are given for the year ended 31st March, but for convenience, costing figures are for 52 weeks.

*Station in operation for part of the year only.

TYPICAL DAILY GENERATION LOAD CURVES

Appendix 10



Appendix 11

TRANSMISSION AND DISTRIBUTION SYSTEMS IN COMMISSION
At 31st March, 1966

Transmission System

Transformer stations	No. in commission	Increase for year	Total capacity in kVA	Increase (+) or decrease (−) in capacity for year in kVA
220 kV stations	2	1	189,000 at 220/110 kV 47,000 at 220/10 kV	+126,000
110 kV stations	29	3	1,028,000 at 110/38 kV 15,000 at 110/10 kV 40,000 at 110/6 kV 73,400 at 38/10 kV	+245,000 Nil Nil Nil

Transmission lines and cables	Length km.	Increase(+) or decrease(−) for year km.	Description
220 kV lines	277·5	+277·5	3×425 sq. mm. single circuit SCA
110 kV lines	188·3	—	6×95 sq. mm. double circuit copper
110 kV lines	638·5	−102·8	3×95 sq.mm. single circuit copper
110 kV lines	66·5	+2·1	6×200 and 6×300 sq.mm. double circuit SCA
110 kV lines	1,863·3	+111·0	3×200 to 3×425 sq.mm. single circuit SCA
110 kV cables	9·8	—	3 single core 325 sq.mm. oil filled
110 kV cables	3·0	—	3 core 185 sq.mm. oil filled
110 kV cables	13·4	—	3 core 300 sq.mm. pipe compression
110 kV cables	12·0	+12·0	3 core 500 sq.mm. pipe compression

Distribution System

Transformer stations	No. in commission	Increase for year	Total capacity in kVA	Increase in capacity for year in kVA
38 kV stations	225	9	1,163,800	122,200
10 kV substations	5,158	212	961,571	83,568
5 kV substations	101	8	82,553	6,680

Distribution lines and cables	Length km.	Increase (+) or decrease(−) for year km.	Description
38 kV lines	4,007·3	+25·5	3×35 to 3×300 sq.mm. copper and SCA
38 kV cables	162·6	+10·5	95×500 sq.mm. solid or oil-filled
10 kV lines	5,799·5	+38·9	Single-phase and three phase
10 kV and 5 kV cables	1,261·9	+72·9	3×10 to 3×185 sq.mm.
3·3 kV cables	3·7	—	3×185 sq.mm.

Appendix 12

PROGRESS OF THE RURAL ELECTRIFICATION SCHEME

Period	Poles erected	Miles of line strung	Consumers connected	Areas completed
Year ended 31st March				
1947	1,300	39	Nil	Nil
1948	15,986	721	2,203	7
1949	32,002	1,730	9,262	30
1950	40,972	2,083	13,688	45
1951	42,423	2,232	15,803	49
1952	46,008	2,466	18,067	49
1953	48,059	2,703	18,818	49
1954	68,382	3,769	23,477	60
1955	91,391	4,977	27,316	75
1956	112,616	6,196	34,257	99
1957	91,794	5,149	34,627	80
1958	61,696	3,332	17,725	60
1959	50,113	2,700	14,997	45
1960	47,982	2,592	13,458	40
1961	43,757	2,322	11,570	40
1962	30,155	1,652	9,515	26
1963	22,062	1,215	8,829	19
1964	29,616	1,551	10,820	12
1965	27,737	1,501	11,773	7
1966	21,219	1,136	9,882	—
TOTALS	925,270	50,066	306,087	792

TO THE MINISTER FOR AGRICULTURE AND FISHERIES

REPORT ON FISHERIES

In accordance with the provisions of Section 10 of the Electricity (Supply) (Amendment) Act, 1961, the Board presents the Annual Report on its fisheries and the Preservation and Operation of Fisheries Account (No. 5) for the year ended 31st March, 1966.

Progress on the Board's work for the rehabilitation of the fisheries on the rivers developed for hydro-electric power was well maintained and the possible effects on fisheries of the new thermal stations being sited on estuarine waters were being examined.

On the River Shannon, the further increase in applications to the Limerick Board of Fishery Conservators for netting licences in the public sector of the fishery continued to cause concern and proposals to ensure that this fishery will not be exploited in the short term were being prepared. Over 8,500 salmon were counted passing into the Shannon midland tributaries. These will provide the basis of a successful salmon angling amenity, but there is still considerable scope for development, provided reasonable conservation measures can be introduced into the commercial netting arrangements.

Unfortunately the salmon disease, which had been present in a number of rivers in the south-west of the country, affected the stocks in the River Lee in January, 1966. By March the disease had spread to the Shannon causing substantial losses among the spring fish. Efforts were made immediately to control the further spread of the disease by removing infected fish from fish passes and weirs, but no real progress can be expected until the causative organism is identified and the origin and sources of infection are isolated. Since the close of the year the disease has spread to other rivers, including the River Liffey, and is a serious setback to the Board's salmon development work. As it is possible that the disease could continue for a number of years, the future of salmon development in Ireland may be gravely threatened. The Board is keeping in close touch with the various parties who are working to combat the disease and has offered facilities and assistance for the urgent study of this problem.

On the Clady where the Board is acquiring a commercial salmon fishery, it was decided, in the interest of stock conservation, to cease netting and to permit all salmon to move upstream for propagation in 1966. The Board also decided to develop the sea trout fisheries which had been adversely affected by the hydro-electric project.

The problem of improving the brown trout fishery in Pollaphuca Reservoir is a difficult and complex one. A heavy restocking programme was carried out and the future plans for the lake will be reviewed in the light of the results. The salmon run counted at the Leixlip fish pass on the River Liffey was the highest ever recorded there by the Board.

On the River Lee the series of experiments, begun in 1962, in connection with the movement of smolts past the hydro dams, continued. In addition further restocking and predator control work was carried out.

The prohibitions on the commercial exploitation of the River Erne salmon stocks were removed by the Minister for Agriculture and Fisheries and the Board operated its commercial fishery at Cathaleen's Fall, taking 20% of the run for marketing. The Erne stocks have shown considerable recovery in recent years. On the Shannon 28% of the run of salmon at Thomond Weir was taken for marketing and on the Lee the Board again decided not to fish commercially.

HATCHERIES AND REARING STATIONS

The extension of Parteen rearing station, which increased the rearing capacity for salmon smolts by 100%, has been completed. During the year 720,000 salmon fry, 662,000 fingerling and 200,000 smolts were planted out; 20,000 of these smolts have been tagged and 180,000 have been fin-clipped to help in the study of salmon movement. Experimental rearing carried out on the Erne is being continued.

Hatchery production figures for 1965/66 were as follows:

Hatchery	Salmon ova	Sea trout ova	Losses during incubation
Shannon (Parteen)	1,570,000	100,000	2.0 %
Lee	360,000	—	2.0 %
Erne	610,000	—	0.9 %

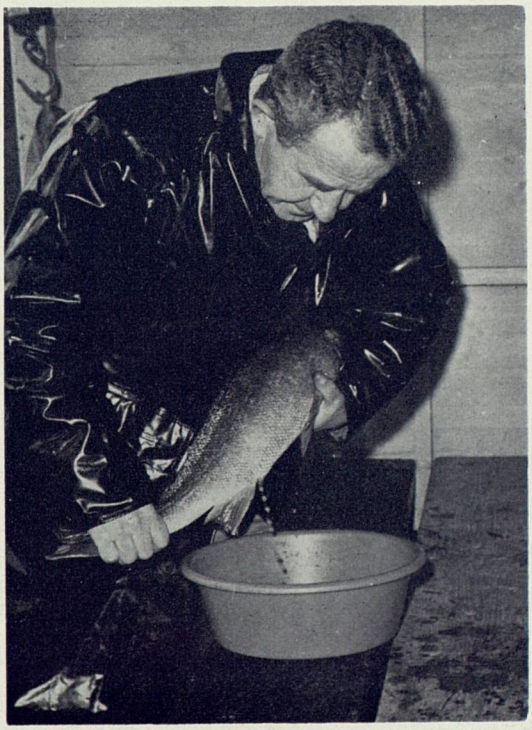
The Shannon figures include 100,000 salmon ova and 100,000 sea trout ova obtained from Scotland and 250,000 salmon ova from Glenties Hatchery.

COMMERCIAL FISHING

Salmon: Despite a mid-summer glut, due to the disposal in British and Continental markets of the extensive trawler catches taken off the coast of Greenland, revenue from sales of salmon increased from £22,200 to £28,700.

Eels: The Board continued its policy of stocking the Shannon with elvers taken from other Irish rivers; 7,250,000 elvers were planted in the Lough Derg area. Revenue from sales of eels at £17,400 showed a substantial increase.

Stripping ova from live salmon at Parteen Hatchery



CONSERVATION AND ANGLING

The number of salmon in the midlands continued to increase and the co-operation of clubs in the area in framing regulations was generously given. In the Limerick area, the Mulcair fishing was sporadic due to weather conditions, but the Castleconnell spring fishing was the best for many years. The appearance of the salmon disease in all these rivers, however, is a matter of grave concern for the future.

COUNTING OF SALMON

The numbers of salmon counted in each of the last two years were as follows:

	1965	1964
Thomond weir, Limerick	19,704	13,997
Ardnacrusha fish pass	7,178	4,662
Parteen fish pass	1,551	957
Inniscarra fish pass	914	341
Carrigadrohid fish pass	534	140
Cathaleen's Fall fish pass	9,885	8,715
Gweedore weir, River Clady	340	215
Leixlip weir	3,152	1,540

FINANCIAL

The financial aspects of the fisheries activities, on the five river systems directly affected by hydro-electric development, are shown in Account No. 5.

The revenue figure of £49,003 shows an increase of £14,001 over last year due to increased sales of salmon and eels. The continuing expansion in the preservation and development of fisheries is reflected in the total expenditure of £70,745.

The Board gratefully acknowledges the assistance and help received from the officers of Fisheries Division, from the Ministry of Commerce for Northern Ireland, The Inland Fisheries Trust, Bord Failte, Aer Lingus, the Board of Conservators and local angling clubs.

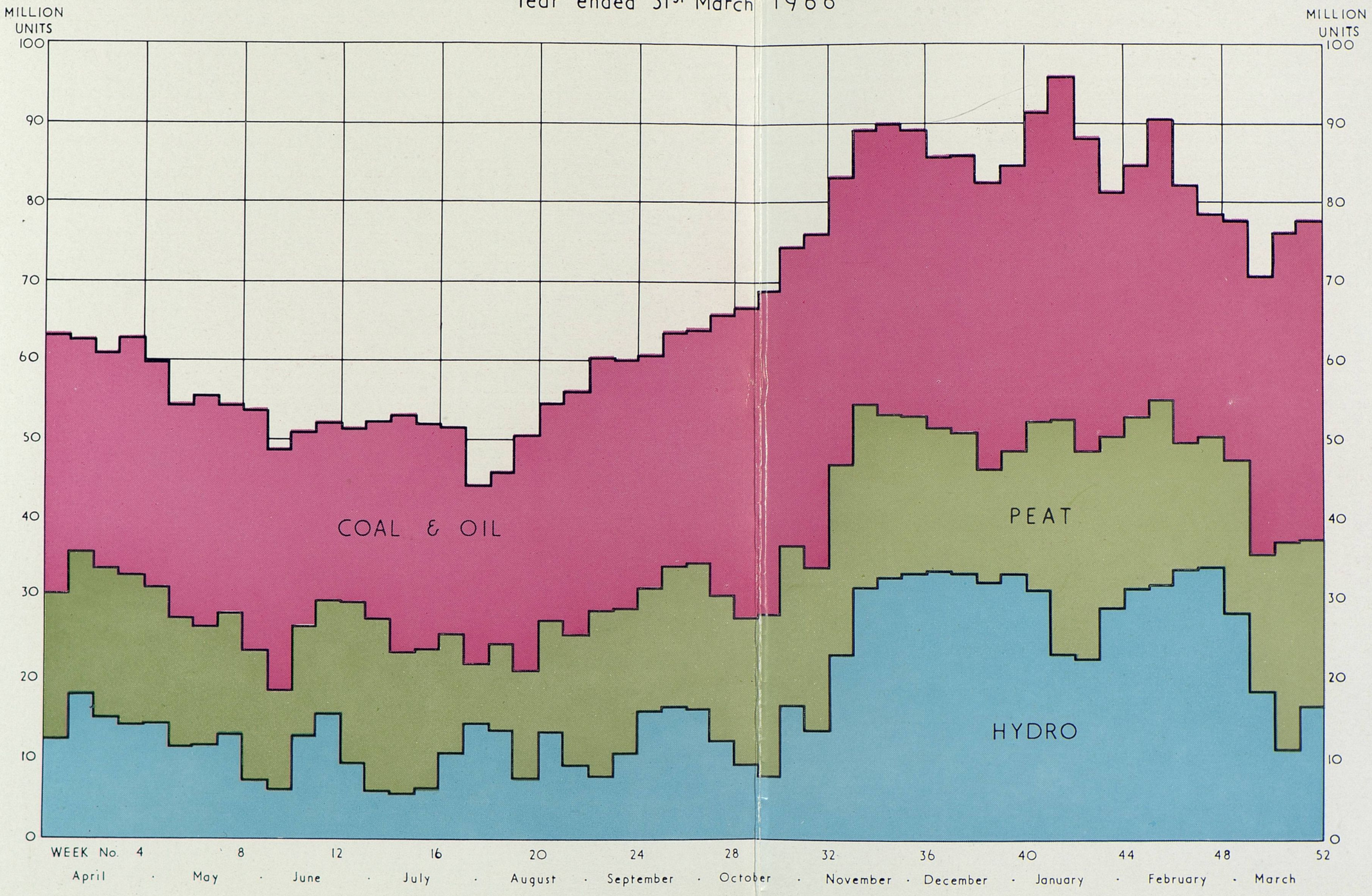
(Signed) *T. Murray*, CHAIRMAN
Henry Kennedy
C. Gordon Lambert
T. MacMahon
Breandán Ó Cearbhaill
J. A. Ryan
J. C. Tonge

(Signed) *J. G. Gargan*, SECRETARY
5th July, 1966

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WEEKLY GENERATION

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