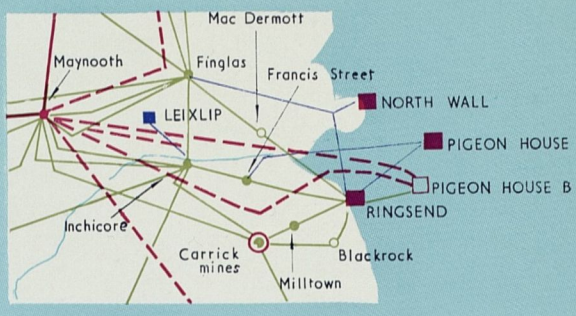
ESB

Forty fourth Annual Report
For year ended 31st March 1971

ELECTRICITY SUPPLY BOARD · IRELAND

GWEEDORE
CLADY
Letterkenny
CATHALEEN'S FALL
CLIFF
Sligo
BELLACORICK
ARIGNA
To E.B.N.I.
Shankill
Dundalk
Louth
Carrick-on-Shannon
Castlebar
Drybridge
Navan
Platin
LANESBOROUGH
Mullingar
Finglas
Maynooth
Athlone
SHANNON BRIDGE
RHODE
ALLENWOOD
See inset below for city side circuits
SCREEB
Inchicore
Derryfrench
Tynagh
Galway
FERBANE
Newbridge
PORTARLINGTON
Carrick-mines
GOLDEN FALLS
POLLAPHUCA
Portlaoise
TURLOUGH HILL
Carlow
Ennis
Arklow
MILTOWN MALBAY
Shelton Abbey
ARDNACRUSHA
Killonan
Thurles
Kilkenny
Limerick
TARBERT
Rathkeale
Wexford
Cahir
Charleville
Waterford
GREAT ISLAND
Tralee
Waterford South
Mallow
Dungarvan
CAHIRCIVEEN
Macroom
Kilbarry
Knockraha
CARRICADROHID
INNISCARRA
MARINA
Haulbowline
Whitegate
Ringaskiddy
Raffeen
Dunmanway
Trabeg
Bandon



General Outline of the

GENERATION and TRANSMISSION SYSTEMS

31st March, 1971

HYDRO STATIONS
STEAM STATIONS
STEAM STATIONS PROJECTED
PUMPED STORAGE STATION PROJECTED
220 KV TRANSFORMER STATION
220 KV TRANSFORMER STATIONS PROJECTED
110 KV TRANSFORMER STATIONS
110 KV TRANSFORMER STATIONS PROJECTED
220 KV LINES
220 KV LINES PROJECTED
110 KV LINES
110 KV LINES PROJECTED
275 KV LINES PROJECTED
OTHER HIGH VOLTAGE LINES
NORTH/SOUTH INTERCONNECTION No. 2

HIGHLIGHTS OF THE YEAR

	1970–71	1969–70
REVENUE:		
Electricity	£44,082,000	£39,390,000
Appliance Sales	£2,124,000	£2,175,000
Installations	£1,390,000	£980,000
Net Revenue	(—) £2,593,000	£189,000
ASSETS	£258,358,000	£233,090,000
SALES (in millions of units)	4,862	4,412
GENERATION CAPACITY (MW)	1,438	1,410
PEAK DEMAND (MW)	1,203	1,128
LOAD FACTOR	*55·1%	53·2%
NO. OF CONSUMERS	805,736	786,500
NO. OF EMPLOYEES	11,824	11,291

*Corrected for voltage level 54·1%

(Cash figures are rounded off to the nearest thousand)

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TO THE MINISTER FOR TRANSPORT AND POWER

The Board presents the Annual Report and Accounts for the year ended 31st March, 1971, in accordance with the Electricity (Supply) Acts, 1927 to 1970.

The year 1970/71 saw a number of significant events in the development of the Board. These included—

—the completion and signing of a Comprehensive Agreement between the Board and the Trades Unions
—the establishment of a new management organisation and the introduction of new management systems aimed at further improvements in efficiency
—the conclusion of a second loan agreement with the World Bank, this time for an amount of 20 million dollars towards the cost of the first 250 MW unit at Tarbert, Co. Kerry
—the commissioning of the North/South interconnector (with all the implications which this entails for future planning).

During the year, the Board had to meet a series of problems directly caused by the effects of inflation which, cumulatively, created a deficit situation. Inflation has affected the Board's operating costs through the growth in pay-roll costs, in fuel prices, and in the servicing of capital development programmes. The indications are that these costs will continue to rise. The Board is required by law to achieve a 'break-even' position in its Revenue Account. Despite increases in rates of charge and improved productivity, inflationary pressures have made this a difficult objective to achieve.

In a capital intensive industry such as electricity supply, the cost of servicing capital requirements is the major item of expense. This year it absorbs 38% of the total revenue and the burden on the Revenue Account continues to grow. The reasons are, the present high level of interest rates for home and international borrowing, the fact that loan durations are tending to shorten and the effect of the larger scale of capital investment which the Board must incur to meet the continuing growth in demand for electricity.

The deficit of £2·45 million for electricity trading in the year just past is due to the following factors:

1. The three items which, between them, account for 90% of the Board's revenue costs (fuel, pay-roll and capital charges) have continued to rise;
2. The very mild winter and the aftermath of a number of external industrial disputes resulted in revenue being short of expectation by over £800,000;
3. Price changes added the sum of £350,000 to the amount provided for fuel costs;
4. Pay awards and improvements in conditions made during the period added a further £240,000 to revenue costs;
5. Other price increases and bad debts resulting from the bank strike cost £100,000.

A further factor was the delay in the implementation of necessary tariff increases which resulted in a short fall in revenue of over £600,000.

The Board resorts to an increase in tariffs only when it becomes clear that no other course is possible. In spite of rising costs the Board, by increasing the efficiency of its operations, has succeeded in keeping increases in electricity costs far below the increase in the general price index in the last five years. It is unlikely, however, that this record can

be maintained in the future, and it is expected that henceforward electricity costs will tend to rise in parallel with the rise in the general level of prices. One of the major factors contributing to this situation is that the growth rate in demand for electricity in Ireland is so high. This necessitates heavy capital investment much of which (by reason of the long construction periods involved) has to be serviced before the projects themselves become productive. Present indications are that a further revision of tariffs will be necessary early in 1972.

Because of the deficit situation in 1970/71 the Boards modest reserves were exhausted and, in fact, a loss of over £1 million has been carried forward to the current year. It is necessary to restore these reserves as rapidly as possible, partly as an insurance against losses which may arise at any time as a result of external factors (e.g., strikes in industry, or short-term recessions) and also to assist in maintaining the required cash flow to meet capital and other commitments. In the longer term, the price of electricity to industry, to commerce and to the domestic consumer can be kept relatively stable only by increasing the availability of low cost money which these reserves represent.

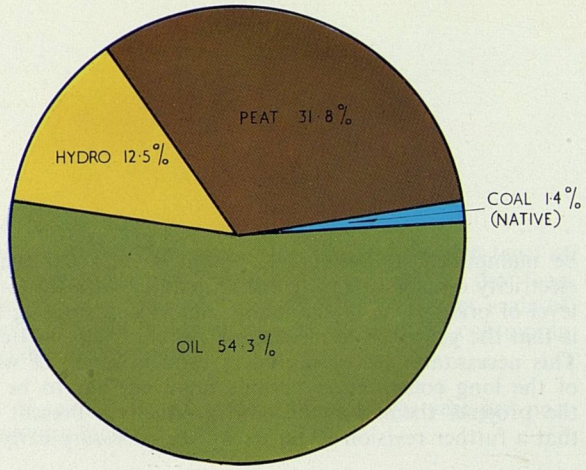
The E.S.B. was not established to create profits; it was conceived as a public service organisation but is, nevertheless, required by statute to pay its way fully and without subsidy. Its revenue must come from its customers, i.e. the users of electricity. The additional costs which arise from the present inflationary trends and from the nation's demand for ever-increasing supplies of electricity have to be paid for by these customers—there is no other way in which they can be met if the E.S.B. is to operate as a commercial enterprise. The Board will maintain its efforts to increase efficiency and thereby reduce the effects of inflation on the consumer, but it is inevitable that—in common with all other prices—electricity costs will tend upwards until inflation has been brought under control. Meanwhile the Board's efforts to promote increased efficiency have been successful in keeping prices to date lower than those which apply in most parts of Britain and in Europe generally. It is hoped that its favourable position on the international price table will be maintained so that industry in Ireland and the general consumers will not suffer any disadvantage in electricity prices in comparison with other countries.

Once the need for a tariff increase has been established there is no virtue in delaying its implementation. To do so merely intensifies problems. It is in the interests of the community as a whole that the Board should maintain its sound financial position and retain the reputation it has achieved, at home and abroad, for prudent management of the vast capital investment programme which it is called upon to control. The continuing success of this mission depends primarily on maintaining a healthy relationship between revenue and expenditure.

During the current year (15th February, 1971) the death occurred of Dr. T. A. McLaughlin, R.I.P., who for so many years served as a member of the Board with such high distinction. The international reputation which he had attained marked him out as a man of whom any nation might be proud, while his unique contribution to the national economy in promoting the original Shannon Scheme was an achievement for which Ireland will continue to be indebted to him. The Board again tenders to his relatives its sincere sympathy on their bereavement. May he rest in peace.

ELECTRICITY PRODUCTION

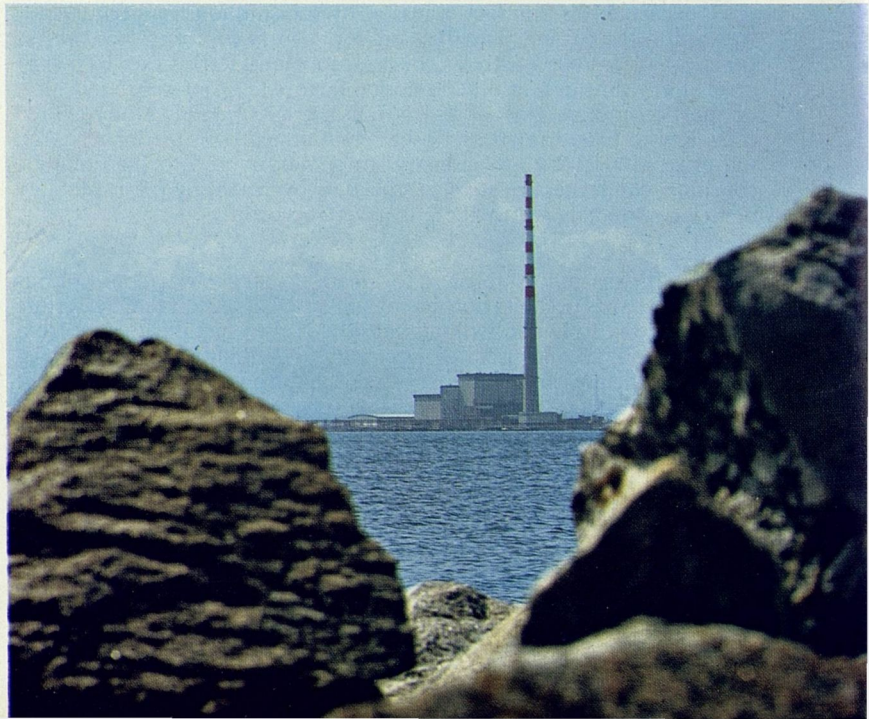
The total electricity output for the year was 5,921 million units, an increase of 10·4% over the previous year. Electricity supplied to the system was provided as shown in the accompanying diagram.
Generation from fuel oil increased by 12% to 62% of all thermal generation. Output from the peat stations equalled that of last year while output from the hydro stations was considerably higher.
Generation from native sources provided 45·7% of total output. The corresponding figures for the previous two years were 49·7% and 54·9%. This progressive decline in the contribution of native sources to the total output is likely to continue unless the exploration of the sea uncovers economically exploitable deposits of gas or oil.



The total installed capacity of the Board's generating stations, following the commissioning during the year of two Gas Turbine units at Pigeon House 'B' station, was 1,437·5 MW, as follows:—

hydro plant	**219 MW**
steam plant (sod peat)	**117·5 MW**
steam plant (milled peat)	**290 MW**
steam plant (coal/oil)	**783 MW**
gas turbine plant (oil)	**28 MW**
	1,437·5 MW

This total includes 90 MW (name plate rating) of old stand-by plant at Pigeon House which gives a firm capacity of 60 MW. The four 5 MW stations designed to burn hand-won peat are included in this total.



The Pigeon House 'B' generating station at Ringsend, Dublin.

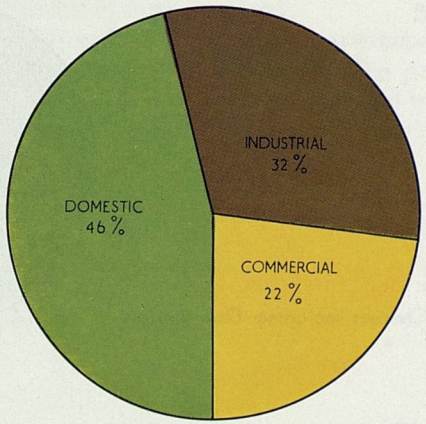
ELECTRICITY SALES

Total electricity sales in 1970/71 were 4,862 million units, an increase of 10·2% over the previous year. Of the total, 46% went to domestic, 32% to industrial and 22% to commercial consumers.

Demand for electricity has been increasing steadily year by year. This requires the continual addition of costly generation, transmission and distribution plant. Available plant must be sufficient to meet peak demand and, obviously, to achieve maximum economy in operation it is necessary to strive for the greatest possible use of electricity in off-peak periods. The Board's marketing activities are directed towards this end and it is gratifying to record that, as a result of these efforts, the annual load factor (the ratio of average demand to peak demand) has improved from 47·8% in 1960/61 to the 1970/71 figure of 55·1% (corrected for voltage level, 54·1%).

The domestic space heating market has been a particularly fruitful field for the development of off-peak demand. Electricity sales in this market have increased by 25% annually in recent years and more homes now use off-peak electricity for central heating than any other source. This is due primarily to the success of the Board's Warm Home Plan Campaign which advertised the advantages of electric storage radiators. For new homes there is now available a range of Electricaire Heaters and in 1970/71 these heaters were installed in 842 new homes throughout the country, an increase of 215% over the previous year.

In March, 1971, an Electricity and Productivity Conference and Exhibition was organised by the Board in co-operation with the Irish Branch of the Institution of Electrical Engineers, coinciding with the centenary of the Institution; it coincided also with an expansion of the Board's Industrial Advisory Service. The purpose of the Conference and Exhibition was to show the contribution which electricity can make towards increasing industrial productivity. Hopefully, this event will prove to have been a milestone in the development of a partnership between the Board and industry which will prove fruitful for both partners.





E.S.B. Staffs provide expert advice in showrooms.

FINANCIAL RESULTS

Revenue from the sales of electricity and miscellaneous revenue totalled £44,224,957, an increase of £4,746,298 over the previous year. Expenditure incurred was £46,683,339 an increase of £7,380,931 over the figure for 1969/70. As the revenue was insufficient to meet the expenditure a deficit of £2,458,382 resulted.

Turnover tax paid by the Board amounted to £476,927.

A special service for consumers was provided on the change-over to decimal currency.

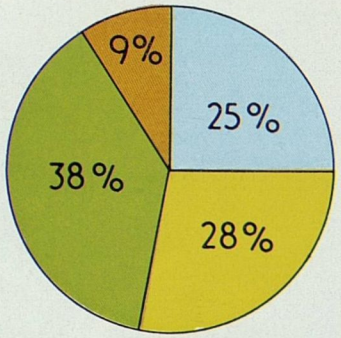


The summarised Revenue and Expenditure figures are as follows:—

	Year ended 31st March, 1971	Preceding Year
	£	£
Working expenditure	28,985,071	23,728,773
Interest (net)	7,981,781	6,816,183
Depreciation provision	6,013,000	5,621,000
Capital redemption	3,703,487	3,136,452
	46,683,339	39,302,408
Revenue (including miscellaneous revenue)	44,224,957	39,478,659
	2,458,382 (Deficit)	176,251 (Surplus)

Taking credit for installations profit and allowing for the deficits on appliance sales and fisheries, the result for the year is a total deficit of £2,593,234 as shown in the Net Revenue Account (No. 8). Having charged the Stock Issue expenses of December, 1970, £32,116, having brought forward from the previous year the credit on the Net Revenue Account of £106,297 and having transferred to the credit of the Account the balance in the Contingencies Reserve, £1,450,000, the debit balance carried forward to 1971/72 is £1,069,053.

Expenditure



Capital Charges including Depreciation
Payroll
Fuel
Materials, Transport and Services

CAPITAL BORROWING

The capital expenditure in the year was financed by

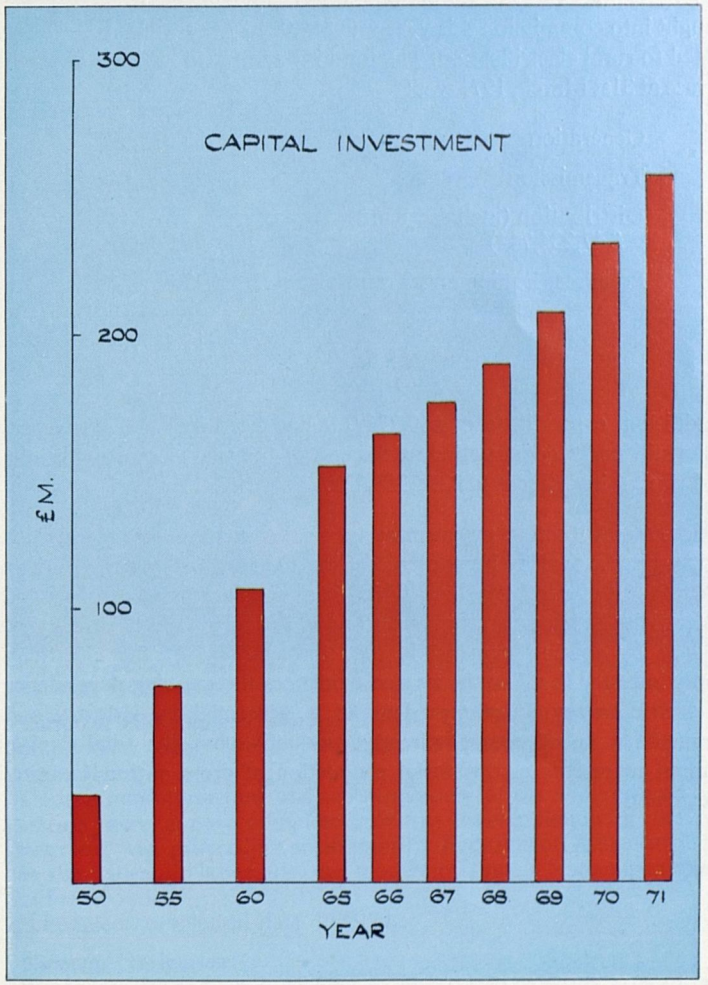
(a) internal resources, arising mainly from provisions for depreciation,

(b) the issue of redeemable public stocks in the home market,

(c) loans from the World Bank and short term credits for the construction of major plant, and

(d) borrowings brought forward from the previous year.

The Electricity (Supply) (Amendment) Act 1970 authorises a capital expenditure not exceeding £290 million for general purposes, excluding rural electrification. At the 31st March 1971 the Board had approved expenditure totalling £242,218,161 of which £170,352,417 represented electricity assets in commission, the balance of £71,865,744 representing either work in progress or work approved.
The legislative limit to expenditure on rural electrification is £50 million inclusive of capital subsidy for rural electrification provided by the State. At the 31st March, 1971, the amount approved was £48,375,271 of which £47,234,744 represented assets in commission and £1,140,527 work in progress or approved.



CAPITAL EXPENDITURE ON ASSETS

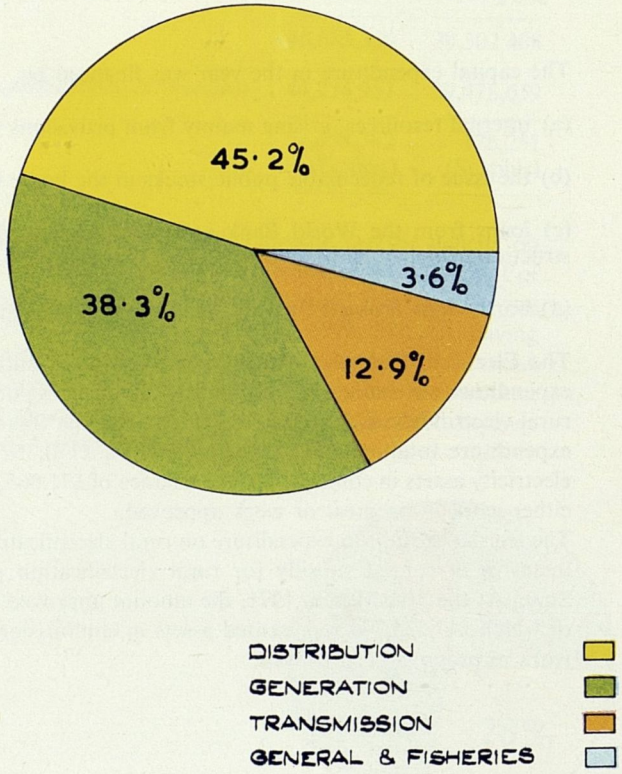
The continuing growth in the demand for electricity calls for a high level of capital investment in new assets. The value of such assets brought into commission this year was £14,021,872 of which £3,447,615 related to rural electrification. The total investment in assets in productive use at 31st March, 1971 was:

	£
Generation	83,333,695
Transmission	28,120,842
Distribution (includes Rural £47,234,744)	98,243,375
Premises, Equipment, Transport, etc.	7,889,249
	217,587,161

In addition, expenditure of £40,771,077 had been incurred on capital works still under construction at the end of the year. Accordingly, the fixed capital investment is £258,358,238.

The asset construction programme to meet a continuing 10% growth rate requires a further investment during the next 7/8 years, of some £300 million at current values, which is as much as has been invested in electricity development here up to now. A heavy scale of investment dictated by soaring demand is the characteristic of the electricity supply industry in all countries and evidences the growing dependence on electric energy. Insofar as demand is generated by industry and commerce it is, of course, directly productive but the total capital required represents a substantial proportion of gross national capital investment.

CAPITAL INVESTMENT IN FIXED ASSETS



MAJOR CONSTRUCTION WORKS

The Board has an extensive building programme in hand (outlined below) and work is going ahead on the general planning and preparation of specifications for a Nuclear Power Station. Apart from contributing significantly to generating capacity, a nuclear station would lessen the Board's dependence on oil. However, there are many inter-related problems involving changing technology, capital availability and timing to be resolved before the Board will be in a position to make a firm submission to the Government's proposed Nuclear Energy Board. Meanwhile, possible sites are being investigated with a view not only to achieving maximum operational efficiency, but also to preservation of the environment.

The following generating projects were under construction:—

Great Island Station, Co. Wexford (Oil-fired)
1—120 MW Set. Erection of the boiler unit was advanced and erection of the turbine due to commence.
Scheduled completion date 1971/72.

Tarbert Station, Co. Kerry (Oil-fired)
2—250 MW Sets. An order was placed for the boiler units and tenders were received for the turbines.
Site investigation is being carried out prior to commencing site development.
Scheduled completion dates 1975 and 1976.

Pigeon House 'B' Station, Dublin City (Oil-fired)
2—120 MW Sets. The erection of the first 120 MW unit was almost complete and pre-commissioning tests were due to start. Erection of the second 120 MW unit was in progress. The two 14 MW gas turbine units were commissioned.
Major civil engineering works, including the 680 feet high reinforced concrete chimney, were completed.
Scheduled completion dates: Unit 1 — Summer 1971
Unit 2 — 1971/72

Shannonbridge, Co. Offaly (Milled-peat fired)
1—40 MW Set. Orders had been placed for both boiler and turbine units.
Site development has been carried out for the extension.
Scheduled commissioning date 1974/75.



On the Feast of St. Barbara, a special Mass was celebrated in the cavern at the Turlough Hill Project.

Turlough Hill Pumped Storage Station, Co. Wicklow
4—73 MW Sets. Work progressed satisfactorily on the contracts generally.
Underground tunnelling and the excavation for the underground power station were almost completed. Work on completion of the upper reservoir was proceeding satisfactorily. Experiments were carried out in the hydraulic laboratory on models of Lough Nahanagan and the tail race outlet.
Scheduled completion date 1973/74.

Shannon Navigation
Work was started on a scheme to improve navigating conditions on the River Shannon between Lanesboro and Tarmonbarry.

TRANSMISSION SYSTEM

At Maynooth 220 kV station, the 300 MVA 275/220 kV auto-transformer and associated switchgear for the interconnection with Northern Ireland were commissioned. This established a link between the Northern system and that of the Board which is of considerable mutual benefit. A further extension of this station is in progress and has been partly commissioned.

The new 220 kV station at Pigeon House 'B' was completed and a 30 MVA 10·5/110 kV transformer with its associated 110 kV cable and switching bay at Ringsend were commissioned to take the output of two new gas turbines at Pigeon House 'B'. An increase in transformer capacity at Shannonbridge 220 kV station was completed and design and construction work on new 220 kV stations at Louth and Great Island and on an extension at Knockraha 220 kV station were well advanced. Design work on the new 220 kV station at Turlough Hill Pumped Storage Station was in progress and construction work commenced.

New 110 kV stations were commissioned at Mullingar and Platin while existing stations at Ringsend, Shankill, Sligo, Cahir, Inchicore and Francis Street were extended or uprated. Site work is progressing on nine new 110 kV stations and a further four are in course of design. Erection of 220 kV lines from Knockraha to Great Island and from Maynooth to Carrickmines commenced and work continued on a 220 kV line from Maynooth to Louth via Finglas and on a double circuit 220 kV line from Maynooth to Inchicore. Survey and design of the Great Island—Turlough Hill 220 kV line were completed and a survey of the 220 kV line from Turlough Hill to Maynooth was under way.

The first 220 kV underground cable on the system, a 12·5 km. section from the new Pigeon House 'B' generating station to Inchicore was laid and tested. It will be commissioned later this year when the station is put into operation. Work was almost completed on a further length of 220 kV cable from Pigeon House 'B' to Carrickmines. An aluminium conductor cable was laid over part of this route and a recently developed metal inert gas welding system was employed for jointing.

Preparatory work was at an advanced stage for the installation of high-speed intertripping equipment to improve the existing protection of the system and the Board is also investigating schemes of fast busbar protection to reduce outages resulting from faults at major stations. Computer studies were begun to evaluate the performance of protective relays on the transmission network so that the design of future schemes may be improved.

Automatic under-frequency load shedding relays were installed in 30 stations and remote control of the Dublin City 38 kV network was extended to include East Wall Road 38 kV station. Research and development work continued on a number of other projects including switching surge measurements. There was further investigation of station earth potentials and of the effect of the proposed earthing of the 110 kV system neutral.

After a trial exercise, the transmission network of 3,500 km of overhead line was successfully patrolled by helicopter in March, 1971. Each District and Transmission Organisation (Dublin) took part in the patrol by sending a representative to accompany the departmental observer. Although a helicopter had been used for patrol during the 'Debbie' storm emergency in 1961 and, occasionally, for survey and spot inspections, this was the first time that the whole network was inspected from the air.

DISTRIBUTION SYSTEM

Training in various aspects of line work was given to some 300 line staff at the Line School which was opened in Portlaoise in July, 1970. Technical Support staff were also given training in the school. In addition, the school initiated a development programme on new methods and techniques for distribution work.
Advanced systems are being introduced to produce the 'profile', or vertical section of the route, of a power line on a digital plotting machine. Previously a line designer would need to spend days producing such a profile. Now it can be produced in minutes on the plotter and the line designer is able to devote all his skill and judgment to the selection of mast positions and heights.
Lightning storms during May, June and July, 1970, caused loss of supply to 5,200 consumers and damaged 274 single phase transformers. Supply was restored to the vast majority of consumers within 12 hours. Tests carried out on a new system for the location of single phase earth faults on 10 kV overhead networks gave very promising results.

Eleven 38 kV and 433 10 kV transformer stations were completed and put into commission, 126 transformers were retired from service and the operating voltage in four others was increased from 5 kV to 10 kV.

Rural Electrification
During the year, 9,481 new rural consumers were connected.
The recanvass of rural areas under the revised post development scheme was continued and by the end of the year, 573 areas had been re-canvassed. Work had been completed in 523 of these and was in progress in 28 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.
Capital expenditure during the year was £3,084,505. The total invested in the scheme at 31st March 1971 amounted to £48,255,592 of which £17,589,826 was by way of subsidy.
New legislation introduced following the period covered by this report envisages a plan under which all unsupplied premises in rural electrification areas will be given one further opportunity of obtaining supply on a subsidised basis between now and 1975. The Government has indicated that a further subsidy of £10 millions will be made available for rural development. The total cost for the 4-year programme to the completion date in March 1975, will be £18 millions.



Maintenance and repair operates on a 24-hour basis.

APPLIANCE AND INSTALLATIONS TRADING

Service on the customer's premises.



Appliance Trading

Sales of electrical appliances by the Board amounted to £2,030,846, excluding turnover tax, compared with £2,125,090 in the previous year. The gross profit was £318,060 representing a rate of 15·66%. The Appliance Sales Trading Account, having been charged with overhead expenses and interest on working capital, showed a nett loss of £117,538 compared with a nett profit of £12,525 in 1969/70.

The failure to achieve a volume growth in the appliance trading business during the year, with consequent adverse effect on profitability, is attributable largely to the imposition of stringent hire purchase restrictions introduced by Government Order in January, 1970. The Board is concerned that heightened competition for available business may result in the promotion of cheap appliances which do not meet acceptable standards of safety and reliability and in trading generally at a level of gross profit margin which would not allow the provision of an assured after-sales service.

The Board does not intend to depart from its policy of offering for sale only appliances which have been tested for conformity to high standards of safety and reliability; nor does it intend to depart from its policy of providing a good after-sales service to its customers.

Corrective measures are being taken to reverse the adverse trend in profitability in the appliance trading business and bring it back to a profit-making situation as, indeed, the Board is legally bound to do—without sacrifice of standards or service. To secure cost reductions the Board is reviewing the profitability of all outlets with a view to withdrawing from appliance trading in unprofitable locations. At the same time, every effort is being made to promote increased business in all locations.

Many difficulties must be overcome to restore the appliance trading business to a profit-making situation, particularly in the present economic climate and it cannot be expected that a nett profit will be made in the current year but progress towards cost reduction and increased turnover so far indicate the adverse trend is being reversed.

Installations Trading

The value of installations contracts completed amounted to £1,390,137 compared with £980,389 in the previous year. The gross profit was £225,532 representing a rate of 16·22%. The Installations Trading Account, having been charged with overhead expenses and interest on working capital, showed a nett profit of £41,705.

PREMISES

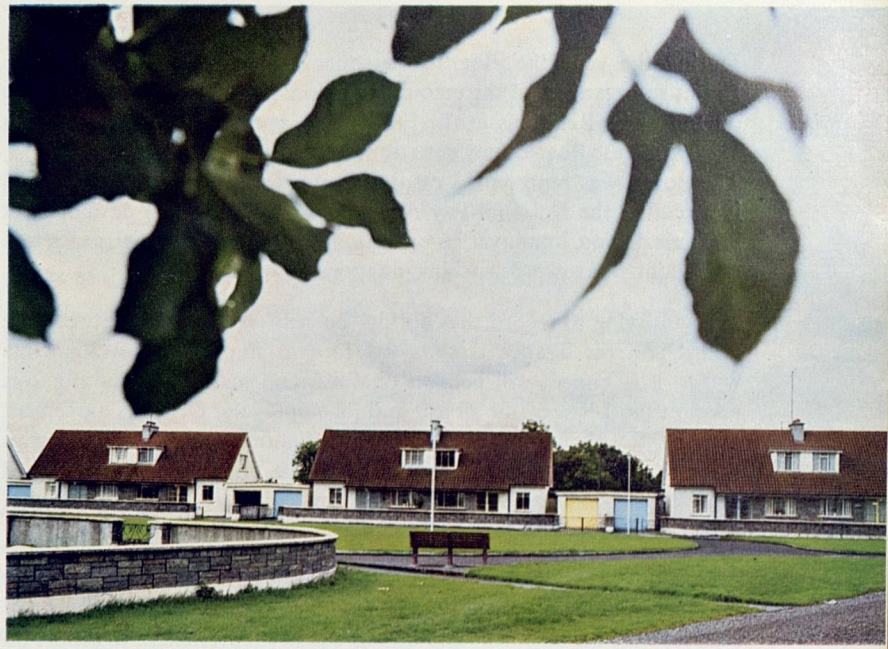
During the year progress was made on the building of staff houses in various parts of the country. Upwards of forty new houses were built on sites at Tarbert, Lanesboro and New Ross, bringing the total number completed to date to three hundred and eighty. All of these houses are of high standard. Most are semi-detached (a small number detached) with at least three bedrooms and with gardens front and back. Garages are being provided with houses now under construction. Work is continuing and almost complete on additional houses required for staff at Great Island Generating Station. Staff Houses are built to provide accommodation within a reasonable distance of generating stations. During the year the customary gardening competition was held for occupiers of these houses.

New service centres were opened during the year at Finglas, Mullingar, Castlebar and Tuam, while extensions were carried out on a number of existing centres.

In November, 1970, the new Fitzwilliam Street offices were completed and officially opened. New District Offices at Tralee were opened in March, 1971. Building had commenced at the site of the new Waterford District Office; reconstruction of Portlaoise office was almost complete. Planning for a new District Headquarters in Galway was well advanced. Site sslection and investigation was in progress for new District Offices for Dublin South and Dublin Northwest Districts. Operations Centres were under construction for Dublin City District at Ballymun and Parnell Road.

Progress on projects, generally, was impeded by the cement strike and by shortage of capital.

Work is proceeding on twenty-seven other projects and thirty-eight are at various planning stages.



E.S.B. Staff houses are provided in many locations.

STAFF

During the year the Board's Personnel function was re-organised. In this re-organisation the recommendations of the Fogarty Committee on Industrial Relations in the E.S.B. were implemented in so far as it was within the Board's power to do so.
The Board was represented on the Employer/Labour Conference and it welcomes the National Pay Agreement as a significant development in Trade Union/Employer co-operation to achieve industrial peace and as a major step towards curbing inflation.

It is gratifying to record that during the year co-operation between the Board and the Trades Unions led to two important developments which, it is hoped, will help to establish and maintain a harmonious relationship between the Board and its employees. One was agreement with all E.S.B. unions to set up an Industrial Council to deal with disputes. The other was a Comprehensive Agreement with unions representing manual staff which covers conditions of employment, works committees, grievance procedures and outlaws unofficial industrial action.

Another significant development was the establishment of working parties, with management and unions equally represented, to report on the introduction of formal job evaluation schemes. An officer of the Labour Court is chairman of the working parties. At the year end they had completed the first stages of their examination.

The Board believes that it and the trades unions have entered into an era of greater understanding and co-operation from which long-term benefits in personnel relations in the electricity industry will gradually develop.

Another important and welcome innovation during the year was agreement by the staff organisations to amend, with the consent of the Minister for Transport and Power, the General Employees Pension Scheme to provide pensions for widows and orphans.
In the field of manpower, the Board's policy is to draw on its own staff to the greatest possible extent to fill higher managerial, administrative and technological positions. This involves a big investment in training schools and development courses for the various categories of personnel. The Board believes that this is a well worth-while investment in its staff. It provides career opportunities over a broad field for young people entering the Board's service who are assured that the way is open to them to reach the highest positions in the Board if they have the ability and the willingness to try.
At the close of the year, the total staff employed by the Board was 11,824. All are there to serve the public throughout the whole country. The Board wishes to express its appreciation of their work and its anxiety and determination to pursue a policy of constructive co-operation with its employees in accordance with their mutual obligations to one another and to its consumers.

FISHERIES AND ENVIRONMENT



Planting young trees at Pollaphuca.

The Board intensified its programme towards the re-habilitation of the fisheries affected by hydro electric development and this is reflected in the increase in expenditure to £124,000.

A detailed report of the Board's activities on Fisheries and Conservation is being published separately. The financial results of the year are shown in Account No. 5.

Notable features of the year have been the continuing decline in the stocks of the valuable spring salmon on the Shannon and in the acute danger to the stocks caused by the incidence of U.D.N. on the grilse. In contrast, silver eel runs continued to show an increase and last year's run was the highest on record.

The Board's work on conservation and environmental development was pushed ahead vigorously particularly in the field of water pollution control. A water quality survey of the River Shannon started and surveys in other waterways are scheduled and will commence in the near future. A biological survey of the estuary of the River Liffey and of part of Dublin Bay has been started and will be continued over the next two years in conjunction with the Dublin Port and Docks Board and Dublin Corporation. Production began at the new rearing station at Carrigadrohid, Co. Cork.

(Signed) *T. Murray*, CHAIRMAN
C. Gordon Lambert
T. MacMahon
B. Ó Cearbhaill
J. A. Ryan

(Signed) *J. G. Gargan*, SECRETARY
31st August, 1971

ACCOUNTS
FOR YEAR ENDED
31st MARCH 1971

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Electricity Production Account for the Year ended 31st March, 1971

	Fuel	Operating Expenses	Maintenance and Repair	Supervision and Local Administration	Works Cost	Per Unit Sent Out 1970/71	Per Unit Sent Out 1969/70	Depreciation and Renewals	Interest and Capital Repayments Allocation	1970/71 Total	1970/71 Per Unit Sent Out	1969/70 Total	1969/70 Per Unit Sent Out
GENERATION	£	£	£	£	£	Pence	Pence	£	£	£	Pence	£	Pence
Coal/Oil													
Marina	622,100	189,304	147,755	37,906	**997,065**	·235	·205	179,000	289,328	**1,465,393**	·345	**1,450,783**	·298
Ringsend	1,775,130	353,834	299,383	77,727	**2,506,074**	·213	·190	391,000	821,254	**3,718,328**	·316	**3,516,068**	·280
Arigna	324,180	72,544	43,231	13,340	**453,295**	·591	·504	30,000	60,430	**543,725**	·709	**516,256**	·603
Great Island	699,814	141,700	121,186	35,587	**998,287**	·192	·173	200,000	453,666	**1,651,953**	·318	**1,540,598**	·287
Tarbert	943,526	118,274	74,641	31,295	**1,167,736**	·146	*	253,000	534,700	**1,955,436**	·244	**608,987**	*
					6,122,457	·204	·197			**9,334,835**	·311	**7,632,692**	·299
Sod Peat (Machine)													
Portarlington	708,305	140,284	112,924	25,090	**986,603**	·663	·555	49,000	69,914	**1,105,517**	·743	**1,063,456**	·626
Allenwood	879,283	156,487	105,924	28,470	**1,170,164**	·600	·531	74,000	100,837	**1,345,001**	·690	**1,273,765**	·618
Lanesborough	432,365	68,901	27,635	11,234	**540,135**	·492	·447	32,000	64,338	**636,473**	·580	**527,808**	·539
					2,696,902	·595	·522			**3,086,991**	·681	**2,865,029**	·605
Milled Peat													
Ferbane	1,570,136	215,871	143,914	44,093	**1,974,014**	·497	·435	177,000	365,573	**2,516,587**	·634	**2,220,764**	·565
Rhode	1,302,964	161,248	157,082	38,900	**1,660,194**	·443	·410	144,000	289,541	**2,093,735**	·559	**1,760,751**	·534
Bellacorick	667,420	127,409	82,920	24,085	**901,834**	·483	·459	80,000	164,812	**1,146,646**	·614	**994,270**	·599
Shannonbridge	560,223	104,233	48,877	21,978	**735,311**	·402	·355	90,000	178,395	**1,003,706**	·548	**949,844**	·485
Lanesborough	533,689	89,587	38,715	18,266	**680,257**	·419	·337	90,000	178,454	**948,711**	·585	**941,027**	·460
					5,951,610	·456	·404			**7,709,385**	·591	**6,866,656**	·533
Sod Peat (Hand-won)													
Four 5 MW Stations	180,596	102,438	49,529	11,640	**344,203**	1·212	1·028	42,000	90,609	**476,812**	1·679	**442,833**	1·438
Peak Station													
North Wall	206,501	111,102	54,382	21,345	**393,330**	—	—	93,000	131,775	**618,105**	—	**435,835**	—
Stand-by													
Pigeon House	83,500	109,494	69,457	26,839	**289,290**	—	—	60,000	84,786	**434,076**	—	**313,136**	—
TOTAL—FUEL STATIONS	11,489,732	2,262,710	1,577,555	467,795	**15,797,792**	·322	·307	1,984,000	3,878,412	**21,660,204**	·441	**18,556,181**	·424
Hydro													
Shannon	—	102,871	151,282	31,615	**285,768**	·090	·108	49,000	236,850	**571,618**	·181	**546,474**	·223
Erne	—	51,086	79,208	26,236	**156,530**	·060	·057	80,000	363,549	**600,079**	·231	**564,357**	·247
Liffey	—	38,901	44,481	16,952	**100,334**	·263	·205	22,000	76,330	**198,664**	·521	**178,834**	·467
Lee	—	27,746	30,026	12,138	**69,910**	·104	·094	52,000	297,489	**419,399**	·625	**378,979**	·621
Clady	—	11,868	9,107	1,703	**22,678**	·142	·134	10,000	72,552	**105,230**	·658	**93,588**	·704
TOTAL—HYDRO STATIONS	—	232,472	314,104	88,644	**635,220**	·091	·094	213,000	1,046,770	**1,894,990**	·272	**1,762,232**	·301
TOTAL—ALL STATIONS	11,489,732	2,495,182	1,891,659	556,439	**16,433,012**	·293	·282	2,197,000	4,925,182	**23,555,194**	·420	**20,318,413**	·410
TRANSMISSION	—	119,922	359,866	232,742	**712,530**	—	—	817,000	1,637,137	**3,166,667**	—	**2,693,652**	—
	11,489,732	2,615,104	2,251,525	789,181	**17,145,542**	—	—	3,014,000	6,562,319				
Electricity purchased in bulk										**9,028**	—	**8,693**	—
General Administration:									£				
Generation									1,411,870				
Transmission									425,871	**1,837,741**	—	**1,473,039**	—
Total Cost										**£28,568,630**	·510	**£24,493,797**	·494
Transferred to Revenue Accounts:									£				
Non-Rural									**20,607,889**			**17,792,930**	
Rural									**7,960,741**			**6,700,867**	
										£28,568,630		**£24,493,797**	

*Recently commissioned

No. 2

Electricity (Non-Rural) Revenue Account for the Year ended 31st March, 1971

	£	£	*1969/70* £
Electricity Production Account		20,607,889	*17,792,930*
Distribution Charges:			
Operation and maintenance	2,906,775		
Reserve for depreciation and renewals	1,355,465		
Interest and capital repayments	2,723,029		
Supervision and local administration	1,833,016		
		8,818,285	*7,078,208*
General Administration:			
Salaries and wages	1,849,747		
Travelling expenses	115,785		
Board members' remuneration *(including full time Chairman)*	9,665		
Stationery	63,496		
Telephones and postage	33,772		
Light and heat	31,641		
Rents and rates	45,084		
Insurance	171,013		
Legal and other professional fees	111,921		
Audit fee	7,000		
Publicity	221,537		
Maintenance of office buildings and equipment	115,294		
Staff training	637,728		
Pensions	59,052		
General assets–interest and capital repayments	463,124		
General assets–depreciation	103,000		
Bad debts	85,000		
Sundry expenses	59,722		
	4,183,581		
Less apportionments charged to:			
Production Account	1,837,741		
Rural Revenue Account	841,992		
Capital Works and other accounts	403,508		
		1,100,340	*840,496*
Turnover Tax		378,204	*335,508*
Balance transferred to Profit and Loss Account		513,651	*2,032,719*
		£31,418,369	*£28,079,861*

	£	*1969/70* £
Electricity Revenue	31,418,369	*28,079,861*
	£31,418,369	*£28,079,861*

No. 3

Electricity (Rural) Revenue Account for the Year ended 31st March, 1971

	£	£	*1969/70* £
Electricity Production Account		7,960,741	*6,700,867*
Distribution Charges:			
Operation and maintenance	2,021,622		
Reserve for depreciation and renewals	1,540,535		
Interest and capital repayments	2,076,584		
Supervision and local administration	1,378,212		
		7,016,953	*5,980,084*
General Administration		841,992	*643,451*
Turnover Tax		98,723	*87,084*
		£15,918,409	*£13,411,486*

	£	*1969/70* £
Electricity Revenue	12,663,609	*11,309,755*
Balance transferred to Profit and Loss Account	3,254,800	*2,101,731*
	£15,918,409	*£13,411,486*

Profit and Loss Account for the Year ended 31st March, 1971

	£	£	1969/70 £
Interest payable to the Minister for Finance	2,512,314		
Interest on E.S.B. Stocks and on other loans (*less* temporary investment earnings)	5,535,134		
Stock management and transfer charges	32,184		
Other interest	1,841,880		
		9,921,512	*8,347,549*
Reserves:			
Repayments of capital advances from the Minister for Finance	950,375		
Sinking fund provisions for redemption of E.S.B. Stocks and other loans	2,754,933		
		3,705,308	*3,138,202*
		£13,626,820	*£11,485,751*
Balance transferred from Rural Revenue Account		3,254,800	*2,101,731*
Balance transferred to Net Revenue Account		—	*176,251*
		£3,254,800	*£2,277,982*

	£	1969/70 £
Interest and Capital Repayments allocated to:		
Production Account	6,562,319	*5,611,006*
Non-Rural Revenue Account	2,723,029	*2,288,484*
Rural Revenue Account	2,076,584	*1,851,029*
Administration	463,124	*358,336*
Fisheries Account	6,124	*6,124*
Interest allocated to:		
Installations Account	58,400	*36,900*
Appliance Sales Account	44,800	*31,400*
Capital Works	1,692,440	*1,302,472*
	£13,626,820	*£11,485,751*
Balance transferred from Non-Rural Revenue Account	513,651	*2,032,719*
Miscellaneous revenue	142,979	*89,043*
Interest receivable	139,788	*156,220*
Balance transferred to Net Revenue Account	2,458,382	—
	£3,254,800	*£2,277,982*

Preservation and Operation of Fisheries for the Year ended 31st March, 1971

	£	1969/70 £
Preservation, operation and other direct costs	98,775	*79,803*
	£98,775	*£79,803*
Balance brought down	33,334	*17,061*
Salaries and sundry expenses	11,223	*9,407*
Fishery rates	5,238	*4,877*
Reserve for depreciation and renewals	3,000	*3,000*
General administrative expenses and interest	4,403	*4,474*
	£57,198	*£38,819*
Balance brought down	57,198	*38,819*
Capital repayments	1,821	*1,750*
	£59,019	*£40,569*

	£	1969/70 £
Sales of fish, letting of fishing rights and miscellaneous income	65,441	*62,742*
Balance carried down	33,334	*17,061*
	£98,775	*£79,803*
Balance carried down	57,198	*38,819*
	£57,198	*£38,819*
Net cost transferred to Net Revenue Account	59,019	*40,569*
	£59,019	*£40,569*

No. 6

Installations Trading Account for the Year ended 31st March, 1971

	£	1969/70 £		£	1969/70 £
Cost value of work for which credit had not been taken at 31st March, 1970	637,428	399,934	Credit taken for contracts completed and charged	1,390,137	980,389
Cost of installation work carried out during the year	1,162,464	1,059,741	Cost value of work for which credit has not yet been taken	635,287	637,428
Gross profit carried down	225,532	158,142			
	£2,025,424	£1,617,817		£2,025,424	£1,617,817
	£				
Salaries, wages and commission	73,565		Gross profit brought down	225,532	158,142
Travelling expenses	8,442				
Sundry expenses	10,960				
General administrative expenses and interest, as apportioned	90,860				
	183,827	117,592			
Balance (surplus) transferred to Net Revenue Account	41,705	40,550			
	£225,532	£158,142		£225,532	£158,142

No. 7

Appliance Sales Trading Account for the Year ended 31st March, 1971

	£	1969/70 £		£	£	1969/70 £
Cost of goods sold	1,603,467	1,627,469	Sales	2,123,563		
Direct costs in connection with sales	109,319	99,659	*Less* Turnover Tax	92,717		
Gross profit carried down	318,060	397,962			2,030,846	2,125,090
	£2,030,846	£2,125,090			£2,030,846	£2,125,090
	£					
Salaries, wages and commission	220,969					
Travelling expenses	25,500		Gross profit brought down		318,060	397,962
Publicity	29,075		Balance (deficit) transferred to Net Revenue Account		117,538	—
Rents, rates and maintenance of property	32,566					
Sundry expenses	23,168					
General administrative expenses and interest, as apportioned	104,320					
	435,598	385,437				
Balance (surplus) transferred to Net Revenue Account	—	12,525				
	£435,598	£397,962			£435,598	£397,962

Net Revenue Account for the Year ended 31st March, 1971

No. 8

	£		£
Profit and Loss Account deficit	2,458,382	Installations trading surplus	41,705
Fisheries cost (net)	59,019	Balance carried down	2,593,234
Appliance Sales trading deficit	117,538		
	£2,634,939		£2,634,939
Balance brought down	2,593,234	Balance brought forward from last year's account	106,297
Transfer to reserve for renewals, of credits (per contra) as additional provision for the renewal of plant	694,416	Credits arising consequent on the retirement of assets and the sale of scrapped material	694,416
Stock Issue expenses	32,116	Transfer from Contingencies Reserve	1,450,000
		Balance carried forward	1,069,053
	£3,319,766		£3,319,766

No. 9

Statement of Repayable Capital and Redemption

	Total Receipts to 31st March 1971 £	Redeemed: Total to 31st March 1970 £	Redeemed: Redeemed during Year £	Redeemed: Total to 31st March 1971 £	Balance Outstanding 31st March 1971 £
Minister for Finance:					
Advances under the Electricity (Supply) Acts and the Shannon Fisheries Act, 1935	**68,450,236**	12,617,923	950,375	13,568,298	**54,881,938**
Electricity Supply Board Stocks:					
5% redeemable 1966–1975	**10,000,000**	3,397,767	116,805	3,514,572	**6,485,428**
6% redeemable 1968–1978	**5,000,000**	1,149,422	201,260	1,350,682	**3,649,318**
6% redeemable 1982–1987	**12,000,000**	1,998,852	397,042	2,395,894	**9,604,106**
6% redeemable 1984–1989	**16,500,000**	2,568,694	612,528	3,181,222	**13,318,778**
7% redeemable 1986–1991	**13,000,000**	831,714	322,320	1,154,034	**11,845,966**
7¼% redeemable 1988–1993	**7,000,000**	121,049	139,650	260,699	**6,739,301**
9½% redeemable 1985–1990	**9,250,000***	—	—	—	**9,250,000**
6% Premium, redeemable 1975 (repayable at 20% premium)	**3,250,000**	—	—	—	**3,250,000**
6% Premium, redeemable 1976 (repayable at 20% premium)	**2,800,000**	—	—	—	**2,800,000**
Funded Loans and Loan Stocks:					
Local Authority Undertakings	**756,021**	756,021	—	756,021	—
New Ireland Assurance Co. Ltd.—repayable by half-yearly instalments, 1962–1987	**500,000**	89,351	14,439	103,790	**396,210**
German Banks 6¾%—repayable by annual instalments, 1975-1984***	**5,657,452**	—	—	—	**5,657,452**
German Banks 7¾%—repayable by annual instalments, 1975-1984***	**8,486,179**	—	—	—	**8,486,179**
International Bank for Reconstruction and Development 6½%—repayable by half-yearly instalments, 1974–1994 ***	**2,456,173****	—	—	—	**2,456,173**
	£165,106,061	£23,530,793	£2,754,419	£26,285,212	**£138,820,849**

*Further issue of £3,650,000 stock—December 1970 included.
**Loan $14,500,000: drawdown scheduled over phased period.
***Equivalents in Irish pounds of amounts repayable in foreign currencies.

No. 10

Statement of Capital Reserves

	£	at 31st March 1971 £	*at 31st March 1970 £*
Non-repayable contributions from Minister for Finance under Electricity (Supply) Acts towards capital cost of supplying rural areas	17,589,826		
Other non-repayable contributions for capital works	3,124,783		
		20,714,609	*18,645,130*
Repaid Capital, less intangible assets, currency revaluation and loan discounts written off		**24,071,634**	*20,801,835*
Provision for depreciation, renewal and retirement of physical assets, together with proceeds of sale of assets, less physical assets retired		**80,456,802**	*73,337,631*
Total Capital Reserves		**£125,243,045**	*£112,784,596*

No. 11

Investment in Capital Assets

	Total at 31st March, 1970, less retirements	Expenditure less retirements during year	Total at 31st March, 1971, less retirements
	£	£	£
Generation	82,293,047	1,040,648	**83,333,695**
Transmission	25,415,686	2,705,156	**28,120,842**
Distribution	90,372,197	7,871,178	**98,243,375**
General	6,815,400	955,039	**7,770,439**
Fisheries	111,652	7,158	**118,810**
	205,007,982	£12,579,179	**217,587,161**
Capital Works in Progress, including payments on account to contractors and others	28,082,073		**40,771,077**
Total Investment in Capital Assets	£233,090,055		**£258,358,238**

No. 12

Balance Sheet as at 31st March, 1971

Liabilities and Reserves	£	31/3/70 £
Repayable Capital as per Statement No. 9	138,820,849	*132,271,266*
Capital Reserves as per Statement No. 10	125,243,045	*112,784,596*
	264,063,894	*245,055,862*
Revenue Reserves:		
Contingencies Reserve	—	*1,450,000*
Plant, Self-Insurance—special risks	500,000	*500,000*
Others	75,000	*75,000*
	264,638,894	*247,080,862*
Net Revenue Account—(Deficit)	(1,069,053)	*106,297*
	263,569,841	*247,187,159*
Loans under the Electricity Supply Board (Superannuation) Act, 1942	123,461	*3,374*
Short-Term Loans	7,920,814	*8,106,371*
	£	
Sundry Creditors and Provisions	15,099,022	
Hire Purchase Debts block discounted with Finance House (contra amount included in Sundry Debtors)	2,338,763	
	17,437,785	*17,522,935*
Sinking Funds	2,787,588	*1,829,731*
	£291,839,489	*£274,649,570*

Note:

At 31st March, 1971 contractual capital commitments amounted to approximately £24,000,000 (1970—£18,000,000)

Assets	£	31/3/1970 £
Capital Assets as per Statement No. 11	258,358,238	*233,090,055*
Electricity Supply Board Stocks (nominal £1,280,719) at cost, held by the Munster and Leinster Bank Nominees Ltd., as depositaries of the Board	1,257,069	*2,673,322*
Sinking Fund Investments (nominal £3,000,177, market value £2,122,095) at cost	2,781,635	*1,824,169*
Stocks of material (at average cost), **Tools and Working Equipment** (at depreciated cost) on hand and in transit	10,170,550	*7,980,309*
Cost Value of Installation and Other Repayable Work in Progress	1,218,748	*1,046,838*
Sundry Debtors, advances for goods not yet delivered, accrued but unbilled revenue and hire purchase debts, less provision for bad and doubtful debts	14,932,301	*21,136,788*
Temporary Cash Investment	3,000,000	*6,250,000*
Cash in Hand and with Banks (Net)	120,948	*648,089*
	£291,839,489	*£274,649,570*

Signed: T. MURRAY, *Chairman*

H. J. COMERFORD, *for Secretary*

Signed: L. J. BARRY, *Director, Finance*

AUDITORS' REPORT

As Auditors appointed by the Minister for Transport and Power, with the consent of the Minister for Finance, we have examined the Balance Sheet and Financial Statements numbered 1 to 12, which have been prepared in accordance with the Electricity Supply Acts.

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, and the Balance Sheet and Financial Statements 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 cost of renewal of physical assets, the original cost of which has already been fully provided.

In our opinion, the Balance Sheet and Financial Statements, when read in conjunction with the Notes appearing on Statement 9 and the Balance Sheet, give a true and fair view of the outcome of the Revenue Operations of the Board for the year ended 31st March, 1971, and of the state of the Board's affairs as at that date.

KENNEDY CROWLEY & CO.
CHARTERED ACCOUNTANTS.

HAINAULT HOUSE,
69-71 ST. STEPHEN'S GREEN,
DUBLIN 2.
31ST AUGUST, 1971.

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NUMBER OF CONSUMERS AND ELECTRICITY SALES

District	No. of Consumers at 31st March		Electricity Sales	
			Units sold in year ended 31st March	
	1971	1970	1971 Millions (Estimated)	1970 Millions (Estimated)
Athlone	46,251	45,430	170·9	156·6
Cork	90,878	88,347	577·4	536·0
Dublin City	137,208	136,953	995·3	913·2
Dublin North/West	70,421	66,405	559·9	506·9
Dublin South	50,272	48,047	385·6	327·3
Dundalk	61,957	60,749	375·8	337·5
Galway	44,647	43,670	204·4	180·4
Limerick	74,614	72,932	507·8	466·3
Portlaoise	54,301	53,267	286·2	261·6
Sligo	73,674	71,781	202·5	184·4
Tralee	39,120	38,036	154·0	140·8
Waterford	62,393	60,883	442·3	400·6
Totals	805,736	786,500	4,862·1	4,411·6

GROWTH OF ELECTRICITY SALES AND NUMBER OF CONSUMERS

Year Ended 31st March	Units Generated (and Purchased) Millions	Units Sold Millions	Revenue from Electricity Sales Thousands	Average Price Per Unit Sold New Pence	Total Consumers
			£		
1930	60·9	43·2	478	1·108	48,606
1935	206·1	157·0	1,258	0·800	103,037
1940	407·0	318·6	1,946	0·612	172,545
1945	406·3	319·0	2,458	0·771	228,008
1950	784·8	626·2	4,774	0·763	310,639
1955	1,461·7	1,192·2	9,522	0·800	461,901
1960	2,096·0	1,692·2	14,724	0·871	610,946
1961	2,262·3	1,863·6	16,263	0·871	628,241
1962	2,453·0	2,005·1	17,731	0·883	642,753
1963	2,714·9	2,238·5	19,445	0·867	659,932
1964	2,900·8	2,375·9	20,383	0·858	678,054
1965	3,240·2	2,682·6	22,488	0·838	697,491
1966	3,546·2	2,953·3	24,077	0·817	716,113
1967	3,851·0	3,238·1	26,690	0·825	726,561
1968	4,246·4	3,570·1	29,898	0·838	745,430
1969	4,749·0	4,012·3	34,457	0·858	765,213
1970	5,245·7	4,411·6	39,400	0·892	786,500
1971	5,921·0	4,862·1	44,082	0·907	805,736

The above table shows, quinquennially from 1930 to 1960 and for each year since, the number of units generated and sold, the revenue, the average price per unit and the number of consumers.

Appendix 3

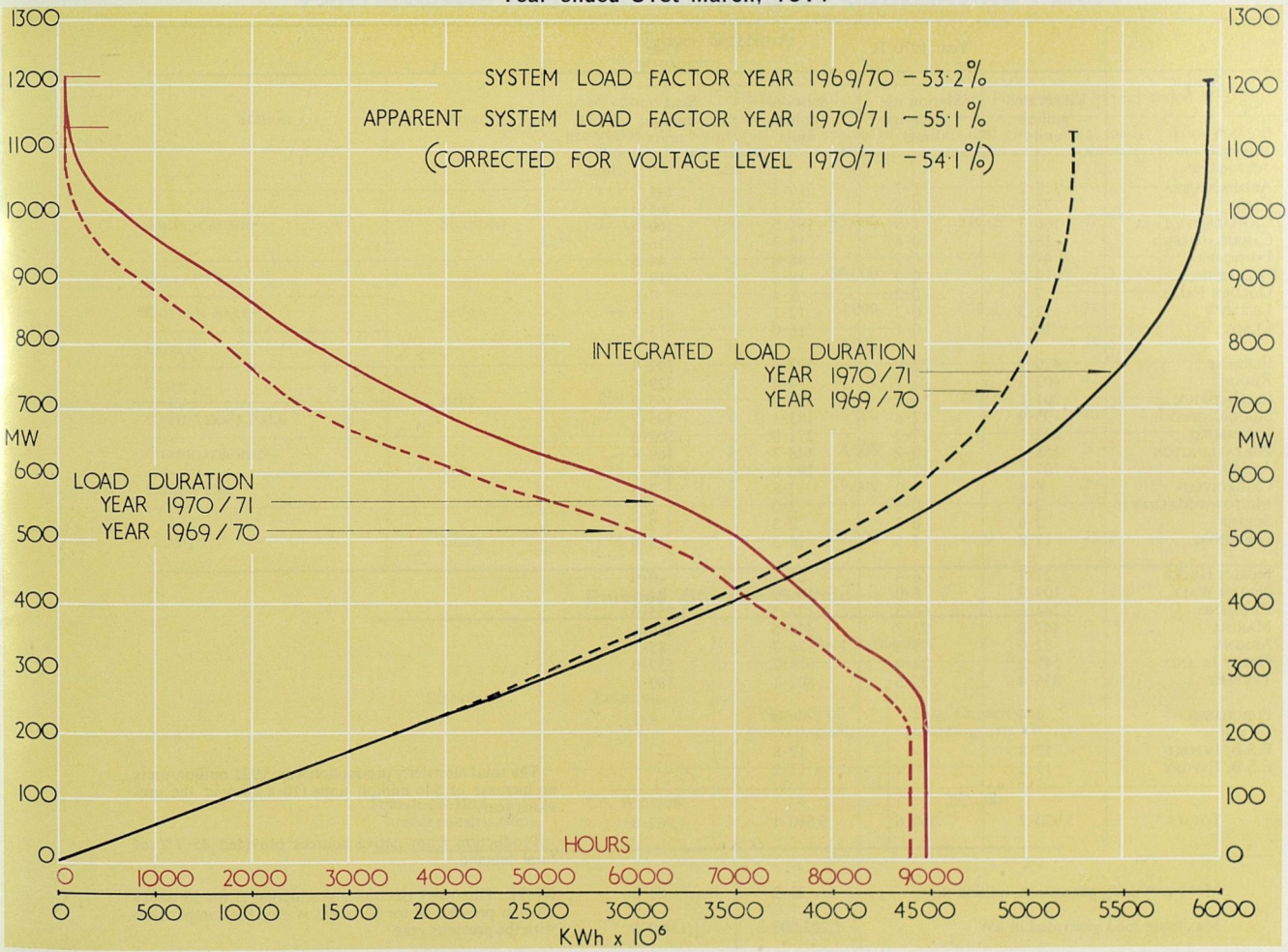
ANALYSIS OF UNITS SOLD

Class of Supply	Year Ended 31st March, 1971 Estimate Millions	Year Ended 31st March, 1970 Estimate Millions	Increase Millions	Percentage Increase
DOMESTIC				
General Supply	1,953·5	1,782·6		
Night Space Heating	253·2	181·7		
	2,206·7	1,964·3		
COMMERCIAL				
Lighting	184·3	177·4		
Heating, Cooking and Waterheating	300·7	301·8		
Motive Power	189·7	179·1		
Night Space Heating	210·7	200·8		
Public Lighting	51·9	46·3		
Miscellaneous	145·2	128·2		
	1,082·5	1,033·6		
INDUSTRIAL				
Maximum Demand	1,389·2	1,224·9		
Lighting	17·6	17·3		
Heating, Cooking and Waterheating	41·2	43·1		
Motive Power	114·9	118·5		
Night Space Heating	10·0	9·9		
	1,572·9	1,413·7		
TOTAL	4,862·1	4,411·6	450·5	10·2

Note: Due to the effects of an industrial dispute, it has not been possible to calculate accurately electricity sales in every class of supply in either of the years 1969/70 or 1970/71. For this reason, the increase and percentage increase figures are not given for the various classes of supply. The sum of 1969/70 and 1970/71 figures are accurate in all cases, and the figures for total electricity sales are accurate for each year.

GENERATION LOAD DURATION AND INTEGRATED LOAD DURATION CURVES

Year ended 31st March, 1971



Appendix 5

GENERATION STATISTICS FOR THE YEAR 1970/71

Station	Year 1970/71			Year 1969/70
	Generated million units	Station use million units	Sent out million units	Sent out million units
ARDNACRUSHA	319·2	2·7	316·5	244·7
CLIFF	75·9	0·6	75·3	68·3
CATHALEEN'S FALL	186·3	1·8	184·5	160·5
CARRIGADROHID	18·7	0·4	18·3	16·5
INNISCARRA	49·5	0·7	48·8	44·5
POLLAPHUCA	19·5	0·9	18·6	19·2
GOLDEN FALLS	7·6	0·2	7·4	7·6
LEIXLIP	12·3	0·2	12·1	11·5
CLADY	16·1	0·1	16·0	13·3
FERBANE	429·9	32·9	397·0	392·9
RHODE	402·3	27·7	374·6	329·6
BELLACORICK	201·1	14·2	186·9	165·9
SHANNONBRIDGE	195·9	12·8	183·1	195·7
LANESBORO	289·1	17·2	271·9	302·6
PORTARLINGTON	158·9	10·2	148·7	169·8
ALLENWOOD	207·1	12·1	195·0	206·3
CAHIRCIVEEN	8·8	1·0	7·8	7·6
MILTOWN-MALBAY	2·5	0·5	2·0	2·1
SCREEB	2·6	0·3	2·3	2·7
GWEEDORE	17·8	1·5	16·3	18·4
PIGEON HOUSE	27·7	6·4	21·3	-0·9
NORTH WALL	109·9	8·0	101·9	24·1
RINGSEND	1,244·6	66·3	1,178·3	1,255·9
MARINA	447·8	23·3	424·5	487·6
ARIGNA	82·0	5·3	76·7	85·7
GREAT ISLAND	547·2	28·0	519·2	537·0
TARBERT	836·4	35·3	801·1	189·6
PURCHASED	4·4	—	4·4	4·1
E.S.B. IMPORT	12·8	—	12·8	—
E.S.B. EXPORT	13·2	—	13·2	—
TOTALS	5,920·7	310·6	5,610·1	4,962·8
Maximum daily generation, million units			23·2	21·6
Maximum load generated in kW			1,203,000	1,128,000

The total electricity production was 5,921 million units an increase of 546 million units (10·4%) over the previous year.

Production from native sources provided 45·7% of total demand.

NOTE: This years electricity production is for 53 weeks but the production for 52 weeks is used for comparision with the previous year.

PARTICULARS AND PERFORMANCE OF GENERATING PLANT

Hydro Stations

Station	River	Average annual generation million units	Plant Particulars		Plant Performance in year ended 31/3/'71		
			Number of generating sets	Capacity of sets kW	Units sent out millions	Plant load factor %	Total cost per unit sent out new pence
ARDNACRUSHA	Shannon	331	4	85,000	316·5	42·2	0·181
POLLAPHUCA	Liffey	48	2	30,000	38·1	7·3	0·521
GOLDEN FALLS			1	4,000		21·3	
LEIXLIP			1	4,000		34·5	
CLIFF	Erne	269	2	20,000	259·8	42·6	0·231
CATHALEEN'S FALL			2	45,000		46·5	
CARRIGADROHID	Lee	85	1	8,000	67·1	26·3	0·625
INNISCARRA			2	19,000		29·3	
CLADY	Clady	14	1	4,000	16·0	45·2	0·658

Pumped Storage Station

Station	Location	Plant Particulars	
		Number of generating sets	Total Capacity of generating sets kW
TURLOUGH HILL (under construction)	Co. Wicklow	4	292,000

Appendix 6 cont.

PARTICULARS AND PERFORMANCE OF GENERATING PLANT

Steam Stations

Station	Location	Plant Particulars					Plant Performance in year ended 31/3/'71			
		Generating Sets		Boilers			Units sent out millions	Plant load factor %	Fuel cost per unit sent out new pence	Total cost per unit sent out new pence
		No.	Total Capacity kW	No.	Total Capacity k.lb./hour	Fuel Type				
ARIGNA	Co. Roscommon	1	15,000	1	165	Coal	76·7	61·4	0·423	0·709
LANESBOROUGH	Co. Longford	2	60,000	1 1	220 380	Sod Peat Milled Peat	109·7 162·2	64·6 48·9	0·394 0·329	0·580 0·585
RHODE	Co. Offaly	3	80,000	3	800	Milled Peat	374·6	56·5	0·348	0·559
BELLACORICK	Co. Mayo	2	40,000	2	420	Milled Peat	186·9	56·5	0·357	0·614
SHANNONBRIDGE SHANNONBRIDGE (under construction)	Co. Offaly	1 1	40,000 40,000 80,000	1 1	380 380	Milled Peat Milled Peat	183·1	55·0	0·306	0·548
GREAT ISLAND	Co. Wexford	2	120,000	2	1040	Oil	519·2	51·2	0·135	0·318
GREAT ISLAND (under construction)		1	120,000	1	835	Oil	—	—	—	—
TARBERT TARBERT (under construction)	Co. Kerry	2 2	120,000 500,000 620,000	2 2	1040 3520	Oil Oil	801·1	78·3	0·118	0·244
PIGEON HOUSE "B" (under construction)	Dublin City	2	240,000	2	1670	Oil	—	—	—	—
		2	28,000	Gas Turbine Sets						

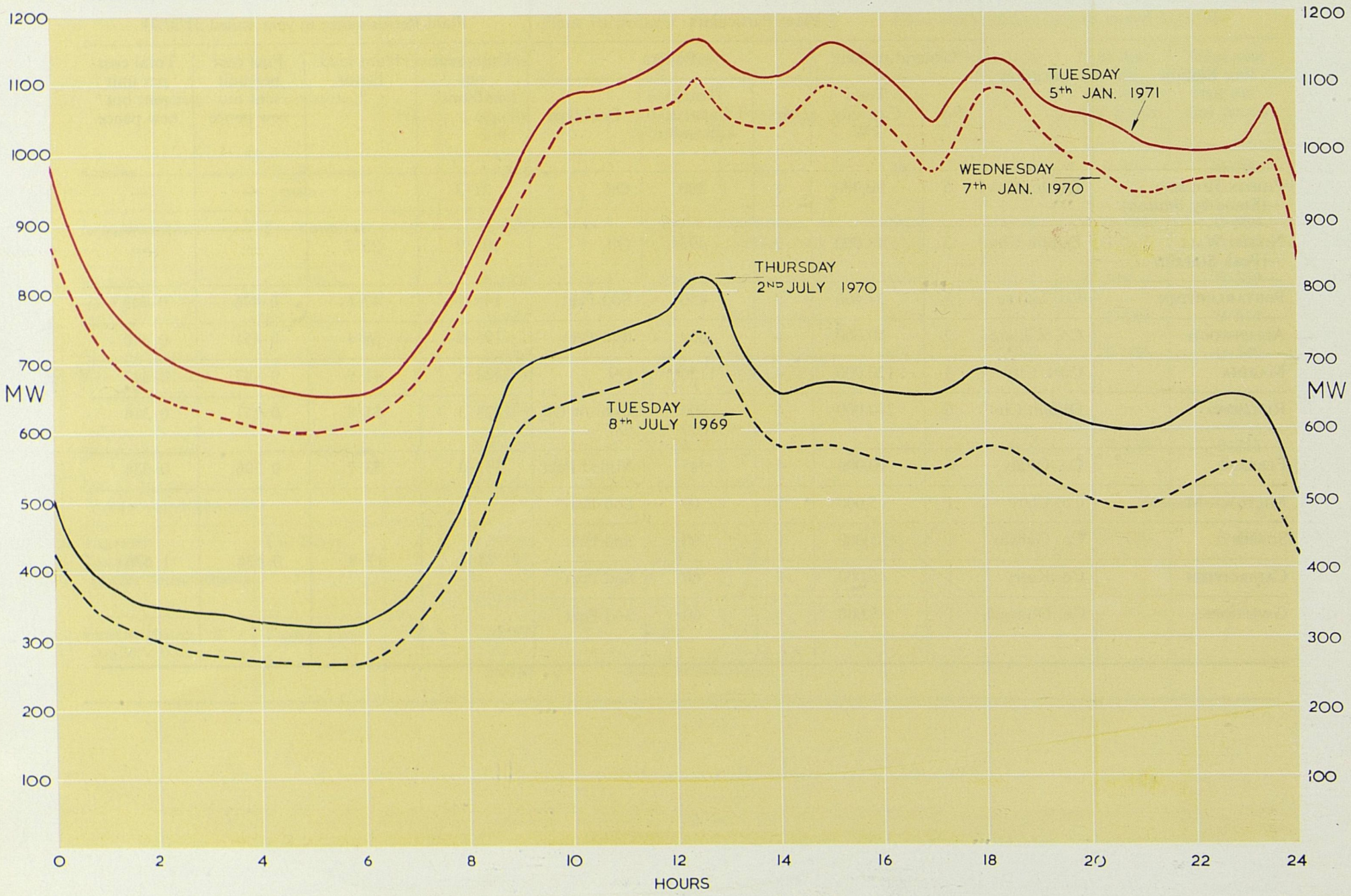
PARTICULARS AND PERFORMANCE OF GENERATING PLANT

Steam Stations

Station	Location	Plant Particulars					Plant Performance in year ended 31/3/'71			
		Generating Sets		Boilers			Units sent out millions	Plant load factor %	Fuel cost per unit sent out new pence	Total cost per unit sent out new pence
		No.	Total Capacity kW	No.	Total Capacity k.lb./hour	Fuel type				
PIGEON HOUSE (Stand-by Station)	Dublin City	5	90,000	8	800	Oil	21·3	—	—	—
NORTH WALL (Peak Station)	Dublin City	3	48,000	3	495	Oil	101·9	25·7	—	—
PORTARLINGTON	Co. Laoise	3	37,500	3	450	Sod Peat	148·7	47·6	0·476	0·743
ALLENWOOD	Co. Kildare	2	40,000	4	600	Sod Peat	195·0	58·1	0·451	0·690
MARINA	Cork City	3	120,000	4	1150	Oil	424·5	41·9	0·147	0·345
RINGSEND	Dublin City	6	270,000	4 3	800 1650	Coal or Oil Oil	1178·3	51·8	0·151	0·316
FERBANE	Co. Offaly	4	90,000	4	945	Milled Peat	397·0	53·7	0·396	0·634
MILTOWN-MALBAY	Co. Clare	1	5,000	1	60	Sod Peat	28·4	17·8	0·636	1·679
SCREEB	Co. Galway	1	5,000	1	60	Sod Peat				
CAHIRCIVEEN	Co. Kerry	1	5,000	1	60	Sod Peat				
GWEEDORE	Co. Donegal	1	5,000	1	60	Sod Peat				

Appendix 7

SYSTEM DAILY LOAD CURVES



TRANSMISSION SYSTEM At 31st March, 1971

Transmission Stations

Transformer/Switching Stations	No. in commission	Increase for year	Total capacity in kVA	Increase or decrease in capacity for year in kVA
220 kV Stations	6	Nil	300,000 at 275/220 kV	+300,000
			753,000 at 220/110 kV	+125,000
			47,000 at 10/220 kV	Nil
			310,000 at 10/110 kV	+30,000
			20,000 at 110/ 6 kV	Nil
110 kV Stations	53	2	2,042,000 at 110/ 38 kV	+101,000
			55,000 at 110/ 10 kV	Nil
			60,000 at 110/ 6 kV	Nil
			110,400 at 38/ 10 kV	+4,000
			1,151,000 at 10/110 kV	Nil
			88,000 at 10/38/110 kV	Nil
			5,000 at 10/38 kV	Nil

Transmission Lines and Cables

Lines and cables	Length kms.	Increase or decrease for year kms.	Description
275 kV lines	10·5	+10·5	6×twin 485 sq.mm double circuit SCA
220 kV lines	74·7	+74·7	3×600 sq.mm. single circuit SCA
220 kV lines	277·5	—	3×425 sq.mm. single circuit SCA
110 kV lines	7·4	—	6×95 sq.mm. double circuit copper
110 kV lines	639·2	− 94·0	3×95 sq.mm. single circuit copper
110 kV lines	88·0	+ 2·6	6×200 and 6×300 sq.mm. double circuit SCA
110 kV lines	2,372·2	+47·5	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	6·7	+0·2	3 single core 400 sq.mm. oil filled
110 kV cables	14·2	—	3 single core 425 sq.mm. oil filled
110 kV cables	3·2	—	3 core 185 sq.mm. oil filled
110 kV cables	13·6	—	3 core 300 sq.mm. pipe compression
110 kV cables	12·0	—	3 core 500 sq.mm. pipe compression

Appendix 9

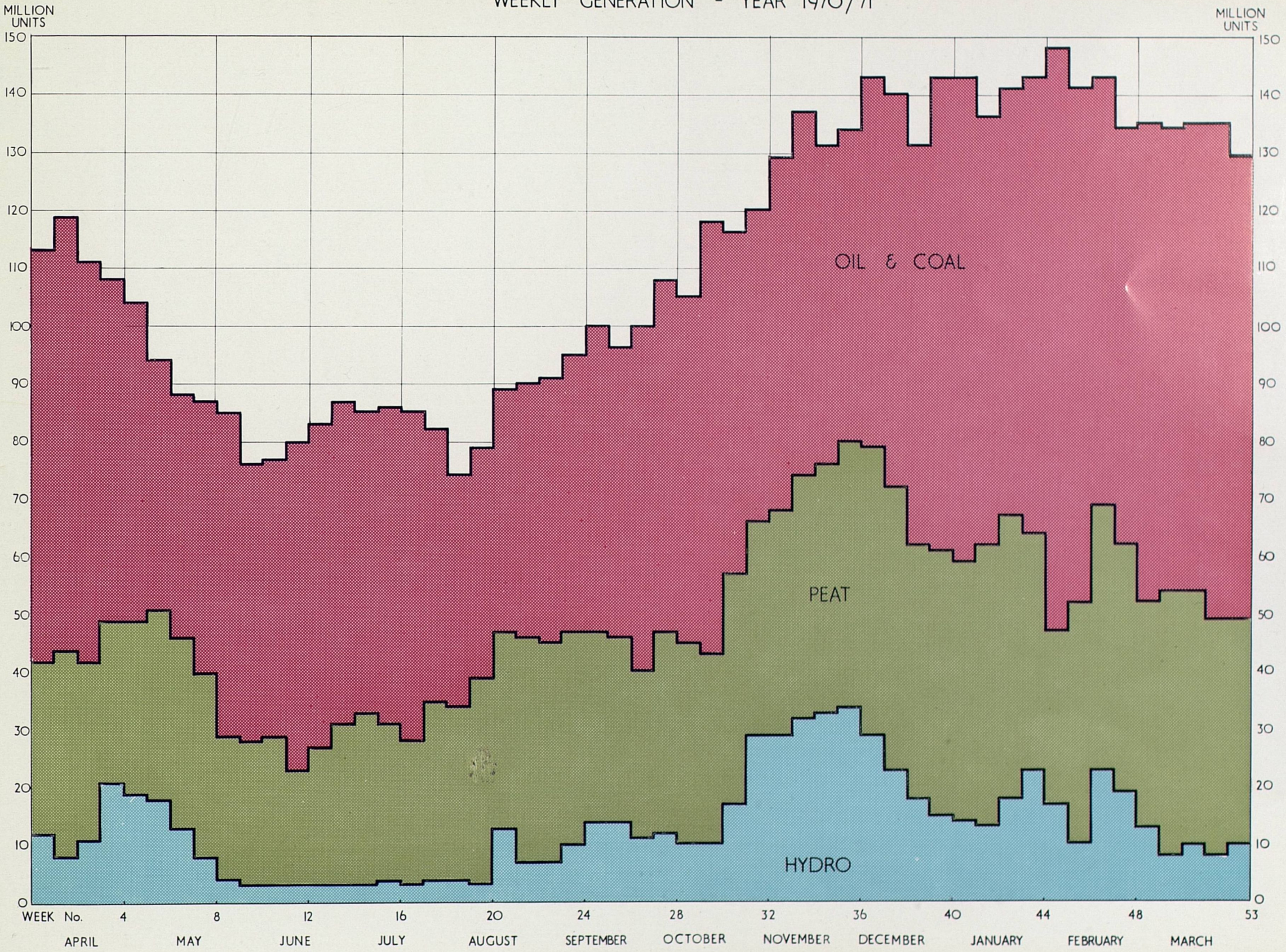
DISTRIBUTION SYSTEM IN COMMISSION At 31 st March, 1971

Distribution System (Excluding Rural Networks)

Transformer stations	No. in commission	Increase (+) or Decrease (—) for year	Total capacity in kVA	Increase (+) or decrease (—) for year in kVA
38 kV Stations	284	+11	1,723,100	+108,100
10 kV stations (Excl. U.R.D.)	6459	+311	1,435,768	+105,990
10 kV Stations U.R.D.	621	+169	34,040	+8,665
5 kV Stations	54	— 4	33,220	— 2,910

Distribution lines and cables	Length kms.	Increase (+) or Decrease (—) for year km.	Description
38 kV lines	4477·5	177·0	3×25 to 3×300 sq.mm. Cu. and SCA.
38 kV cables	205·7	8·1	3×95 to 3×680 sq.mm. Solid and oil filled.
10 kV lines	6111·8	+92·6	Single and three phase.
10 kV and 5 kV cables	1718·0	+102·6	2×16 to 3×185 sq.mm.
3·3 kV cables	3·7	----	3×185 sq.mm.

WEEKLY GENERATION - YEAR 1970/71



DISTRICT OFFICES AND DISTRICT MANAGERS

ATHLONE 6–8 Church Street Telephone: Athlone 2611	T. P. Haugh, B.E., M.I.E.E.
CORK 113 Patrick Street Telephone: Cork 26851	J. Cronin, B.E., B.Sc.
DUBLIN CITY 49 Fleet Street Telephone: Dublin 772961	J. J. McEvoy, B.E.
DUBLIN NORTHWEST 41 Merrion Square Telephone: Dublin 771821	J. B. Nolan, B.E., A.M.I.E.E.
DUBLIN SOUTH Brewery Road, Stillorgan Telephone: Dublin 881683	T. Costello, B.E.
DUNDALK Chapel Street Telephone: Dundalk 4765	D. C. White, M.I.E.E., D.F.H.
GALWAY Newtownsmyth Telephone: Galway 2111	T. McCarthy, M.E., F.I.E.E.
LIMERICK 41 O'Connell Street Telephone: Limerick 45599	D. P. Greene, B.E.
PORTLAOISE Abbeyleix Road Telephone: Portlaoise 21327	J. F. Heslin, B.E.
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