COUNTY BOROUGH · OF WALLASEY ·

ELECTRICITY DEPARTMENT

COUNTY BOROUGH OF WALLASEY

AUDEMUS DUM CAVEMUS

OFFICIAL OPENING of the EXTENSIONS · TO THE · ELECTRICITY WORKS

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Friday October 26th 1928

COUNTY BOROUGH OF WALLASEY

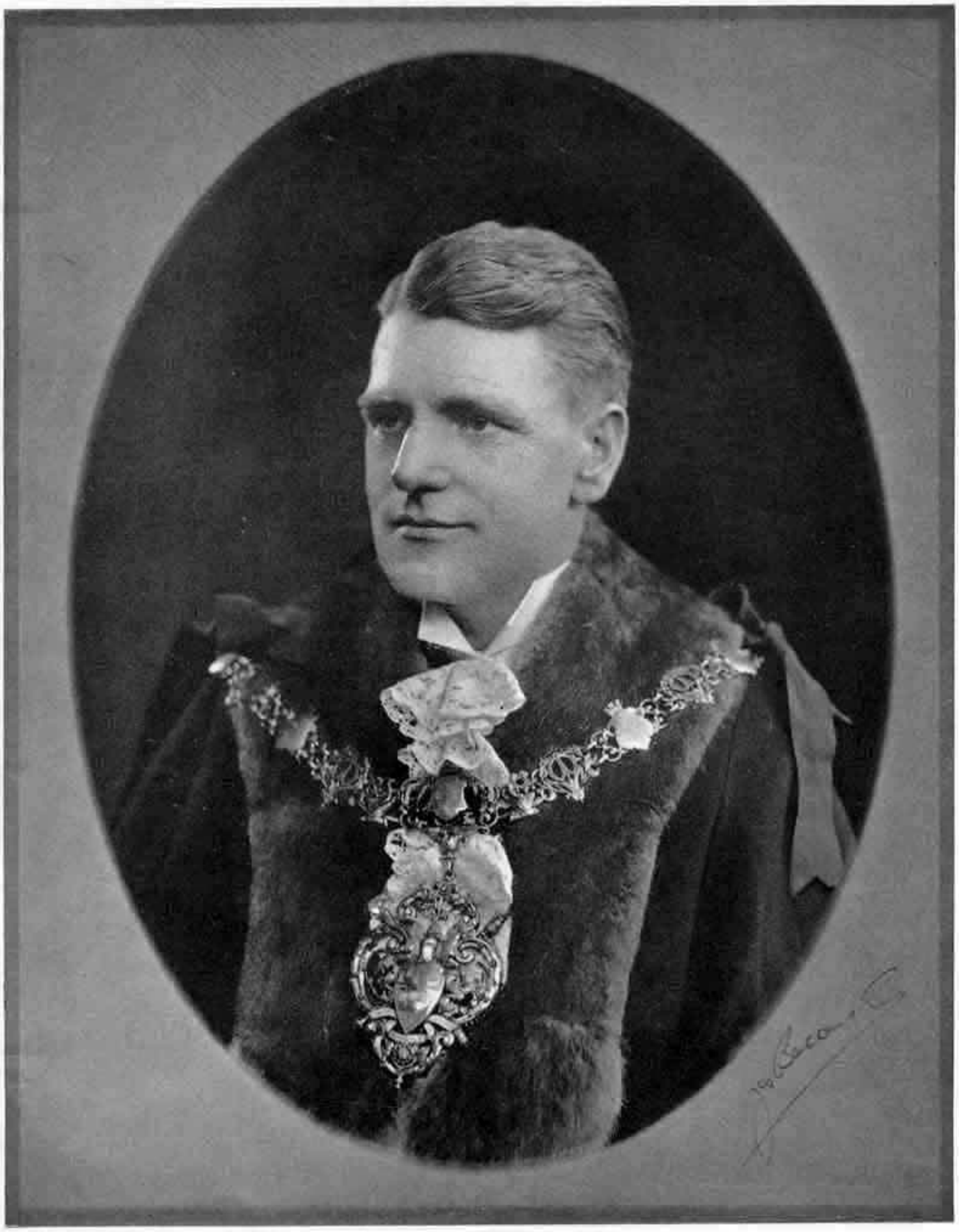
ELECTRICITY DEPARTMENT

OFFICIAL OPENING

of the

EXTENSIONS to the ELECTRICITY WORKS

FRIDAY, OCTOBER 26TH, 1928



THE WORSHIPFUL THE MAYOR OF WALLASEY.
Alderman Dr. J. McMillan, J.P.

THE WORSHIPFUL THE MAYORESS OF WALLASEY.
Mrs. J. McMillan

Alderman JOS. HUGHES
Chairman of the Electricity Committee

Photo] [*Elliot & Fry, Ltd.*

B. T. HAWKINS, Esq.
A.M.I.M.E., A.M.I.E.E.
Borough Electrical Engineer
and Manager

COUNTY BOROUGH OF WALLASEY

Official Opening of the

Extensions to the Electricity Works

by

THE WORSHIPFUL THE MAYOR OF WALLASEY

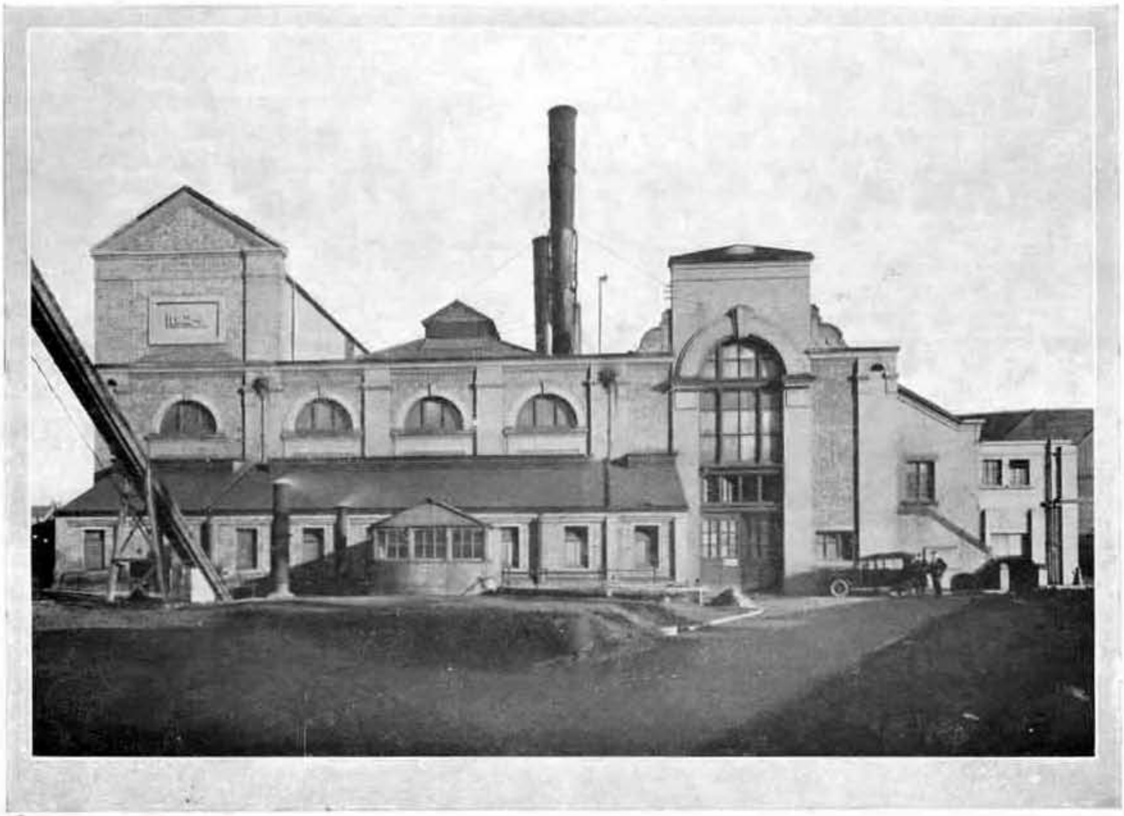
Alderman Dr. J. McMILLAN, J.P.

MEMBERS OF THE ELECTRICITY COMMITTEE, 1927-28.

Chairman - - - - - -	Alderman JOS. HUGHES
Vice-Chairman - - - - -	Councillor ATKINSON, F.C.I.S.
Alderman HASLAM	Councillor JOHNSTON
Councillor BLACKBURN	Councillor JONES
Councillor BURNLEY, F.S.A.A.	Councillor LARSEN
Councillor FLANAGAN	Councillor SCOINS
Councillor HANNAFORD	Councillor STOREY

GEO. LIVSEY, LL.B.,
Town Clerk.

B. T. HAWKINS, A.M.I.M.E., A.M.I.E.E.,
Borough Electrical Engineer and Manager.



EXTERIOR VIEW OF GENERATING STATION

COUNTY BOROUGH OF WALLASEY
ELECTRICITY DEPARTMENT

THE public supply of electricity in Wallasey, which has had a very successful financial career from its inception, having contributed no less than £133,590 to the relief of the Borough rates, was first given in January, 1897, current being supplied for lighting from a single-phase generating station at Sea View Road.

In March, 1900, a supply was commenced for the electric tramways, a new bay being added to the original engine room, direct-current generating sets installed and extensions made to the boiler house, etc.

In 1912 it had become necessary to give serious thought to the question of large extensions, either by making a considerable enlargement of the old station, or by the erection of a new works, and it was decided, after full consideration of the estimates presented to the Committee, that the erection of a new station was the better proposition.

A scheme was therefore prepared, and approved by the Council, for the erection on a site near the docks and railway, of a generating station to contain two 3,000-kw. turbo-alternators, with the necessary boilers, economisers, condensers, switchgear, etc. ; the scheme also including the conversion of the existing electricity works into a sub-station connected to the new generating station by extra high-pressure cables, the provision of rotary converters for tramway purposes, Scott-connected transformers for the lighting system, and the supply of three-phase current for power in the district around the docks. In the meantime a 1,000-kw. three-phase turbo-generator was installed at the Sea View Road station to cope with the increasing demands on the Undertaking.

The buildings of the new station were commenced in the early part of 1914, and contracts were entered into for the supply of plant, pipework, cables, etc. In August, 1915, the station was ready for trial runs, but the Government being then in urgent need of plant for the production of munitions of war, one of the generating sets was commandeered. At the same time the contractors were engaged in urgent war work, and the starting up of the station was delayed until September. Even then only the one 3,000-kw. turbo-generator was installed, and this had to carry on alone for the greater part of the war.

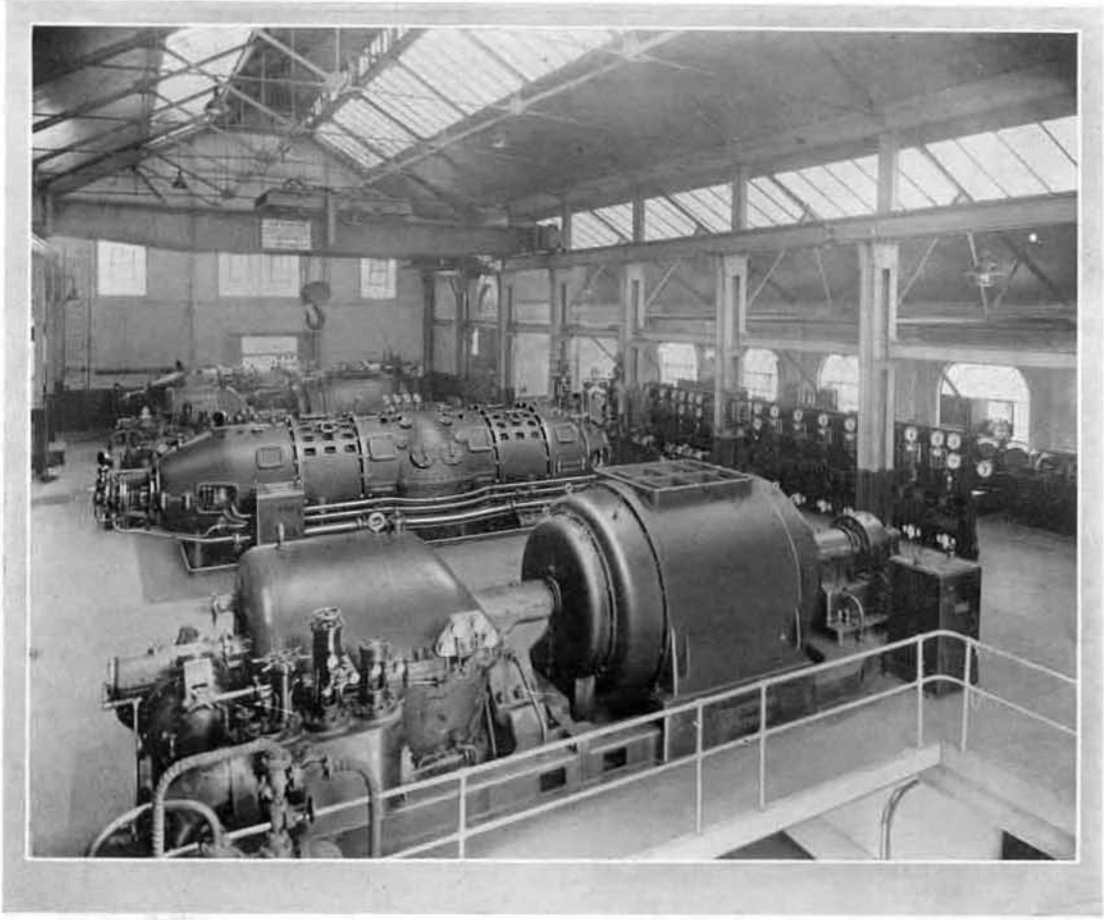
When the station was completed the generating plant comprised two 3,000-kw. turbo-generators with condensing plant and auxiliaries made by the Metropolitan-Vickers Electrical Co., Ltd., of Manchester, and one 1,000-kw. turbo-generator, made by the British Thomson-Houston Co., Ltd., of Rugby, transferred from the old Sea View Road generating station, each of these generating three-phase current at a pressure of 6,600 volts.

The boiler plant comprised three Babcock & Wilcox water-tube boilers each capable of evaporating 22,000 lbs. of water per hour at 200 lbs. per square inch pressure and 200° F. superheat, a similar boiler, but of 16,000 lbs. per hour capacity transferred from Sea View Road, three Green's fuel economisers, a Prat patent ejector chimney equipped with Prat's induced draught fan driven by a variable speed motor for each boiler, and two steam turbine-driven rotary-feed pumps for boiler-feed purposes.

The turbine room was equipped with a 15-ton crane, and a nine-panel 6,600-volt switchboard was installed for the control of the alternators and the electrical distribution from the station.

The buildings were constructed of steel frame-work, filled in with bricks, and picked out with pressed and Staffordshire brick facings, the inside walls of the turbine room and basement being of glazed bricks in low-toned colours.

Owing to growing loads and largely increased demands for current both for lighting and power, it again became necessary to instal additional plant, and in July, 1922, a new 5,000-kw. Brush-Ljungstrom turbo-generator, with condensing plant and auxiliaries, was put into commission, a new Babcock & Wilcox water-tube boiler of 25,000 lbs. per hour evaporative capacity, together with a Green's fuel economiser and a Prat patent ejector chimney, having also been installed.



GENERAL VIEW OF TURBINE ROOM, 1926

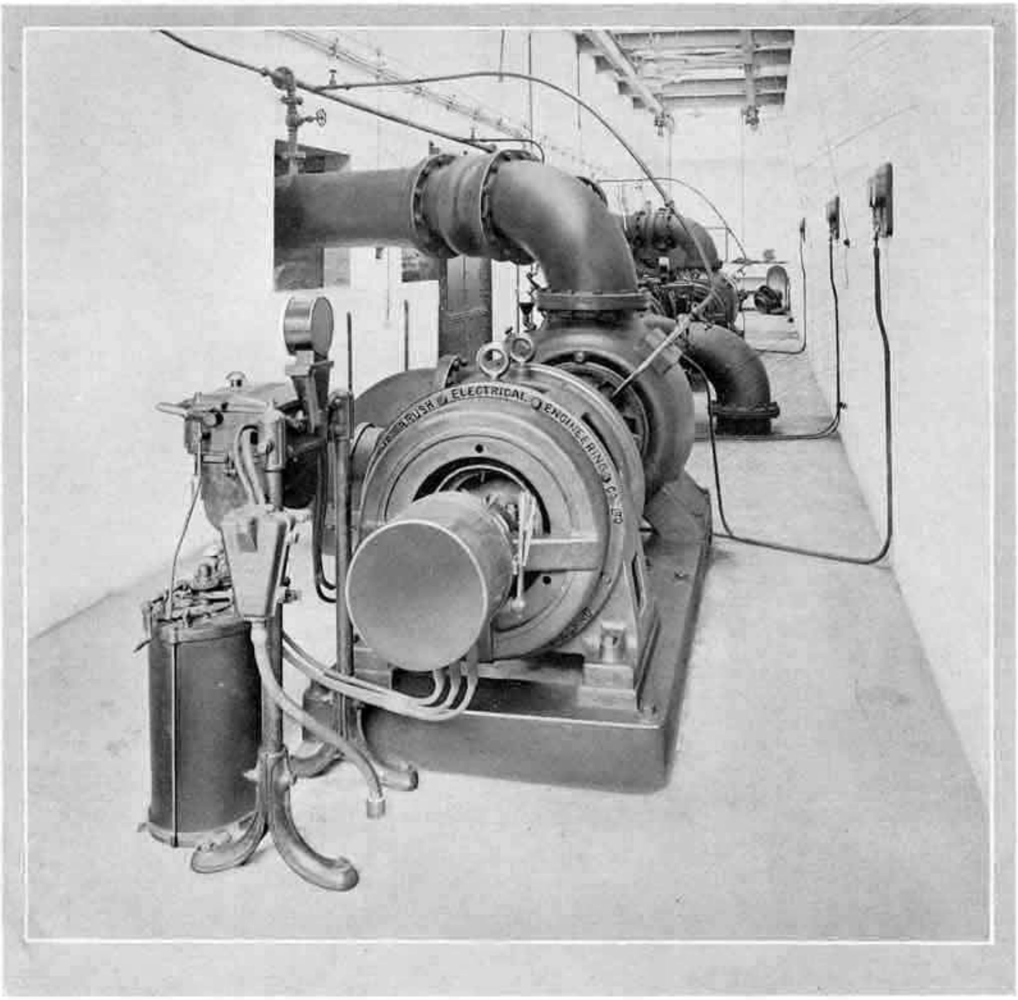
The further extension to the generating station, which was opened in April, 1926, comprised the following :—

A complete coal-handling plant by Messrs. Babcock & Wilcox, comprising wagon tippler, coal elevator and conveyor, overhead bunkers and traversing chutes.

A complete ash-handling plant and ash bunker by Messrs. Edward Bennis & Co., Ltd.

Two new 35,000-lb. Babcock & Wilcox boilers with Green's economisers.

Feed-water treatment plant for the scientific treatment of either make-up water or whole condensate.



INTERIOR OF CIRCULATING WATER PUMP HOUSE

A further 5,000-kw. Brush-Ljungstrom turbo-alternator.

A complete new electrical remote control E.H.T. switchboard by Messrs. Metropolitan-Vickers Electrical Co., Ltd.

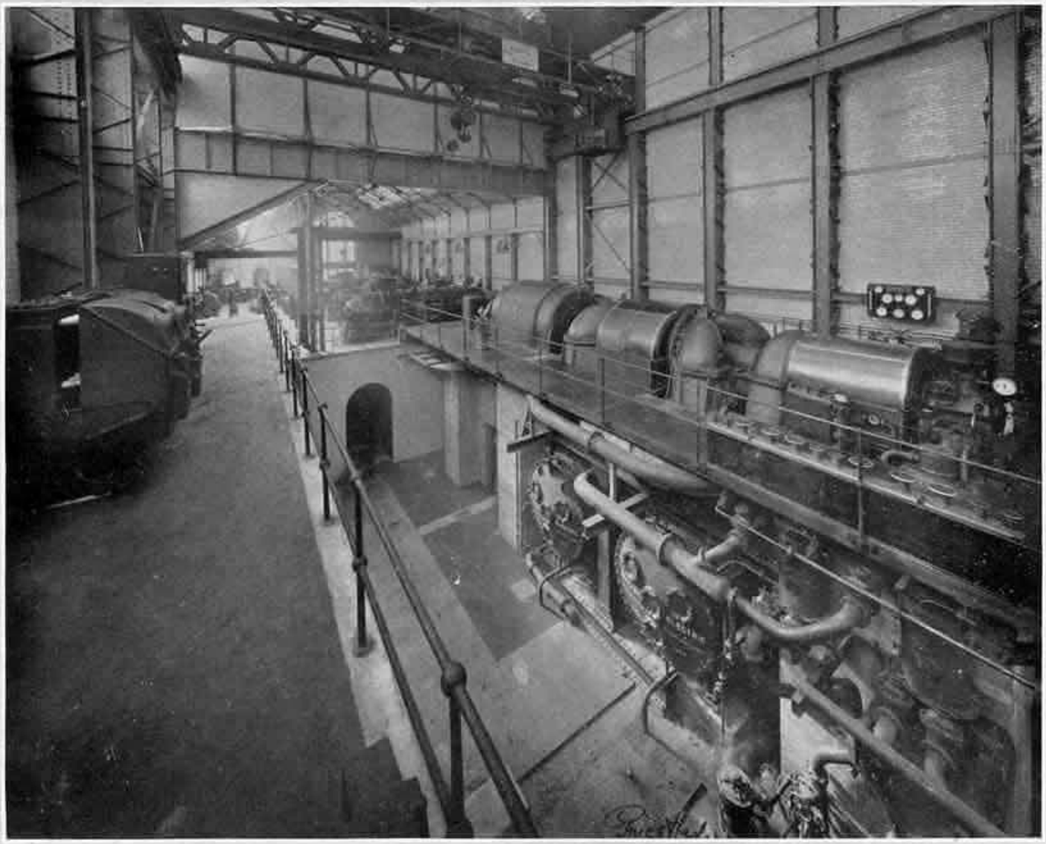
A new circulating water scheme with reinforced concrete culvert and underground pump house, by Messrs. J. & G. Chappell, equipped with Rees-Roturbo pumps.

Two new Weir turbine-driven feed pumps, and the re-conditioning of the original pumps.

A 30-ton electrically-driven crane by Messrs. The Wharton Crane and Hoist Co., Ltd.

INTERIOR OF SWITCH HOUSE, WITH REMOTE CONTROL SWITCHGEAR

The present circulating-water arrangements consist of a reinforced concrete culvert, constructed by Messrs. J. & G. Chappell, Walton, Liverpool, running from station to dock, a distance of 200 yards. To allow of inspection, the culvert is divided by a reinforced concrete wall into two parts, controlled by penstocks at each end. It is capable of supplying sufficient water to deal with an actual load of 30,000 kw.



GENERAL VIEW OF TURBINE ROOM, 1928

At the station end of the culvert is situated a reinforced concrete screening chamber, which is also divided in halves controlled by penstocks, and provided with two Brackett's rotary screens.

An underground, reinforced concrete pump house is situated alongside the station, the water culvert running under the pump-house floor, and the water being so controlled by penstocks that it is possible to have either or both halves working on either or both screens.

The pump house is provided with five rotary pumps driven by electric motors.

The pumps deliver into a common bus main running the length of the basement, from which supplies to the various condensers are obtained.

The old discharge main and inlet mains have now been coupled, and form one common discharge back to the dock, about 135 yards away from the culvert inlet.

In view of the ever-increasing demand for electricity, and the large bulk supply required by the Birkenhead Corporation, together with probable requirements in the near future, the further extension of the station was recommended by the Council to the Electricity Commissioners in 1926, when the Borough Electrical Engineer and Manager was instructed to prepare a scheme.

After very careful and extensive investigations, it was decided that the time had arrived for the adoption of the latest system of pulverised fuel firing in connection with the boiler-house extension plant, and that provision should be made for possible future generation of steam at a higher pressure than that at present obtaining at Wallasey.

Provision was therefore made for the installation of two 50,000 lbs. per hour boilers complete with bunkers, pulverising plant, Green's economisers, steel chimneys, steam pipes, feed pipes, etc., all under the contract of Messrs. Simon-Carves, Ltd., Manchester.

The necessary extension of coal conveyor by Messrs. Babcock & Wilcox, Ltd., and the Ash-conveyor extension by Messrs. Edward Bennis & Co., Ltd.

In the turbine-room extension provision was made for the installation of a 12,500-kw. turbo-alternator set complete with condensers and auxiliary plant by Messrs. English Electric Co., Ltd.

A 50-ton electric travelling crane by the Wharton Crane & Hoist Co., Ltd., E.H.T. switchgear by Messrs. Metropolitan-Vickers Electrical Co., Ltd., L.T. switchgear and a 750-K.V.A. transformer for works auxiliaries by Messrs. English Electric Co., Ltd., was also provided for, and a 10,000-G.P.M. circulating water pump by Messrs. Rees Roturbo Manufacturing Co., Ltd.

EXTENSION TO TURBINE ROOM, SWITCH HOUSE AND FITTING SHOP

BUILDING EXTENSIONS

In December, 1927, Messrs. Joseph Dolan & Sons, building contractors, of Warrington, commenced their contract in connection with the erection of the superstructure, on foundations prepared by Messrs. J. & G. Chappell.

This work comprised an extension to the turbine room, boiler and bunker houses, switchgear and transformer houses and new fitting shop, office for shift engineers, etc.

In the case of the turbine room and boiler house, these have been considerably increased in height to the existing premises, the eaves in each case being brought level with the bunker house. The reason for this is in order to accommodate the increased size of boiler plant, etc., in the boiler house and to allow of a 50-ton travelling crane and galleries in the turbine room.

The whole of the buildings are of steel framework, supplied and erected by Messrs. Redpath, Brown & Co., Ltd. The walls of the turbine room are carried out in ivory white glazed brickwork, while a similar wall has been built across the room, completely shutting off the view of the existing turbine foundations, the access to same being obtained through two glazed brick archways. The carcase of the remaining buildings is carried out in common and red pressed brickwork.

The turbine room, switchgear and transformer-house floors are finished in small red adamantine tiles, and the galleries, office, lavatory and fitting shop in Granwood patent flooring.

Ample natural lighting is obtained in the turbine room, boiler and bunker houses by means of roof lights carried out in Heywood's patent glazing, with $\frac{1}{4}$-inch wire-woven rough-cast glass with additional side lights to turbine room, and side lights to the fitting shop, switchgear and transformer houses. Messrs. The Crittall Manufacturing Co., Ltd., supplied the whole of the metal windows and lantern ventilators, which are opened by means of patent worm and rod gearing operated at condenser floor level.

The iron staircases, hand-railings, etc., were supplied and fixed by Messrs. The Falkirk Iron Co., Ltd.

The whole of the drawings and supervision of buildings during the course of erection were carried out under the direction of L. St. G. Wilkinson, Esq., M.C., M.Sc., M.I.C.E., the Borough Engineer and Surveyor.

The whole of the plant extensions have been carried out to the design and specifications issued by B. T. Hawkins, Esq., A.M.I.M.E., A.M.I.E.E., Borough Electrical Engineer and Manager.

BOILER-HOUSE EXTENSION

COAL-HANDLING AND PULVERISING PLANT.

The coal for firing the boilers is delivered by an extension of the bucket conveyor feeding the old boilers to two bunkers, each of which has a capacity of 150 tons. From each of these bunkers the coal falls by gravity through an " Avery " automatic coal weigher into a small hopper, which directs the coal through three chutes to three Simon-Carves unit type pulverisers.

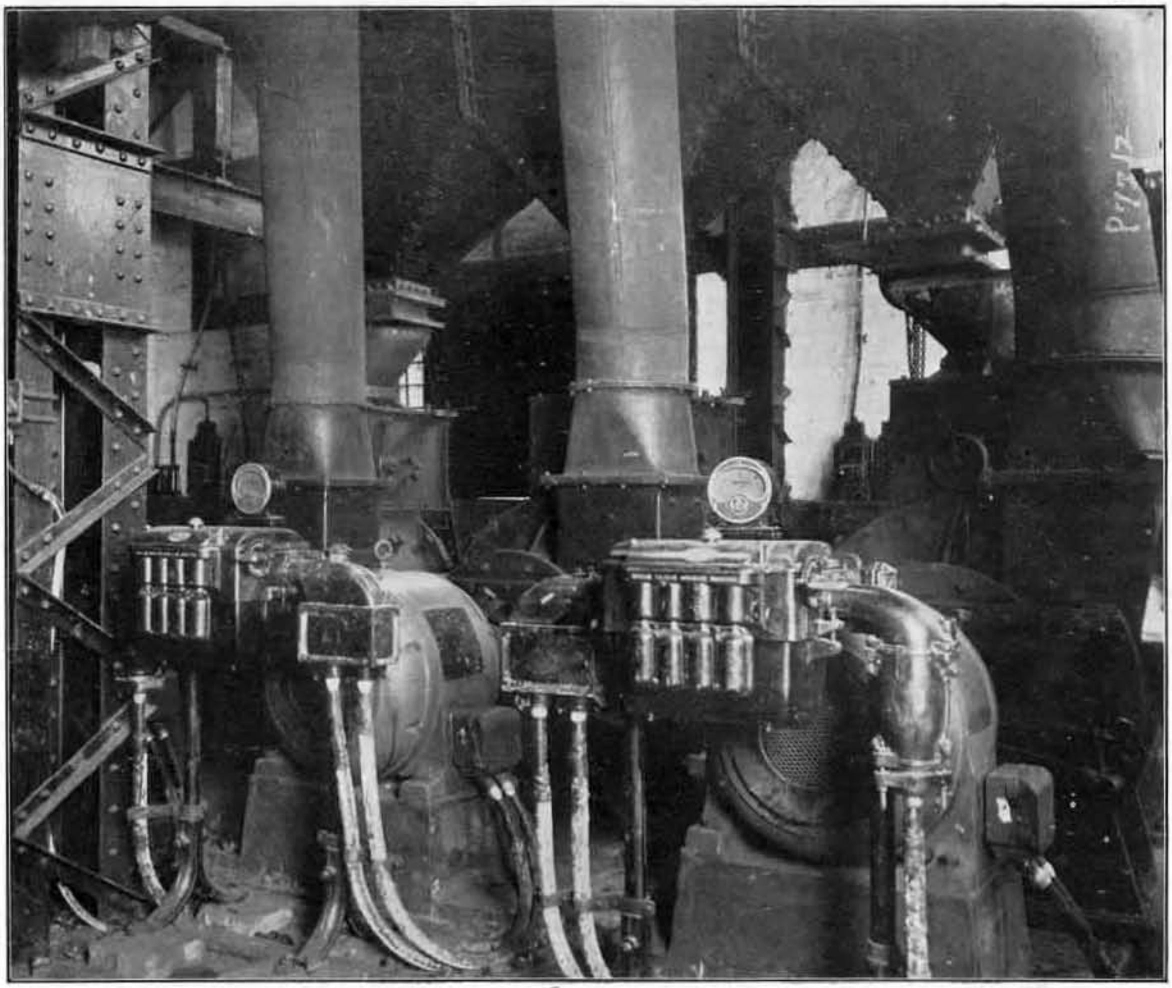
The coal can be regulated and fed by means of a rotating table from which an adjustable plough scrapes off the coal in the desired quantities. It falls over a chute, behind which is fixed an electro-magnet, so that any pieces of tramp iron, etc., being fed to the machine are automatically held to the chute and do not pass through to the pulverising chamber. From time to time the attendant can open a small door in front of the chute and remove any such material which may be adhering to it.

The air is drawn through the same sliding door by a fan fixed to the shaft at the further end of the pulveriser and passes through the pulverising chamber, picking up on its way the particles of coal when they are pulverised sufficiently finely to be carried by the air. It will be seen that by adjusting the sliding door the amount of air can be varied and, consequently, the fineness of the coal particles can be regulated.

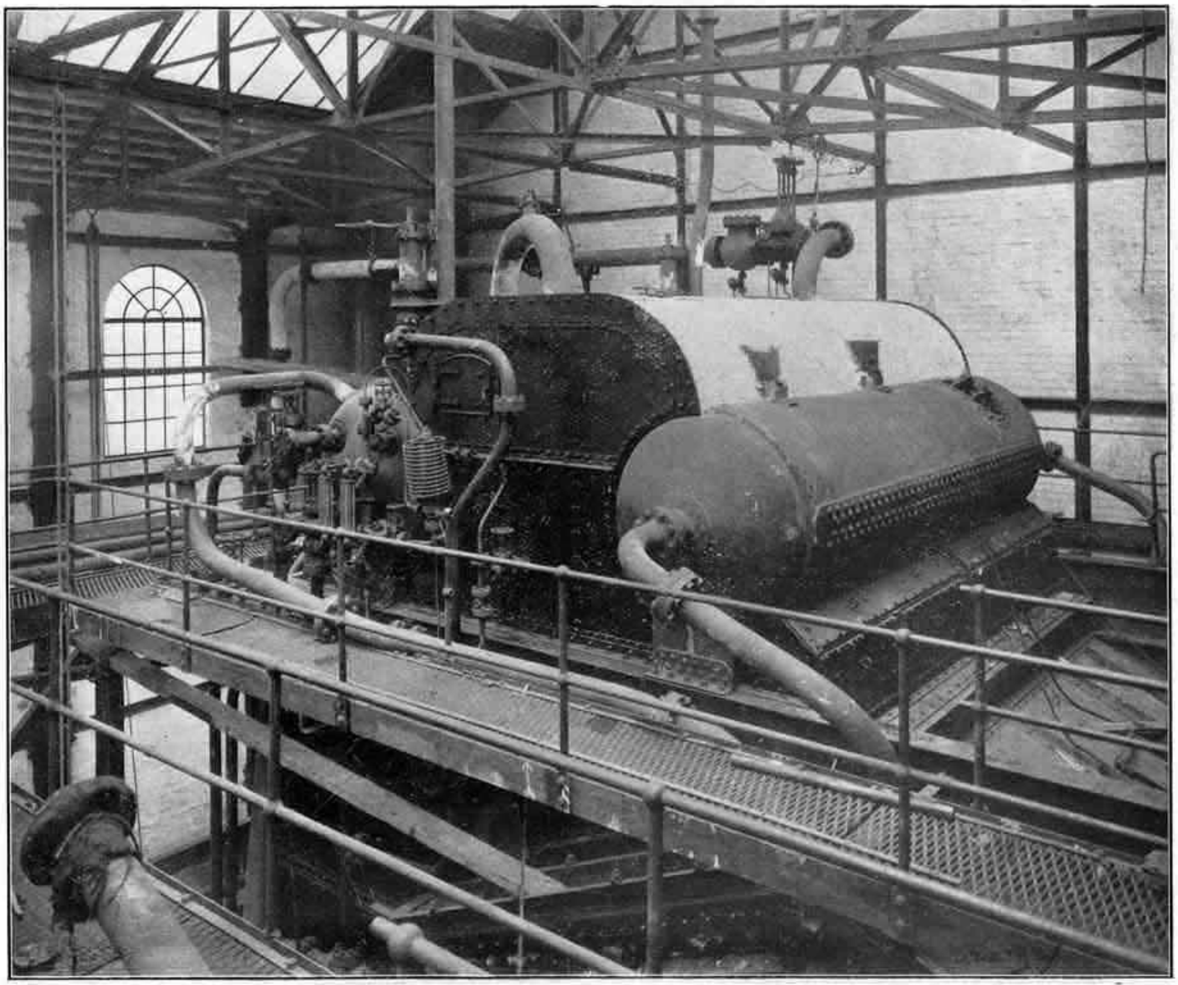
The pulverising chamber is of cylindrical form, and has a central shaft to which are affixed four sets of eight hammers each. The hammers are pivoted to a hub and are thus free to swing, so that when the shaft is rotated at high speed they deal flail-like blows to the coal as it passes through. Both the hammers and the lining of the pulverising chamber are made of specially hard manganese steel to resist the abrasive action of the coal.

On leaving the pulverising chamber the air carrying the coal is met in the fan chamber by another current of air, admitted through an adjustable door round the shaft on the opposite side of the fan. The combination of air and coal dust, which is now correctly proportioned for perfect combustion, is driven by the fan through mild steel pipe to a mixing chamber, where an abrupt change of direction accomplishes the thorough mixing of the coal and air, and delivers the product through a firebrick burner to the combustion chamber of the boiler in a turbulent condition.

The construction of the burner in firebrick ensures that no damage shall occur to these parts should any burner not be working, for during operation the passage of cold air keeps it cool.



PULVERISING PLANT



TOP OF 50,000 lbs./hr. BOILER

BOILERS.

The boilers are of the Simon-Carves' Tri-drum vertical tube type, each having a heating surface of 7,592 square feet and capable of normally evaporating 50,000 lbs. of steam per-hour at a pressure of 300 lbs. per square inch above atmosphere.

The boilers were manufactured to Simon-Carves' designs, by Messrs. Wm. Beardmore & Co., Ltd., Glasgow.

Part of the boiler-heating surface is formed of a series of water walls, which consist of $3\frac{1}{4}$-inch tubes surrounding all four sides and roof of the combustion chamber. All the wall tubes are covered with special firebrick blocks, so that in operation the walls are maintained at a bright red heat in order to assist combustion, while at the same time the comparatively cool water in the tubes tends to limit the temperature of the bricks at their surface and thus give them longer life.

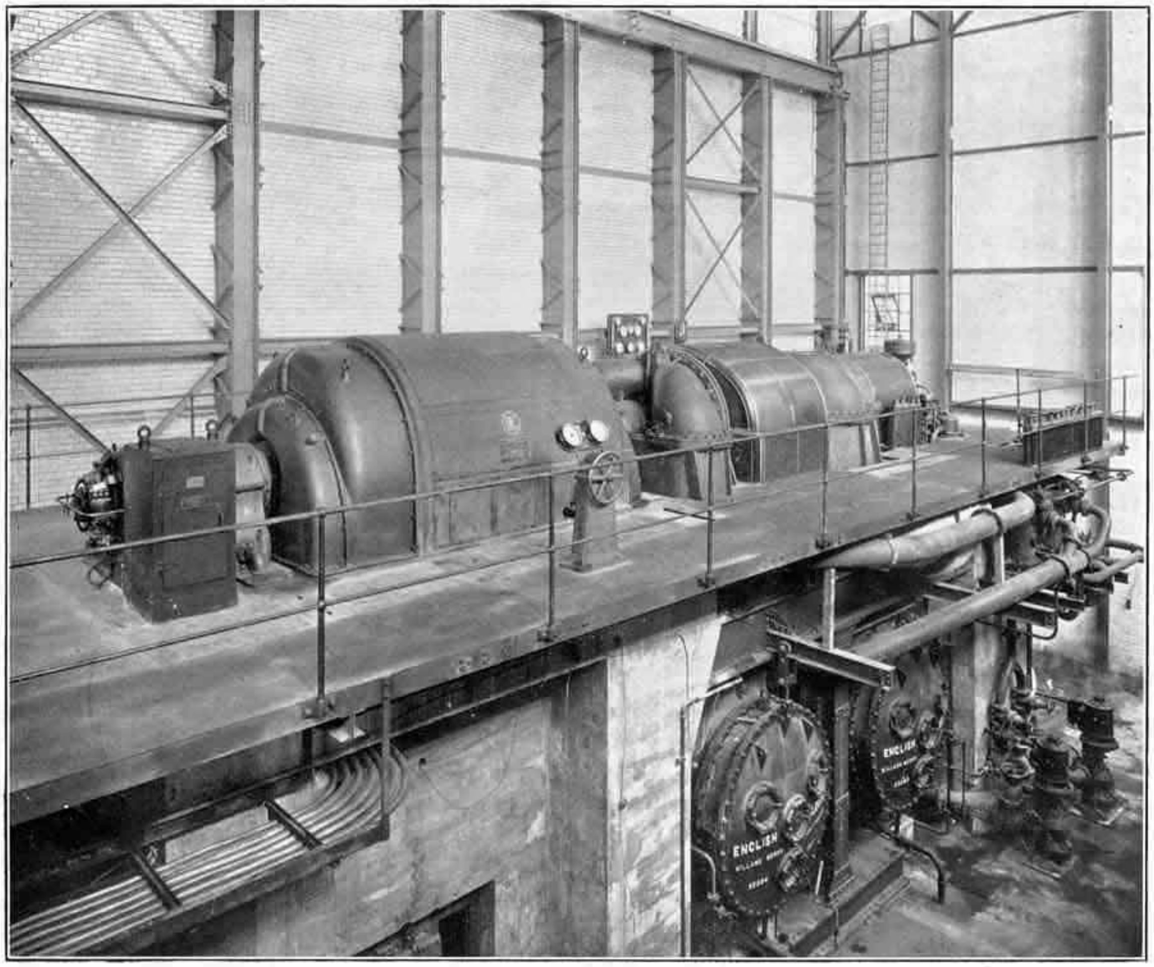
The complete cooling system of the combustion chamber is in direct communication with the boiler proper, and is designed so that the circulation in both is concurrent.

The bottom of the combustion chamber tapers to ledges, beneath which is an ash pit from which the ashes are withdrawn by an automatic rotary water-cooled extractor. This is designed to deal with ashes either in the solid or molten forms according to the class of coal used and the conditions of operation. Should slag form it is chilled and solidified by the cooling arrangement of the extracting wheel.

Access and inspection doors for observation of the operation of the boiler are provided at various points in the combustion chamber.

The gases leaving the combustion chamber are drawn over the tubes of the boiler proper, passing through a superheater on the way where all the steam is superheated to a final temperature of 650° F., after which they pass downwards through an economiser of the Green's Tri-tube type which heats the feed-water from 120 °F. to about 200° F. The gases then pass through the induced draught fan, which delivers them through grit collectors manufactured by Messrs. Davidson & Co., where the bulk of the fine ash which has been carried over from the combustion chamber is trapped, after which they escape to the atmosphere through a steel chimney 6ft. diameter.

Each boiler is controlled from the ground floor, where are the starting motors, air and coal controls for the pulverisers and all the valve controls for the operation of the boilers. There is also a panel for each boiler, on which are situated instruments for indicating and recording temperatures of the steam, water and gases at various points, together with the output, draughts and composition of the gases, by means of which latter it can be at once seen whether the correct amount of air is being admitted.



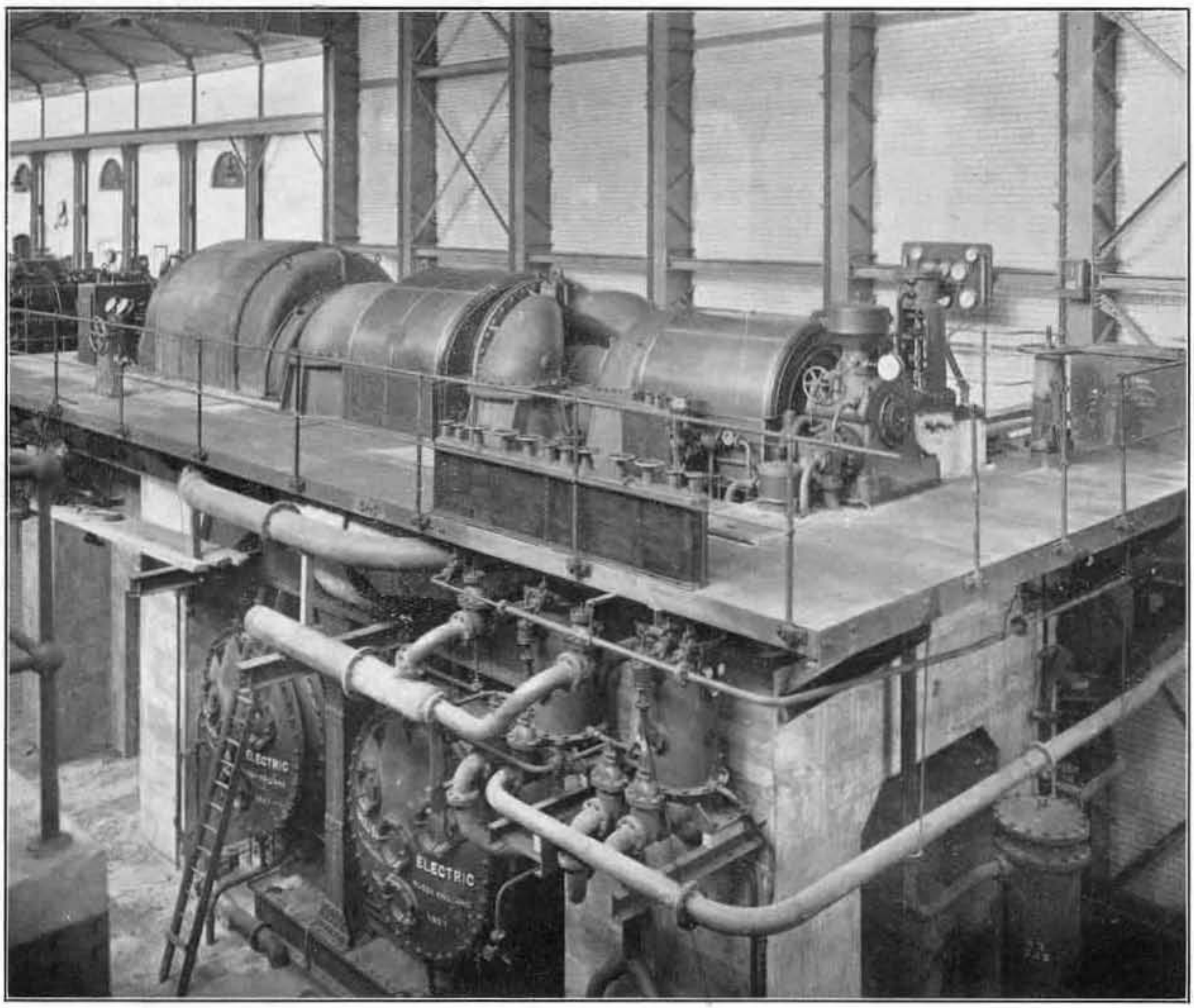
12,500 kw TURBO-ALTERNATOR

TURBINE-ROOM EXTENSION

The turbo-generating set which forms part of the extension has been supplied by the English Electric Co., and consists of one of their latest type of impulse reaction turbines driving direct an alternator having a maximum continuous output of 12,500 kw. at a speed of 3,000 revolutions per minute.

The turbine consists of two separate cylinders, the first cylinder being of the impulse type, and the second cylinder embodying the reaction principle.

This design has the advantage of making a short compact high-pressure end for dealing with the high temperatures and pressures, and the steam, after leaving

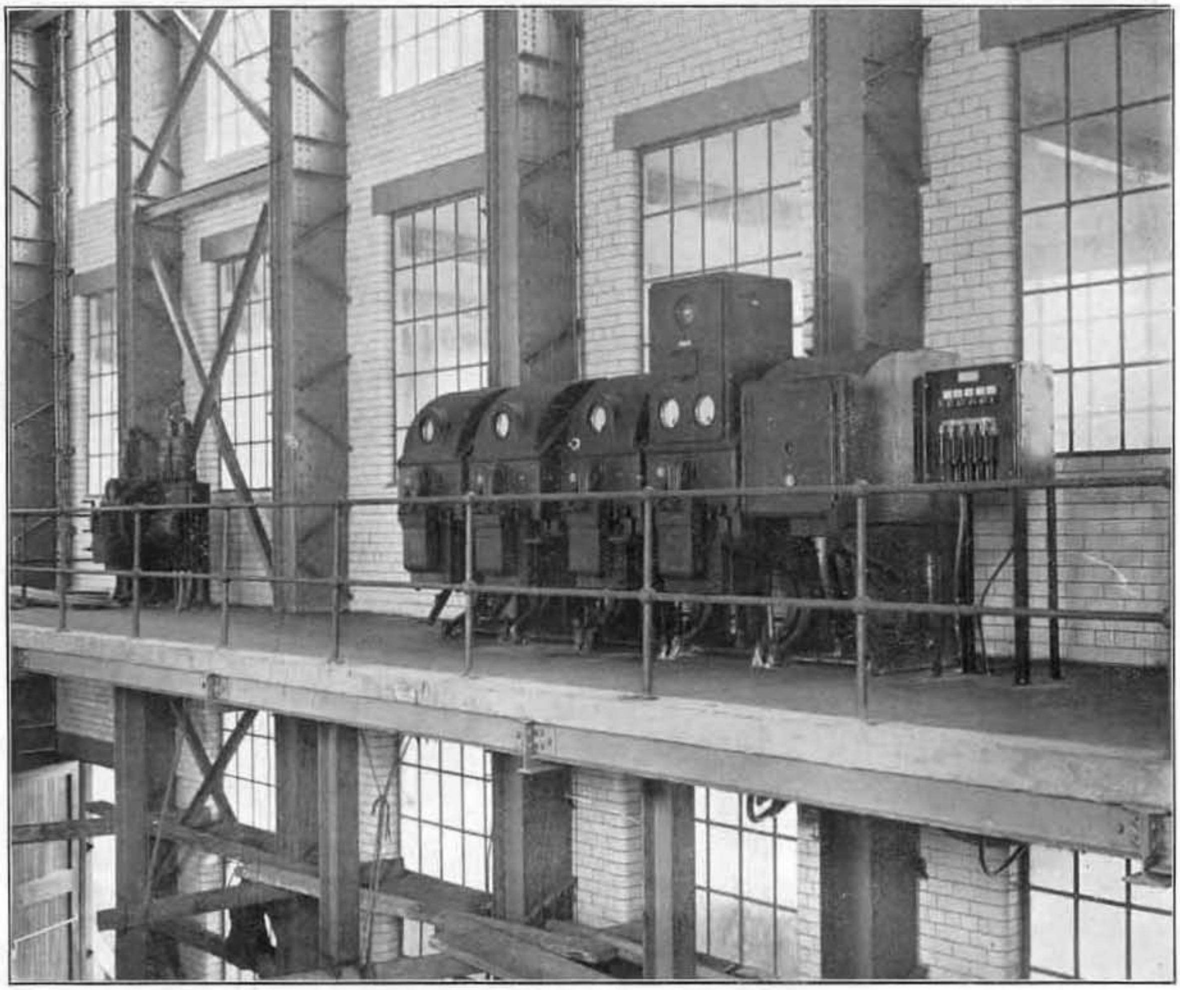


12,500 kw TURBO-ALTERNATOR AND CONDENSING PLANT

this cylinder at approximately atmospheric pressure, enters the low-pressure turbine, where the double-flow blading enables full advantage to be taken of the high vacuum, namely, 29 inches. With this arrangement two condensers are employed, which have also been designed and supplied by the English Electric Co.

In passing it is interesting to note that this turbine has been so designed that whilst operating with high economy under the present steam conditions, namely 190 lbs. per square inch and 605° F. total temperature, it will be able to work in the future under higher steam conditions with even greater economy.

The alternator also embodies all modern improvements and will generate 15,625 K.V.A. at a pressure of 6,600 volts, at 50 cycles per second, when the unit is running at the designed speed of 3,000 r.p.m. Directly coupled to the alternator is an overhung type exciter for exciting the field of the alternator.



L.T. SWITCHBOARD CONTROL GALLERY

For cooling the air for the alternator a closed circuit air-cooling equipment has been supplied by Messrs. The Premier Cooler & Engineering Co., Ltd., Guildford.

For extracting the air from the condensed steam air ejectors have been supplied by Messrs. Mirrlees, Watson Co. Ltd., of Glasgow. These are of the latest type and have been supplied in duplicate. Circulating water for the condensers is delivered by existing pumps, and for extracting the condensate, vertical motor-driven pumps have been supplied in duplicate. The motors have been manufactured by the English Electric Co. and are complete with control gear.

An oil-purifying equipment has been supplied by Messrs. Alfa Laval Co. of London; also there is an indicating and recording apparatus supplied by Messrs. The Lea Recorder Co. of Manchester, for measuring the condensate.

THE PROGRESS OF THE UNDERTAKING

The growth of the Wallasey Corporation Electricity Undertaking has already been referred to in general terms, and below are given figures and charts which show in a more definite manner the progress of the Undertaking as regards its output and efficiency.

Until the last few years the load was principally of the nature associated with a residential district, there being a peak load in the evening, which during the winter amounted to 1,725 kw., made up of domestic and shop lighting, while there was a comparatively light load during the daytime, naturally resulting in the poor load factor of 24·28 per cent. Recent years, however, have brought demands for power supplies from flour mills, engineering and other works. The flour mills are particularly good consumers, as they have a 24-hour load and average six days per week, thus assisting the load factor and helping materially to reduce the overall works costs.

TABLE I.

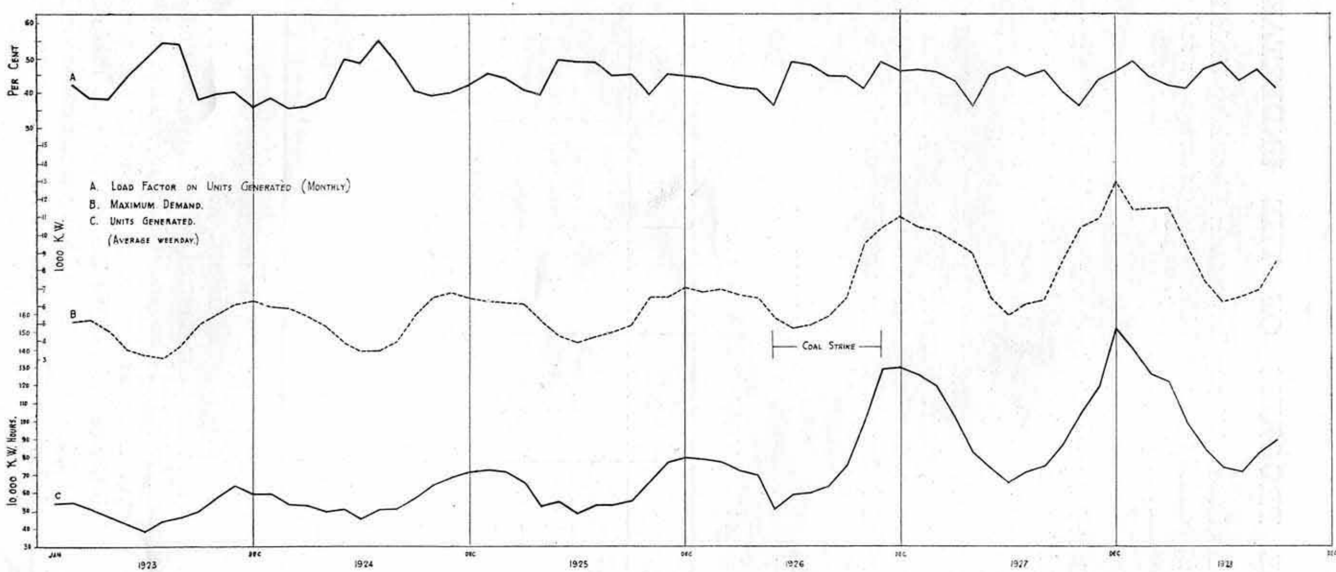
AVERAGE UNITS GENERATED PER 24 HOURS FOR A NORMAL WEEK-DAY.

MONTH	1923	1924	1925	1926	1927	1928
January	54,400	59,500	72,700	78,250	124,850	139,000
February	55,850	53,200	71,350	77,350	118,800	125,680
March	51,300	52,200	66,000	71,650	101,850	120,870
April	47,400	49,750	52,150	69,400	81,250	97,700
May	42,400	50,700	55,010	50,300	74,800	83,130
June	38,150	45,500	48,900	58,700	65,650	73,100
July	44,000	51,000	52,300	59,600	70,350	71,058
August	46,175	51,000	52,200	62,600	74,200	81,170
September	50,000	57,250	55,600	74,900	86,600	89,032
October	57,650	64,650	66,700	99,400	102,750	—
November	63,700	68,500	77,250	128,650	118,500	—
December	59,300	71,000	79,800	129,800	150,100	—

As will be seen from Fig. No. 1, progress has been steady and continuous throughout, the demand rising from 9¾ million units generated in 1921, to 34¾ million units in 1928 (in each case the year referred to is that ending on March 31st). The maximum load has risen from 3,311 kw. in 1921 to 13,000 kw. in December, 1927, the average load factor over the year remaining practically the same, *viz.*, 30·66 per cent. in 1921, and 30·5 per cent. in 1928; Curve "C" and Table No. 1 shown above representing the average 24 hours' output during a normal week-day, illustrates the course of the demand during the last five years.

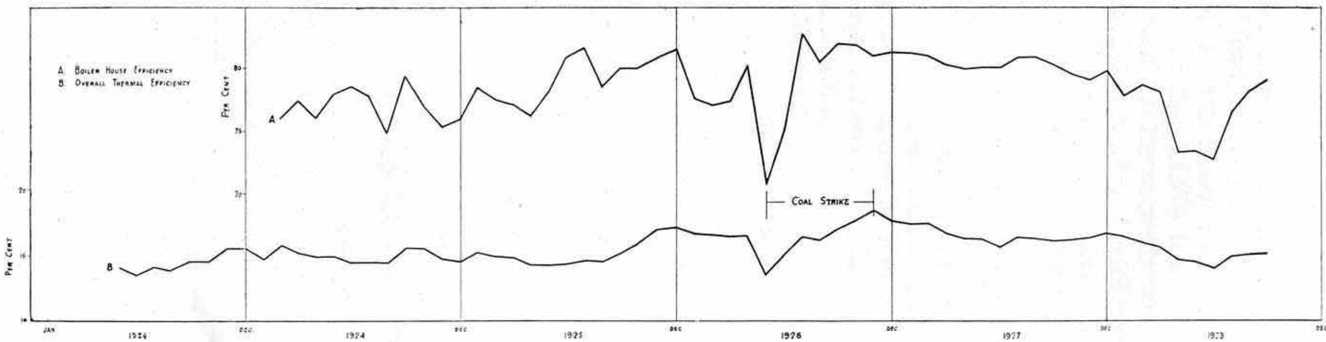
COUNTY BOROUGH OF WALLASEY ELECTRICITY DEPARTMENT

Fig. No. 1



OUTPUT CURVES

Fig. No. 2



EFFICIENCY CURVES

As will be seen from Fig. No. 2 there has been also a steady improvement in the efficiency of the station, although it is not possible to give definite figures of boiler-house efficiency prior to 1924, or overall thermal efficiency prior to May, 1923. The boiler-house and overall thermal efficiency during the period shown has been maintained at a satisfactory figure, the apparent fall in April, 1928, being entirely due to calculations based on the gross calorific value of fuel, in accordance with instructions issued by the Electricity Commissioners to all undertakers, as against the net calorific value, upon which the previous figures were calculated.

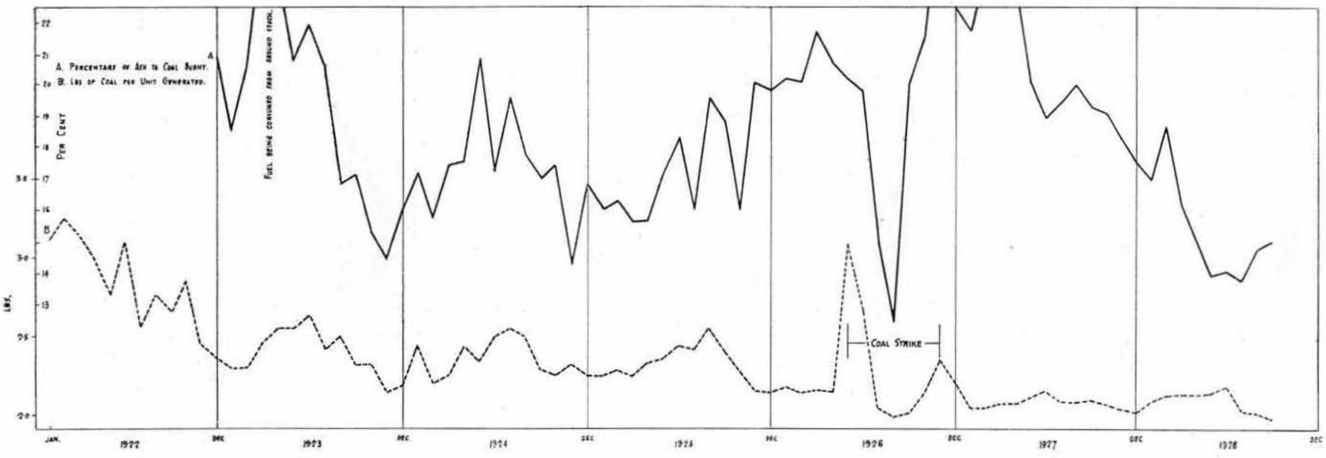
The coal-consumption curve shown on Fig. 3 shows a remarkable improvement, a rapid fall being brought about in 1922 from 3·26 lbs. per unit in January to 2·32 lbs. per unit in December of that year, subsequently maintaining a fairly steady average, the highest consumption being in the mid-summer, when the load is lightest and output least. The early portion of the rapid fall may be explained by a considerable improvement which had been effected in boiler-house conditions; an overhaul of turbines had also been made, resulting in increased efficiency, lower steam consumption, and improved vacuum. The later fall in fuel consumption during the same year 1922 was principally brought about by the installation and putting into commission in September of a new 5,000-kw. Brush-Ljungstrom turbo-alternator set.

The still lower figure of 1·97 lbs. per unit was obtained in September, 1928, owing to improvements which have been effected in the boiler house, including the installation of the new boilers equipped with efficiency apparatus, mechanical handling of fuel, and in the turbine room the installation of a further 5,000-kw. Brush-Ljungstrom turbo-alternator. These, together with efficient operation on the part of the staff, have had the effect of still further improving the boiler-house efficiency, overall thermal efficiency, fuel consumption, and works costs generally.

As the average gross calorific value of the fuel consumed is 11,140 B.Th.U's per lb., it will be seen that this figure of 1·97 lbs. is extremely favourable.

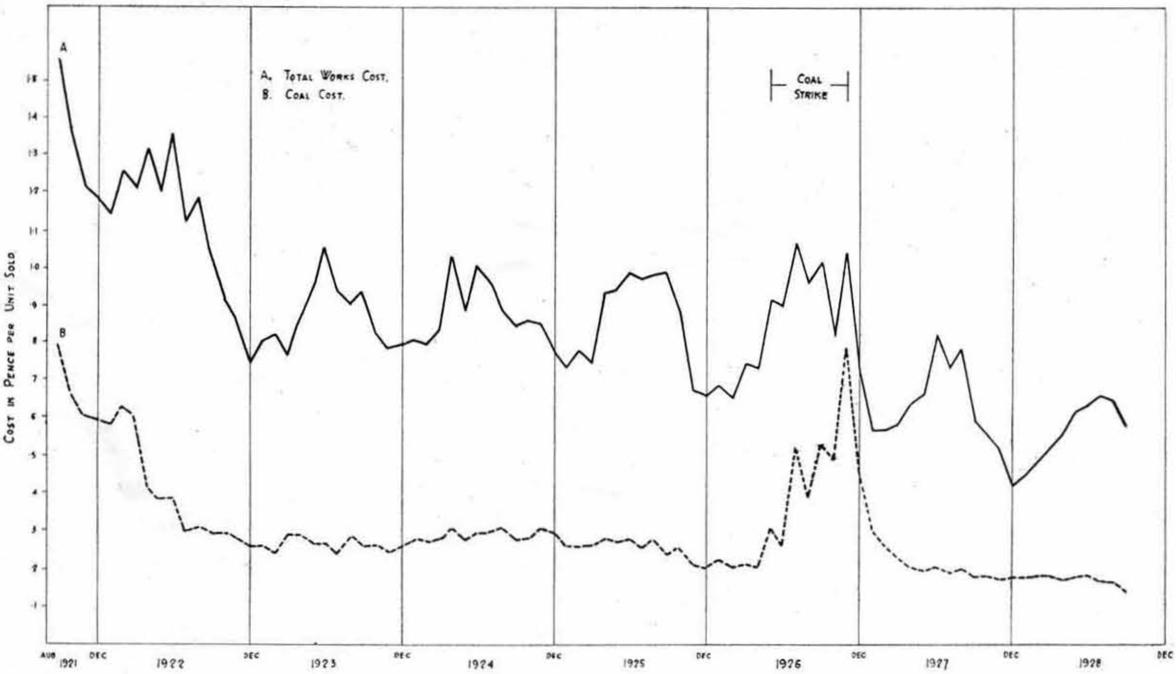
The increased thermal efficiency has, in no small measure, contributed to the reduction of the coal cost per unit generated, the figures for 1921 being ·88d. per unit and for 1928·17d. per unit. The reduced coal cost is reflected in the actual works costs per unit sold, coal costs and the total works costs both being shown in Fig. No. 4. The curves show a great improvement over the period in question, and while the works costs increase with the low output of the summer months, and decrease during the heavier winter months, owing to standing charges being distributed over a greater number of units, there has been a rapid decline in 1922, followed by a slight variation on the lower level. Similarly the coal cost experienced a heavy fall in 1922, after which there was a steady average at the lower level, until 1926, when the coal strike affected the price of fuel adversely.

Fig. No. 3



COAL CONSUMPTION CURVES

Fig. No. 4



COST CURVES

The total works costs based on the units sold, including mains distribution, worked out at a minimum of 1·687d. per unit in August, 1921, whereas the minimum up to September 30th, 1928, was ·446d. per unit in January, 1928.

An illustration of the annual reduction in generation costs, eliminating the distribution charges, is given by Table II. This amounted to 1·16d. per unit in 1921/2, and was reduced to ·318d. per unit in 1927/28.

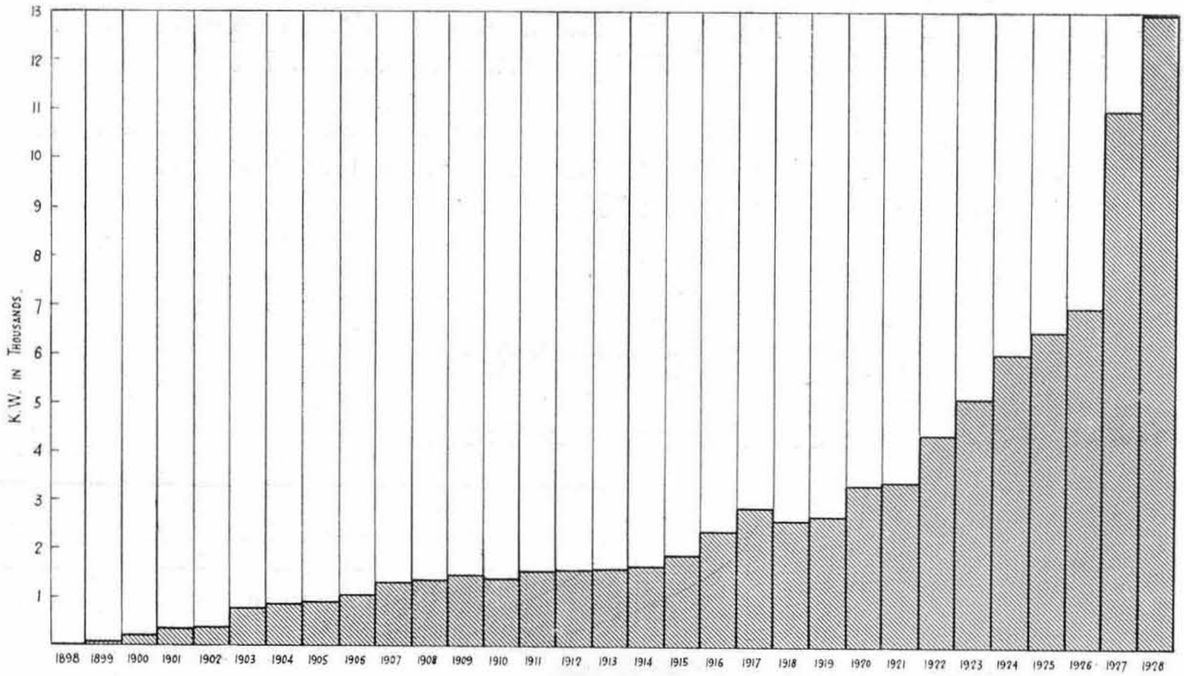
TABLE II.

STATION COSTS PER UNIT SOLD.

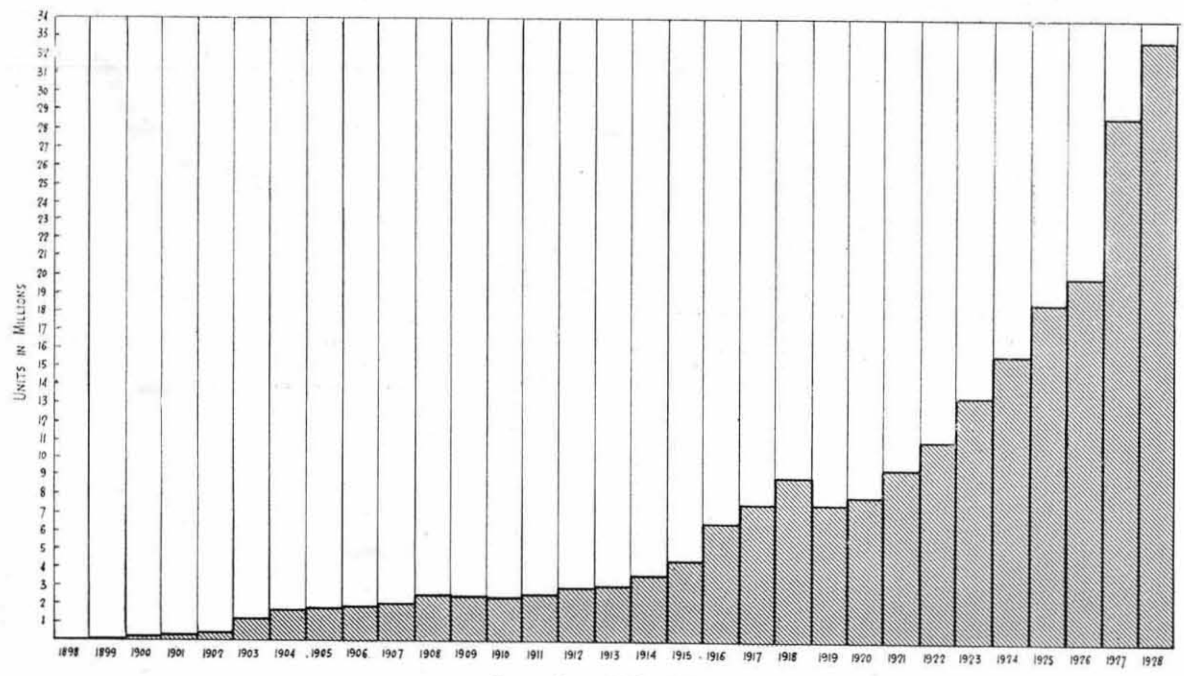
	1922	1923	1924	1925	1926	1927	1928
	d.	d.	d.	d.	d.	d.	d.
Salaries and Wages	·11	·09	·08	·07	·08	·05	·047
Coal	·88	·30	·26	·28	·24	·41	·190
Stores, Oil Waste, Water	·02	·01	·01	·01	·01	·01	·007
Repairs and Maintenance	·15	·16	·14	·14	·15	·08	·074
Total Works Cost (in pence)	1·16	·56	·49	·50	·48	·55	·318

SELECTED STATION

Under the North-West England and North Wales Electricity Scheme, 1928, published by the Central Electricity Board, the Wallasey Station has been selected to be retained for supplying electricity into the National Grid.



Maximum Demand 1898 – 1928



Units Sold 1898 – 1928

DIAGRAMS SHOWING PROGRESS OF MAX. DEMAND AND OUTPUT

LIST OF MAIN CONTRACTORS

THE ENGLISH ELECTRIC CO., LTD., RUGBY.

Turbo-alternator, Condensing Plant, and Low-Tension Switchgear.

MESSRS. SIMON-CARVES, LTD., MANCHESTER.

Boiler Plant.

MESSRS. J. & G. CHAPPELL, LIVERPOOL.

Foundations.

MESSRS. J. DOLAN & SON, WARRINGTON.

Buildings.

THE METROPOLITAN-VICKERS ELECTRICAL CO., LTD., MANCHESTER.

Extra High-Tension Switchgear.

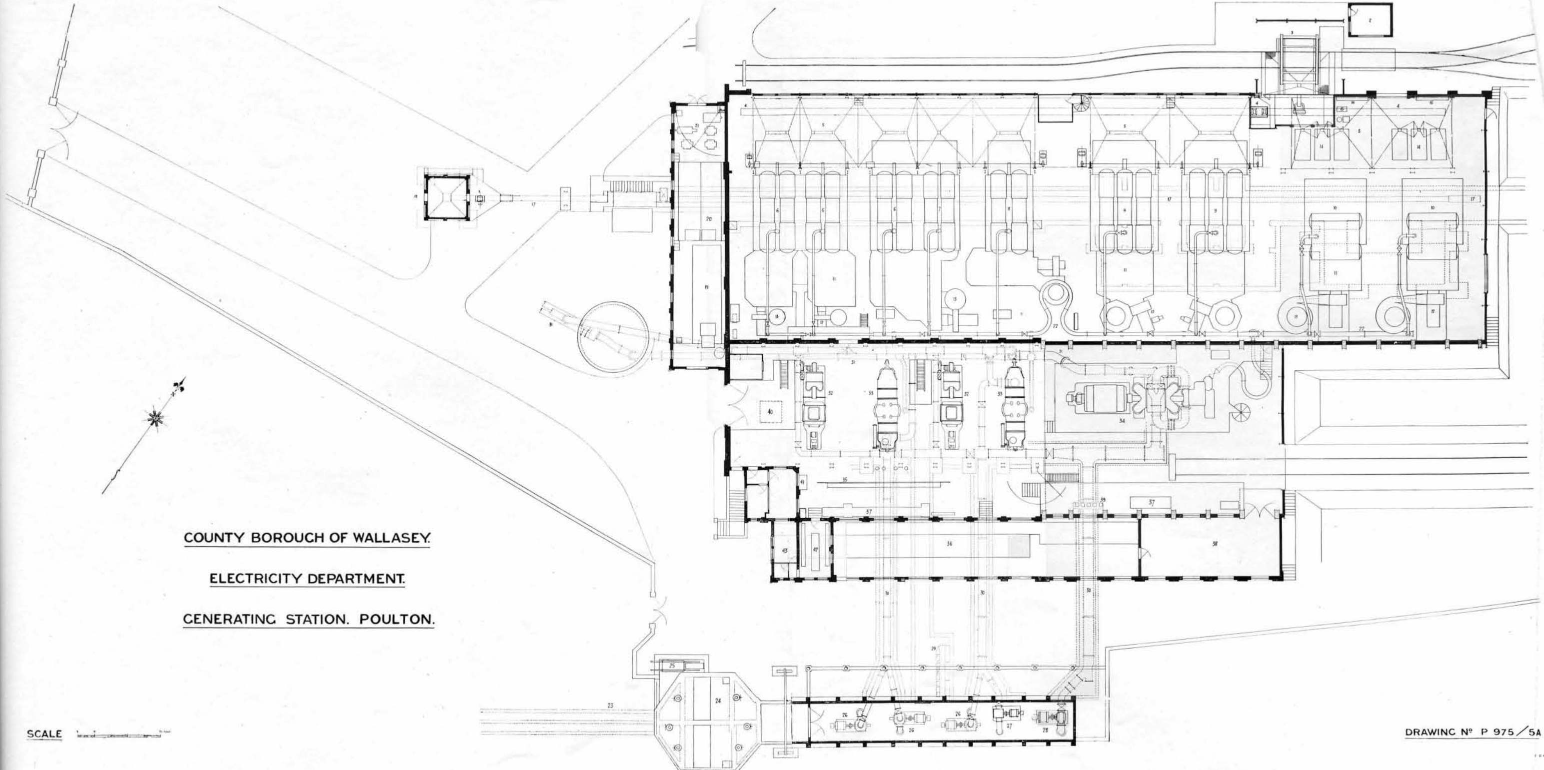
THE WHARTON CRANE & HOIST CO., LTD., STOCKPORT.

50-ton Electric Crane.

INDEX TO PLANT SHOWN ON THE DRAWING FOLLOWING.

Number	PLANT, Etc.
1	Siding from L. M. & S. Railway, Wirral Section.
2	Weighbridge and Office.
3	Rotary Coal-wagon Tippler.
4	Gravity Bucket Coal Conveyor.
5	Coal Bunkers.
6	22,000 lbs. per hour Boiler Babcock & Wilcox.
7	18,000 ,, ,, ,, ,, ,,
8	25,000 ,, ,, ,, ,, ,,
9	35,000 ,, ,, ,, ,, ,,
10	50,000 ,, ,, ,, Simon-Carves.
11	Green's Economisers.
12	Fan and Motors.
13	Chimney.
14	Pulveriser.
15	Magnetic Separator.
16	L.T. Switchboard, 50,000 lbs. per hour Boiler.
17	Ash Conveyor.
18	Ash Storage Bunker.
19	Water Purification Tank.
20	Hot Well.
21	Boiler Feed Pumps.
22	Main Steam Range.
23	Circulating Water Culvert from West Float.
24	Water Screening Sump.
25	Rubbish Hoisting Gear.
26	Circulating Water Pump, 5,000 G.P.M.
27	,, ,, ,, 2,500 ,,
28	,, ,, ,, 10,000 ,,
29	Pump House Switchboard.
30	Circulating Water Pipes to Condensers.
31	Circulating Water Discharge Pipes to West Float.
32	3,000-kw. Turbo-alternator—Metropolitan-Vickers Electrical Co., Ltd.
33	5,000-kw. ,, ,, —Brush Electrical Engineering Co., Ltd.
34	12,500-kw. ,, ,, —English Electric Co., Ltd.
35	E.H.T. Remote Control Board.
36	E.H.T. Switchgear.
37	L.T. Switchgear.
38	Transformer Room (Workshop over).
39	Earthing Board Pedestal Control.
40	Earthing Resistance.
41	Motor Generator.
42	Battery Room.
43	Test Room.

Charles Birchall, Ltd., Liverpool.



COUNTY BOROUGH OF WALLASEY.

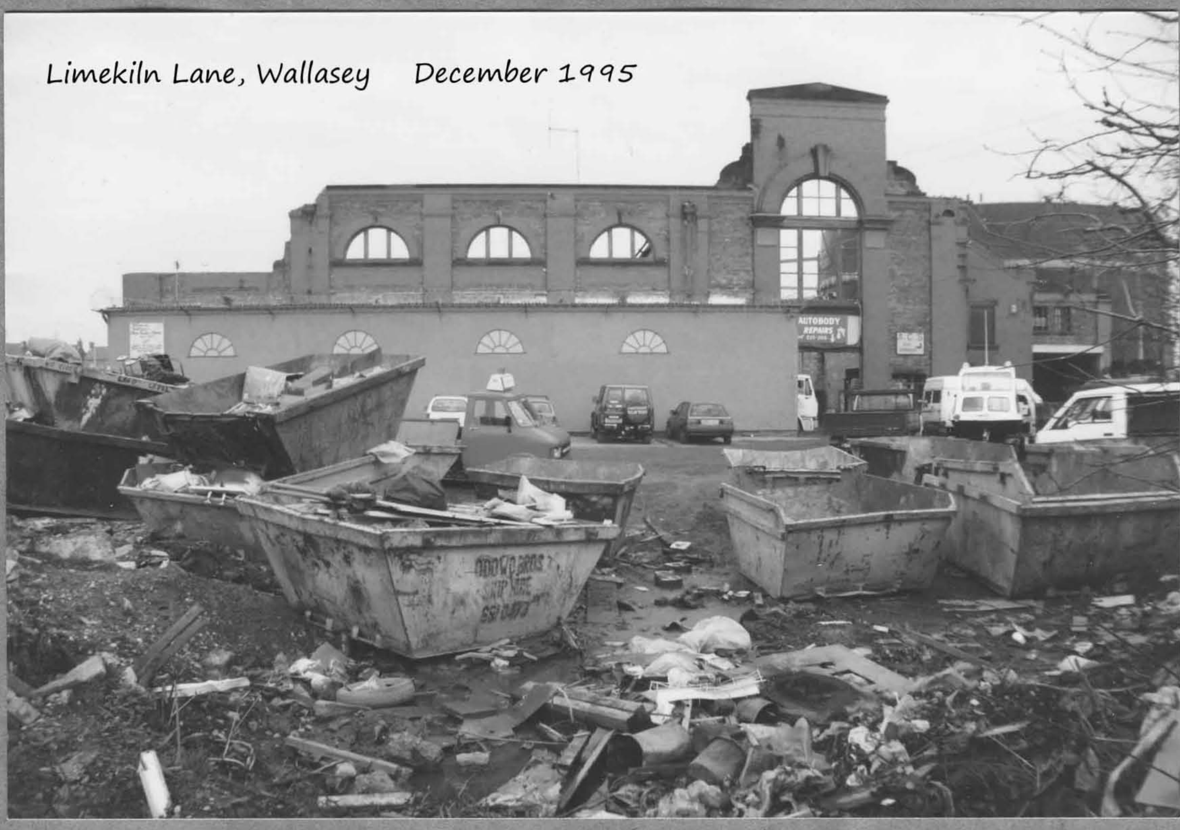
ELECTRICITY DEPARTMENT.

GENERATING STATION. POULTON.

SCALE

DRAWING Nº P 975/5A

EXTENSIONS (1928) SHEWN COLOURED


Limekiln Lane, Wallasey December 1995
AUTOBODY
REPAIRS