

# *“Droitwich Calling”*

*The Story of*

## **Droitwich Transmitting Station**



John F. Phillips

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# **Droitwich Calling**

by John F. Phillips

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## **INTRODUCTION**

Experimental sound broadcasting began in the British Isles as far back as 1919 by the Marconi Company and other large electrical engineering manufacturers. The British Broadcasting Company came into being in 1922 and took over three 1.5 kilowatt transmitters; 2LO in London, 5IT in Birmingham and 2ZY in Manchester. Regular daily broadcasting on medium waves commenced from these stations on 14th and 15th of November 1922. In July 1924 the first long-wave transmitter, 5XX, opened at Chelmsford, and was transferred to Daventry 12 months later to carry an alternative programme that was the forerunner of the National Programme. Expansion of the B.B.C. continued and by 1925 over 20 medium-wave stations were in operation. These were all low-power services and situated in large towns and cities. Today these would be classed as local radio stations.

On the 1st January 1927 the British Broadcasting Company was dissolved and the British Broadcasting Corporation was constituted under a Royal Charter. The broadcasting system then gradually developed into a regional scheme with the low power stations being replaced by new studio centres and high-power transmitters serving seven regions of the British Isles. One of these Transmitting Stations was at Wychbold, near Droitwich Spa, which became operational in 1934. Its new long wave transmitter replaced that of Daventry but continued to use the same 5XX call-sign.

In the following pages the story is told of why Droitwich was chosen as a site, and of the 60 years of history and activities of the station from the early 1930s.

## **PROLOGUE**

On Thursday afternoon, September 6th 1934, a great occasion in broadcasting history took place as a giant radio transmitter went on the air at the British Broadcasting Corporation's new transmitting station at Wychbold, Droitwich Spa. Radiating the National Programme on long-waves, the transmitter was the largest of its time, certainly in the B.B.C. The story that now unfolds tells of the events that led to the building of the transmitting station and explores some of its history.

The Radio Times, October 5, 1934

Every Friday TWOPENCE

Plan Your Listening in Advance: All B.B.C. Programmes for OCTOBER 7-13

THE  
**RADIO TIMES**  
THE JOURNAL OF THE BRITISH BROADCASTING CORPORATION



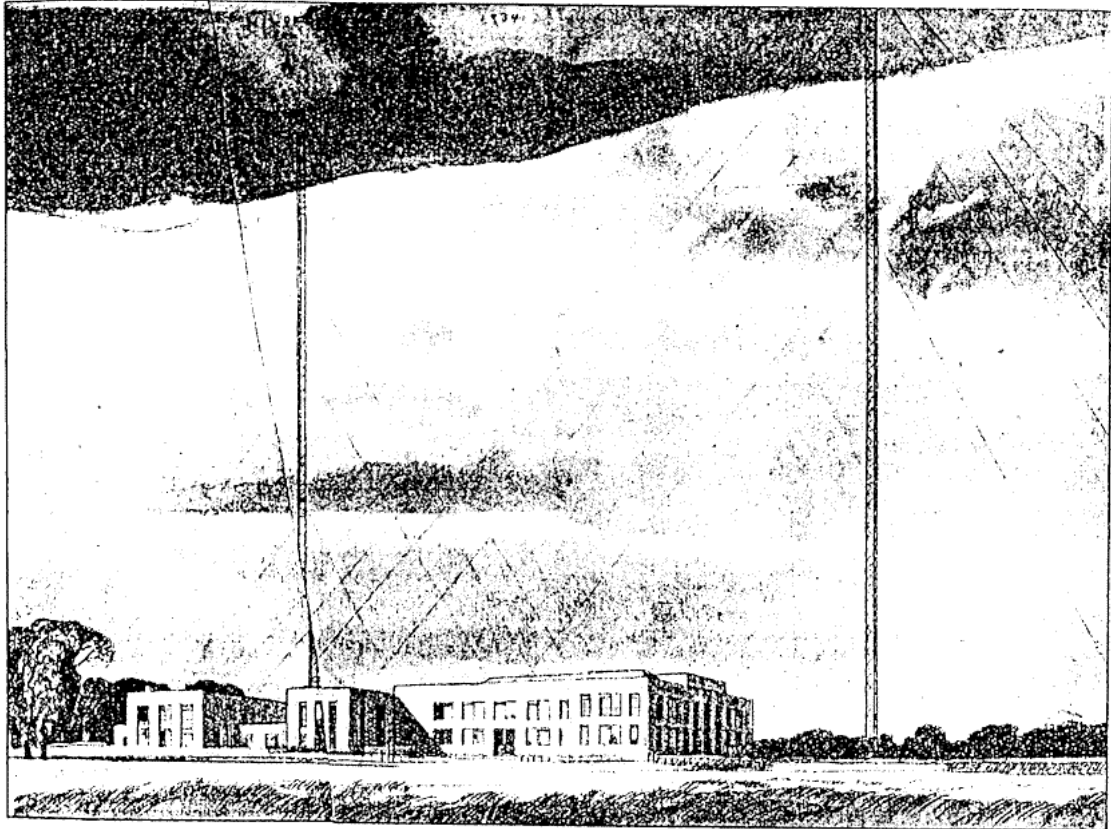
NATION SHALL SPEAK PEACE UNTO NATION

Vol. 45 No. 575

FRIDAY, OCTOBER 5, 1934

Registered at the G.P.O.  
as a Newspaper.

## THE LATEST GIANT OF BROADCASTING



An impression of the new Droitwich Station, which will 'take over' from Daventry 5XX this week-end

The Radio Times announces the opening  
of Droitwich Transmitting Station.

# A NEW SITE FOR THE MIDLAND TRANSMITTER

Beginning of a Further Chapter to the many Centuries of Droitwich History

**T**HERE has been great interest in the Midlands in the decision to rebuild on a site just outside Droitwich the long-wave National and Midland Regional transmitting stations now located at Daventry. Pictures of the site selected, which is close to the Birmingham-Droitwich main road, have appeared in the Birmingham press. Soon Droitwich will be as familiar a name to listeners as Daventry has become. It was broadcasting principally that made Daventry known, and broadcasting will continue to keep it known through the Empire Station which was recently opened there. Droitwich, on the other hand, because of its reputation as a health resort, sunny and salubrious, with beautifully laid-out gardens, was already widely known before it was chosen as a site for broadcasting purposes, and the wider notice it will receive will no doubt be welcomed by the local development association. In Roman times Droitwich was an important centre, and a road was built across to it from Lincolnshire. Under the Normans it was one of the King's own demesnes, and King John farmed it out to the burgesses. The Royalist Army was quartered there for a time early in the Civil War. The borough still maintains its ancient "wakes" just after midsummer, when jollifications lasting several days attract many people from the surrounding districts.

**B**EFORE the War Ruahden Temperance Band had proved—at the Crystal Palace and at Belle Vue, Manchester—that it was in the first rank. It was hard hit, as were many bands, by War-time loss. Thomas Young, and with enthusiastic notable "come-b" in the second set as the County A a place of fourtes between Bedford road, and its at industry, in which employed. For January 30, the 1

**M**IDLAND nise the tape of t of County Week example was the teners found to i broadcasts so far even to suit the the fish suction f

because that would have disorganised the dinner in thousands of households. But by means of the Blatnerphone recording the arrival of the travellers on the morning tide, and the 8 a.m. auction, the most famous industry actually, the first one Midland Region—it not M.S. Boiler Works week programmes.

d castle and its old memories of high-coaching days, has musical life. The city foster youthful ly for competition by Oakham (Mansfield) who have won this Thursday, February al concert for young eyed. This School are all under sixteen, esser at Nottingham artists at the concert a young Nottingham (entertainment).

## WYCHBOLD BROADCASTING STATION

### LANDMARK BY DAY AND NIGHT.

The two huge aerial masts which are being erected by the B.B.C. at their new broadcasting station at Wychbold will be landmarks by day and night.

During the waking hours their 700 feet of lattice steel make them the most prominent feature of the Worcestershire plain, and from dusk onwards brilliant electric lamps of many thousand candle power at the top of the structures will flash a warning to low flying aircraft.

Getting the masts up is a tricky job, and hundreds of tons of concrete were used to give a secure foundation. High speed electric lifts are to be constructed inside the masts, and engineers will be able to shoot up aloft in a few seconds.

The station, which it is stated is to be called "Droitwich," will be the biggest controlled by the B.B.C. When it is opened in about 12 months' time its voice will be the loudest in Europe.

SEP 2 1933

## REPORTS ON THE WYCHBOLD B.B.C. TESTS.

### DROITWICH HEARD AT ABERDEEN.

From reports which have been received from various stations which have picked up the test transmissions from the Droitwich National station it is already established that the quality will be extremely good in comparison with that of Daventry 5XX. The comparative field strength is generally put as being about two to one. The most distant point from which the B.B.C. has received reports is Aberdeen, where signal strength was notably better than 5XX. Fading was very much less, although there was some fading, this being understandable considering that the distance from the transmitting point is 350 miles. It will be recalled that the Scottish medium-wave National transmitter is to be retained, because it is felt that the new station may not put out a reliable service at all times in Scotland.

The B.B.C. has now stated that the Midland Regional station is to have an entirely new transmitter, and is not to be equipped with one of the medium-wave National transmitters which will be displaced by the new long-wave station. A statement as to the time of the introduction of the new regional transmitter will be made when the Droitwich station is opened on Thursday, September 6th.

AUG. 25 1934

## DROITWICH CALLING.

### TESTING WYCHBOLD STATION.

"This is the long-wave National transmitter at Droitwich testing" is a wireless announcement of peculiar local interest, which has been heard for the first time this week. Official tests of the B.B.C. super station at Wychbold began on Monday from 12.5 to 3.0 a.m., and will continue daily (except Sundays) until August 31st, at a power of 150 kilowatts, with normal modulation. Later on, during August, tests will also be held between the hours of 7.0 and 9.0 a.m. to ascertain the strength and quality of reception in daylight. Gramophone records are used, and the programmes consist mainly of dance music. Reports are being gathered from the engineering point of view to judge the strength of the transmitter compared with Daventry 5XX. At the later stages of the tests quality of reception will be more carefully tested with chamber music and speech.

Preliminary tests had been going on for several weeks, both of the carrier wave of the new transmitter and of music by means of records, but no pre-arranged schedule had been disclosed. Now anyone caring to sit up till the small hours of the morning can judge for themselves the strength and quality of this new giant of the air, which is expected to take over the National programme on September 6th. Provision is also being made for the erection of a new transmitter for Midland Regional at Wychbold. This will probably come into operation before the end of the year.

It is of particular interest to people in this district to note the effect of broadcasts by such a powerful transmitter only a few miles away. The new transmitter promises to give results superior to those obtained from Daventry, which is not to be wondered at, since Droitwich is the last word in transmitter construction, and should set a standard for the rest of the world. The records that have been broadcast included orchestral and voice performances of a type calculated to bring out its possibility, and with the exception of the xylophone, every instrument as well as the operatic soprano, came over cleanly and with excellent quality.

So far as volume is concerned, listeners who do not possess modern selective sets, and who wish to get other long-wave stations from the Continent, will probably find Droitwich difficult to tune out. Power is certainly great, but the dreaded "spread"—that is, the effect of blotting out whole sections of the long-wave band—is not as bad as was feared. It seems that a really efficient three-valve set should be able to deal fairly adequately with it. If this is the case there will be nothing at all to fear from the new Midland station when it gets going, because of the low wave-length on which it will radiate.

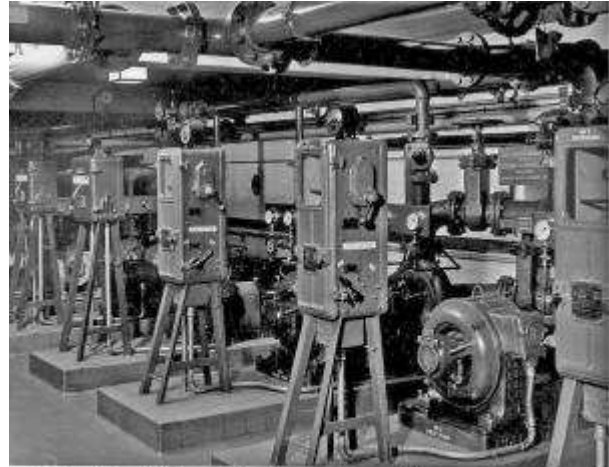
AUG 4 1934

Cuttings from the Radio Times and the Bromsgrove, Droitwich and Redditch Weekly Messenger.

## IN THE BEGINNING

A question often asked by visitors to the Droitwich Transmitting Station was "Why Droitwich?" To answer this we must go back to 1930. The B.B.C Regional Broadcasting scheme was developing well following the start of regular broadcasting some eight years earlier. Seven main regions of the British Isles were to be covered by high power dual-programme medium-wave transmitters and their associated studio centres, thus replacing the numerous small stations that had been installed in large towns and cities. The new stations each transmitting on two wavelengths would give listeners the choice of a Regional or National Programme.

In 1930 the Midland region was served by two transmitters situated at Daventry, the Midland Programme on medium-waves (transmitter call-sign 5GB) and the National Programme on long-waves (call-sign 5XX). With a power of only 25 kilowatts, 5XX was unable to cover the British Isles as originally intended and it was necessary to provide several medium-wave fill-in transmitters for the more distant regions. It was decided that a new high-power long-wave transmitter should be built at a site where it would serve most of the highly populated areas thus eliminating the need for some of the fill-in transmitters. The population map of 1930 indicated that these areas were London, the Midlands, South Wales and South West England, Yorkshire and Lancashire, Glasgow, Edinburgh, and Belfast. The most remote region from the "centre of gravity" of the population was that including Glasgow and Edinburgh and it was considered that this area could continue to be provided with the existing medium wave service carrying the same programme as the long-wave transmitter. The centre of the remaining population map was Birmingham but technical reasons made it undesirable to locate a high-powered transmitter in a built-up area such as a city. The preferred alternative site would be to the south of Birmingham and the short-list included Barnt Green and Wychbold and in 1932, after tests had been carried out using a mobile transmitter, Wychbold was selected. Test boreholes were drilled to check if any underground brine streams existed with the risk of consequent subsidence but none were found. The 54 acre site was purchased in February 1933 from G. Jackson Esq.(24 acres) and A. Smith Esq.(30 acres). The location would also be suitable for the transfer of the medium wave service from Daventry.



Droitwich: Valve Cooling Pump  
Crypt 1934 - 1960

In April 1933 the laying of the approach road to the new station was started, the work being undertaken by Messrs. Higgs and Hill Ltd., of Vauxhall, London, who were also awarded the contract for building the station. Construction of the long-wave transmitter had commenced at the works of the Marconi Company. It was reported that the system of modulation to be used, known as series modulation, would "give faithful reproduction between 30 and 10,000 cycles". The transmitter output power was to be 200 kilowatts and this caused controversy in certain quarters. Some experts, suggesting that this power would give Droitwich the loudest voice in the world, declared that a great deal of interference with other stations would occur and bring trouble in international broadcasting circles. Eventually it was planned that the transmitter would operate at a lower power and thus eliminate this problem.

The aerial system for the new transmitter was to be supported by two steel lattice masts each 700 feet in height. During September 1933, when the two masts had reached a height of over 500 feet, the 10 riggers forming the construction team became increasingly dissatisfied with the rates of pay and conditions. They argued that the increase in pay with height was insufficient as "danger money" and that they were expected to work at 600 to 700 feet for only 1s 11d (less than 10p) an hour - a weekly wage of £4 10s (£4.50). Matters came to a head on Wednesday 27th September 1933 with the riggers coming out on strike. The strike lasted a week until the men, assured that their grievance would go to arbitration, resumed work. The Arbitration Court, appointed by the Ministry of Labour, was held on 24th October at Droitwich Town Hall. The chairman was Sir Richard Redmayne, the representative for the employers, the Radio Communication Co. was Mr. R. Vyvyan and the representative for the workmen was Mr. R. Dennison, the ex-M.P. for Kings Norton. It was noted that no structure as high as these masts had ever been erected in this country and consequently there was no precedent to guide either the contractors or the men in fixing the rates. The only comparable guide was the erection of the Brookmans Park masts where the rate was 2s 4d an hour but these masts were not as high as those at Droitwich. The two representatives failed to agree on a suitable wage so a rate was fixed by the chairman to provide a maximum of 4 shillings (20p) when full height was reached. Other concessions were made unanimously including a lodging allowance and better overtime rates, and in all, the improvements backdated to August 28th amounted to £5 12s (£5-60) a week. Another stipulation made was that safety belts should be provided and worn. An interesting point that emerged from this case was that the original riggers had also gone on strike for better pay and had actually been replaced by the present gang who benefited from the award.

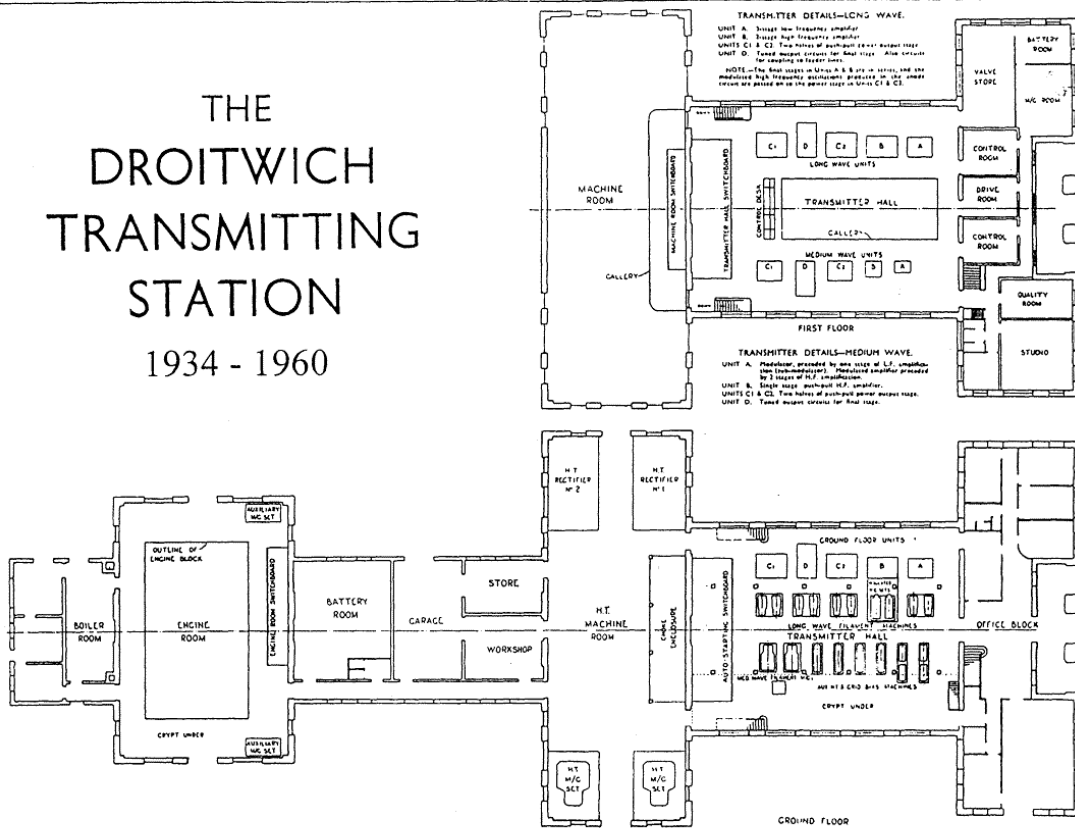
By November 1933 construction of the transmitter building was well advanced with the walls up to the roof level. The main transmitter hall consisted of two floors with a balcony running around a central well. The balcony would carry the transmitters and control desk while the motor generating plant would be installed below the well on the ground floor. Above this hall a large skylight was being erected 20 feet by 50 feet in size. On Tuesday 7th November a fatal accident occurred, caused by scaffold planks breaking during the placing in position of a 3 hundredweight section of the skylight, plunging four men some 30 feet to the floor. A fifth man was saved from the fall by his overalls becoming caught on the framework. The men, all employees of Messrs. Crittalls, were taken to Bromsgrove Cottage Hospital where four of them were detained. One of them died soon after admission from spinal injuries. An inquest was opened three weeks later by the coroner, Mr. F.P. Evers at Bromsgrove Police Station.

The jury heard how the four men were working on the scaffolding hoisting up a skylight section known as a hip-bar without the use of pulleys. The main bearer of the scaffold, a nine inch by three inch plank, 18 feet long was unable to take the weight of four men and the hip-bar and cracked without warning. After hearing the testimony of several witnesses the jury decided on a verdict of "accidental death" with the foreman adding "We think that it was due to overloading and that pulleys should have been used, but we do not think it is for us to determine on whom the responsibility rested." During the inquiry it emerged that a question had been asked in the House of Commons about the incident, such was the publicity.

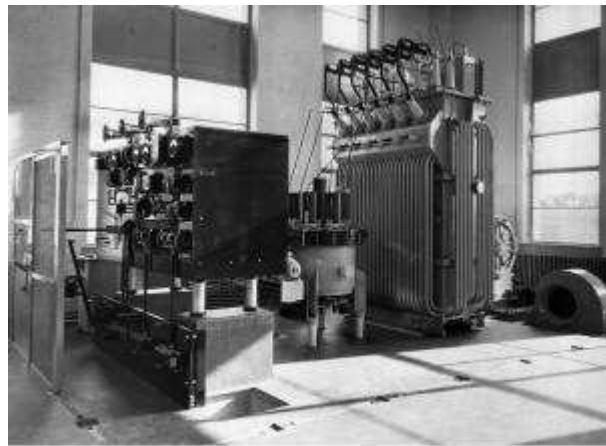
July 1934 saw building work nearly complete and testing of the new long wave transmitter was under way with the opening date set for September 6th. It had been suggested in April that His Majesty King George V might officially open the station but it was now announced that this plan had fallen through and that the opening would be a less formal ceremony.

# THE DROITWICH TRANSMITTING STATION

1934 - 1960



Preparations were almost complete in August and any listeners who happened to tune to the long-wave band of their radios (or "wireless sets" as they were called in those days) in the early hours of the morning would hear an announcement "This is the long-wave National transmitter at Droitwich testing" followed by a programme of gramophone records. Reports on the reception from all over the country confirmed the high quality signal that had been the promise of the new series modulation system. A trade boom was already apparent and the Marconi Company who designed and built Droitwich had received orders to build similar transmitters for Finland, Sweden and Rumania. At home, the Radio Exhibition at Olympia, or as it was known, Radiolympia, coincided with the testing period of 5XX and manufacturers were able to display their new receivers with Droitwich marked on the tuning dials alongside such names as Moscow, Luxembourg, Warsaw and Radio Paris. Concern was expressed that some of the older radio sets in use would have such poor selectivity that their owners would be unable to tune to stations other than the strong Droitwich signal. Some of the technical journals began to publish articles on the construction of simple wave-traps to help overcome this problem although manufacturers hoped for a boom in sales of new sets of the super-heterodyne type with their superior selectivity.



Droitwich: 600kw mercury arc rectifier

This advert for a new Philco set boasted that it could cut out Droitwich. It appeared in the Bromsgrove, Droitwich and Redditch Weekly Messenger on September 15th 1934.

Early radio sets were not very selective and were easily swamped by local transmitters making the reception of distant stations almost impossible. New radios were developed using the *superheterodyne* principle which enabled them to tune into weak signals without interference from strong ones, thus combining high selectivity and sensitivity.

The Raven Garage (no longer in existence) were quick to advertise a new Philco superhet receiver to coincide with the opening of the Droitwich Transmitter.



CAN YOU CUT OUT DROITWICH?  
**WE CAN.**  
The 9-stage, Five Valve Balanced PHILCO SUPERHET SET will give you any stations in Europe: From £10 10s. 0d.

Hear this Radio at the  
**Raven Garage,**  
Victoria Square, Droitwich Spa.  
SOLE DISTRICT AGENTS.

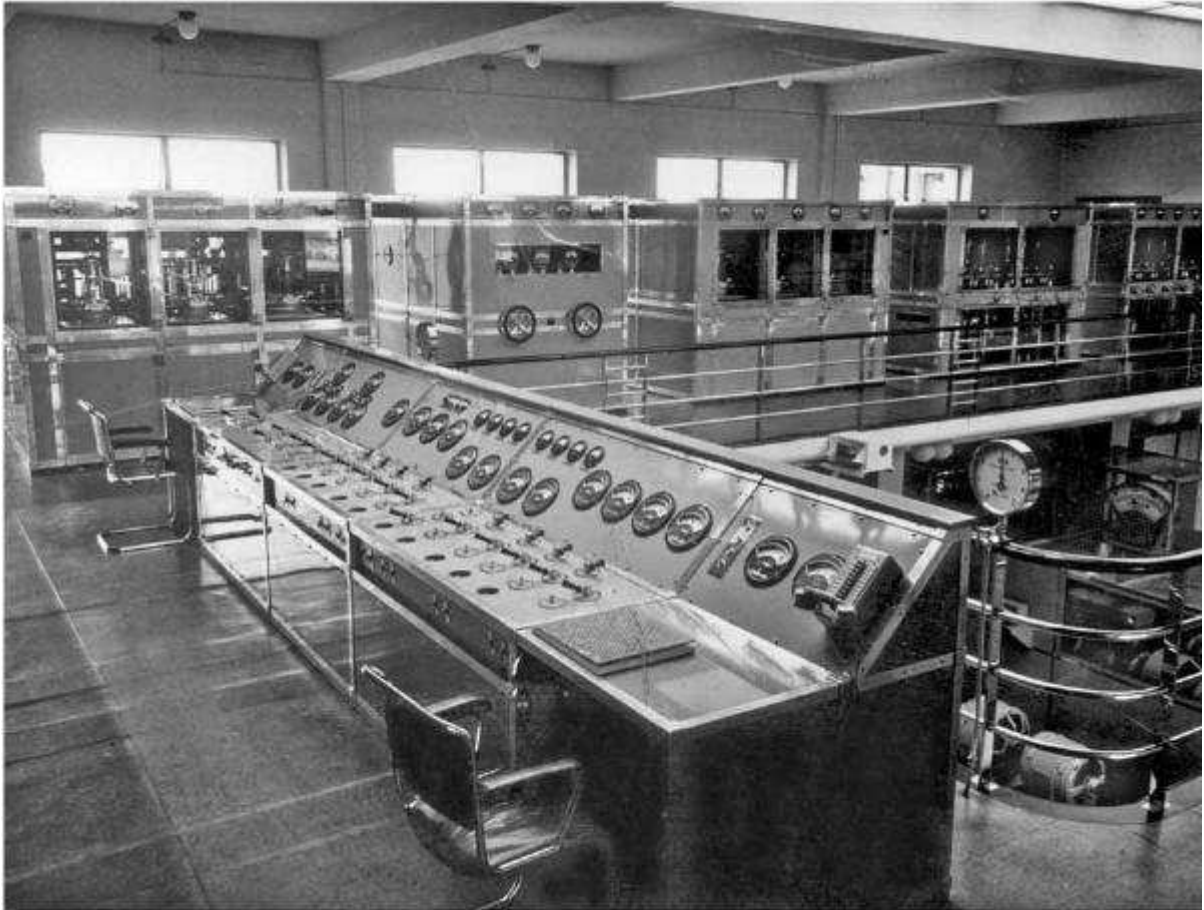
**PHILCO**  
RADIO  
UNIVERSAL  
**A.D.C.**  
for BOTH A.C. & D.C. mains WITHOUT any change

FREE TRIAL INSTALLATION IN YOUR OWN HOME.

Thursday 6th September 1934; the great day had arrived. A party of 150 pressmen from all over the country were conveyed from Droitwich railway station to the transmitting station by Midland Red bus where, with B.B.C. engineers and Regional Directors, and representatives of overseas broadcasting undertakings they formed the audience for the opening ceremony. At 3.45 pm, at a signal from Admiral Sir Charles Carpendale, Controller of the B.B.C., 5XX went on the air replacing the transmission from Daventry with a radiated power of 150 kilowatts. The audience heard a programme which originated in London by the B.B.C. Orchestra, conducted by Aylmer Buest. It began with the overture from "The Merry-makers" by Eric Coates followed by three English dances in the old style. The newsmen and guests were given an extensive tour of the station and equipment and first public transmission from Droitwich was given extensive coverage. Locally, the September 8th edition of the Bromsgrove, Droitwich and Redditch Weekly Messenger gave a full page report with pictures of the new installation.

For the first month after the opening 5XX replaced Daventry only during the mornings and evenings. The official changeover took place on 7th October 1934 with Daventry closing down after nine years of transmitting the National Programme, and Droitwich taking over the full service. The change was chosen to coincide with the end of Summer Time, and, to quote the Bromsgrove Droitwich and Redditch Weekly Messenger, "the return of normal time, that harbinger of the long winter evenings, when the wireless is especially welcome in the home". In those early days the programme began with the Daily Service at 10.15 am and ended at midnight with dance music. Such was the interest shown in the new high power transmitter with its revolutionary (for those days) circuits that technical visitors from all over the world came to inspect it, as the visitors book can confirm. By present day standards the transmitter would be considered simple in design and inefficient in operation.

With 5XX Droitwich successfully launched attention was turned to the new Midland Regional transmitter now being installed. This again was a Marconi transmitter, 50 kilowatts output on medium waves, destined to supersede the 25 kilowatt 5GB transmitter at Daventry. By the end of 1934 the new installation was complete and preparations were made to put it into service the following February. On Saturday night, 16th February, a short programme was broadcast from the Midland Region called "Farewell to Daventry," in which Mr. Percy Edgar, the Midland Regional Director recalled that Daventry 5GB started broadcasting on August 21st 1927. This was the start of the Regional scheme by which Birmingham contributed the first alternative to the National Programme for the Midlands.



Droitwich 1937: Upper tx hall; Longwave (5XX) tx & control desk.

Droitwich 5GB made its unostentatious debut on Sunday 17th February at 4.30pm with the Greenwich time signal. Transmitting on 296 metres from a vertical aerial suspended from a triatic on the north mast it was well received in the Birmingham area. But unless listeners had very selective receivers of the superhet type, other stations on the medium wave band were swamped by Droitwich and in some cases cross-modulation between the Regional and National transmissions caused the two programmes to interfere with each other. The only cure for this problem, apart from buying new receivers was for the listener to fit wave-traps between the aerial and the set. Many a small radio repair business found it profitable to make and sell wave-traps to keep their customers happy.

The power supply for the station was provided by 4 large diesel generators situated in an engine room at the rear of the building, always a fascination for technical and non-technical visitors alike. The 6-cylinder marine type engines were each rated at 750 horsepower, 375 r.p.m. and coupled to 470 kilowatt 3-phase 415 volt alternators. Fuel oil was stored in two surface tanks each containing 150 tons of fuel. This was sufficient to run the station with a normal load of 1000 kilowatts for 3 months with three sets in use and one in reserve. It is interesting to note that a [requisition dated January 1939](#) for 20000 gallons of fuel oil from Shell Mex & B.P. quotes a price of 4d per gallon plus 1d duty - about 2p a gallon in decimal currency!

For 4 years the station generated its own power until it was decided to connect to the public electricity supply. A substation was built by the supply company, S.W.&S. as it was in those days, and two feeders were brought in from separate sources to provide continuity of supply should one fail. The engine room then became the ultimate reserve.



## Droitwich: Engine room 1935

An attraction that appealed to visitors, especially children, was the pond. It was part of the cooling system for the large transmitting valves, holding 300,000 gallons of water and also containing thousands of goldfish put there to keep the water free from algae. In time the fish bred to produce all shapes, sizes and varieties, and they learned that when the metal guard rail was tapped food was about to appear. The station canteen kept a supply of stale bread available for this purpose and visitors were able to command shoals of fish to appear in response to the signal. It was against regulations to remove fish from the reservoir but over the years many an ornamental garden pond was stocked from this source.

<u>Standard Prices in Droitwich Canteen</u>	
Main Meal, including meat <sup>and Veg.</sup> and sweet .....	1s.6d.
Soup, per portion .....	3d.
White Coffee .....	3d.
Black Coffee .....	2½d.
Tea .....	2d.
Bread, per slice .....	1d.
Bread and Butter, per slice .....	1½d.
Toast and Butter .....	2d.
<u>BREAKFAST</u>	
Bacon, potatoes; toast and marmalade; and one cup of tea .....	1s.0d.
<u>SNACKS</u>	
Egg on Toast, one cup of tea .....	10d.
Baked Beans on Toast, one cup of tea .....	10d.
Welsh Rarebit, one cup of tea .....	10d.
Egg Salad, two slices of bread and butter, and one cup of tea .....	1s.0d.
Sardine Salad, two slices of bread and butter, and one cup of tea .....	1s.0d.

jmk/11.00 a.m./29th July 1952

# ABRIDGED TECHNICAL DATA.

## OIL TANKS.

Two at back of building, having a total capacity of 300 tons (three months' supply for both Transmitters).

## ENGINE ROOM.

Engines :—Four 6-cylinder solid injection Diesel Engines, each 750 b.h.p. at 375 r.p.m.  
Generators :—Four 3-phase, 415-volt, 470 kW. alternators.  
Normal load with both Transmitters working about 1,100 kW.

## ENGINE FOUNDATION.

Consists of a 900-ton block of concrete resting on cork anti-vibration mats spread upon a reinforced concrete "raft."

## BATTERY ROOM.

Contains a 220-volt battery of 1,500 amp. hours capacity. Provides station lighting and power for such auxiliaries (pumps, etc.), as have to be used when the generating plant is not running.

## HIGH-TENSION ROOM.

Contains principally the high-tension supply apparatus. There are two high-tension motor generators, each capable of delivering 300 kilowatts at voltages between 7,000 and 12,000. Normally, one of these provides H.T. supply to the medium-wave Transmitter, the second being a stand-by. In emergency, the two can be series connected to provide the main H.T. supply to the long-wave Transmitter. Power for this purpose is, however, normally derived from the mercury-arc rectifier equipment, which is in duplicate and occupies the opposite end of the High-Tension Room. Each rectifier has an output of 600 kW. at 20,000 volts D.C. (at an overall efficiency of 95 per cent.). The normal load of the long-wave Transmitter is somewhat less than 600 kW. and thus one rectifier is always in reserve. The A.C. input switchboard for this high-tension equipment is located on a gallery, below which is H.T. smoothing and other equipment.

## TRANSMITTER HALL.

Dimensions : 82 ft. by 61 ft. 6 ins. by 26 ft. 6 ins. high.

On the ground floor are filament current and grid bias motor-generators for both Transmitters, also H.T. motor-generators for the early stages. The switchboard for the control of the motor-generators is operated from the control unit at the end of the gallery. The long-wave Transmitter units run straight through from ground floor level to gallery, whilst those of the medium-wave Transmitter are on the gallery. (For layout, see plan.)

Elaborate precautions are taken to guard against the possibility of two sources of the same power supply being paralleled, and also to prevent access to the Transmitter units when the power is on, due to danger to life from high voltages. There are warning devices and alarms to indicate any failure in the water cooling supplies to the high power valves.

## TRANSMITTERS.

Series modulation is employed in the long-wave Transmitter, whereas in the medium-wave Transmitter low-power choke control modulation is employed, as in other B.B.C. medium-wave Transmitters.

In each Transmitter, the origin of the carrier frequency is a triode oscillator. This generates oscillations of half the carrier frequency required. These are passed to a frequency doubling circuit, thereby producing the carrier frequency. Elaborate precautions are observed in order to maintain constant the voltage of the supplies to the oscillator and to keep its oscillatory circuits at a constant temperature. As a result the frequency has a normal constancy of 10 parts in 1 million.

## FEEDS TO WATER-COOLED VALVES.

### Long-Wave Transmitter.

	H.T. Supply.			Filament Supply.			Grid Bias Volts.
	Volts.	Amps.	kW.	Volts.	Amps.	kW.	
Units C <sub>1</sub> and C <sub>2</sub> .. .. .	18,350	7	128	33	460	15.2	300
Unit B. .. .. .	*7,000	1.1	7.7	20	75	1.5	
Unit A. .. .. .	*11,000	1.1	12.1	18	75	1.35	1,350

\* Due to the adoption of series modulation in the long-wave Transmitter, the full H.T. voltage of 18,350 volts is applied to these two valves in series as indicated by the figures, the remaining 350 volts being the drop across decoupling resistances.

### Medium-Wave Transmitter.

Units C <sub>1</sub> and C <sub>2</sub> .. .. .	10,600	1.1	11.7	20	75	1.5	300
Unit B. .. .. .	10,600	0.6	6.4	18	75	1.35	2,000
Unit A. .. .. .	No water-cooled valves in this unit.						

N.B.—The above figures are for one valve only of each class.

## VALVE COOLING SYSTEM.

The valve cooling arrangements for the two Transmitters consist of two separate and totally enclosed circuits. Distilled water only is used and all the pipes are of copper. The coolers are situated over the reservoir outside the building, the heat being dissipated both by direct radiation and by water sprays. The capacity of the reservoir is 300,000 gallons.

## CONTROL ROOMS

There are two control rooms, one for the long-wave programme, and the other for the medium-wave programme. They are connected to the S.B. network by land lines to the Birmingham control room.

## AERIAL TRANSFORMER HOUSES.

That for the long-wave Transmitter aerial is situated midway between the masts and contains the equipment for transferring the energy from feeder lines to the aerial. All the apparatus in the Aerial Transformer House is in duplicate, change-over switches being provided for this purpose. The Aerial Transformer House for the medium-wave Transmitter aerial is situated close to the North mast. Both Aerial Transformer Houses are electrically heated.

## AERIAL AND EARTH SYSTEMS.

The two masts are each 700 ft. in height, and are spaced 600 ft. apart. Each mast weighs some 100 tons which, with the vertical component of the stay tension, produces a load on the mast base of approximately 150 tons. There is a lift inside each mast, and fixed lights are shown at the foot, middle and top of each mast after dark as a warning to aircraft. The current for the lamps is fed through an H.F. filter.

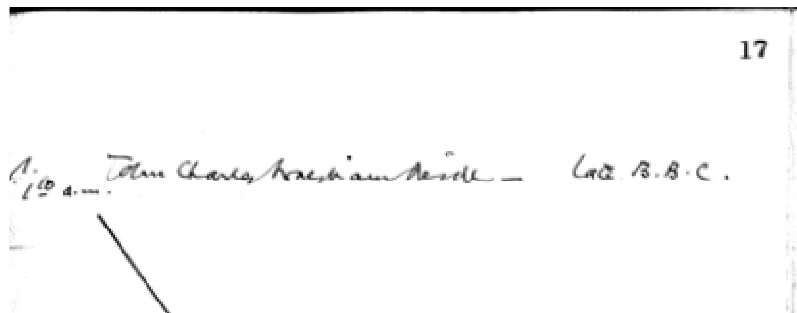
The long-wave aerial is a single wire T, whilst a half-wave aerial is employed for the medium-wave Transmitter. The latter consists of two vertical wires supported by trapezials slung from the top of the North mast, one being the main radiator and the other a reflector.

The Earth for the long-wave aerial is made up of 72 bare copper wires extending radially in every direction from the Aerial Transformer House. These wires are buried a few inches below the surface of the ground.

For the medium-wave Earth, two copper strips from the Aerial Transformer House are bonded to the wires of the long-wave Earth at the points of intersection.

The first Director-General of the B.B.C. was Sir John Reith. Born in Glasgow in 1889 he became the General Manager of the British Broadcasting Company in 1922. When the company became a corporation five years later, Sir John was appointed Director-General, a post he held for eleven years. During that time he was responsible for developing the world renowned image of the B.B.C., resisting all forms of commercial and political pressure. Because of his views he made many enemies in the government and in 1938 he was forced to resign from the B.B.C. His last action was to drive with two colleagues to Droitwich from London on June 30th where he personally closed down the National transmitter at the end of the programme for that day. He then signed the visitors book :-

"July 1st, 1.10 am, John Charles Walsham Reith - late B.B.C."



**Droitwich 1935: Machine Room Switchboard**  
Knife switches feeding 415v 3ph supplies to mercury arc rectifiers.  
The switches were changed over daily  
and the blades frequently felt to check for overheating!

# SATURDAY NATIONAL

JULY 2, 1938

DROITWICH 200 kc/s, 1500 m. LONDON, AND NORTH 1149 kc/s, 261.1 m. For Scottish National see page 78

## 2.30-6.0 OUT OF DOORS

During the afternoon commentaries will be broadcast on

### LAWN TENNIS

The All-England Championships by R. H. Brand, H. B. T. Wakelam, and F. H. Grisewood from the Centre Court, Wimbledon

### CRICKET

Oxford v. Cambridge by P. G. H. Fender from Lord's and

**THE KING'S CUP AIR RACE** by Thomas Woodroffe from Hatfield Aerodrome

The fixed times for commentaries will be:

5.0 Wimbledon  
5.25 Hatfield Aerodrome  
5.45 Lord's

## 6.0 Time Signal, Greenwich

### THE FIRST NEWS

including Weather Forecast

## 6.30 SATURDAY TALK ON SPORT

'Cobden's Match and Memories of other Varsity Matches' MacKinnon of MacKinnon and Kenneth Rankin

MacKinnon of MacKinnon, the thirty-fifth Chief of the Clan MacKinnon and the oldest clan chieftain living, who celebrated his ninetieth birthday in April last, is one of the only two survivors (with the Rev. E. E. Ward) of the famous match between Oxford and Cam-

bridge played in 1870. Cricket-lovers will remember that Oxford had three wickets left and required only four runs to win. MacKinnon of MacKinnon, who was in the Cambridge team, will describe to listeners how Cobden, the Cambridge bowler, achieved the miraculous.

## 6.45 BRITISH COMPOSERS

The BBC Theatre Orchestra  
Leader, Tate Gilder  
Conductor, Stanford Robinson  
Overture, Much Ado about Nothing  
*Edward German*  
Bohemia.....*K. A. Wright,*  
*orch. Arthur Wood*

Minuet  
Moon Maiden's } *Stanford Robinson*  
Dance  
Waltz, The Haunted Ballroom  
*Geoffrey Toye, orch. Frank Tapp*  
Suite for Orchestra, Eire  
*Anthony Collins*  
1 The Boyne (Battle March). 2 To  
the Mourne Mountains (Réverie).  
3 Fluter's Hooley (Reel)  
(First performance)

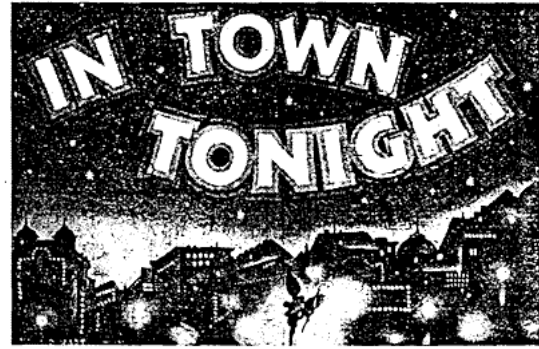
Anthony Collins's Suite 'Eire' is based on three well-known songs by the late Percy French, a popular song writer and entertainer who lived in Dublin. Collins has treated the tunes of these songs very freely. 'Hannigan's Adnt' has been turned into a battle march, while 'Phil the Fluter's Ball' has become a reel.

## 7.30 IN TOWN TONIGHT

5th Season

166th and final edition of the present series

Produced by C. F. Meehan



The Saturday night feature reaches its 166th, and final edition of the present series, in the broadcast at 7.30. So, 'Carry on London' until the autumn!

## 8.0 MUSIC-HALL

Bennett and Williams  
Two Jovial Boys with their  
Phono-Fiddles  
Lily Morris  
Comedienne  
Vic Oliver  
England's Favourite American  
Comedian  
Dawn Davis and Len Bermon  
The Racketeers of Romance  
Charles Austin  
Comedian  
Tod Slaughter,  
assisted by C. Douglas Carlyle,  
in a dramatic duologue,  
'It's Brains that Count'  
The BBC Variety Orchestra  
Conducted by Charles Shadwell  
Presented by John Sharman

9.0 Time Signal, Greenwich  
**THE THIRD NEWS**  
including Weather Forecast  
and Forecast for Shipping

9.20 AMERICAN  
COMMENTARY  
A weekly commentary on  
American Affairs  
Raymond Gram Swing  
(From America)  
See the article by Raymond Gram  
Swing on page 6

9.35 Glyndebourne Festival  
'MACBETH'  
Act 4 of the opera by Verdi  
from the Glyndebourne Festival  
Opera House  
The action takes place in Scotland  
Scene 1, On the borders of Scotland  
and England  
Scene 2, A courtyard in Macbeth's  
castle

Scene 3, On the battlements of the  
castle  
Scene 4, A field of battle

Cost in order of appearance  
Macduff.....David Lloyd  
Malcolm.....Eric Starling  
A Doctor.....Fergus Dunlop  
Lady-in-Waiting  
Elizabeth Abercrombie  
Lady Macbeth.....Vera Schwartz  
Macbeth.....Francesco Valentino  
The Glyndebourne Festival Chorus  
The Glyndebourne Festival Orchestra  
Conductor, Fritz Busch  
Producer, Carl Ebert  
Act 3 of 'Macbeth' was broadcast in  
the Regional programme at 9.10  
(See-note on page 13)

10.35 THE BBC  
MILITARY BAND  
Conductor, P. S. G. O'Donnell  
Daniel Melsa (violin)

BAND  
March, The Rocket.....*Cedric Akster*  
Suite, La Feria (The Fête).....*Lacome*  
1 The Bulls. 2 The Grated  
Window (Serenade). 3 The Comedy

10.52 DANIEL MELSA  
Larmes d'autrefois (Bygone Tears)  
*Gilbert Stacey*  
Andantino.....*Elgar, arr. W. H. Reed*  
Danses tziganes (Gypsy Dances)  
*Rachmaninoff, arr. S. Dushkin*

11.3 BAND  
Waltz, The Blue Danube  
*Johann Strauss*

11.15 JACK HARRIS AND  
HIS BAND  
with  
DINAH MILLER  
SANDRA SHAYNE  
FRED LATHAM  
from Ciro's

Time Signal, Greenwich, at 11.30

11.50-12.0 LATE NEWS  
SUMMARY  
including Weather Forecast



BENNETT AND WILLIAMS bring their phono-fiddles to 'Music-Hall' tonight at 8.0. Here they are facing the television camera.

A typical programme schedule of the late 1930s for Droitwich National. The "second news" is not included in the because it was broadcast at 7.0pm only by the Regional transmitters.

## **WARTIME SERVICE**

1939. A year of escalating international tension in Europe. As the months went by the threat of hostilities with Germany increased in spite of high level diplomatic activity. Behind the scenes the Government was making emergency plans for Britain to cope with a war, and the B.B.C. in common with other vital organisations was kept up-to-date with the situation to enable preparations to be made should the worst occur. Air raid shelters for staff were built and two underground tanks providing a further 200 tons of fuel were installed. Emergency office accommodation was erected on the site to provide a home for the Station Design and Installation Department (S.D.I.D.) if it was evacuated from London.

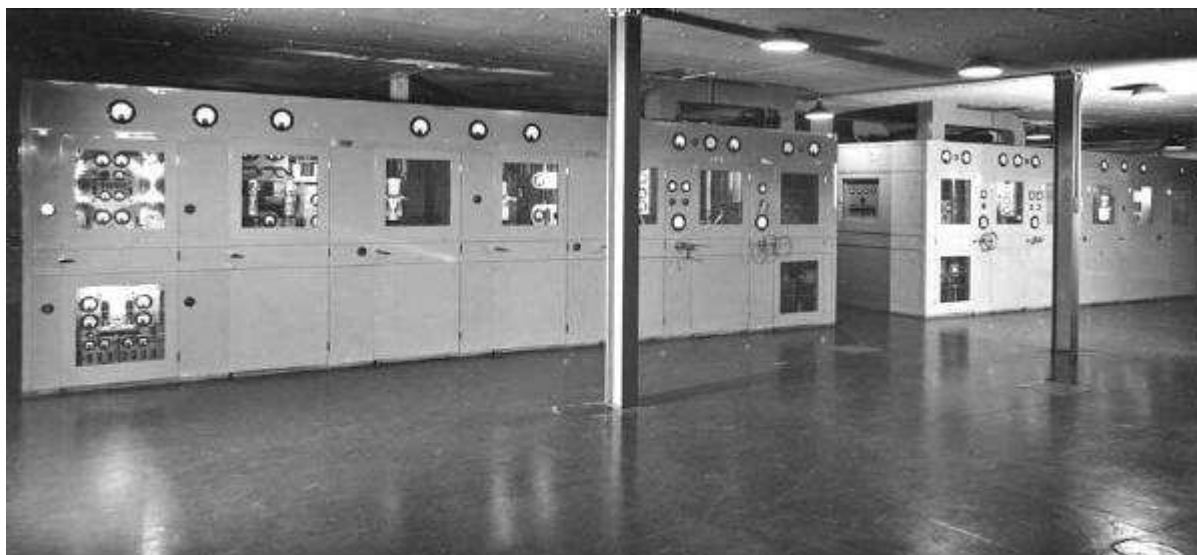
At 6.55pm on September 1st 1939 a message was received by the B.B.C. for all transmitters, including Droitwich, to close down and change over to the pre-arranged wartime broadcasting system. This involved wave-changes on all medium wave stations so that they would operate in two synchronised groups and come under the control of Fighter Command - the reason for this will be explained later. At 8.15 that same evening the medium wave transmitters returned to service with the Regional and National services replaced by a single Home Service. Droitwich 5GB was now transmitting on 391 metres instead of 296 metres with the long-wave transmitter 5XX closed down indefinitely. In fact 5XX resumed long-wave broadcasting again on 16th November 1941 with the European Service on 1500 metres.

On Sunday morning September 3rd the Prime Minister spoke to the Nation in a broadcast to inform the people that Britain was now at war with Germany. By this time full security measures were in operation at Droitwich Transmitting Station - all windows were bricked up against blast, full blackout was put into effect and the mast lighting was discontinued. Military Police with guard dogs took over patrolling the aerial fields and manned a security post at the main gate, and a 24 hour shift rota was started by the engineering staff. S.D.I.D. were soon installed in their new offices and the town of Droitwich provided lodgings for many of the evacuated staff and their families.

Early the following year an additional programme to the Home Service came into being, called the Forces Programme, initially commencing at 6.00pm each evening but eventually extending to all-day broadcasting. At Droitwich, to cope with this new service a small rest-room was hurriedly converted to house a 2 kilowatt transmitter. Later this was replaced by a 20 kilowatt unit in another building.

With the outbreak of war the B.B.C.s commitment to overseas broadcasting greatly increased, and a massive programme of new station building took place. Each station was called an Overseas Service Extension, abbreviated to O.S.E. At Droitwich a new station was erected on the same site as the main building to accommodate two large medium-wave transmitters for parallel operation, and called O.S.E.6., although this designation did not remain in use and the station became known as Droitwich H.P.M.W. (High Power Medium Wave).

In February 1941 H.P.M.W. was officially opened and testing began. The station became operational on October 20th transmitting the European Service of the B.B.C. with a power of 400 kilowatts and a wavelength of 261 metres. The transmitters had the benefit of improved technical developments and incorporated a system known as High Power Class B Modulation with greater efficiency than 5XX and 5GB. The building was designed to take four transmitters but only two were installed, the others being used elsewhere. The remaining space in the building was used as a store and also to house a 20 kilowatt Marconi transmitter that took over the Forces Programme.



**Droitwich 1941: H.P.M.W. (OSE 6)  
Two 200kw Marconi transmitters operating in parallel.**

The parallel-operation of high-powered transmitters was a completely new technique so another "first" was scored for Droitwich. Special circuits were devised so that if one of the two units failed, the healthy transmitter would not feed power into the faulty one with disastrous consequences. Manual switching would put the good transmitter back on the air thus resuming the service on half power. Nowadays, parallel working of transmitters is common practice and automatic switching takes place when necessary. Programmes in many European languages were radiated during the hours of darkness from H.P.M.W., including the Voice of America with its signature tune "Yankee Doodle Dandy", which was relayed from short-wave transmitters in the U.S.A. For a period during the war news was broadcast in Morse code for resistance and underground groups in the occupied countries, the only way to get information through the heavy jamming of transmissions.

The aerial used for H.P.M.W Consisted of a stacked array of two Krauss dipoles giving a horizontally polarised signal with no upward radiation. The top section of the aerial could be used simultaneously as a "T" aerial for the long-wave transmitter by means of special combining circuits. The lack of upward radiation meant that the signal could not be used for direction finding by enemy aircraft flying at high altitudes. It was not the case however for the medium wave transmitters using vertical wire aerials, such as Droitwich, and this is the purpose of the two synchronised groups of transmitters mentioned earlier. When enemy bombers were approaching over the English Channel, radio direction finding equipment would be used to plot a course for the mission using signals from the transmitters as beacons. R.A.F. Fighter Command, monitoring the approach of the raiders would order certain transmitters of a synchronised group to be closed down for a period, by issuing a U.P.C.D. (urgent priority close down) thus confusing the enemy navigators. By varying the sequence of which transmitters did or did not radiate it was possible to deflect the raiders from their intended destination. Listeners would still be able to hear the programme, albeit at a lower volume, from another transmitter not affected by the U.P.C.D.

In 1943 a new 300 foot self-supporting mast was built to the north of the site. The bolted steel lattice construction, manufactured by the American firm of Blaw Knox, was supplied under the Lease-Lend agreement. Erecting this mast was a particularly hazardous operation because of the close proximity of the other aerials radiating power. As the height of the Blaw Knox mast increased so did the amount of power induced from

the other aerials, resulting in spectacular arcing from the steel halyards used for hoisting purposes. The riggers had to meticulously maintain the earthing arrangements to avoid getting severe burns. The mast was mounted on insulators so that it could be used as mast radiator and by late 1943 was in use as an alternative aerial for H.P.M.W., eventually replacing the Krauss dipole.

Towards the end of the war, German domestic transmitters were used to issue instructions to Luftwaffe aircraft approaching Britain. To combat this 5XX was used as a jamming device, operated by remote control from R.A.F. Fighter Command. Given about an hours notice the engineers at Droitwich would set up the transmitter on one of several pre-arranged frequencies determined by intelligence reports on which transmitter the enemy was likely to use. With all the power supplies on, 5XX would be in a stand-by mode and when required the carrier was switched on by the distant controller, transmitting a warbling signal from a noise generator to obliterate the enemy transmission.

The nearest contact the Droitwich station had with enemy action was on 12th March 1941 when a German bomber crashed in a field near the transmitter site. The plane, a JU88, was on a bombing mission to Birkenhead docks when it caught fire near Anglesey. The crew baled out after setting the plane on a course to crash at sea, but by some strange chance it turned through 180 degrees and flew inland. The Junkers covered 100 miles before it crashed in flames at 10.00pm just behind the B.B.C. station and must have passed very close to the two masts. The incident is very well documented in a book by Mr. Glyn Warren called "Worcestershire at War".

During the war production of domestic radio sets was severely restricted as manufacturers assembly lines were turned over to making electronic equipment for the services. A standard design known as the Utility Radio or Wartime Civilian Receiver was adopted and produced by certain firms. It was housed in a plain wooden cabinet and available as a mains or battery version. The tuning dials no longer displayed station names and the sets tuned to medium waves only so Droitwich Long Wave could not be received. For a while after the war, until the radio industry returned to peace-time production, converters became available allowing the sets to be adapted to receive long waves when Droitwich returned to domestic broadcasting.

A natural hazard for all transmitting stations, and Droitwich is no exception, is lightning. Fortunately direct strikes on the aerial systems are rare although a "hit" did occur on September 15th 1943 causing the Krauss dipole to collapse into the field. This put H.P.M.W. and the European Service off the air for 24 hours while the reserve aerial was hoisted by the rigging staff. At that time there was a new intake of trainees at the station for a technical course and they were pressed into service to help lay out the replacement aerial on the ground prior to erecting thus saving time. The more usual effect during thunderstorms is arcing on the mast stay insulators caused by the high voltage induction from a nearby lightning flash. The result, referred to as "static", is a series of loud cracks similar to repeated gun fire as the static flashes over the insulators to discharge to earth. In severe conditions the flashover can be maintained by the pick-up of energy from the nearby transmitting aerials resulting in continuous arcing, emitting at high volume the modulation or sound of the programme being radiated. The transmitter has to be switched off momentarily (suppressed) to quench the arc otherwise the heat generated tends to fracture the insulators. With present day installations this problem does not exist as ultra-violet detectors fitted to the stays sense a discharge and cause the transmitters to be suppressed automatically. There is a story that on one occasion during the war arcing took place during transmission of a German programme much to the consternation of the residents of Wychbold. They feared that an invasion had taken place and that German troops were hailing the British to surrender!

An interesting phenomenon that the local householders, especially those living adjacent to the transmitter site, became used to was the sound of programmes mysteriously emanating from objects such as electric cookers and iron cooking ranges. In some cases electric lights continued to glow dimly after they were switched off. This was due to long lengths of house wiring and large metal objects acting as receiving aerials and picking up energy from the transmitting aerials. Poor electrical contact between panels and fittings causes rectification to take place and this gives rise to an audible, rather "tinny" signal. One lady claimed to be able to hear a programme every time she touched the poker on the firebars of her metal fireplace. A similar effect occurs with rusty cast-iron drain-pipes and these also cause a mixture of the transmissions to be re-radiated as electrical interference. This is known as "the drain-pipe effect" and was particularly troublesome in the early days of V.H.F. television as viewers in Wychbold were well aware, frequently telephoning the transmitter to complain. On the transmitter site however the problem was due, not to drain-pipes but to the steel halyards used for hoisting the aerials and mast lift cages. Although the halyards were kept taut, a strong wind would cause them to move and make intermittent contact with the masts, giving rise to slight arcing resulting in electrical interference. This was corrected by the station riggers bonding (electrically connecting) the halyards to the masts at various places.

### **RETURN TO PEACETIME**

The war ended on May 8th 1945. In the previous year the Director-General had promised that within 90 days of Victory in Europe the peacetime broadcasting service would be restored. On July 29th 1945 regional programmes were resumed but with the Home Service title retained; thus the Midland Regional became the Midland Home Service. The original National Programme was replaced by the Light Programme and carried by Droitwich Long-wave as before on 1500 metres, 200 kilohertz. An additional service started in September the following year called the Third Programme. This was broadcast from Droitwich on 583 kilohertz using the H.P.M.W. transmitter now released from its wartime service. It was necessary to run the transmitter on low power because the frequency was also shared by a station in Latvia. Unfortunately the transmitter at Latvia used a very unstable frequency source which continually deviated from 583 kilohertz causing a heterodyne whistle with Droitwich which marred the programme. This was monitored at the B.B.C.'s receiving station at Tatsfield in Surrey and instructions were relayed to Droitwich to "steer" a specially installed variable-frequency oscillator driving the transmitter, to the same frequency as Latvia. The change wasn't enough to necessitate re-tuning of the listeners' radio sets but the heterodyne was reduced nearly to zero, although a faint background of Latvian programme would be noticeable in some areas. Interference from foreign stations is always worse during the hours of darkness and in those days the Third Programme went on the air only in the evenings so making the problem more noticeable. Eventually Latvia moved to another frequency and the situation resolved itself.

In February 1947 the Third Programme was suspended for 16 days during the national power crisis at that time. Power cuts were widespread although Droitwich transmitter, in common with other stations had its own power supply. It was B.B.C. policy to save power by closing the Third Programme for the duration and merging the Home and Light programmes until 6.00 p.m. on a daily basis. For a period broadcasting ceased during daylight hours except for news bulletins and weather forecasts. Although the situation improved during the following weeks it was not until April 28th that full day-time broadcasting resumed.

## THE COPENHAGEN PLAN

Since 1925 a conference has been held every few years by a union of experts representing most European governments to formulate plans allocating wavelengths to countries. This was in order to avoid stations interfering with each other and to prevent chaotic broadcasting conditions. Originally called the International Broadcasting Union it was renamed after the war the European Broadcasting Union. Although little change had occurred in the number of wavelengths available, the number of broadcasting stations had greatly increased since the Lucerne Plan of 1930. So a meeting of the E.B.U. was called and took place in Copenhagen in 1948 where a plan was internationally agreed to re-allocate wavelengths and maximum transmitted powers to the countries of Europe, to be put into operation in 1950. With the exception of Droitwich long-wave Light Programme (which was allowed an increase in power) all the B.B.C. medium-wave Home, Light and Third Programmes were given new wavelengths and also allowed increased powers. Work started at Droitwich to convert H.P.M.W. to 1500 metres (200 kilohertz) in order to increase the aerial power of the Light Programme from 150 kilowatts of 5XX to 400 kilowatts. To facilitate this the Third Programme was transferred to the ex-Forces 20 kilowatt transmitter as a temporary measure until the Plan was implemented when a new transmitter at Daventry would eventually take over that service. On March 15th 1950 the Copenhagen Plan came into force at 2.00 a.m. At Droitwich the Light Programme transmitter, now known as H.P.L.W. (high power long wave), came into service at 400 kilowatts and 5GB radiated the Home Service on the same power of 50 kilowatts, but wavechanged from 296 metres to 276 metres. Work started immediately to convert 5XX from 1500 metres to 276 metres and on June 25th it became the main Midland Home Service transmitter on 150 kilowatts, with 5GB now acting as a reserve. The Third Programme eventually left Droitwich on April 8th the following year and was taken over by the new installation at Daventry, where it remained before returning to Droitwich in 1978 - but more about this later.

THE COPENHAGEN PLAN - 1950

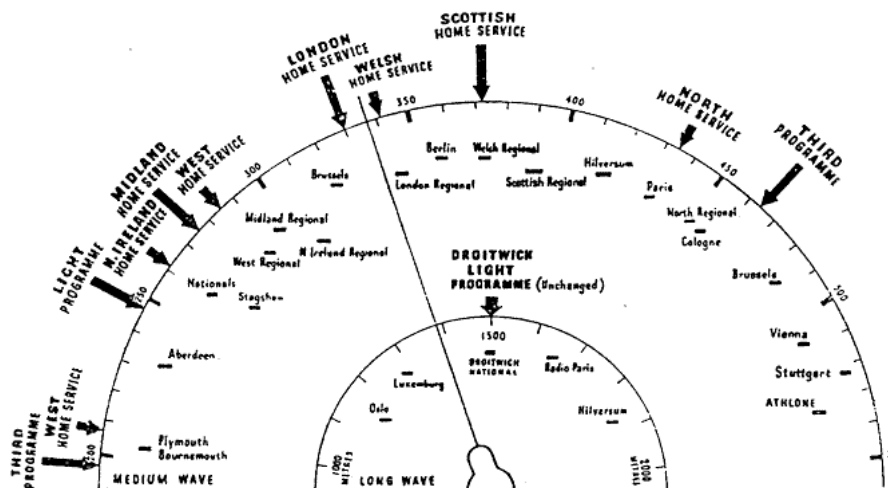


Diagram produced by the B.B.C. Engineering Information Department to help listeners find the new station positions on their receivers.

Charges to pay File T-4 POST OFFICE *Post* No.            OFFICE STAMP

RECEIVED

TELEGRAM

Prefix. Time handed in. Office of Origin and Service Instructions. Words. 207/14/4

At 11/9 m 18

From XBN

To 194/271

By me! \* BS B 1013 10.54 GUERNSEY 7 15 By Randall

THE BBC DROITWICH

= CONGRATULATIONS ON MARKED IMPROVEMENT QUALITY AND OUTPUT LONG WAVE TRANSMITTER = BENNETT GUERNSEY

\* ~~CT THE BBC DROITWICH~~ \* BS

For free repetition of doubtful words telephone "TELEGRAMS ENQUIRY" or call with this form at office of delivery. Other enquiries should be accompanied by this form, and, if possible, the envelope - B or C

Droitwich long-wave assumed an important role in February 1953 when another emergency occurred. This time the crisis was the East Coast flood disaster and the Government decided that the 200 kilohertz transmission would be used to broadcast flood warnings to the affected areas. Arrangements were made at London to interrupt the Light Programme at any time of day or night and this meant that the transmitter had to be ready for service within 3 minutes if it was necessary to broadcast warnings during the out-of-programme hours. At the same time as the East Coast flooding, Holland was experiencing a similar disaster and help with the provision of emergency communication equipment was supplied by Droitwich staff. The B.B.C. had purchased a number of small American war-surplus transmitters (RCA type 4336K, 250 watts output) for a special project and these were stored at Droitwich. Some of them were hurriedly modified and tested by staff working day and night in order to be urgently shipped to Holland where they were used as a communication chain along the Dutch coast.

It was also during February that Droitwich became responsible for for another service. During the war a large station called O.S.E.5, had been built at Ottringham, near Hull, for overseas broadcasting and this was soon to be closed down. It carried the European Service on both long and medium wavelengths and Droitwich replaced Ottringham by broadcasting the European Service on long-waves during the night when the Light Programme was off the air. Ottringham was finally dismantled in the late 1950s and the transmitters, identical to those of H.P.L.W., were transferred to Droitwich for storage and later use.

## OPEN DAYS

In 1957 an open day was planned for the Droitwich Transmitting Station. This was to be a trial run to ascertain the public interest in the technical side of broadcasting and Droitwich was chosen because of its central position and easy access. The date chosen was the 27th April and work started several months beforehand making and erecting signs and explanatory notices together with barriers to keep visitors from touching vital equipment. A route was planned directing visitors through the main building containing 5GB and 5XX, across the field beneath the aerials and masts, and into the H.P.L.W. building. The tour was organised to take in as much equipment of interest as possible. The Police and Automobile Association arranged to control traffic and parking and provision was made for a first-aid post to be run by St. John's Ambulance Brigade. Rotas were drawn up for staff to act as marshalls, occupying key positions to answer questions and keep visitors from wandering off the route.



**Droitwich 1957  
Scenes from the open day**



The weather on the open day turned out to be fine and warm and attendance exceeded all expectations. Visitors started arriving early and by the official opening time of 10.00 am there were already 160 people on site. The numbers gradually increased and by the peak time of 3.30 pm over six thousand visitors had passed through, 1550 being on site at that time. The A38 main Worcester road had traffic jams in both directions keeping the Police and A.A. busy controlling the vehicles entering and leaving the station drive. Caterers in the large refreshment marquee in the field were overwhelmed with customers and a bookstall set up by BBC Publications in the main building was completely sold out. By the end of the day nearly thirteen thousand visitors had toured the station and when the gates were closed at 8.00 pm 260 were still on the premises. Such was the interest shown by the public that open days were planned for other stations, particularly the new television transmitters. Two further open days were organised at Droitwich, in 1961 and 1963, but the great public interest was never repeated and the attendance in 1963 was only about 2000 visitors. Open days are now occasions of the past as security prohibits general access to technical areas.

## THE CHANGES BEGIN

In 1960 the first of the big changes to Droitwich Transmitting Station began to take place. Because of the age of 5XX and 5GB it was decided that both these transmitters would be replaced with a more efficient installation. Although 5XX and 5GB were still providing a reliable service, the over-all efficiency of the old transmitters was only about 22% compared with the 40% of newer designs such as those used in H.P.L.W. Also by incorporating all the transmitters in one building, reduced staffing levels would be achieved. The plan was to replace 5XX and 5GB with the ex-Ottringham transmitters already in store at Droitwich.



Droitwich: Lower transmitter hall showing filament, grid bias & aux.h.t. motor generators

The first transmitter to be removed was 5GB which meant that no reserve transmitter was available should a serious breakdown occur on 5XX. The latter however continued to give faithful service and no major mishaps were encountered. The space vacated by 5GB was sufficient to incorporate two of the replacement transmitters. As they were installed modifications were made to replace all the original motor generators (see picture above) for the various D.C. supplies with transformer and rectifier sets thus cutting down on maintenance and noise. Circuits were also altered to enable new versions of the original valves to be used, again improving the efficiency.

By this time - in fact since the late 1940s - the original transmitter designations had been replaced by a new system of numbering that would provide easy identification of services throughout the Engineering Department. Although 5XX and 5GB were still used for local reference, 5GB was officially known as Droitwich T1, 5XX as Droitwich T5 and H.P.L.W. as Droitwich T4 (T2 and T3 had been used for services no longer in operation). The system required that the identities of new transmitters should continue in sequence, and so the two transmitters replacing T1 became T6a and T6b. In 1961 the latter went into service radiating the Midland Home Service at 150 kilowatts, replacing

T5. T6a and T6b were used singly on alternate days so that one transmitter was always available as a reserve.

As soon as the T6 units were proved to be reliable it was the turn of T5 to be stripped out and replaced by the two remaining ex-Ottringham transmitters. These were on long-waves, designated T7a and T7b. The layout was identical to T6 and all four units were now operated from one control desk (now on display in the "Droitwich Calling" exhibition).



## Droitwich 1962: Upper tx hall; replacement longwave tx & control desk

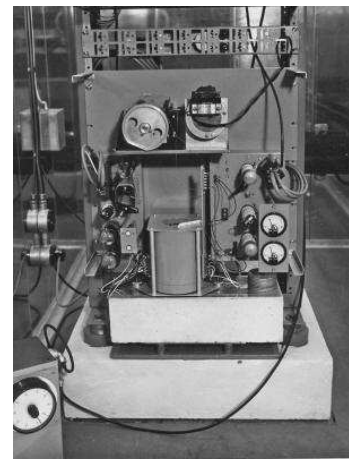
On the 18th September 1962 T7 was put into service for the long-wave Light Programme and European Service with both the A and B units operating in parallel and a total output power of 400 kilowatts. The operating conditions were similar to those of T4: if one transmitter unit failed the service continued on half power using the "healthy" unit until the faulty one was repaired. The necessary switching was carried out by the control desk engineer. The old H.P.L.W. or T4 transmitter was retained as an ultimate spare for a short period before being scrapped and the building released from engineering purposes. It was used for a while as a scenery store for the Pebble Mill television studios and when this requirement ceased the building was sold by the BBC to a private company.

Monitoring of radiated programmes had always been an important duty at transmitting stations. Since the early days each programme had its own control and listening room with an engineer continuously checking the incoming land line and transmitted signal for quality and continuity, taking corrective action if necessary. This was in addition to each transmitter having its own engineer in attendance. Gradually, as progress was made in broadcasting, monitoring was re-organised to allow staff to be reduced. The modernisation at Droitwich meant that one engineer could supervise four transmitters and at the same time monitor each programme. This was made possible by a unit called a sequential monitor which fed short periods of programme in sequence, about 20 seconds in duration, to a loudspeaker at the transmitter control desk.

An additional monitoring commitment for Droitwich, existing since 1957, came about with the transmission of V.H.F. sound programmes from the Sutton Coldfield television station. Because staff at Sutton were not on duty when the daily sound broadcasts started (television programmes in those days did not start until later in the morning) it was necessary to provide monitoring of Sutton for the early morning period known as "the unguarded hour". The transmitters at Sutton were switched on by time switches and at Droitwich the outputs of V.H.F. receivers were also fed to the sequential monitor enabling the engineer to keep an intermittent check on the programmes transmitted by Droitwich and Sutton.

Eventually the V.H.F. receivers were connected to devices called Automatic Monitors where the received signals were electronically compared with same programmes transmitted from Droitwich. Should a discrepancy occur between two identical programmes, either in quality or continuity, an alarm alerted the Droitwich engineer who would make an aural check. If the fault was at Sutton the engineer could, by remote control, switch to reserve equipment. This system also provided automatic monitoring of the Droitwich programmes and so reduced the reliance on the sequential method. Nowadays nearly all transmitter monitoring is carried out electronically. Faults are rectified by automatic switching and defective equipment investigated later by engineers.

The carrier frequency of the long-wave transmission had been used since 1945 as a 200 kilohertz (in those days kilocycles per second) reference standard by many authorities. Early in 1963 the normal quartz crystal oscillator for generating the carrier frequency was replaced by a much more accurate device called an Essen Ring drive - after its inventor, Dr. Essen. A quartz crystal was still used but in a different arrangement - a crystal ring suspended on nylon threads. Because this drive was extremely sensitive and susceptible to vibration it had to be installed in a separate building where it was free from daily disturbances. Its accuracy was monitored off-air by the National Physical Laboratory (N.P.L.) at Teddington and any adjustment required was carried out by Droitwich staff at the request of the Laboratory.



Droitwich: Essen Ring crystal drive in use from 1963 until 1968 as the 200 khz frequency standard.

In 1968 the Essen Ring was replaced by a still more accurate oscillator called a Rubidium Drive. This type, still in use today, is an atomic standard using a rubidium gas cell as its controlling device. Not suffering from the sensitivity problems of the Essen drive it was installed on a normal equipment rack in the transmitter building. Still under the control of the N.P.L. for occasional adjustments, its accuracy was very high - equivalent to a clock gaining or losing not more than 1 second in 3000 years! This is a far cry from the drives of the early days when a tuning fork was maintained in oscillation by a valve and the output multiplied up to the carrier frequency, with an accuracy of plus or minus 1 second per day.

## **CHANGES IN PROGRAMMES.**

In the 1960s a challenge emerged for the BBC with the appearance of illegal offshore radio stations known as "pirates". These broadcast on the medium-wave band with programmes of the latest pop records presented by disc jockeys, and claimed a large audience especially from the younger generation. It was decided in 1967 that the BBC should launch a new programme dedicated to popular music to win back listeners from the pirates and called, appropriately, the "Pop Channel". It would be broadcast by 17 transmitters countrywide, including Droitwich, using the Light Programme medium wave channel of 1214 khz (247 metres).

Because there was no spare transmitter at Droitwich the Home Service had to give up its reserve until a new transmitter could be installed. For this purpose T6b was used and was given the new title T8. It was retuned to 1214 khz and connected to a vertical wire aerial suspended from a triatic on the north mast. This left T6a, now called T6, radiating the Home Service on 1052 khz (285 metres) from the Blaw Knox mast radiator. T8 could only be run at 30 kilowatts output instead of 150 because of the risk of interference in the Bristol area served by Washford, also on 1214 khz. In fact to further reduce this problem, a reflector aerial was suspended from the north mast to restrict radiation in a southerly direction. The new programme went on the air on August 30th 1967.

At this time a major change in programme titles was put into effect. Instead of the new service being listed as "the Pop Channel", it was called Radio 1. The Light Programme was changed to Radio 2, the Third programme to Radio 3 and the Home Service to Radio 4. This coincided with the rationalisation of the networks and the type of programmes broadcast. Although neither Radio 1 or Radio 4 had reserve transmitters very little trouble was experienced and no lengthy breakdowns occurred. It wasn't until 9 years later that Droitwich Radio 1 was provided with its own transmitter. In 1975 delivery was taken of a 50 kilowatt transmitter, one of many manufactured in the BBC's own workshops. It was completely air cooled (not water cooled like T6 and T7) and thus suitable for unattended working, and used a modulation method called the Doherty system (invented by an American, W.H. Doherty in 1936) resulting in high efficiency and a compact layout. This transmitter was put into service for Radio 1 on February 8th 1976 at 30 kilowatts output and given the title T9. T8 resumed the status of spare transmitter and arrangements were made to enable quick wavechanges to be made so that it could be used as a spare for Radio 1 or Radio 4.

## **THE FINAL PHASE**

In the late 1970s the BBC started a programme of re-equipping all its high power sound transmitting stations with a view to improving efficiency and eventual de-staffing. At the same time it was known that in late 1978 a new wavelength plan, called the Geneva Plan, would come into operation, with consequent frequency changes. It was also planned that Radio 3 would return to Droitwich, releasing Daventry from this commitment.

Early in 1978 the Droitwich Transmitting Station became a hive of activity with contractors, BBC specialist departments and station staff working on several projects. Because Droitwich would be handling all 4 national radio networks, the increase in transmitted power would result in much higher voltages being present on the masts. The mast stays, 42 in total, were replaced by new ones fitted with larger insulators. As each stay was removed it had to be replaced by a temporary stay to take the strain until the new one was hoisted and anchored. It was also necessary to check and clean the ceramic insulators that support each mast. This was done by using special jacks to raise a mast by just three quarters of an inch to allow each of the ten circular insulators to be

slid out for inspection. This operation was especially vital on the south mast because this was to be used as a mast radiator for Radio 2 under the Geneva Plan.

Inside the station, building work was proceeding with the installation of three new Marconi type B6034 50 kilowatt medium-wave transmitters to be used in parallel (triplexed) on Radio 2 when the Plan came into force. These transmitters, erected in the former High Tension Machine Room, would form part of the final scheme when all transmitters were installed in this area. The B6034, incorporating a modified Doherty modulation system, used the latest technology and gave an overall efficiency approaching 60%. Although four thermionic valves (air-cooled) were still necessary for the high power stages, semi-conductors were used in control and protection circuits, and low power stages. It was designed for complete automation and the 3 transmitters together would deliver a power of 150 kilowatts. The triplexer combining arrangement ensured that if one unit should fail, the system would continue to transmit on reduced power without a break in programme. It was claimed by the makers to be one of the worlds smallest 50 kilowatt transmitters and the BBC adopted it as a standard unit at several stations. The hot air from the waste heat was ducted around the building to replace the old oil-fired central heating system.

By the beginning of November testing of the new equipment was well under way and during the night of the 9th a rehearsal for the Geneva Plan (known in the BBC as the MF/LF Plan) took place. Proving the system and checking the times of the changeover was vital to ensure smooth running of the operation when the Plan was implemented two weeks later.

November 23rd was big day, or rather night. It was a nation-wide operation involving over 100 transmitters and hundreds of BBC engineers carrying out the changes. At Droitwich things went smoothly and when programmes commenced the new frequencies came into use. Radio 1 was now transmitted on 1053 khz, and being allowed an increase in power, radiated 150 kw using T6. Radio 2 moved from long to medium-waves and was radiated from the new B6034 equipment. Radio 3, transferred from Daventry, used T9 on 1215 khz at 30 kw, and Radio 4 was transmitted on 200 khz from T7a/b. T8, now released, became a reserve for Radio 1 or Radio 3, being re-tuned when required. In 1982 a Pye 10 kw transmitter was provided as a reserve for Radio 3. By the end of the 1980s T9 was replaced by a single B6034.

Because under the MF/LF Plan Radio 4 had to relinquish its medium-wave service, two new 50 kw long-wave transmitters were provided in Scotland to cover areas not served well by Droitwich. These were located in the existing Scottish stations at Westerglen and Burghead, and also used 200 khz. To avoid problems in the overlap zones (called "mush" areas) between the three transmitters, each used a high stability rubidium drive so avoiding a "beat" between the stations which could occur with less stable drives and mar the programme.

Work now started on the final phase; the replacement of the ex-Ottringham transmitters with new equipment situated in the remaining areas of the old H.T. Machine Room. The first installation was three more B6034 units to provide a 150 kw service for Radio 1 thus replacing T6. These went into service on November 3rd 1981 and were operated in the automatic mode as were the Radio 2 units and only attended by the duty staff if alarms indicated that all was not well, and for occasional maintenance. Monitoring, except for Radio 4, was now left to automatic monitors and the engineer looking after T7a/b was responsible for checking the Radio 4 programme. T7 was in use now for 24 hours a day. When programme ended after the Shipping Forecast at 00.45 hrs, the long-wave channel was used by the External Services Department for World Service to Europe until the start of Radio 4 the next day. This service also had a large audience in

this country - people who couldn't sleep and preferred a speech programme to the music of the other services.

In 1983 a new specialised service known as Radio Data Signalling (RDS) was introduced on long-waves. This project, funded by the Electricity Council, provided a low speed code signalling system to be superimposed on the carrier radiated from all Radio 4 long-wave transmitters. The code, injected by London Control Room into the programme feeds to all the Radio 4 200 khz transmitters, was processed in such a manner that it could not be detected on domestic radio sets. Special decoding receivers fitted by the Electricity Supply Industry to equipment in electricity sub-stations allowed remote switching to be carried out when the necessary code was transmitted. Domestic electricity supplies could also be controlled by installing "intelligent white meters" fitted with these special receivers on consumers premises to switch "off-peak" heating on and off as required. This enabled the supply authorities to shed or add load and thus control demand on the national grid system. The R.D.S. could be used at the same time for the transmission of data for other purposes and the continuous operation of the 200 khz transmitters provided the facilities for this 24 hours per day requirement.

An important part of the re-equipping of Droitwich Transmitting Station was to improve reliability and this included aerial systems. Two new mast radiators were to be built to replace the medium-wave wire aerials. Wire aerials are always vulnerable to extreme weather conditions as was proved on January 2nd 1976. During the afternoon a strong wind developed and by the early evening had become a severe gale. The south mast triatic supporting the reflector aerial collapsed under the strain. The large concrete blocks anchoring the north mast Radio 1 aerial pulled out of the ground and were swinging about causing damage to the safety fences. Emergency circuits were used to enable Radio 1 to continue transmitting from the Blaw Knox mast, sharing it with Radio 4. The long-wave aerial luckily withstood the gale but as it had been stressed it was replaced a few days later. Because of the complicated design of an aerial for long-waves it is not possible to use a mast for this purpose, but two new masts would replace the medium-wave aerials.

July 1983 saw the building of the first of the 300 ft. masts. This was called D mast (the original 700 ft. masts were A and B, the Blaw Knox C). Twelve months later the Blaw Knox was dismantled and replaced by the new C mast, again a 300 ft structure. By 1985, the new masts were in use and the old wire aerials no longer needed. Large underground co-axial feeders were also installed to replace the overhead open-wire feeders, again a feature to improve reliability and security. The two main masts had already been "updated"; the lift winch motors, originally designed to work from the station 220 volts D.C. supply, were modified to operate from the main A.C. supply as the D.C. system was about to become redundant with the new installation. Also the mast navigation lights, now well below the regulation standard required by the Civil Aviation Authority, had been replaced with high intensity neons making them visible many miles away by road as well as air.

Whilst all this activity was in progress, an important event was not forgotten - the 50th anniversary of the opening of the Droitwich Transmitting Station on September 6th 1984. A celebration banquet was held for some 110 specially invited guests including present, past and retired staff and their spouses, senior members of engineering departments and their wives and the Mayor and Mayoress of Droitwich. Special seating was arranged in the old lower transmitter hall, tastefully decorated for the occasion, and a 5-course dinner was provided a local chef and his staff. The banquet took place alongside T7, quietly radiating Radio 4, a symbol of the power of Droitwich. A week long exhibition of the history of the station was mounted in the entrance hall but sadly, because of security, the general public could not be invited to see it although there were many visitors from other BBC departments.



**Droitwich: 50th Anniversary. Top Table guests**  
L to R: W. Mitchell, Mrs. P Morris, D. East, A. Morris,  
Mrs. M. Lawley, D. Lawley (Mayor of Droitwich), J. Phillips.



**Droitwich Anniversary: Engineering VIP Guests**  
L to R: W. Mitchell, G. McKenzie, D. East, D. Sandbrook, A. Morris,  
M. Clough, I. Tupper, J. Phillips, M. Williamson

**BBC**  
**DROITWICH**

**BBC**  
**DROITWICH**



50 YEAR BROADCASTING CELEBRATION

★  
"TRANSMITTERS COCKTAIL"

*Honey Melon Balls with Black Grapes in stock orange ginger Syrup*

★

"RECEIVERS CORNET"

*Smoked Salmon roll with Prawns, Mayonnaise*

*Salad garni and brown bread and butter*

★

"**B**RAISED **B**EEF of the **C**HEF" "BEOUF EN DAUBE"

*Top-side of Beef marinated in red wine, braised with vegetables*

*garnished with stuffed tomato and asparagus*

*served with rich brown sauce*

★

*Vegetables*

*Cauliflower, Mashed Carrots and Parsnips*

*Normande Potatoes*

★

"WYCHBOLD CELEBRATION GATEAU"

*Vanilla Gateau with spiced Peaches, Fresh Cream filling*

*coated with Italienne Meringue*

★

*Cheese Board*

*Stilton, Gloucester, Cheddar*

*Brie and*

*Celery and Biscuits*

★

*Coffee, Mints*

The Menu for the 50th Anniversary Banquet.

By late 1985 the new long-wave installation was complete and testing was taking place. The two transmitters, type B6042 and again manufactured by the Marconi Company, were each rated at 250 kilowatts output and used a new method of modulation called the "Pulsam" system. This was a new application of Pulse Width Modulation (P.W.M.). So efficient was this new system that a figure of 70% overall was claimed, 10% better than even the B6034s. The two large valves in each transmitter used a form of cooling known as vapour cooling. Water flowing into the valve anode jacket (known as the boiler) is vaporised by the heat dissipated, fed to a cooler and condenser and re-circulated, the waste heat being removed by an air blast radiator. Only a few gallons of water (purified) are needed compared with the 7500 gallons required by 5XX! Consequently a water leak, although undesirable, is not as catastrophic as in the old transmitter. The two transmitters were arranged to work in parallel with an output of 500 kilowatts using a diplexer combining circuit and automatic switching to reduce breakdown time in the event of a failure of one unit. By the end of 1986 the new long-wave transmitters were in use for Radio 4, still providing a frequency standard using the rubidium drive, and continuing the RDS service. On February 1st 1988, the carrier frequency of Radio 4 was changed from 200 khz to 198 khz. This was the final requirement of the Geneva Plan its deferment until this date was part of the plan. The change was so small (1%) that it was unnoticeable on most receivers but it brought Radio 4 into its new allocated channel.

The last part of the re-engineering of Droitwich Transmitting Station was nearing completion at the end of the 1980s. This was the replacement of the original Diesel Alternators by new, more efficient machines. The four English Electric sets, admired by so many visitors in the past were scrapped and their place has been taken by two high-speed turbo-charged machines which take up half the space of the originals and provide more power! These new engines are fully automated, running themselves up in a few seconds when required in a power failure. In comparison the old machines, being manually controlled, took about twenty minutes to prepare for service with a consequent break in programmes of this duration if a failure of incoming power occurred.

The completion of the re-engineering meant that the front part of the 1934 building, now empty, had become redundant. After remaining an empty shell for some time, it has now been demolished.

## **WHAT OF THE FUTURE?**

Broadcasting in Great Britain is continually changing with new programme styles and new technology. The introduction of commercial radio meant that the listening audience was able to have a greater choice of programmes. The BBC, facing a challenge from these new stations, revised and renewed programmes to appeal to as wide an audience as possible. Local radio stations were opened to provide competition for the independant local radio companies.

In 1955 the first of the nationwide network of V.H.F. sound transmitters went on the air, with its superior system of frequency modulation (FM). This gave listeners, suitably equipped with new FM receivers, a higher quality transmission than that provided by amplitude modulation (AM) used on the medium and long-wave services.

The post-war period saw the invention of the semiconductor and a revolution in the design of both transmitters and receivers. Transistor radios quickly replaced the old valve radio sets and the rapid advances in technology have made very sophisticated equipment available to the listener. Transmitters have been using semiconductors for low powered stages for some time and now they are being used in output stages as well. For example, some of the B6034 50 kilowatt units at Droitwich have already been

replaced by solid-state 50 kilowatt transmitters using multiple transistors in the output stages and no valves.

The rapid increase in the number of new radio stations in Europe has resulted in a shortage of frequencies available for the United Kingdom and the BBC has had to release medium wave channels where programmes were simultaneously broadcast on V.H.F. This affected Droitwich by the national closure of Radios 1 and 3 medium wave services, the transmitters being used by the independent radio stations Talk Radio UK and Virgin 1215. Radio 2, now on V.H.F. only, has been replaced on medium-waves by the BBC's Radio 5. A further development in Engineering Division resulted in the Transmitter Department being sold to a commercial organisation who are now responsible for maintaining and running the whole transmitter network and leasing the services to the BBC.

The Royal Charter, which lays down the constitution and objectives of the BBC, expired in 1996. It was renewed putting forward radical changes and development for the future of public service broadcasting, including the introduction of Digital Audio Broadcasting (DAB). This, together with satellite broadcasting, has now been well proved and offers the listener an even better reception and quality on UHF than frequency modulation.

How will all these developments affect the old style regional transmitting stations? Perhaps the BBC will eventually cease to use medium and long waves. If so, can we see a future where Droitwich Transmitting Station becomes redundant and no longer required?

I wonder what Lord Reith would make of it all?



## THE B.B.C. (DROITWICH) CLUB

From the early days it has always been the custom of the BBC to provide social club facilities for its staff and their families at all studio centres and transmitting stations. The Droitwich club was formed soon after the opening of the station and an inaugural dinner and dance was held in early 1935.

The initial club facilities were table tennis and snooker equipment set up in the studio and staff mess-room of the transmitter building. A tennis court and pavilion was also built, situated at the south side of the aerial field. Besides tennis, snooker and table tennis several other sporting sections of the club soon developed - cricket, a rifle team in the Droitwich Small Bore League, chess and a cine section. The October 1937 edition of "The Heterodyne", a BBC club bulletin that covered club news from all centres, reported on the summer's activities of the Droitwich club. The rifle team won 8 out of 10 matches and the cricket team won two important matches played against Daventry and the Midland Region Studios. The two tennis tournaments played against local teams were however lost by Droitwich who promised to do better in the future. It was also noted in "The Heterodyne" in January 1938 that a swimming section had been formed and was going ahead with intensive training at Droitwich Spa Lido.



In-house competitions were organised with trophies being presented by senior members of the Head Office management - the Wheeler Cue and Case Snooker Trophy, the Florence Billiard Handicap Cup and for table tennis the MacLarty Handicap Cup. There was also an annual competition for the "Home Shield", embracing all the activities.

Dinner dances were held annually at the Norbury House Hotel (now no longer a hotel) and were very popular - the attendance at the January 1939 event was 186.

The club activities were curtailed drastically at the end of 1939 with the outbreak of World War II. The rooms on the station used by the club had to be hastily converted to other uses so the snooker and table tennis tables had to go temporarily into store. Because the aerial field came under the security of the army, constantly patrolled by armed soldiers and guard dogs, the tennis court became out-of-bounds and the pavilion was used as a store.

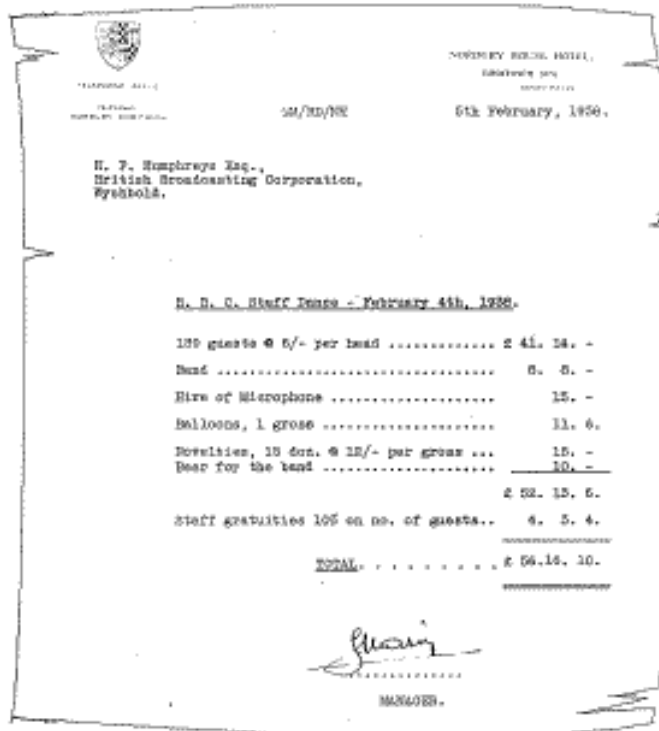
Under wartime conditions the staffing level of Droitwich increased considerably with transferred engineers from suspended departments such as television, the arrival of trainees, and the evacuated Head Office staff. In 1944 it was decided to re-introduce some club facilities and two small wooden prefabricated buildings were erected alongside

the main building to house the table tennis and snooker facilities, and a small bar. Conditions were rather cramped in the huts and some snooker players had difficulty in making cushion shots because of the handle of the cue hitting the wall!

During the war years the club membership gradually grew to 116. The interest in social activities was maintained and on many occasions the club hired Wychbold Village Hall to put on variety concerts and dances. The club also helped with the war effort by subscribing to the "British Prisoners of War Funds" and involvement with Droitwich Highfield Hospital which had become a military hospital for wounded servicemen.

Towards the end of the war security was relaxed a little and the guard dog patrols were posted elsewhere. This allowed outdoor activities to be re-instated and although the tennis court was still unavailable, a hockey section was formed and a hockey pitch prepared in the north aerial field.

At the end of the war the evacuated staff returned to London and the office accomodation built specially for them on the transmitting station site became empty. A request was made to senior management for the club to use these premises and at a meeting in April 1946 the Director General agreed that the buildings should be allocated to the club. This was a wonderful acquisition, two large wooden huts 70 feet by 17 feet and a brick built strongroom linking the two. One of the huts had a small kitchen at one end and the rest of the hut was immediately used as a snooker room with brick piers being built under the wooden floor to take the weight of the table. Eventually part of the snooker room, being quite large, was partitioned off to make a television viewing room and a projection-type television set was installed.



Invoice for the 1946 Staff Dance

The strongroom, actually two separate areas, was turned into a bar with an adjacent lounge. The walls were lined with plaster panelling which gave a very realistic wood panel effect. The remaining hut, at a later date, was converted into a dance hall with a stage at one end. The hall was used for table tennis when not required for other functions. A new tennis court was built near to the club buildings and close enough to the dance hall for this to double as a pavilion.

Membership began to increase rapidly. In addition to the staff members and their families, friends and relatives were invited to join as associate members and soon a waiting list was formed as the membership list became full.

The range of activities continued to grow. A drama section of the club was formed, called "The Ariel Players" and plays were produced using the stage in the dance hall. So successful were these productions that the club at times hired the Winter Gardens in Droitwich for larger shows. The group also became involved with the Droitwich Amateur Theatrical Society and took part in many annual pantomimes, first at the Salters Cinema in the 1950s and later at the Winter Gardens. The expertise of the engineers in the dramatic group was put to good use for the stage craft needed in the various productions and the station workshops were in great demand at these times. It was little wonder that Droitwich became known as "the Club with a Transmitting Station attached".

Cricket and hockey flourished, and two snooker teams - A team and B team - were formed, playing in The Droitwich and District League. Archery was also very popular for some years. An amateur radio station also came into being, licensed to use the call sign G3IAW. The station could only be operated by club members who already held licenses of their own and when these members eventually moved on from Droitwich the station relinquished its licence and closed down.



Besides the annual dinner dances which were held at the Raven or Worcestershire hotels in Droitwich, several other functions took place annually, such as the Gala and Flower Show held each summer in the club grounds. Marquees were hired to house the exhibits and side-shows, sports were arranged and teas were served on the lawns. Perhaps the most memorable gala was in 1952 when the cast of "The Archers" radio serial performed a rehearsal for one of their recordings using an open-air stage set up for the occasion. The club also became the venue in July 1959 for the Midland Region Sports Day.

Another very popular event each year was the Hallowe'en fancy dress party when, instead of the traditional "witches" theme being used, an original topic was chosen for the decor and costume. South Sea Island, Paris by Night, Eighteenth Century London, Fairy Tales and The Wild West were just some of the themes used. The whole of the club was decorated for these occasions with work starting many weeks beforehand.

Many dates were used as an excuse for a celebration; St. Valentines Day, Leap Year, Mid-summers Day, a Christmas party for the children and young relatives of members, and of course New Years Eve. At all these dances and parties elaborate buffets were arranged using the snooker room as a refreshment area. The snooker table was covered with a specially made wooden top, on which the buffet was laid.

The club suffered a tragedy in 1966. On Saturday afternoon July 30th at about 1600 hours a fire started in the wooden building housing the snooker table, television room and kitchen. At this time of day the club was deserted and the smoke from the fire was first noticed by a police patrol on the nearby M5 motorway. The patrol alerted the fire brigade who quickly arrived on site but they were unable to save the building which was completely destroyed together with its contents. The adjoining brick building with the bar and lounge was severely damaged by smoke and water and the fittings and furniture were beyond redemption.

The dance hall was miraculously unscathed and arrangements were put in hand immediately to convert the hall into a temporary club. The stage was removed, the floor reinforced and a new snooker table installed. A small bar in the hall, used normally only during dances, was stocked and put into emergency use, and within a week or two the club was back in business.

The cause of the fire was thought to be due to a faulty television set and once the insurance claim had been settled, work started on the replacement building. This was a brick built structure with a larger snooker room than before, a modern kitchen with improved facilities and indoor toilets (previously outside). The work was completed and the building in use by October 1967.

By the beginning of the 1970s several of the club's activities had ceased. Because of a gradual reduction in the transmitter staff many of the keen, active club members had left the station. The Ariel Players no longer existed and the hockey and cricket sections had also disbanded. Snooker was still very popular however with many associate members in the teams, and the tennis court was well used during the summer months. Dances and parties continued to be organised although not with such lavish decorations as the functions of the 50s and 60s. The summer dances often included a barbecue.

It was realised by the middle 1980s that the de-staffing of the transmitting station and reduction of shift working meant that the club being on the same site presented a risk to the security of the station. Proposals were put forward locally to provide the club with its own drive-way and security fence but cost prohibited any move in this direction. With great reluctance it was decided that the club would have to close down.

A final "Farewell to the Club" party was organised for 13th August 1988, prior to the close down at the end of the month. It was attended by a large gathering of full and associate members together with families and retired staff. It was a festive occasion with dancing and the usual first class buffet though tinged with sadness when the evening came to an end. Many members had lots of happy times during their years in the club, but as the secretary pointed out in his letter to club members breaking the news of the closedown, "all good things must come to an end".

The wooden building dance hall has now been demolished and the remaining brick built section has been sold to another organisation for communication purposes. All that remains are over forty years of memories, and the club photograph album with its visual record.

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