

PART TWO

The Start and Growth of Public Broadcasting

[Part 1 – The Birth of Wireless Communications]

Section 2 – Radio Broadcasting

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SECTION 2

The Start and Development of RADIO Broadcasting.

But first let's have a Diversion

Before *Wireless* Broadcasting came *Telephone* Broadcasting.

- In late 1880s Alexander Graham Bell invented the Telephone.
- In 1888 telephone broadcasting was being used in Paris.
- **In 1894** the Electrophone Company in the UK started telephone programme transmissions. Queen Victoria was a listener at Windsor Castle.
- **Programmes** included News Reports, Church Services, Theatre and Music programmes.
- By 1901 Electrophone had added a **loudspeaker system** so several people could listen at once.
- *Picture taken in 1901.
In House of Lords??*

DIVERSION ENDS



2.1 Broadcasting bring Rules and Regulations

- 1896 Marconi demonstrated his 'wireless' equipment to the Engineering Dept. of the General Post Office.
- 1903 International conference on Wireless Telegraphy in Berlin.
- 1904 UK Wireless Telegraphy Act requires **all Tx stations to be licenced.** The GPO and Postmaster General keep control.
- 1921 **'Radio Receiving Licences'** introduced. Cost 10/- (50p), [Approx. £50 at today's wage equivalent value.]
- 1922 PMG grants Marconi a licence for limited **entertainment** transmissions from Writtle labs. Call Sign 2MT.
- 1922 **British Broadcasting Company** licenced by GPO.
- 1924 By now, 1,400 Tx licences and 3 million Rx licences in USA.

1924 Committee of Enquiry advises against adopting the American 'free-for-all' system of broadcasting and....

1925 BBC becomes a public **Corporation** '*accountable to Parliament.*'

A long gap now before we get significant new Rules & Regs.

1946 Radio + TV (B&W) licences introduced.

1968 Colour TV + Radio licences introduced. Cost £5.

[Approx. £145 at today's wage equivalent value.]

1955 **Commercial TV** broadcasting authorised as ITV is launched

1973 First **commercial radio** broadcasts. LBC (London B'casting Co.) & Capital Radio are first to air in competition with BBC Radio 4, Radio London, Radio 1. [**'Pirate'** radios, see later].

Growth of Licences since Inception of Broadcasting. In 1921

Date.	Number of Licences.	Increase during year.
Dec. 31st, 1922	19,594	19,594
Dec. 31st, 1923	595,137	575,543
Dec. 31st, 1924	1,140,110	544,973
Dec. 31st, 1925	1,645,207	505,097
Dec. 31st, 1926	2,178,259	533,052
Dec. 31st, 1927	2,394,448	216,189
Dec. 31st, 1928	2,627,068	232,620
Dec. 31st, 1929	2,955,950	328,882
Dec. 31st, 1930	3,412,450	456,500
Dec. 31st, 1931	4,330,000	917,550
Dec. 31st, 1932	5,262,850	932,850



The 1932 total was estimated to represent over 20 million listeners.

And now for two more Diversions.....

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First

If we look back at the previous page we see a big reduction in the annual increase in licences issued in the years 1927 and 1928 before it starts to pick up again in 1929.

"WHY?" I ask. "Was it a temporary saturation of the market because Radio was no longer a novelty? Or was it perhaps a result of low wages, unemployment and the 1926 General Strike in support of the miners who were already on strike over wages?"

Second

In 1939 only an estimated 65% of UK households had electric light, the rest still used gas or oil. Hence there was widespread use of battery-powered radios with cumbersome batteries including an acid-filled accumulator. [Covered in Part 1.]

2.2 Milestones in **Radio Broadcasting**

Pre 1906 – Modulated **spark gap Tx** used for voice and Morse.

1906 Prof Fessenden and Ernst Alexanderson demonstrate a **High Frequency 'Alternator Tx'** and makes first entertainment broadcast in Massachusetts.

1906 Lee De Forrest (USA) patents **Triode Valve** – **amplification**.

1913-17 Edwin **Armstrong** (USA) invents **Regeneration** (increased gain & selectivity) & **Superhetrodyne** ccts. (more selective)

1919 **Experimental Wireless Telephony** (or **Radio**) transmissions started from the **Marconi research 'hut'** near Chelmsford. Signals mainly received by enthusiastic amateurs who had used military radio during the war. Tx power =6.5kW

- 1916 De Forest starts 3-times per week experimental broadcasts, mainly music, from station '2XG' in New York.
- 1920 First UK 'public' broadcast by Dame Nellie Melba from Marconi New Street works in Chelmsford. The broadcast was set up by Lord Northcliffe, founder and owner of the Daily Mail which paid Melba's fee of £1,000. Although approaching the end of her career, Melba was known to audiences around the world.
- 1920 Limited regular transmissions continue until temporary halt because of claimed interference with military communications.

1920 Station KDKA, operated by Westinghouse, in Pittsburg began scheduled broadcasts with coverage of Presidential election.

NB. Main purpose of b'casts was to promote receiver sales!!!

1922 Regular Tx re-start as '2MT' from the Marconi research Hut..

1922 BBC (Company) formed. [Became 'Corporation' in 1926.]

Starts transmitting as '2LO' from **Marconi House** in London.

1922 The very first BBC broadcast was the 6pm News on 14 November read by Arthur Burrows.

At the end of the programme he ad-libs: *"You know, this broadcasting is going to be jolly good fun."*

Another Diversion

- BBC's first General Manager, **John Reith**, set out its agenda to **"inform, educate and entertain"** — but didn't lay down any 'rules.'
- The **word 'Programme'** had not yet come into use. They were referred to as **'Talks,' 'Lectures,' 'Recitals,' etc**
- **Notices** near microphones proclaimed: **"No gags** on Scotsmen, the Welsh, Clergymen, drink and no *medical matters*."
- Others warned: **"Do not sneeze** at the microphone" and **"If you cough** you will deafen thousands!" [Ribbon mics, invented c1921, could be damaged by a blast of air!]

1922 A BBC announcer read the first Weather Forecast prepared by the Met Office. Daily forecasts started the following year.

TV Weather Forecasts

Picture shows Michael Fish who, in 1987, assured viewers: "There is nothing to worry about" just before the worst storm in 300 years hit the UK and blew my front garden wall over onto the pavement.!!



- 1924 Marconi build a high power, LW Tx, '5XX', for BBC at C'ford.
- 1925 BBC studios and '2LO' Tx moved to **Selfridges** in Oxford St.
- 1925 BBC's '5XX' moved to Daventry and power increased.
- 1926 *Children's Hour*. first broadcast. *[Ended 1961. Sob!]*
- 1927 Marconi build a Short Wave Tx (G5SW) at C'ford for the BBC. to broadcast to *The Empire*. See Appendix 3.
- Note:** SW requires less power & gives longer range than LW & MW. It also uses much smaller aerials and packs many more stations into the available bandwidth. *Now largely superseded by internet radio.!!!*
- 1930 BBC rationalised: national and regional structure established.
- 1932 BBC move to new premises, renamed **Broadcasting House**.
- 1933 Frequency Modulation developed but well ahead of its time.

- 1933 Radio Luxembourg starts sponsored ('commercial') English transmissions. See Appendix 1 for detailed story.
- 1950 *The Archers* first aired. The world's longest running 'soap.'
- 1952 Stereo transmissions, using FM, in experimental use.
- 1964 Radio Caroline, a 'pirate radio' Tx from ship in the North Sea
- 1970 First 'Phone-in' programme is "It's your line" with Robin Day.
- 1997 DAB, Digital Audio Broadcasting; start of scheduled services.

This list of **Radio events is getting boring!!** Other events include start of FM and Stereo transmissions. The licencing of many new 'Stations,' some BBC but mostly commercial (with adverts.) or sponsored by religious, sports and local interests groups.

2.3 Radio:- Where are we at now? (An overview.)

- There is now a multiplicity of BBC and commercial radio stations operating in the UK. Since 2015 (nearly) all are DAB only.
- On long, medium and short wavebands Amplitude Modulation (AM) is generally used. Frequency (FM) or Digital Modulation (DAB) is used on higher (VHF and SW) frequency bands. Other modulation formats often used for non-public communications.
- The government aims to **stop all FM transmissions** when >50% households have Digital capability. **Bye, bye to my 7 FM receivers!!!**
- 'DAB+' uses a new 'decoding' standard. 'DAB+' receivers are compatible with old DAB transmissions but NOT vice-versa.

- By an international agreement signed in 2016, all digital radio technologies within the DAB family will be receivable by one standard radio chip known as 'Profile 1'. This is now being built into the digital radios on sale in the UK.
- There are no current plans in the UK to switch to DAB+ but the 'Profile 1' chip means that new digital radios are future proof.
- The end of the BBC Long Wave transmissions is now in sight due to the cost and availability of spares to maintain the service.
- When LW transmissions finish, so will the four-times-a-day Shipping forecasts. Thereafter FM services will only cover to ~ 20 miles off-shore.

Final Diversion.....

The world-wide transmission of accurate time signals is an often overlooked area of broadcasting.

- In many industries, having the correct time is essential.
- Radio Controlled Clocks and Watches are available from ~£12.
- Transmission of a long wave (60kHz) radio signal provides an accurate and reliable source of UK civil time, corrected for Summer Time. It is derived from the NPL atomic clock at Teddington.
- The signal's carrier frequency is maintained to within 2 parts in 10^{12} controlled by caesium atomic clocks allowing it to be used as a frequency reference.

- The very long wave signals provides a range exceeding 1,000Km
- The time signal operates 24/7 apart from advertised breaks for maintenance work on the masts and antenna.
- Signals from other countries enable virtually world-wide cover.
- Other methods of time reference are available depending on the accuracy required. These include GPS signals, the internet and many normal radio and television transmitters that include background time and date information.

~ End of Part 2, Section 2 ~