

-. - . - - . - - - . - - . . . - - -

History of Pye Telecommunications

one of the best-known UK radio firms



Adam Farson VA7OJ

Acknowledgements



- . - . - - . - - . . . - . - - . . . - - . - .
- The author is most indebted to Mr. Richard Howes, the Custodian of the Pye Telecom Historic Collection, for his kind and gracious permission to use images and other material from the Pye Telecom History website.
 - ◆ <http://www.pyetelecomhistory.org/>

Key dates



- 1896: W.G.Pye Ltd., scientific instrument maker, founded in Cambridge. Supplier to University of Cambridge.
- 1922: Production of radio receivers begun, in time for start of BBC broadcasts in 1922.
- 1928: Pye Radio Ltd. founded. Later consolidation as Pye Ltd.
- 1937: First Pye TV sets produced, for new BBC TV service.
- 1939-1945: Pye Ltd. Developed and produced military tactical radio sets, radar receivers and multi-channel microwave systems.
- 1944: Pye Telecom formed. Became a major player in LMR (PMR); developed new military and marine radio sets.
- 1965: Acquired by Philips. Continued as Pye until 1986.
- 1986-1996: Adopted Philips name; remained in LMR field.
- 1996-2008: Operated as Simoco until closure in 2008.

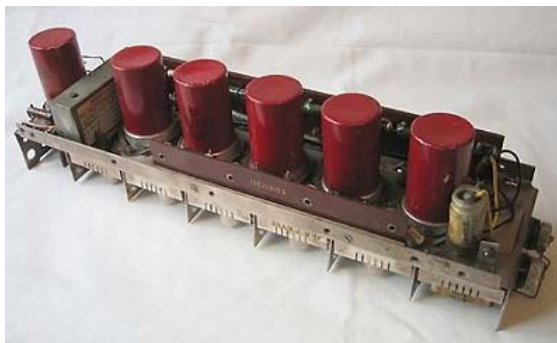
Pye Model 815 9" TV set, 1938 - *a contributor to radar*



Image courtesy TVHistory.tv



- Model 815 cost £31.50.
- 1-ch. B&W TRF set designed to receive BBC Alexandra Palace transmitter (40 km range).
- Low-noise RF amplifier strip using new Philips EF50 tubes extended range to 80 km.
- This RF amplifier was basis for 45 MHz IF strip used in military radar receivers during WW2.
- British TV service shut down Sept. 1939; resumed June 1946.
- Alexandra Palace was used to jam German VHF nav aids during "Blitz".



45 MHz IF strip
w/EF50's



The War Years: 1939 – 1945

Wireless Set No. 18 (WS18)



RX

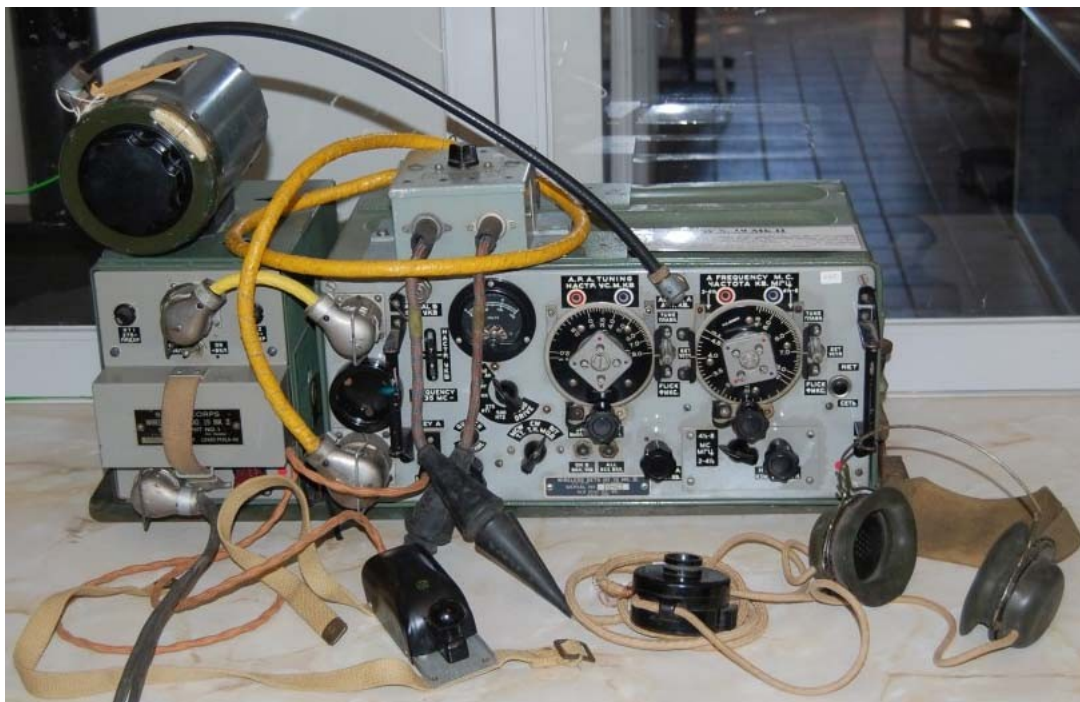
TX

BATT

- Aug. 1939: Govt. issued RFP to Pye for an HF infantry manpack radio set.
- Pye had prototypes for 2 designs ready for acceptance test within 6 weeks!
- After field trials, successful design entered production as WS18.
- WS18/WS48 (6-9 MHz), WS68 (1.75-2.9 & 3-5.2 MHz) widely deployed in Europe, North Africa and Far East.
- 76 000 sets from Pye and other UK radio firms delivered by end of WW2.
- Limited range (max. 16 km) due to 0.25W TX output (AM R/T only) and 2.5m whip antenna. All-up weight: 13 kg.
- US Army favoured VHF-FM for tactical radio – a much superior mode.

The War Years: 1939 – 1945

Wireless Sets No. 19 (WS19)



Freq. range: 2-8 MHz
'B' Set: 229-241 MHz
Power: 8W CW, 5W AM
'B' Set: 100 mW
PSU: 12/24V dynamotor
or AC mains PSU
ATU: variometer
Tubes: 15 (PA: 807)
Weight (set only): 18 kg
Units built: 115 000

- Pye developed the renowned WS19 in 1940-41. It was a mobile set intended mainly for AFV use, but its versatility allowed deployment in many other vehicular, ground and airborne ops. WS19 saw service in all theatres, including Russia.
- The '19 Set' was manufactured in the UK, Canada, the US and Australia.

The War and Beyond: 1945 – 1966

Wireless Set No. 62 WS62)



Image courtesy Duxford Radio Section, IWM Duxford



Freq. range: 1.6-10 MHz
Power: 1-2W CW, 1W AM
PSU: 12V dynamotor or transistor PSU (internal)
ATU: int. roller inductor
Tubes: 11 (PA: QV04-7)
Weight (set only): 14 kg
Antennas: 2.5m, 5m rod, 30m long-wire
Crystal Calibrator: No. 10
Service life: 1944-1966
Units built: ≈ 50 000 (?)

- Pye designed and manufactured WS62 as successor to various wartime HF sets, including WS19 and WS22. This set was self-contained.
- Saw vehicular, fixed, airborne, manpack and even animal-pack service. Deployed in Europe, Africa, Australia, Far East and Korean War.
- Self-contained with internal dynamotor (transistor PSU in later units).

Transition to peacetime & early post-war period: 1944 - 1957



- Pye management saw post-war market for civil land-mobile radio (LMR) communications in VHF bands (66-88 and 100-125 MHz) as an opportunity.
- **Pye Telecommunications Ltd. (PTL) incorporated February 1944.**
- Development of complete range of base and mobile radio sets & systems commenced; in production by 1947.
- **First models were PTC104 base, PTC102 mobile.**
- **First customers: police, river tugboat operators, taxi companies.**
- **First export order: 1948 (Netherlands).**
- PTL also developed and installed ILS (Instrument Landing Systems) for the RAF and for civil-aviation agencies in the UK and abroad.
- **First portable (1952): PTC122 “Walkie-Phone” (1.4V tubes). 8 units supplied to 1953 Hillary-Hunt Everest expedition.**
- 1950-57 saw invention of transistors and rapid technological changes; several generations of new hybrid radio designs.
- **PTL eased out of military radio, SR C12 HF set (1955) was final project.**

Early Pye LMR radios 1948-1963



PTC102, one of the first:
1946 – 1950
77 – 100 MHz AM, 12W
First use: police cars
Simplex or full-duplex

Reporter:
1951-1963
32-184 MHz
1-2.5W AM



PTC108, 1st under-dash mobile:
1948 – 1952
27 – 132 MHz AM, 3-5W
General business, taxicabs etc.
Successor: PTC 116 Reporter



Ranger Series (PTC2001/8001):
1955 – 1963; various configurations
PTC8001 was 1st solid-state mobile
25 – 174 MHz; 9 ranges produced
5-25W AM, 10-25W FM
Separate TX, RX & squelch PSU strips
for enhanced configurability
20-120 kHz channel spacing for UK &
international markets (incl. Canada)

Notes on technology:

AM vs. FM, solid-state advances



— • — • — — • — — • • • — • — — • • • — • • • • — •

■ Why AM rather than FM?

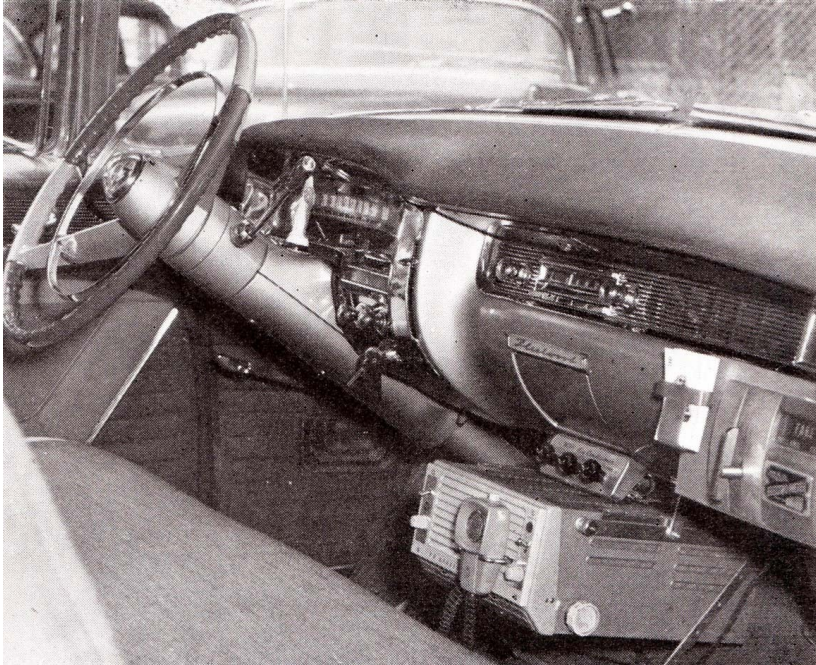
- Although VHF **FM** was well entrenched in the US following pre-war LMR success and widespread military use in WW2, J.R. Brinkley (Technical Director) preferred AM due to better performance of AM at signal levels below FM threshold.
- FM performs best with signals at or above threshold. The US FCC licenses LMR systems with enough TX power to ensure this.
- Post Office licensing policy initially enforced low TX power. This reinforced Brinkley's argument for AM. Pye initially opposed GPO moves to FM, but by mid-1960's FM was already displacing AM.
- FM is now standard analogue LMR mode, except for airport ground services on aeronautical AM channels.
- **Transition to solid-state designs**
- Mid-1950's saw transistor PSU's replacing dynamotors & vibrator packs. Hybrid designs (solid-state RX & exciter, tube PA chain) appeared in 1961. First 100% solid-state radios launched in 1967.

Further transition and change: 1957 - 1967

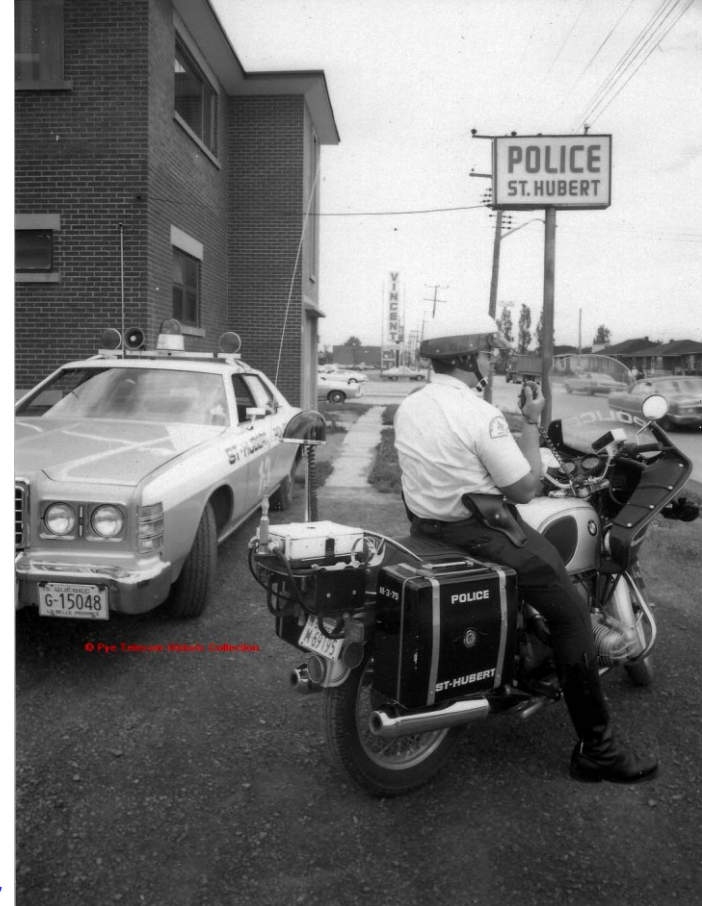


- 1957-1960 saw massive expansion in UK LMR market. By 1960, the Post Office had licensed 1500 LMR operators (private & govt.). Over 80% of all mobile VHF radio installations in Britain were Pye.
- About 15% of all British radio & electronic exports bore the Pye logo!
- 17 000 PTC 116 Reporter radios (priced £85) in service in 70 countries.
- In early 1960, 40 000 vehicles in the UK were fitted with LMR. At this point, Post Office opened public manual mobile phone service (1 calling channel & 4 traffic channels) using PTL equipment.
- 1962: PTL launched new Vanguard and Cambridge LMR radios (FM and AM) in various dash- and trunk-mount configurations, VHF & UHF, up to 25W AM/100W FM, with monoblock IF filter for 25 kHz channel spacing.
- 1963: PTL introduced base/repeater radios to support mobile & portable products: F27AM, F60FM.
- First solid-state lightweight portables: Bantam (1962, shoulder-pack, AM/FM, 0.75W) and Pocketfone PF1 (1964, 2-piece HT, UHF, FM, $\approx 0.1W$).
- Westminster series (15W, VHF, AM/FM, solid-state) introduced 1967-1968.

Pye in Canada: 1959



Montreal taxicab, fitted with 6ch. Ranger



Montreal police motorcycle, fitted with Westminster

Product examples: 1963 - 1971



**IF
Filter**

Cambridge, showing solid-state RX modules: 1961-1970
25-174 & 440-470 MHz
7-10W AM, 25W FM, 5W UHF

Westminster : 1967-1978
PTL's 1st all-solid-state radio
W15AM, underside (TX)
25-174, 402-435, 450-470 MHz
6-15W AM/FM, 5W UHF
Many units in service until
1990's



Bantam: 1965
25-68, 68-174 MHz
1W, AM/FM
Weight ≈ 2 kg

Pocketfone PF2
PTL's 1st complete
HT line, 68-174 &
450-470MHz
1W VHF, 0.1W UHF
Weight ≈ 600g



Acquisition by Philips 1967 to absorption 1986



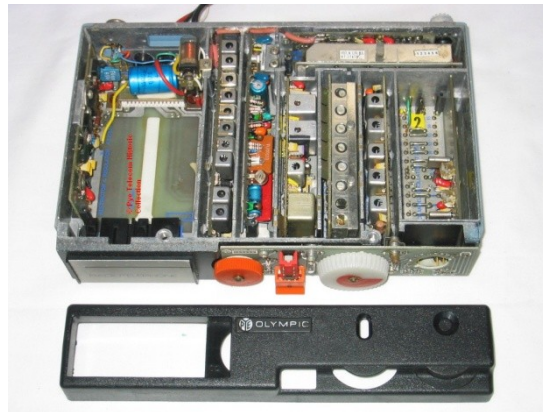
- By 1964, weakness in consumer electronics sector had adversely affected Pye Group's overall financial condition.
- As a result, Philips took control of Pye Group in early 1967.
- 1970: City approved a new 19 000 m² building on St. Andrews Road, Cambridge (opened 1978). All PTL activity consolidated here in 1978.
- 1972: 33 Pye service centres in UK. Active in 113 countries overseas.
- 1972-78: Many new products launched. These included MF5/MF25 Europa mobiles, Olympic modular LMR line, M256 Beaver, new all-solid-state Reporter, Mascot dispatch system and a limited HF-SSB product line.
- Efforts to reduce channel spacing led to successful 6.25 kHz trials in 1978.
- PTL held successful ACSB LMR trials in 1978/79.
- 1979-1986 saw consolidation of R&D and product planning under aegis of Philips HQ in the Netherlands. This led to new Philips IC families for LMR & paging applications, and new μ P-controlled FM radio systems.
- 1986: PTL "reborn" as Philips Radio Communications Systems (PRCS), serving world-wide LMR market from Cambridge. **Our story ends here.**

Product shift, PTL to PRC: 1971 – 1986; Philips badging after 1986



Europa FM dash-mount
Launch: 1971
25W VHF; 5W UHF

Olympic series, 1973 -1983
VHF AM 8W),FM 15W),UHF FM 10W



PF8 handheld, 1977



Base/repeater
w/Europa modules
1st: Cambridge 2m
repeater GB3PI

MX290 series, 1982-89. VHF/UHF,
5-25W, 80 ch., 1st synthesised mobile



PFX handheld, 1977
1st synthesised 'HT'



Thanks for watching!



- . - . - . - . . . - . - . . . - - .

■ Links for further study:

- ◆ [Pye Telecom Historic Collection](#)
- ◆ [Wireless for the Warrior](#)
- ◆ [FM, Land-Mobile Radio and the Amateur Radio Service](#)
- ◆ [Duxford Radio Section, Imperial War Museum](#)
- ◆ [“Calling VHF”](#), 1955: a short film on Pye LMR in the UK
- ◆ [“The Cambridge Story”](#), 1957: Pye and the University