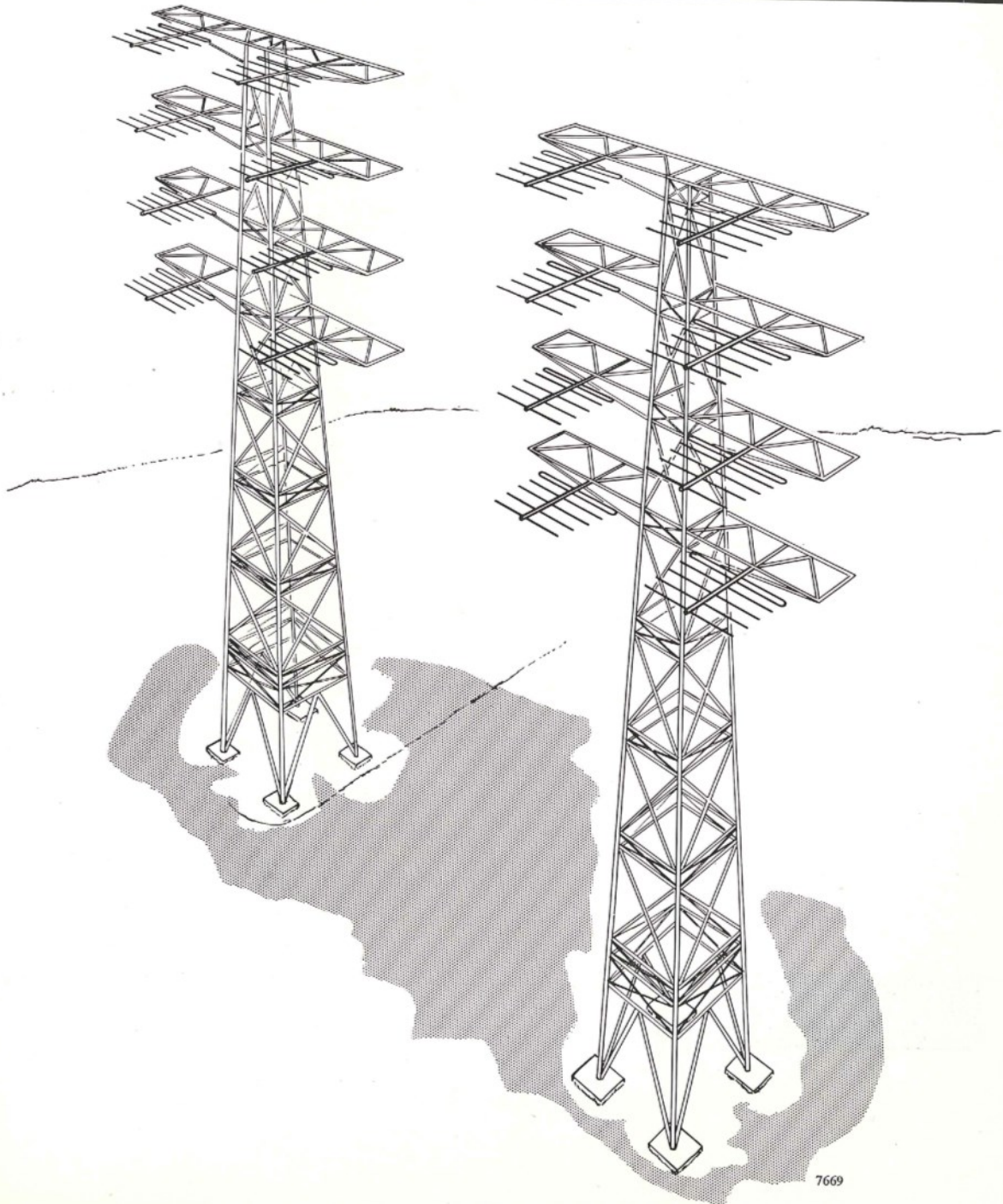




# Aerials for Ionospheric Scatter Communication Systems



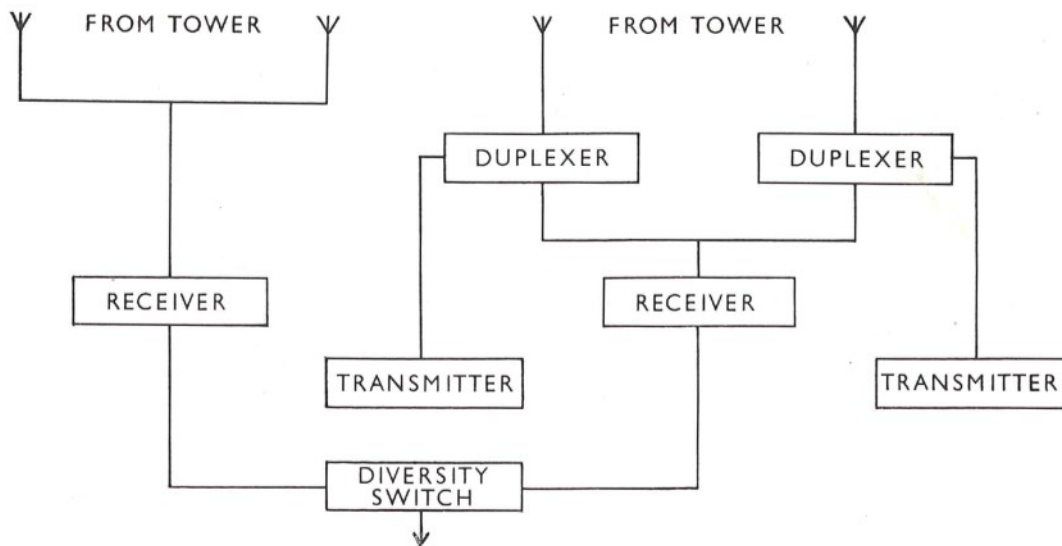
TO MEET the need for a highly efficient directional aerial to be used in ionospheric scatter communication systems, the Marconi aerial depicted here has been developed.

The aerial system consists of galvanised steel six-element Yagi arrays, each having a folded dipole, four directors and a reflecting screen, all being mounted on square-section lattice towers. The number of stacks and their mean height above ground will depend on the length of route and on other factors which are taken into account when the system is planned; generally, require-

ments can be covered by  $2 \times 2$ -stack,  $4 \times 2$ -stack or  $8 \times 2$ -stack arrays.

Two towers, spaced 8 to 10 wavelengths apart are used for diversity reception, the signals being fed to the diversity receivers as shown in the block diagram. By means of duplexers, one of the towers also serves for the transmitting aerial.

The feeder system is simple, consisting of branched co-axial cable with helical membrane inner support insulation. Matching is effected at the dipole feed-points by suitable transformers.



Block diagram of ionospheric scatter system.

## DATA SUMMARY

**Type of aerial:** Multi-stack arrays of 6-element Yagi aerials with reflecting screens mounted on square section lattice towers.

**Application:** For ionospheric scatter communication systems.

**Radiation pattern:** Horizontally polarised, narrow vertical beam width. Forward lobe  $25^\circ$  between  $-3$  dB points.

**Back-to-front ratio:** Greater than 20 dB.

**Frequency band:** 35–55 Mc/s.

**Power handling capacity:** 20+20 kW.

**Nominal impedance:** 50  $\Omega$

**Matching:** Reflection coefficient less than 10%.

*Marconi*

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