



Aerial Equipment

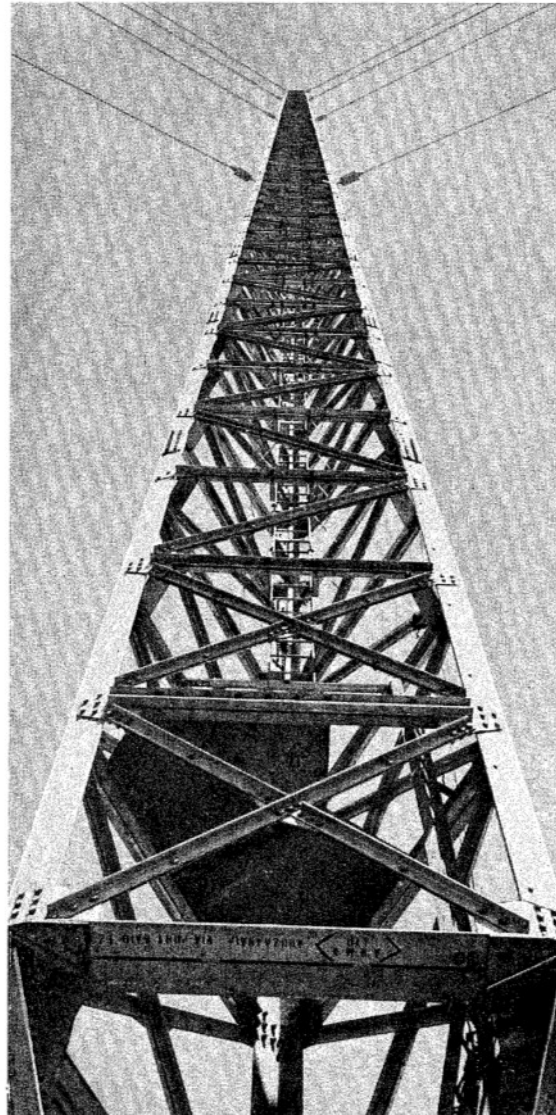
THE DESIGN of large masts and aerial arrays is a very specialised subject, and cannot be entrusted to amateurs. The Marconi Company has had long and extensive experience of this class of work in all parts of the world, and specialists are available to design and build any aerial array, however complex, to suit the requirements of the particular job, broadcasting or communications, transmission or reception, on land, on sea or in the air. The Company's aerial engineering experience covers the whole radio field, from suppressed aerials in aircraft and simple VHF dipoles to broadside beam arrays and the immensely complicated aerial, diplexer and feeder system of a modern television transmitter.

For less complicated requirements the Company has built up a range of standard designs of aerial system components and is prepared to quote for complete systems incorporating these components. Alternatively the components themselves, masts, aerials and aerial fittings, can be supplied for incorporation in customers' own designs.

Among the more standard aerials offered are simple Yagis, dipoles, quadrants and rhombics, and for television, multi-stack and 'turnstile' aerials. For descriptions of these see pages 299, 301, 303, 187 and 189. A short description of some of the masts and insulators for which standard designs exist will be found below.

LATTICE STEEL MASTS

Designs available under this heading range from 15 m (50 ft) to 100 m (325 ft), with square or triangular section, designed to withstand wind velocities of up to 195 km/hr (120 MPH) and head pulls of from 360 kg (800 lb) to 5100 kg (5 tons).



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206 m (675 feet) Mast erected by Marconi's for the Egyptian State Broadcasting authority at Abu Zaabal.

The strength of the mast column is such that a minimum of stays is required.

Galvanised steel wire rope stays are provided, together with tensioning devices, and complete with the necessary anchor steelwork.

All steelwork is hot-dip galvanised after fabrication and the members are bolted up on site.

Provision is made for the attachment of a hal-yard sheave block and for fitting aviation obstruction warning lights.

Full instructions for erection are available and erection can be simply and expeditiously carried out with erection gear which can be supplied with the masts. Simple stay-tension measuring apparatus is available for use on the heavier masts.

Mast Radiators

Designs are available of galvanised lattice-steel stayed triangular-section masts with insulated base and stays to meet the requirements of service as vertical radiators.

Several mast heights are offered, from 76 m (250 ft) to 250 m (820 ft), the choice being made to suit the particular requirement.

These mast radiators are capable of withstanding a wind velocity of 160 km/hr (100 MPH), and in certain of the designs this figure goes up to 195 km/hr (120 MPH).

Self Supporting Towers

Ample provision is made in the Marconi range of designs for meeting a preference for self-supporting galvanised lattice-steel towers.

The range runs from a 9 m (30 ft) tower with 1.5 m (5 ft) square base, suitable for a light head pull and for supporting a simple aerial on a roof, to a 60 m (200 ft) high tower with a 8.5 m (28 ft) square base.

Portable Tubular Masts

Marconi portable masts are built of interchangeable tubular sections socketed to fit into each other. Erection is normally carried out by means of a falling derrick constructed from spare sections of the main mast, but the shorter masts can be erected directly by hand.

Either rope or bronze-wire stays are normally supplied according to the height of the mast, but for more permanent installations galvanised steel-wire stays of a heavier nature can be provided together with stay anchors for embedding in concrete. Three sizes of sections have been standardised as follows:

Small Section. Each section has 1 m (3.3 ft) effective length and is intended for use in constructing masts up to 6 m (19.7 ft) high.

Medium Section. Each section has 1.25 m (4 ft) effective length and is intended for use in constructing masts up to 13.5 m (44 ft) high.

A 13.5 m (44 ft) mast requires eleven sections, but eight sections form a mast which can be hoisted by hand in one piece without a falling derrick.

Large Section. Each section has 2.8 m (9 ft) effective length and is used for masts up to 25 m (81 ft) high.

Insulators

As the result of experience gained in the construction of radio stations in all parts of the world, the Marconi Company has an extensive series of insulators of proved design.

Space is too limited to list the full series, but a selection is referred to below.

Support Insulators for aeriels and transmission lines. The series includes rods from 10 to 90 cm (4 to 36 in.) long in a variety of diameters.

Appropriate metal fittings can be provided for the duty required and the series includes insulators with breaking loads up to 12,200 kg (12 tons).

Lead-in Insulators for aeriels and transmission lines. An extensive range of deep and shallow pot type insulators can be offered including 30 cm (12 in.) transmission line lead-in and 50 cm (20 in.) aerial lead-in insulators.

Suitable insulators can also be offered for the support of multiwire transmission lines.

Stay Insulators. The range of housing-type stay insulators specially developed by the Company includes insulators with a breaking load of up to 76,200 kg (75 tons) which are normally used with a maximum working load of 25,400 kg (25 tons).



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