



TECHNICAL DESCRIPTION
OF THE
MARCONI-E.M.I. SYSTEM OF TELEVISION
AT THE
LONDON TELEVISION STATION

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P R E F A C E

The London Television Station, the first television station to be operated by the B.B.C., was opened in November 1936, and embodied two systems of television, one developed by the Marconi-E.M.I. Television Company Ltd., and the other by Baird Television Ltd. For a number of reasons there was no published matter available dealing with the detailed operation of the apparatus, and there was very little information available internally by means of which the operating staff could gain a close acquaintance with the technical operation of the systems. Much of the apparatus had only just emerged from research in the laboratory. Further the development of modern television had necessitated circuits of great complexity, and the introduction of numerous electrical tricks of such novelty that it was in many cases largely impossible to ascertain the method of operation of a circuit by simply inspecting it.

It was evident therefore that the engineering staff would have some considerable difficulty in becoming skilled in modern television technique, and to avoid that I wrote a technical description of that part of the Station which deals with vision, with the exception of the radio frequency part of the vision transmitter, which follows standard practice. In this description each unit of the apparatus is dealt with individually in considerable detail and information as regards practical working conditions is also included.

As the M.-E.M.I. System is now used exclusively at the London Television Station, the description is confined to apparatus of this System only. The work is divided into a number of sections which at the moment largely cover the apparatus in use, but in the course of time it will no doubt be necessary to add further sections.

In Part 1 are discussed certain considerations which must first be understood before proceeding to the detailed treatment of the actual units. These include 'The Signal Waveform', 'The Restoration of D.C.', 'The Cathode Follower', and 'Scanning'. The first of these notes, The Signal Waveform, deals with the nature of the transmitted signal, which is different from that encountered in sound broadcasting, and which is governed by the

fundamental characteristics of the television system. The others deal with certain fundamental operations peculiar to television which are applied repeatedly, and should clearly be treated at an early stage. Part 2 describes the Control Pulse Generators, the necessity for which will be partly evident after The Signal Waveform has been read. Part 3 describes the Timing Pulse Generators, the necessity for which arises owing to the existence of the Control Pulse Generators. The apparatus associated with the Studio and Control Room naturally falls into two sections, the Camera Channel and the Picture Channel. The former is described in Part 4, and the latter in Part 5. Part 6 describes certain auxiliary apparatus associated with the system. Parts 7 and 8 describe respectively the Modulator and the Aerial. Part 9 describes the receiving equipment used for the television outside broadcast radio link.

Throughout these descriptions certain features common to all units have been omitted in the interests of clarity. For instance, radio frequency filters are almost universally fitted in the high tension and heater supplies to each unit in order to eliminate the possibility of radio frequencies from the transmitting aerial entering the vision apparatus. Again in each unit arrangements are provided for the anode current of every valve to be metered. In the case of certain of the drawings symbols for resistance and capacity units have been omitted in denoting the values of the components when there exists no possibility of confusion.

It should be mentioned that although an effort has been made to arrange the work in such a way that the various descriptions follow each other in logical order, it is impossible to achieve this entirely since the various units of the system are so inter-connected that it is inevitable that reference will be made in places to units which are described later. This difficulty is, however, covered by cross references in the text.

D.C.B.
August, 1937.

TECHNICAL DESCRIPTION MARCONI-E.M.I. SYSTEM OF TELEVISION

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