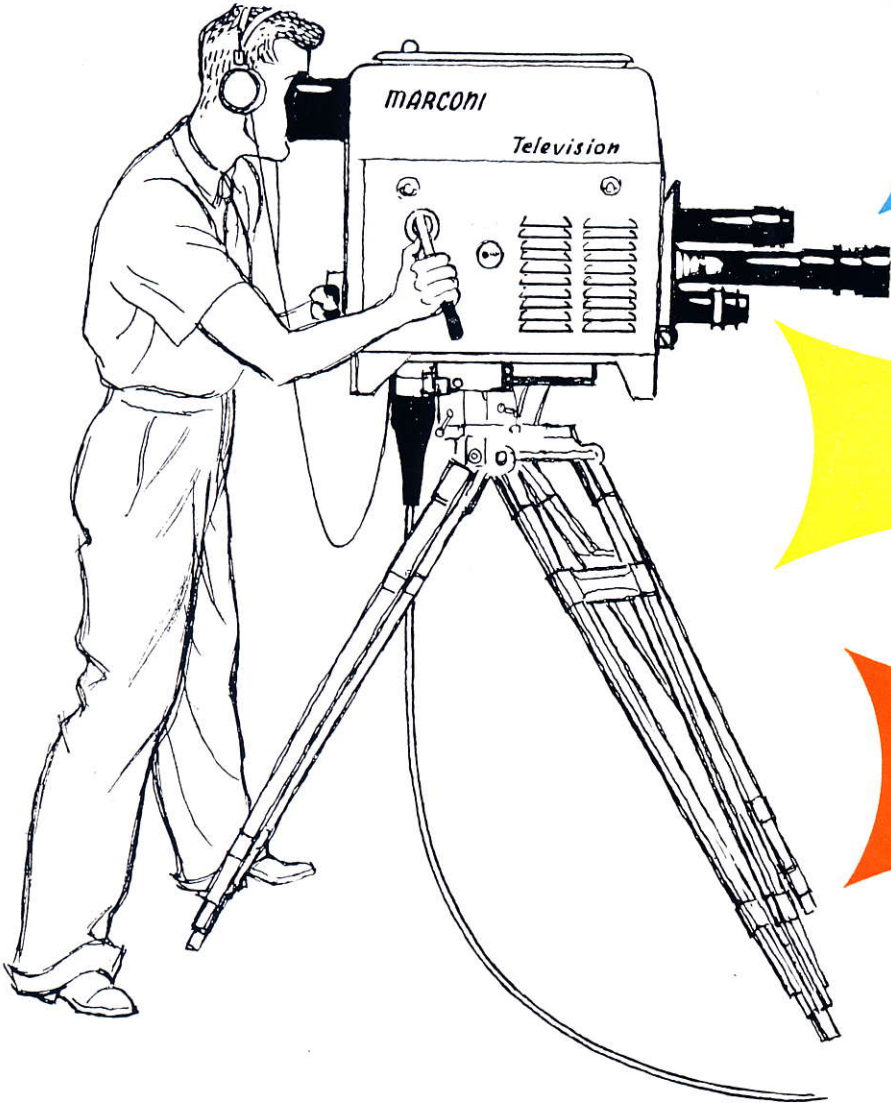


# TELEVISION INSTALLATIONS

The *Marconi*



**STAGE**

**BY**

**STAGE**

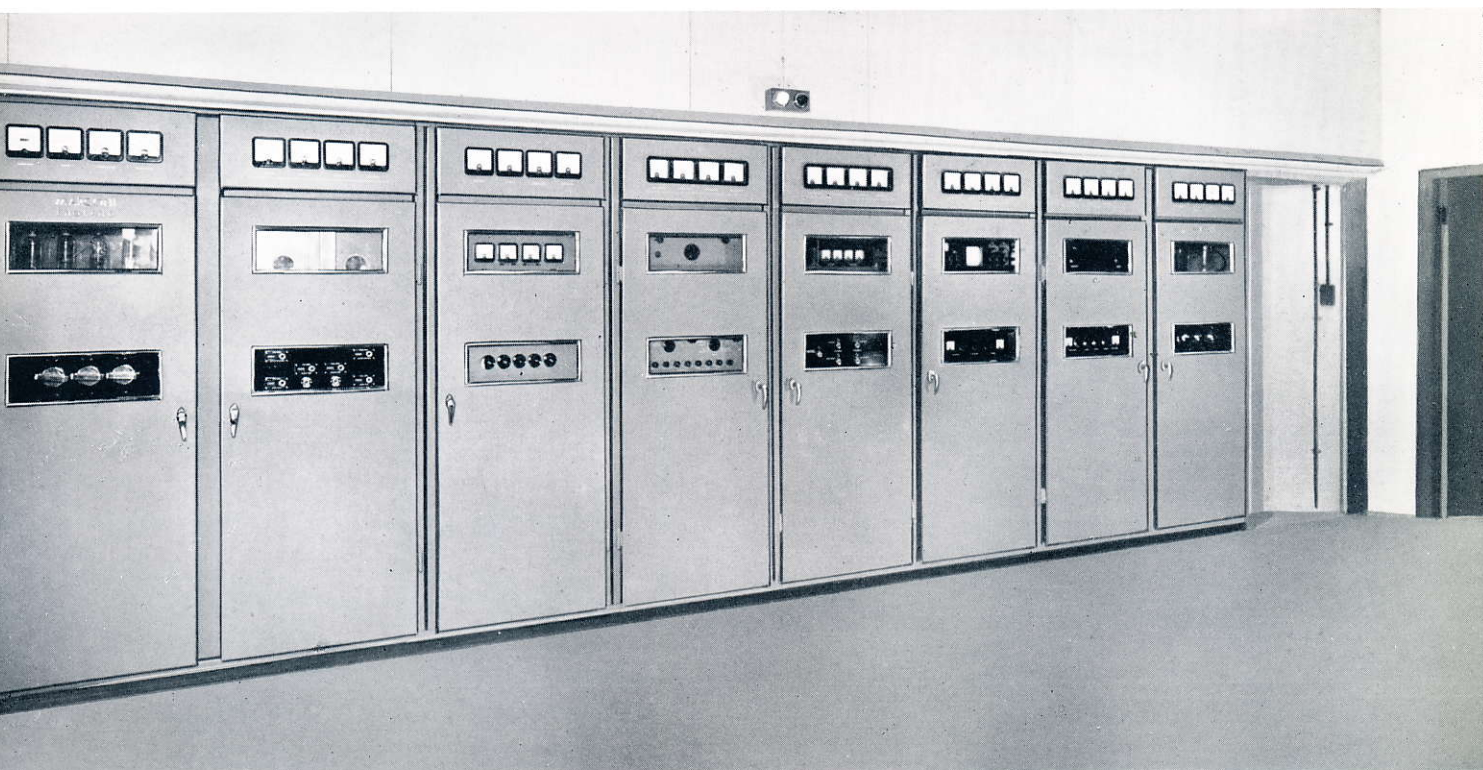
plan

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED

Head Office: Marconi House, Chelmsford · Telephone: Chelmsford 3221 · Telegraphic Address: Expanse, Chelmsford



A programme goes on the air from the Marconi-equipped studios of the Canadian Broadcasting Corporation



The transmitters, one vision and one sound, as used in medium-power installations

The progressive method  
of television installation –

**THE** *Marconi*  
**STAGE-BY-STAGE PLAN**

gives a completely operational  
television station **at every stage**



*Photo by courtesy of the B.B.C.*

**Marconi cameras and equipment played an important part in the highly  
successful televising of the Coronation of Queen Elizabeth II**

# INTRODUCTION

**MARCONI 'STAGE-BY-STAGE'** television installations are specifically tailored to the needs of the station owner and his staff. The design of such stations is matched with the established fact – that the first year in operation is a time of training for producers and technicians, over which period the audience is growing and the return on investment is being given its opportunity to build up. A start is made therefore with the minimum of equipment necessary to provide efficient operation according to the circumstances in which the individual operator finds himself. Then, as commitments grow, additional facilities can be added without loss of any part of the original investment.

This is the principle of the Marconi 'Stage-by-Stage' approach which caters for progressive station planning. Each particular problem is considered individually and engineered by experts. Executed by an organization of world repute, that sees the real need and has catered for it right from the beginning, every installation bears the hallmark of quality. It is also true, of course, that Marconi Television equipment is recognized the world over for its reliability and its quality of signal—it will delight both engineer and treasurer.

**THE PLAN OUTLINED** in this brochure is designed to cater for a small television centre only but there is no limit to the size of installation the Marconi Company will engineer. You are therefore invited to submit your enquiry to an organization who are specialists in the design and manufacture of television equipment, and whose experience in planning and installing television stations is unrivalled.

# THE PROJECT

TO PROVIDE television coverage of a given area . . . This is the fundamental problem confronting all prospective station owners. How this can be achieved in the most economical manner depends on the nature of the district, its topography and buildings. A suitable station site must first be selected—this may utilize an existing building—

and thereafter the factors to be decided are, firstly, what transmitted power is necessary, and secondly, what type of aerial should be used and how should this be sited. These latter will depend on the operating frequency which may fall into one of two ranges, 42–88 Mc/s (lower band) and 170–216 Mc/s (upper band).

*The following table lists some of the various vision transmitters in the Marconi range, and gives their effective radiated powers (ERP) with different aerial systems. Sound carrier power is approximately half vision carrier power.*

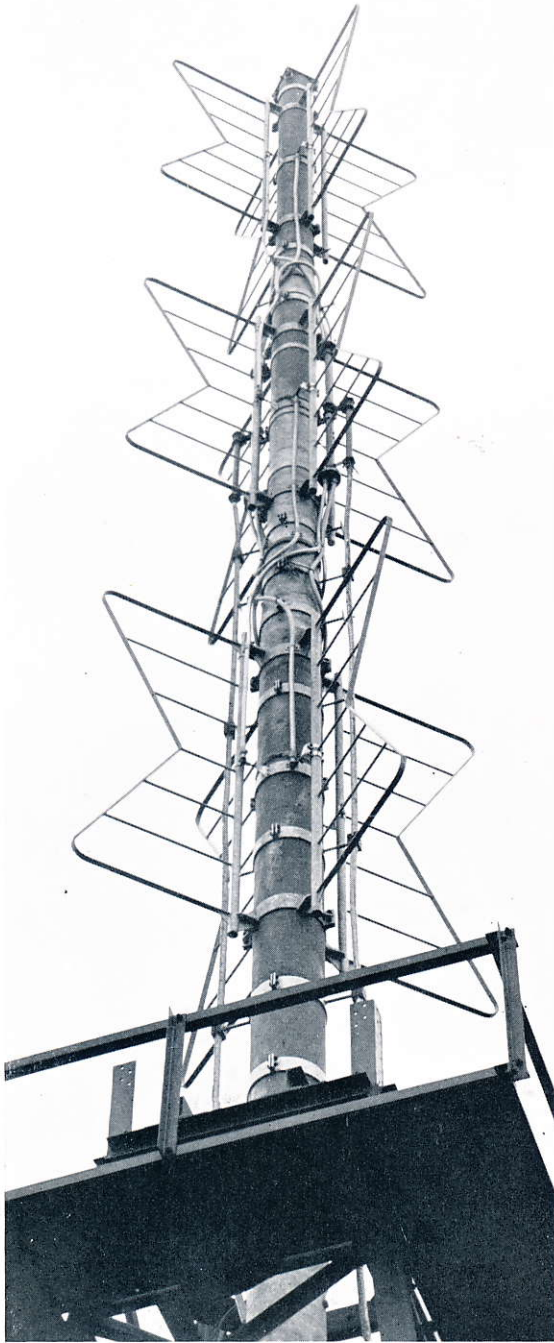
FREQUENCY RANGE	VISION CARRIER POWER	AERIAL SYSTEM	EFFECTIVE RADIATED POWER
42–88 Mc/s	500 W	Super Turnstile or Super Gain Stacked	1.5–3 kW
42–88 Mc/s	5 kW	Super Turnstile or Super Gain Stacked	15–60 kW
170–216 Mc/s	250 W	High Gain Stacked 'V'	1–3 kW
170–216 Mc/s	2½ kW	High Gain Stacked 'V'	10–30 kW

**A panoramic view of Caracas, Venezuela, whose television service uses Marconi equipment**

*Photo by Shell Refining and Marketing Co. Ltd.*



# THE PLAN OUTLINED



A three-stack super turnstile aerial as employed for lower band working

TELEVISION NETWORKS, where they exist, constitute a ready source of programme material. The simplest installation, therefore, comprises sound and vision transmitters, an aerial system, and suitable line input equipment. Variety of programme and local station captions may be added by employing Telecine equipment which permits the transmission of 16 mm. film and standard  $2 \times 2$  in. slides. With this addition, a station is equipped with sufficient equipment to enable it to maintain a continuous programme, whilst possessing its own independence. This is the basic installation –

**STAGE 1** of the Marconi plan.

For such a simple set-up the minimum accommodation required is one room, a transmitter and control room, about the size of a small studio. A station may thus be located in an existing building particularly as the method of equipment construction used permits the installation to be carried out without structural changes. Where a larger station is envisaged incorporating a local studio, the accommodation may be planned as suggested in the accompanying diagram. This proposes a new building, although, of course, this is not essential nor even necessarily ideal.

A studio employing a single camera channel forms

**STAGE 2** of the Marconi stage-by-stage plan;

local programmes may thus be originated. The functional manner in which the additional equipment fits into the station is given in the schematic diagram.

**STAGE 3** is concerned with the outside broad-

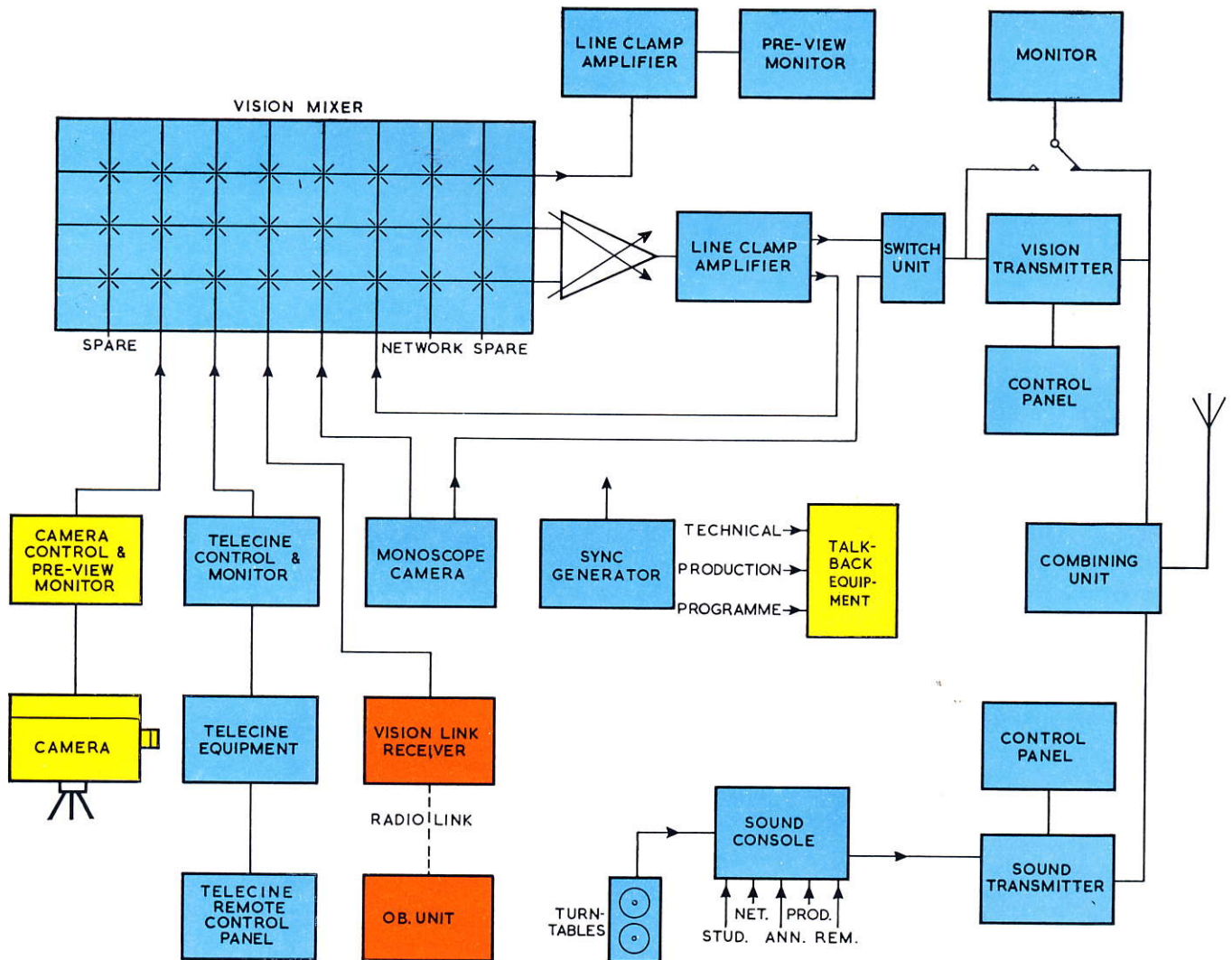
casting unit, an extensively equipped vehicle whose programme value is immense. With such a unit

available there is no limit to the amount of topical interest that can be embodied into the programme; sporting events, theatre shows, public ceremonies being but a few of the activities that may be covered. Furthermore, the camera equipment—which is identical with that used for studio purposes—may also be employed for providing studio facilities when not otherwise engaged. Versatility becomes a key-word for such a Marconi installation.

The interchangeability of units and the standard means of mounting them enables speedy rearrangements to be made to suit the circumstances.

With such a working installation complete, various units—although not essential—can be added to give greater facilities for test and monitoring purposes. The final result—a station economically operated, conveniently planned and thoroughly reliable, conforming to the Marconi tradition.

## SCHEMATIC DIAGRAM



The basic facilities offered by the Stage-by-stage plan; the additions at each stage being indicated by the distinctive colours

## STAGE 1

# The Basic Installation

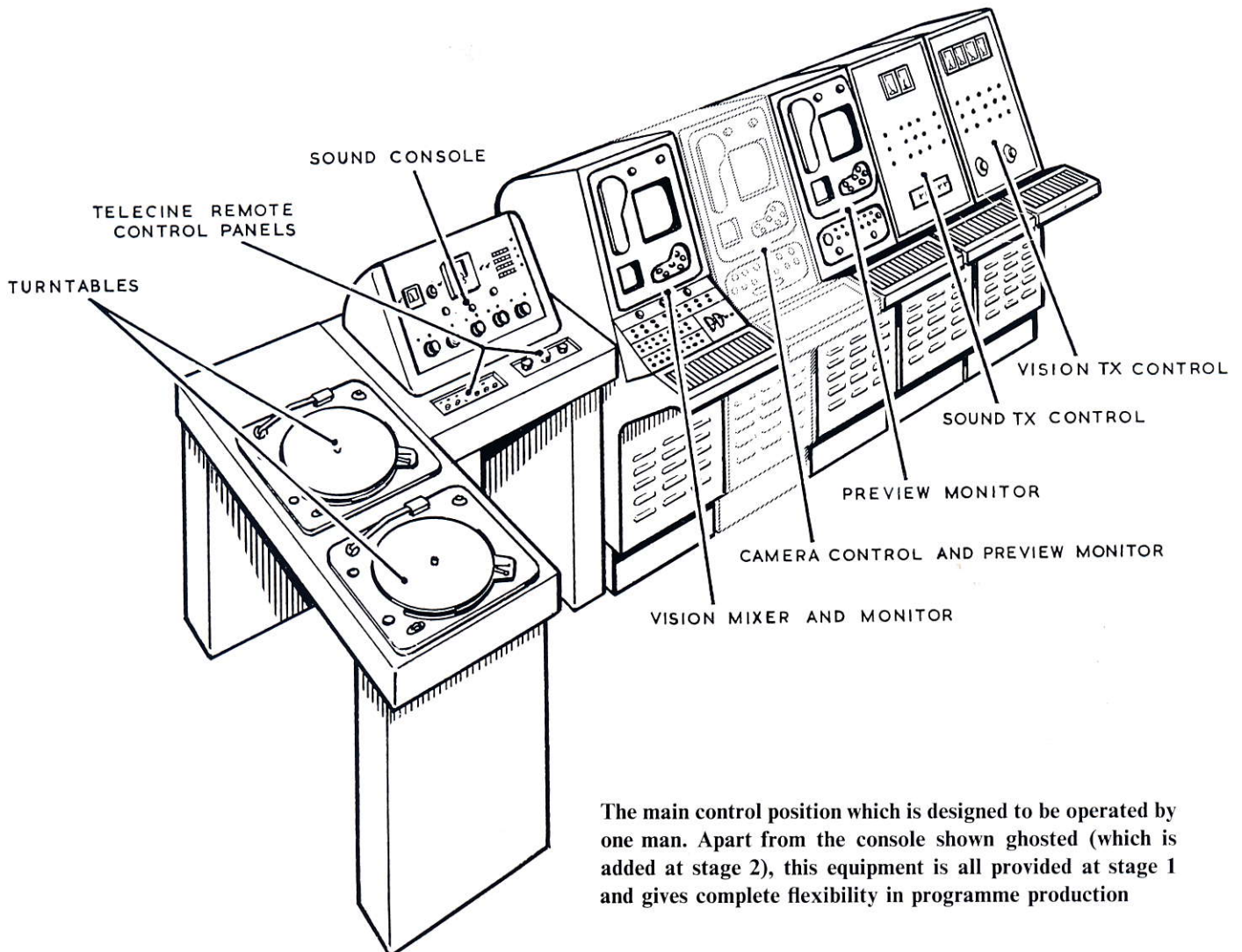
## 4 SOURCES OF PROGRAMME

Networks

Local Film Projector (16 mm.)

Local Slide Projector giving 'stills'

Monoscope Camera



The main control position which is designed to be operated by one man. Apart from the console shown ghosted (which is added at stage 2), this equipment is all provided at stage 1 and gives complete flexibility in programme production



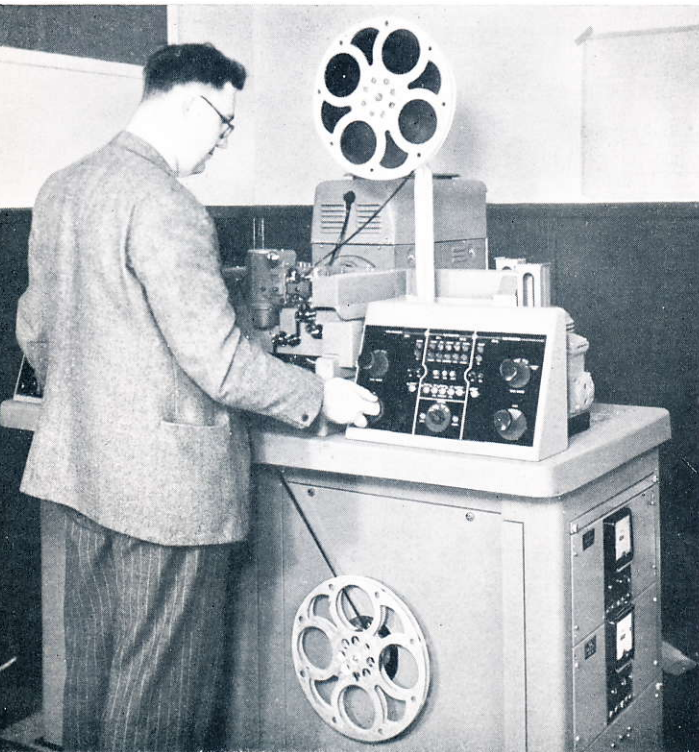
## Earning an income with the minimum equipment

THE BASIC INSTALLATION is planned to handle any programme received from an accessible network and incorporates facilities for adding station identification and commercial bulletins as required. In addition films and slides may provide the programme material which can have local and topical interest. The films and slides in themselves offer an independent source of revenue.

For every station three items of equipment are, of course, essential—an aerial system, a vision transmitter and a sound transmitter—and these require associated test and monitoring equipment. Then there is the local programme source—Telecine Equipment, and certain other items whose function is to correct the picture where necessary before it is finally radiated from the aerial. All control for both sound and vision channels is carried out from one main console, and operator

effort is confined to the employment of one man who can run the station entirely during transmission periods. Those units which require only occasional attention are mounted in a cabinet and include a monoscope camera. This reproduces a test pattern of known quality for transmission before programme time begins so enabling viewers to adjust their receivers properly.

All the equipment is of the finest quality and identical with that used in the world's largest television stations. Your centre will be highly reputed if Marconi equipped.



Televising a film by means of the Telecine equipment

### Equipment Schedule

(representative)

Lower Band Working

15–60 kW ERP

5 kW Vision Transmitter

3 kW Sound Transmitter

Upper Band Working

10–30 kW ERP

2½ kW Vision Transmitter

1¼ kW Sound Transmitter

Sound and Vision Combining Unit

Aerial and Feeder System

Synchronizing Generator

Line Clamp Amplifiers

Preview or Transmission Monitors

Vision Mixer Control Equipment

Monoscope Camera

Telecine Equipment

Sound Console

Power Supply Equipment

Microphones

Miscellaneous Equipment including  
cables, housings, cabinets, etc.

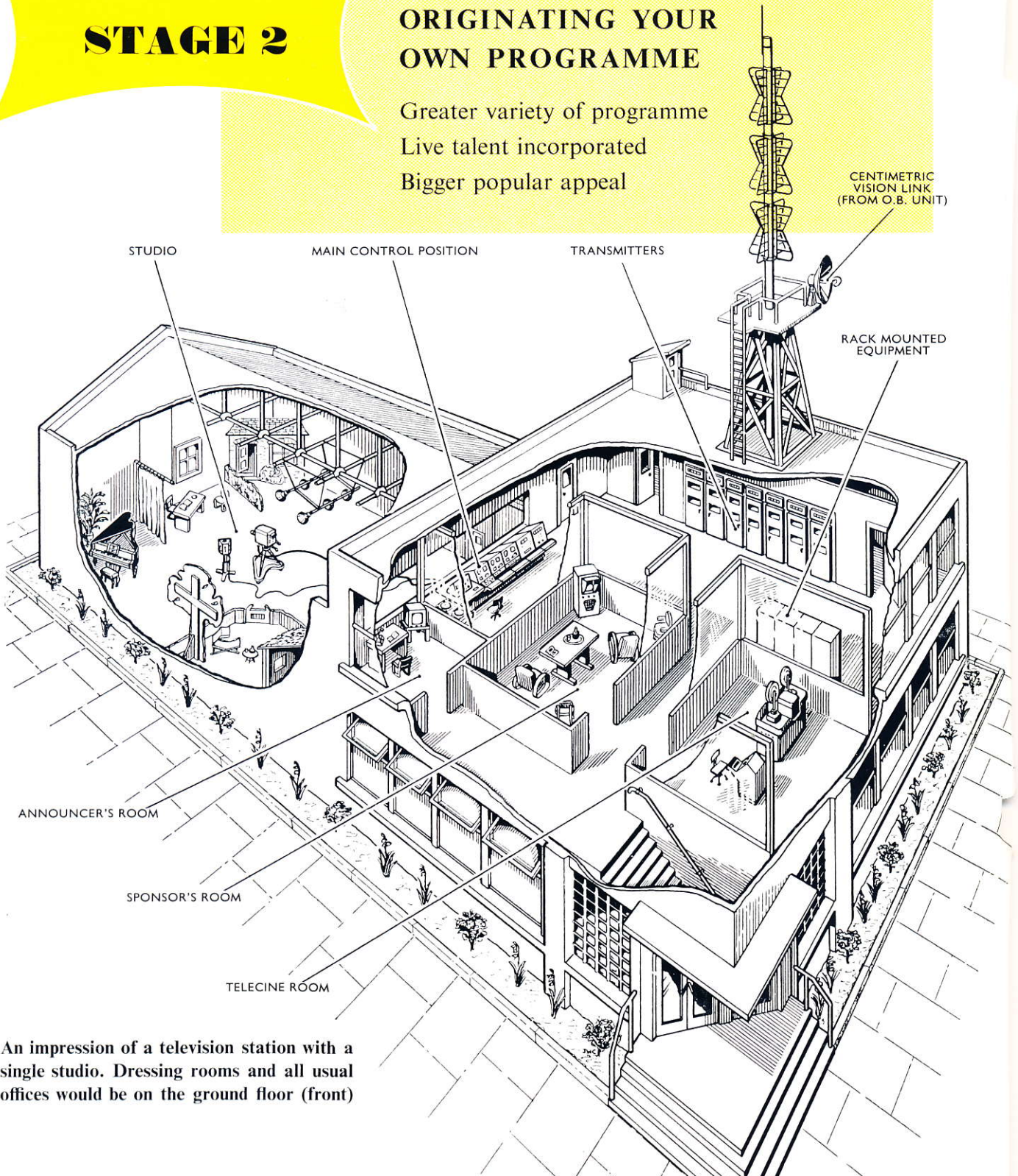
## STAGE 2

# Adding a Camera Channel

## ORIGINATING YOUR OWN PROGRAMME

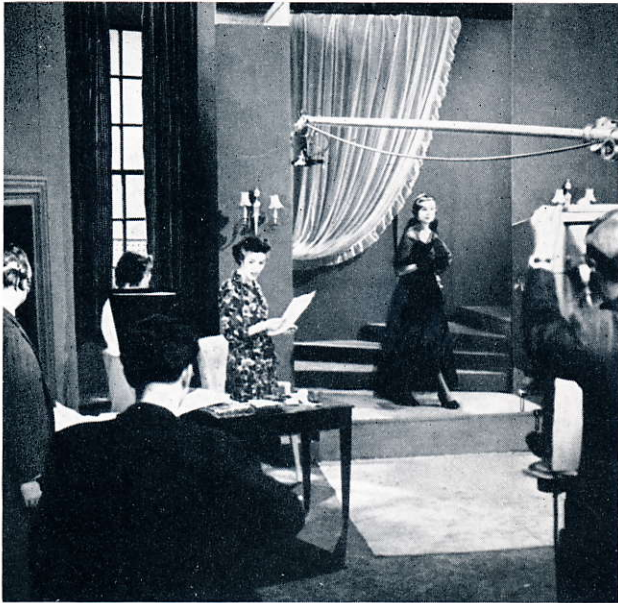
Greater variety of programme  
Live talent incorporated  
Bigger popular appeal

CENTIMETRIC  
VISION LINK  
(FROM O.B. UNIT)



An impression of a television station with a single studio. Dressing rooms and all usual offices would be on the ground floor (front)

## Larger turnover through popular appeal



'On the Air' with live talent and from the studio

THE OPENING of a studio is a major event in the history of any television station. With a single camera channel so much can be achieved to enhance the earning power of any operating concession.

A channel comprises a camera and viewfinder, a camera control chassis, a picture and waveform monitor chassis and associated power supply unit; cables, lenses, tripods, etc., are also included. The camera uses an image orthicon tube and has many excellent features not least of which is its extreme sensitivity. It carries a four-position lens turret, the required lens being speedily selected, and all operating controls other than the focusing handle are at the rear. The viewfinder mounts on top of the camera and presents the cameraman with a properly adjusted picture. The camera output is fed to the camera control chassis via a special multi-core cable. This chassis forms part of the main control console. It is associated with a picture and waveform monitor and the two fit together as an integrated unit. All picture control

is carried out from this position and the camera output is monitored and fed to the vision mixer. Into the mixer are also fed the telecine output and network programmes, and this unit provides means for fading and mixing between channels as well as giving the producer facilities for final channel selection before the signal is passed to the transmitter. A regulated power supply unit provides power for the whole channel. Communication facilities for use by the control operator, producer and cameraman are incorporated in the equipment, and each member of the production team can hear the programme sound in his headphones too.

The camera channel is extremely versatile and may be operated under varying light conditions and in all sizes of building.

### Equipment Schedule

*(representative)*

#### Image Orthicon Camera Channel

Camera Dolly

Communications Unit

Microphones and Booms

Lighting Equipment comprising:

2, 24-lamp 20-watt Fluorescent Lighting Units

12, 500-watt Reflector Lamp Lighting Units,  
single lamp

4, 500-watt Focusing Spotlights

4, 100/200-watt Focusing Spotlights

2 Single Light Broadcast Units

6 Double Lift Stands

6 Hanging Brackets

1 set Diffuser and Snoots

1 Lighting Switchboard

1 set Lamps for above

3 Distribution Boxes with 100 ft. of cable

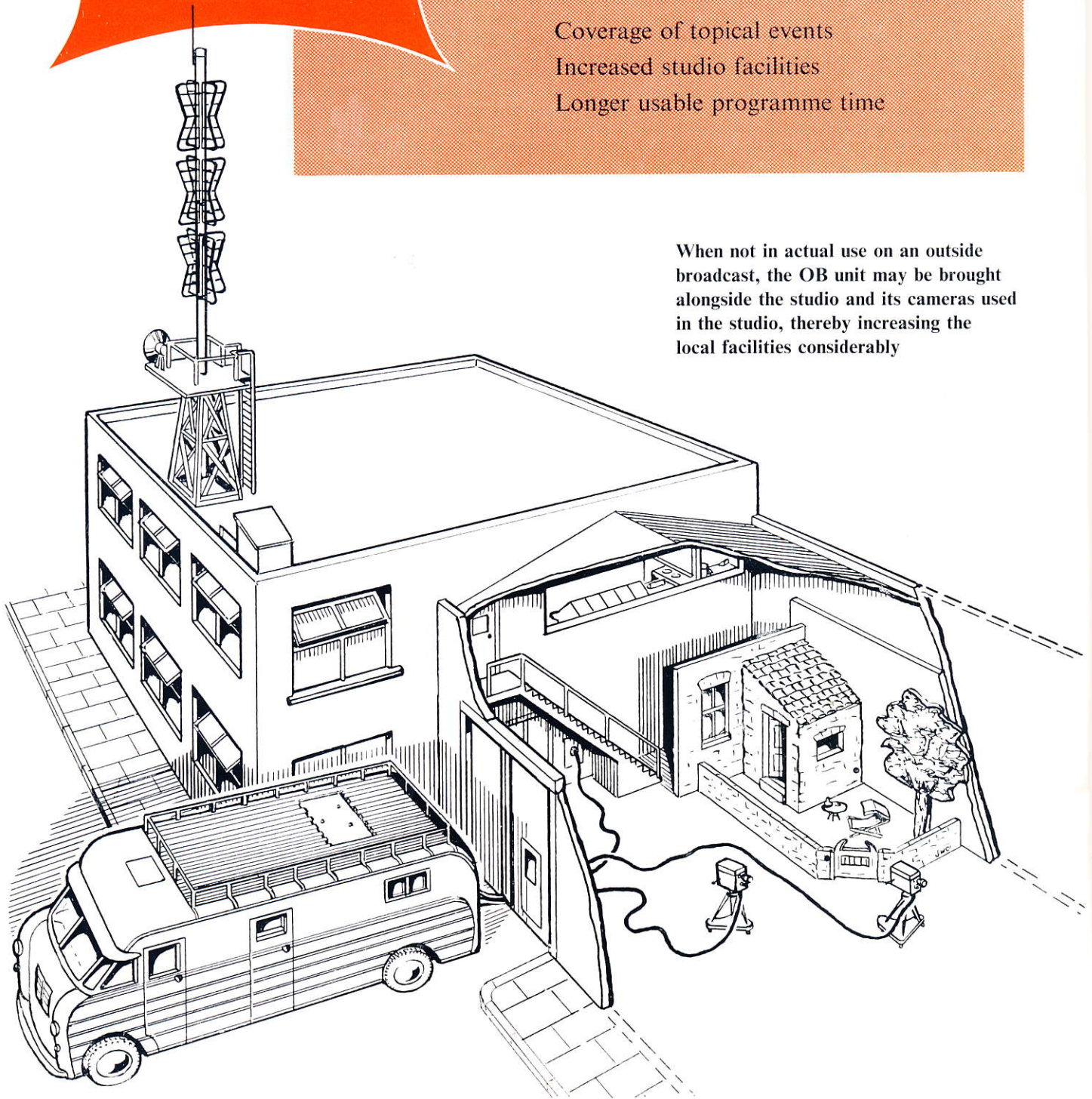
**STAGE 3****Outside Broadcasting Unit****UNLIMITED PROGRAMME SCOPE**

Coverage of topical events

Increased studio facilities

Longer usable programme time

When not in actual use on an outside broadcast, the OB unit may be brought alongside the studio and its cameras used in the studio, thereby increasing the local facilities considerably



## Non-stop programme — ever-flowing income

A SPECIALLY DESIGNED vehicle is fitted as a mobile control room and carries two camera channels, sound mixer and microphones, monitors, a centimetric vision link transmitter, cables and all ancillary items needed for the production of an outside broadcast. It is entirely self-contained and permits considerable operational flexibility, the equipment being so arranged that should occasions arise when it is impossible to bring the vehicle close to the site, the necessary units may be unloaded quickly and set up externally. Spare interconnecting cables and folding equipment desks are provided to meet such difficulties. Frequently it is convenient to operate the cameras and link equipment from the vehicle roof, which is designed to accommodate the tripods and suitably strengthened. Ample storage space is provided—cupboards for spares and lighting equipment, lockers for microphones, stands, cables, etc. All the electronic equipment is fitted on shock absorber mounting trays.

When not engaged in outside broadcasting, the

'OB' unit may be usefully employed for extending studio programme facilities. The proposed building is so planned to allow the vehicle to be parked alongside the studio. With the two additional cameras in use in the studio, control may be carried out from the vehicle and the channel outputs fed to the main control position; alternatively the units may be unloaded from the vehicle and installed temporarily in the control room. This results in an increase in camera channels from one to three, and permits rehearsals to be carried on from one or two sets at the same time as the programme is being transmitted from a third set. Furthermore, it is often desirable to have two, or possibly three, cameras in use for any one programme, thereby giving greater channel mixing facilities. The outcome is that a small centre may be rapidly transformed into an extensive studio.



The thrills and speed of ice hockey can be conveyed to millions through the medium of television

### Equipment Schedule

*(representative)*

*(electronic equipment only included)*

**Camera Channels**  
**Vision Mixer**  
**Synchronizing Generator**  
**Communication Unit**  
**Monitor**  
**Sound Amplifier and Mixer**  
**Portable Loudspeaker**  
**Voltage Control Unit**  
**Regulated Power Supply Unit**  
**Centimetric Vision Link**  
**Microphones**  
**Cables**

## **STATION COMPLETION**

### **Fully Comprehensive Facilities**

Additional units giving greater operating flexibility

Test gear incorporated

Standby equipment ensuring unbroken transmission

### **Maximum Efficiency**

ONCE the station is in satisfactory service, certain items of equipment may be added to make it fully comprehensive. For example, a further preview monitor may be desirable in the control room, a centimetric sound link for the Outside Broadcasting Unit would make it quite independent, whilst additional test gear would enable all maintenance to be carried out within the studio itself.

On these matters, and indeed concerning any problem that may arise in the smooth running of the station, the Marconi Company will be happy to

act as consultants. With a vast background of experience in all aspects of television engineering, the Company offers its service with perfect confidence.

### **Suggested Equipment**

**Grating Generator**

**Spare Synchronizing Generator**

**Synchronizing Generator Locking Unit**

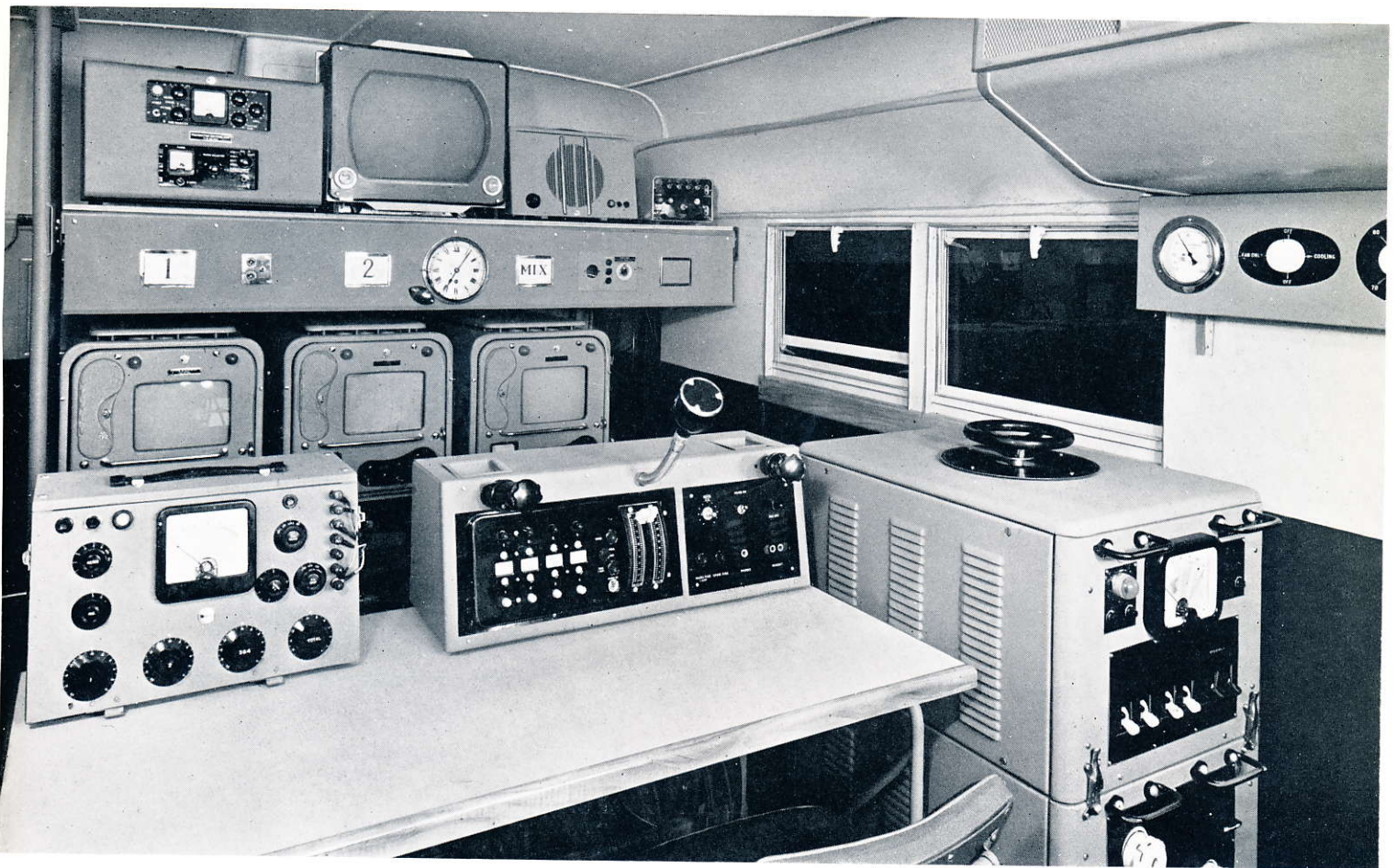
**Synchronizing Generator Changeover Panel**

**Preview Monitor**

**Centimetric Sound Link**

**Additional Camera Channels**

**The single studio television centre here outlined represents the minimum useful installation. This station may well be expanded by building on additional studios and employing more outside broadcasting units, and every modification can be made without upsetting normal operation. In fact, a small station may grow into a large television centre with its own network system.**



Interior view of a typical outside broadcasting unit



The outside broadcast unit may be finished to customer's requirements both as regards colour and general styling

**BUY**

*Marconi*

**BECAUSE....**

Marconi equipment  
has been proved under diverse  
operating conditions

Every product is of the highest  
quality and thoroughly reliable

Your station will be planned  
by experts

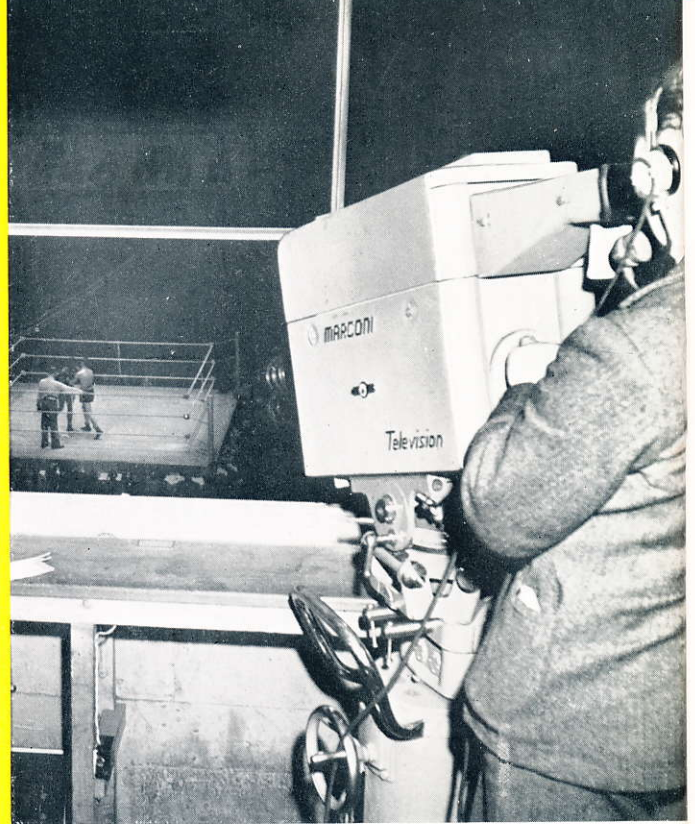
The Marconi Service  
Organization is world-wide

MARCONI'S WIRELESS TELEGRAPH  
COMPANY LIMITED

*Head Office: Marconi House, Chelmsford*

*Telephone: Chelmsford 3221*

*Telegraphic Address: Expanse, Chelmsford*



A ringside seat with the aid of Marconi Television

'OBs' cover places and functions of popular interest

