

TRANSMITTERS  
GREAT BRITAIN

FIRMS	E.M.I.		BAIRD			SCOPHONY			INTERNATIONAL TELEVISION CORPORATION			COSSOR. VELOCITY MODULATION.			
	Type	Scanner	Lines	Elements	Pictures per sec.	Type	Scanner	Lines	Elements	Pictures per sec.	Type	Scanner	Lines	Elements	Pictures per sec.
	Film	Floodlight	Film; inter-mediate film	Spotlight	Floodlight	Film	Spotlight	Floodlight	Film	Spotlight	Floodlight	Film			
	Iconoscope	Iconoscope	Disc	Disc	Electron image camera	High-speed lens wheel	Rotating echelon	Rotating echelon	High-speed lens wheel	Stationary mirror drum	Stationary mirror drum	Cathode-ray tube			
	400	400	240	240	240 to 500	180-240	120 and over	120 and over	180 and over	180 and over	180 and over	180-240			
	200,000	200,000	76,000	76,000	76,000 to 330,000	10,000 and 78,000	20,000	20,000	40,000	40,000	40,000	40,000-76,000			
	50 Interlaced	50 Interlaced	25	25	25 or 50	25	25	25	25	25	25	25			

GERMANY

U.S.A.

Type	FERNSEH A.G.		TELEFUNKEN		TeKaDe		LOEWE	R.P.Z.	Type	R.C.A.		FARNSWORTH	
	Film	Spotlight	Film	Floodlight	Film	Film	Film	Film		Scanner	Film	Floodlight	Film
Scanner	Disc	Disc	Disc	Mirror drum	Disc	Disc	Disc	Disc	Iconoscope	Iconoscope	Iconoscope	Image dissector	Image dissector
Lines	180	180	180	96	90	180	180	180	240	240	240	240	240
Elements	40,000	40,000	40,000	12,000	5,400	40,000	40,000	40,000	76,000	76,000	76,000	76,000	76,000
Pictures per sec.	25	25	25	25	25	25	25	25	24	24	30	30	30

Cathode-ray Tube

Apart from its use in the Iconoscope the cathode ray has been used to scan films by a special system known as "velocity modulation." The beam is made to travel slowly over the bright parts of the film, and quickly over the dark parts.

LINES

This refers to the number of horizontal or vertical lines in which the picture is split up when it is being scanned. For 30-line broadcasts vertical scanning is employed. In high-definition work, horizontal scanning is used. The fineness of detail depends upon the number of lines. 180-line definition gives excellent detail. Increased number of lines improves the detail—the number of picture elements being approximately proportional to the square of the number of lines.

RECEIVERS

Several of the items in the table of receivers correspond with items already dealt with under the heading of Transmission. The following notes, however, will clear up any points not already covered.

ELEMENTS

This is a measure of the ultimate detail of a televised picture. For practical purposes it can be obtained by multiplying the square of the number of lines by the width of the picture in inches and dividing the result by the depth of picture in inches. The number of elements provides a useful figure for comparing the fineness of detail between different systems.

PICTURES PER SECOND

This refers to the number of times per second the complete scene is scanned. If N is the number of elements per picture and the complete picture is scanned 25 times per second, then for adequate picture reception the side bands superimposed on the carrier is given by  $\frac{N}{2} \times \frac{25}{1.6}$ .

SCANNER

Cathode-ray Tube

This is widely favoured for use in high-definition reception. The cathode ray provides its own light source, and it is

caused to scan a fluorescent screen by means of varying voltages applied to the control plates of the tube.

Light Source

Where a cathode-ray tube is not used for reception, it is necessary to supply a local light source in the receiver. The light must be as powerful as possible, must be capable of being concentrated into a narrow beam, and it must be capable of being modulated rapidly, i.e. made to become bright and dark.

Modulation

This refers to the method employed for controlling the intensity of the light beam referred to above.

Colour

It has been found by using different materials on the screen of a cathode-ray tube that various colour effects can be obtained, such as vivid blue, green, sepia, and black. Either sepia or black give the most satisfactory results.

The tables on page 18 summarise the available data concerning some of the better-known systems, but it may be re-

marked that there are other firms, such as Mervyn Sound & Vision Co., Ltd., and Catheon, Ltd., who are developing special systems, details of which will be made available later. All the methods and apparatus referred to in the above tables will be dealt with later in this work. The particulars here given will be found most useful in enabling the reader to visualise the lines of development which are being pursued by some of the most successful of the companies engaged in this highly specialised branch of wireless research.

Whilst every care has been taken in compiling these tables, the development work now being done by the firms concerned may lead to changes in detail in the near future. Several radio manufacturers other than those mentioned in the tables on this and the following page, or referred to in the text above, are known to be experimenting in television, but no information is available.

In America we have Sanabria, Jenkins, de Forest Television Corporation, Ltd., and several other companies who have been in the limelight in the past but about whose present activities nothing is available.

## RECEIVERS

## GREAT BRITAIN

	E.M.I.	BAIRD	SCOPHONY	I.T.C. LTD.	COSSOR
Type . . . . .	Film	Floodlight	Film; inter- mediate film	Spotlight	Floodlight
Scanner . . . . .	Iconoscope	Iconoscope	Disc	Disc	Electron image camera
Lines . . . . .	400	400	240	240	240 to 500
Elements . . . . .	200,000	200,000	76,000	76,000	76,000 to 330,000
Pictures per sec. . . . .	50 Interlaced	50 Interlaced	25	25	25 or 50

## GERMANY

	FERNSEH A.G.	TELE- FUNKEN	TeKaDe			LOEWE	LORENZ- VON ARDENNE
Scanner . . . . .	Cathode- ray tube	Cathode- ray tube	Cathode- ray tube	Mirror screw	High- speed mirror drum	Cathode- ray tube	Cathode- ray tube
Modulation . . . . .	—	—	—	Kerr cell	Kerr cell	—	—
Lines . . . . .	180	180	180	180	120	180	180
Elements . . . . .	40,000	40,000	40,000	40,000	20,000	40,000	40,000
Pictures per sec. . . . .	25	25	25	25	25	25	25
Size . . . . .	10 × 12 in.	6 × 8 in.	3 × 4 in.	7½ × 10 in.	10 × 12 in.	6 × 8 in.	6 × 8 in.
Colour . . . . .	Sepia	Black and white	Sepia	Black and white	Black and white	Sepia	Pink

## U.S.A.

	R.C.A.	FARNS- WORTH	BELL TELE. LABS.	PECK.
Scanner . . . . .	Cathode-ray tube (Kinescope)	Cathode-ray tube (Oscilight)	Cathode-ray tube	Mirrored-lens disc. Kerr cell modulation
Lines . . . . .	240	240	240	60 and over
Elements . . . . .	76,000	76,000	76,000	5,000
Pictures per sec. . . . .	24	30	30	24
Size, approximate . . . . .	6 × 8 in.	6 × 8 in.	—	10 × 12 in.
Colour . . . . .	—	9 × 12 in.	—	—