

CONTENTS

	PAGE
PREFACE	vii
CHAPTER I	
TYPES OF OSCILLOGRAPH TUBE	1
Construction of low-voltage tube—Brilliance—Shield—Focusing—Gas-focus tube—Merits and defects of soft tubes—Electrostatic focusing—Merits of hard tubes—Magnetic focusing—Colour of image—Afterglow—The Skiatron—Effect of size of screen—Recent developments	
CHAPTER II	
THE OSCILLOGRAPH IN USE	15
Sensitivity—Visual persistence—Direction of deflection—Alignment of tube—Time bases—Synchronism—Magnetic deflection—Estimation of magnetic field—Shifts—Tube networks—Tube distortions—Origin distortion—Trapezium distortion—Loss of focus—Magnetic distortion—Location of deflecting coils—Stray fields—Mumetal shield—Faults in setting up—Bulb charge—Excessive deflection—Incorrect speed of time base—Self-centring—Inverted deflection—Softness	
CHAPTER III	
WAVEFORM EXAMINATION	49
Phase difference—Harmonics—Amplitude distortion—Time bases—Non-linearity—Charging time—Synchronism—Too much synchronism—Phase of synchronizing voltage—Push-pull time bases—Sweep expansion—High-frequency time bases—Fly-back—Faults in time bases—Non-linearity—Limited scan—Time-base hum—Magnetic hum—Vertical hum deflection—Intermodulation—Driven time base	
CHAPTER IV	
DEFLECTION AMPLIFIERS	87
Design of amplifier—Linearity—R.M.S. and peak values—Negative feedback—Cathode follower—Gain control—Use of negative feedback for gain control—Transients—Magnetic deflection—Faults in amplifiers—Frequency response—Phase angle—Ripple voltage—Intermodulation—Compensation	

CHAPTER V		PAGE
FREQUENCY-RESPONSE CURVES		107
Motor-driven modulators—Electronic modulators—Application of control voltage—Use of reactor valve—Magnetic methods of frequency modulation—Double-image working—Resonance curves—Adjustment of frequency—Frequency sweep—Modulated envelope—Faults in frequency modulators—Effect of A.V.C.—Inverted images—Hum—Audio-frequency curves		
CHAPTER VI		
CHARACTERISTIC MEASUREMENTS		131
Valve curves—Sweep voltage—Magnetic deflection—Direction of characteristic—Looped characteristics—Phase ellipses—Harmonic analysis— <i>B-H</i> curves		
CHAPTER VII		
FREQUENCY COMPARISON		143
Lissajous figures—Time-base methods—Crystal control—Frequency standards		
CHAPTER VIII		
RADIO-FREQUENCY EXAMINATIONS		150
Band pattern—R.f. distortion—Modulation—Effect of phase—Measurement of modulation depth		
CHAPTER IX		
LOW-FREQUENCY TECHNIQUE		157
Direct-coupled amplifiers—Compensated amplifiers—Low-frequency time bases		
CHAPTER X		
SPECIAL TIME BASES		166
Single-sweep circuits—Repeating transients—Elliptical time base—Phasing circuits—Zigzag time bases—Slave time base—Velocity modulation—Amplifier response		

CONTENTS

xi

CHAPTER XI

	PAGE
CATHODE-RAY PHOTOGRAPHY	178
Transient photography—Exposure—Optical reduction— Type of camera	

CHAPTER XII

SPECIAL APPLICATIONS	184
Double-wave recording—Double beam tubes—Pressure re- cording—Capacitance micrometers—Integration and Differen- tiation—Production of pulses—Radar pulse technique— Function generator—Other applications	
INDEX	197