

MIL
1967



HANDBOOK OF *High-Speed* PHOTOGRAPHY

SECOND EDITION
(Revised)

by
Charles E. Miller

Price: \$1.00

on the cover

A pin struck balloon. Photo taken using a 4 x 5 camera loaded with Kodak Tri-X film. Exposure data: two 1532 Strobolumes, 45-degree lighting, set back 8 feet from subject; camera set to f/11. A microphone picked up the sound of the burst and triggered the flash in a darkened room. No synchronization; camera shutter opened and closed manually just before and after burst.

No. AV-D1/294

GENERAL RADIO COMPANY
WEST CONCORD • MASSACHUSETTS • USA

Copyright 1963 and 1967, by General Radio Company, West Concord, Mass., U.S.A.

Form 3100-D

Printed in U.S.A.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	iii
FOREWORD	iv
SECTION 1. INTRODUCTION.....	1
1.1 Stopping Action with a Short Exposure Time	1
1.2 Multiple-Exposure Motion Studies with a Strobotacmeter	2
1.3 Using the Stroboscope with Moving Film	8
SECTION 2. CHARACTERISTICS OF STROBOSCOPES	9
2.1 Introduction	9
2.2 Using the Tables	9
2.3 Flash Intensity Versus Duration.....	12
2.4 Timing in High-Speed Photography.....	13
2.5 A Specific Example	13
SECTION 3. GENERAL RADIO STROBOSCOPES	16
3.1 The Type 1539 Stroboslave [®] electronic stroboscope	16
3.2 The Type 1531 Strobotac [®] electronic stroboscope	18
3.3 The Type 1538 Strobotac [®] electronic stroboscope	21
3.4 The Type 1540 Strobolume [®] electronic stroboscope	23
SECTION 4. STILL PHOTOGRAPHY	25
4.1 General	25
4.2 The Output Characteristics of General Radio Stroboscopes.....	25
4.3 Film Choice	28
4.4 Guide Number Chart	30
4.5 Lighting Techniques	32
4.6 Shadowgraph Photography with a Scotchlite Screen.....	34
4.7 Ambient Light Conditions	35
4.8 Operation of Camera Shutter at High Speeds.....	38
SECTION 5. SYNCHRONIZATION.....	41
5.1 General	41
5.2 Recognizing the Event: Various Means of Triggering the Synchronization Sequence	41
5.3 Processing the Trigger Signal	48
5.4 Taking a Typical High-Speed Photograph	55
SECTION 6. MOTION-PICTURE PHOTOGRAPHY	58
6.1 Use of a Movie Camera.....	58
6.2 Conventional Movie Cameras	58
6.3 High-Speed Movie Cameras	61
6.4 Movie Camera Synchronization	63
6.5 Selecting a Camera	65
PHOTOGRAPHS.....	66
BIBLIOGRAPHY.....	81
INDEX	84
CATALOG SECTION	86