

HAROLD E. EDGERTON

PAPERS

MC 25

Series III

Laboratory Notebooks

Number 36

Dated June 20, Friday 1986 to \_\_\_\_\_

Draw Vol. 33

# COMPUTATION BOOK

NAME

HAROLD E. EDGERTON

# 36

Room 4-405 M.I.T. STROBE LAB.

(617) 253-1629

phone 4629

Course

STROBE LAB.

494.878.

June 20, Friday 1986.



AMERICAN PAD & PAPER CO.

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HOLYOKE, MASS. 01040 22-156  
Thank you.

TECHNIQUES IN HIGH-SPEED PHOTOGRAPHY AND VIDEOGRAPHY

Dr. Harold E. Edgerton

Massachusetts Institute of Technology June, 1988

Safe combination

27 cal  
shells.

July 26 1956

Start at 0

clear 10x to right.

LEFT 4x to 26

Right 3x to 89

left 2x to 72

Right to 92

6/20

R/V CALYPSO FIRE

FH HV MM GUY SOUAS

The Calypso Society

9030 W AT Norfolk Va

14310K42

at 1400 z.

23517 v5dt

(RADIO)

Harold E. Edgerton.

617-253-4629 STROBE LAB 4-405 4-405 MIT Cambridge Mass. U.S.A.  
617-494-8785 M.S. 2-4-405

Home 100 Memorial Drive  
apt 11-7A and 11-6A.

Cambridge Mass. 02142.

617-864 4790 Home.

Hamrock P264 p 87  
Hazel letter, Cole p 18 Trip Adams & Shaw

Burmester  
Janet Burmester Cambridge  
~~964~~ 0.300 1988

253-6799 Mac Cue ?62-3754  
Copley Square

TECHNIQUES IN HIGH-SPEED PHOTOGRAPHY AND VIDEOGRAPHY

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23517 v5d4

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Harold E. Edgerton.

617-253-4629 5th floor Lab 4-405 4-405 MIT Cambridge Mass. U.S.A.  
617-494-8783 MIT 2<sup>nd</sup> 4-405

Home 100 Memorial Drive  
apt 11-7A and 11-6A.

Cambridge Mass. 02142.

617-864-4790 Home.

Hamrock Valley p 81  
Hazel Lake, Colo p 18 Trip Adams & others

Burmester  
Janet Burmester Cambridge  
~~964~~ 0.300 . 1988

253-6799 Mac Cue ? 62-3754  
Coping Squares

Notebook # 36

Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

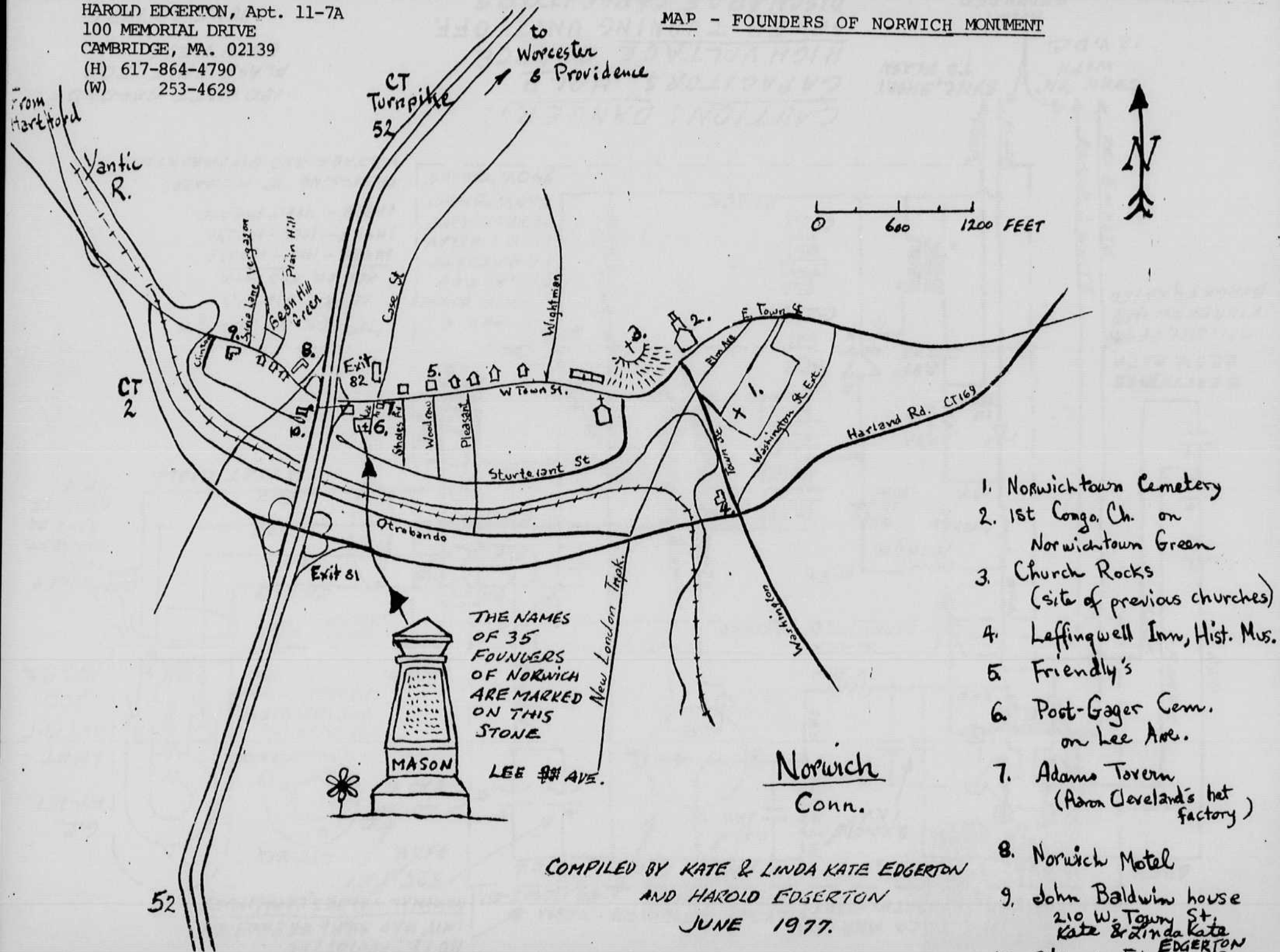
8 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page \_\_\_ and \_\_\_.  
*inside front cover*

Item(s) now housed in accompanying folder.

HAROLD EDGERTON, Apt. 11-7A  
 100 MEMORIAL DRIVE  
 CAMBRIDGE, MA. 02139  
 (H) 617-864-4790  
 (W) 253-4629

MAP - FOUNDERS OF NORWICH MONUMENT



THE NAMES  
 OF 35  
 FOUNDERS  
 OF NORWICH  
 ARE MARKED  
 ON THIS  
 STONE

MASON

LEE AVE.

Norwich  
 Conn.

1. Norwichtown Cemetery
2. 1st Congo. Ch. on Norwichtown Green
3. Church Rocks (site of previous churches)
4. Leffingwell Inn, Hist. Mus.
5. Friendly's
6. Post-Gager Cem. on Lee Ave.
7. Adams Tavern (Aaron Cleveland's hat factory)
8. Norwich Motel
9. John Baldwin house 210 W. Towny St. Kate & Linda Kate EDGERTON
10. Richard Edgerton house

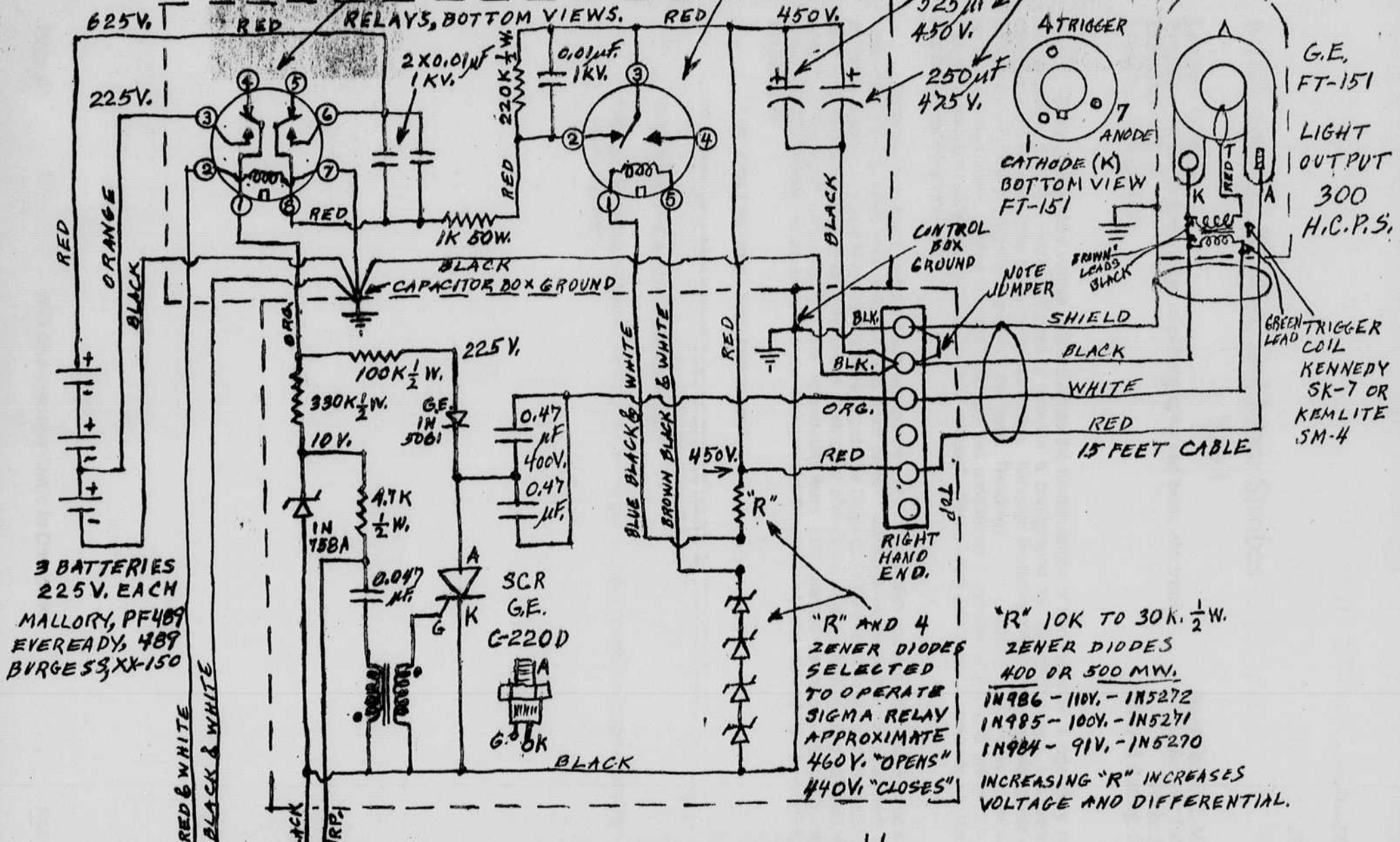
COMPILED BY KATE & LINDA KATE EDGERTON  
 AND HAROLD EDGERTON  
 JUNE 1977.



TURN ON LINE ELEC. CO. MKH 2D } 12V.D.C.  
 RELAY OR OHMITE GPRTPX-260T } COIL

REGULATOR SIGMA  
 RELAY 4R 12000 S-511

NOTE: PROTOTYPE  
 UNIT HAD SIGMA 4R 8000 S-511  
 NOMINAL VALUES, CAPACITORS.



3 BATTERIES  
 225V. EACH  
 MALLORY, PF489  
 EVEREADY, 489  
 BURGESS, XX-150

RED & WHITE  
 BLACK & WHITE

TURN ON WITH  
 12 V. D.C.  
 SYNC. SHORT  
 TO FLASH

NOTE!  
 GROUNDED  
 LEADS

**CAUTION: DANGER!!**  
 CAPACITORS HOLD  
 HIGH VOLTAGE CHARGE  
 AFTER TURNING UNIT OFF.  
 DISCHARGE CAPACITORS  
 BEFORE SERVICING, USE 10 TO 100 OHMS.

"R" AND 4  
 ZENER DIODES  
 SELECTED  
 TO OPERATE  
 SIGMA RELAY  
 APPROXIMATE  
 460V. "OPENS"  
 440V. "CLOSES"

"R" 10K TO 30K. 1/2 W.  
 ZENER DIODES  
 400 OR 500 MW.  
 IN986 - 110V. - IN5272  
 IN985 - 100V. - IN5271  
 IN984 - 91V. - IN5270  
 INCREASING "R" INCREASES  
 VOLTAGE AND DIFFERENTIAL.

100 WATT SECOND  
 FLASH UNIT FOR  
 LOCH NESS.

JUNE 30, 1977.  
 V.E.M.

G.E.  
 FT-151  
 LIGHT  
 OUTPUT  
 300  
 H.C.P.S.  
 GREEN TRIGGER  
 LEAD COIL  
 KENNEDY  
 SK-7 OR  
 KEMLITE  
 SM-4

## 6.163: Strobes, Strobes, and More Strobes

2-5-4.5

Lecturer: C. Miller  
Prerequisites: Some knowledge of photography and basic electronics  
Difficulty: 3.3/10  
Lecturer's Rating: 5.8/7

Next Term: C. Miller  
Evaluated: Fall 88  
Pace: 3.6/7  
Overall Rating: 5.8/7

This is a laboratory course which teaches the fundamentals of Doc Edgerton's legendary strobe photography. Lectures were designed to provide a background for laboratory work, but were too disorganized and could have been more informative. Although Professor Miller's lectures wandered a lot, he was friendly and supportive throughout the term. Readings weren't assigned and many students felt no urge to read them. Those who did read the text considered it comprehensive and informative, but thought it read too much like an "EG&G strobe catalog". Some basic 6.002 circuit knowledge is the only real prereq for the class.

Most students spent about 4 hours per experiment in the lab with about 3 more hours for write-up. Labs went quickly since they were fun and "idiot proof". Although much of the lab equipment looks archaic, it does the job just fine; facilities were accessible (keys could be checked out) and lab hours were sufficient. Some students would like to see more color and motion picture photography covered in the course. TA's Brian Leibowitz and Jeff Applebaum were both praised as being especially helpful, available, and friendly. Brian and Jeff knew how to make things work in the lab and had as much fun as the students.

*"This is the best class I have ever taken."*

*"A nice breather from the hell a course six class usually is! They CARE about you!"*

*"Kick it hard enough and it usually works."*

*"There's not enough material for the term, so we get to watch movies of things exploding .. which is good."*

## 6.161: Modern Optics Project Laboratory

2-6-9

Lecturer: C. Warde  
Prerequisites: 6.003, 6.013, 6.014  
Difficulty: 4.6/10  
Lecturer's Rating: 4.7/7

Next Term: Not Offered  
Evaluated: Fall 88  
Pace: 4.2/7  
Overall Rating: 5.4/7

The class is a survey of basic principles in optics -- Fourier optics, lasers, fiber optics, interference, etc. It covers a lot of material and moves rapidly.

Professor Warde's lectures were pertinent to the labs but were rather dull and at times difficult to follow. Both Chris Eugster and Xavier Douwes were extremely helpful and friendly TA's.

The class notes were unclear, poorly put together, and contained errors. There were too many supplementary text books (Yariv, Hecht, etc.), some of which were very advanced.

The labs were quite good and only took about five hours each, but the writeups for each lab took approximately ten hours.

The lab equipment was adequate but quite antiquated and sometimes unreliable; in some cases more equipment (eg. more lenses) would have aided labs.

*"Anyone who wants a good theoretical and practical exposure to optics should take it."*

*"I hate Yariv."*

*"Pretransistor equipment is getting a little old."*

*"The equipment was better than 6.002 and 6.003."*

A. EDGERTON

# Techniques in High-Speed Photography and Videography

$$\frac{1}{20} + 2\epsilon + \frac{Cd}{d^2} \frac{s}{20}$$

$$t = \frac{Cd}{d^2} A^2 \frac{20}{s}$$

$$t = A^2 \frac{20}{s} \left( \frac{d^2}{Cd} \right)$$

## SOME USEFUL EQUATIONS

For continuous light:  $A^2 = i \cdot t \cdot \frac{s}{20}$

For strobe illumination:  $G.N. = A \cdot d$   
 $= \sqrt{BCPS} \frac{s}{20}$

Correction for magnification:  $A_{lens} = \frac{A_{calculated}}{1 + M}$

Magnification:  $M = \frac{\text{image size}}{\text{subject size}} = \frac{a_2}{a_1}$

Beam candlepower sec:  $BCPS = R \cdot Cd \cdot \tau$

For strobe flash:  $\text{Candela sec} = C_{peak} \cdot \tau$

Lens equation:  $\frac{1}{a_1} + \frac{1}{a_2} = \frac{1}{F}$

$$i = \frac{Cd}{d^2}$$

A=f/stop

$$i = ft \cdot Cd = \frac{Cd}{d^2}$$

Cd=candela

t=seconds

s=ASA

G.N.=guide number

d=lamp-subject in ft

BCPS=beam candlepower sec

M=image magnification

R=reflector factor

$\tau$ =flash duration-sec

F = focal length

$a_1$  = lens-to-subject dist.

$a_2$  = lens-to-film dist

Input energy:  $E = \frac{1}{2} \cdot C \cdot V^2$

E=watt-seconds or joules

Lamp efficacy:  $\epsilon = \frac{\text{candela sec}}{\text{watt sec}}$

C=capacitance farads

V=volts

Conversion of energy to light ( $1 \leq \epsilon \leq 4$  usually)

### Area illumination - Exposure (E)

$$E_m = I \cdot t = \frac{CPS}{d^2}$$

in meter-candle-sec if d is in meters (This is the inverse square law, don't break it!)

### Speed of photographic negative materials

$$\text{Speed} = S_x = \frac{0.8}{E_m}$$

for density of 0.1 above base + fog

9 Fernwise  
Lipstone

Oct. 1986

Fountains, Louise & Tom

Duwell Sr. and Syc. Dr

Larrie Cal. & Bruce Minell

Newman, Lew & Ruth. Photo.

Tanis King & Annis.

698-6844 Stevens JH

Von

EXPOSURE

ISENBERG - photo  
MIT 71

Jeanie Lal not Lal.

24 jewel pieces

Ruby, Luv

Batavia Lel.

more photos  
Hans BjELKHAGEM

Northampton  
BEO material

money for Coles  
Kendall photos  
duress.

50K. JK. Co

England

AGNES DENES X-Ray film

595 BROADWAY

NYC 10012

(212) 966-0288

JOHN NEFF

Bank,

one FIRST NAT PLAZA 00670

Lochness. Room 2570

FIRST NAT OF C

dis



# If

By Rudyard Kipling

If you can keep your head when all about you  
Are losing theirs and blaming it on you;  
If you can trust yourself when all men doubt you,  
But make allowance for their doubting too;  
If you can wait and not be tired by waiting,  
Or being lied about, don't deal in lies,  
Or being hated don't give way to hating,  
And yet don't look too good, nor talk too wise:

If you can dream—and not make dreams your master;  
If you can think—and not make thoughts your aim,  
If you can meet with Triumph and Disaster  
And treat those two imposters just the same;  
If you can bear to hear the truth you've spoken  
Twisted by knaves to make a trap for fools;  
Or watch the things you gave your life to, broken,  
And stoop and build 'em up with worn-out tools:

If you can make one heap of all your winnings  
And risk it on one turn of pitch-and-toss,  
And lose, and start again at your beginnings  
And never breathe a word about your loss;  
If you can force your heart and nerve and sinew  
To serve your turn long after they are gone,  
And so hold on when there is nothing in you  
Except the Will which says to them: "Hold on!"

If you can talk with crowds and keep your virtue,  
Or walk with Kings—nor lose the common touch,  
If neither foes nor loving friends can hurt you,  
If all men count with you, but none too much;  
If you can fill the unforgiving minute  
With sixty seconds' worth of distance run,  
Yours is the Earth and everything that's in it,  
And—which is more—you'll be a Man, my son!

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Doubleday, Page & Company, Publishers  
All Rights Reserved  
Distributed by The Hoxsey Co., Minneapolis





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By Rudyard Kipling

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If you can trust yourself when all men doubt you,  
But make allowance for their doubting too;  
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IF

IF  
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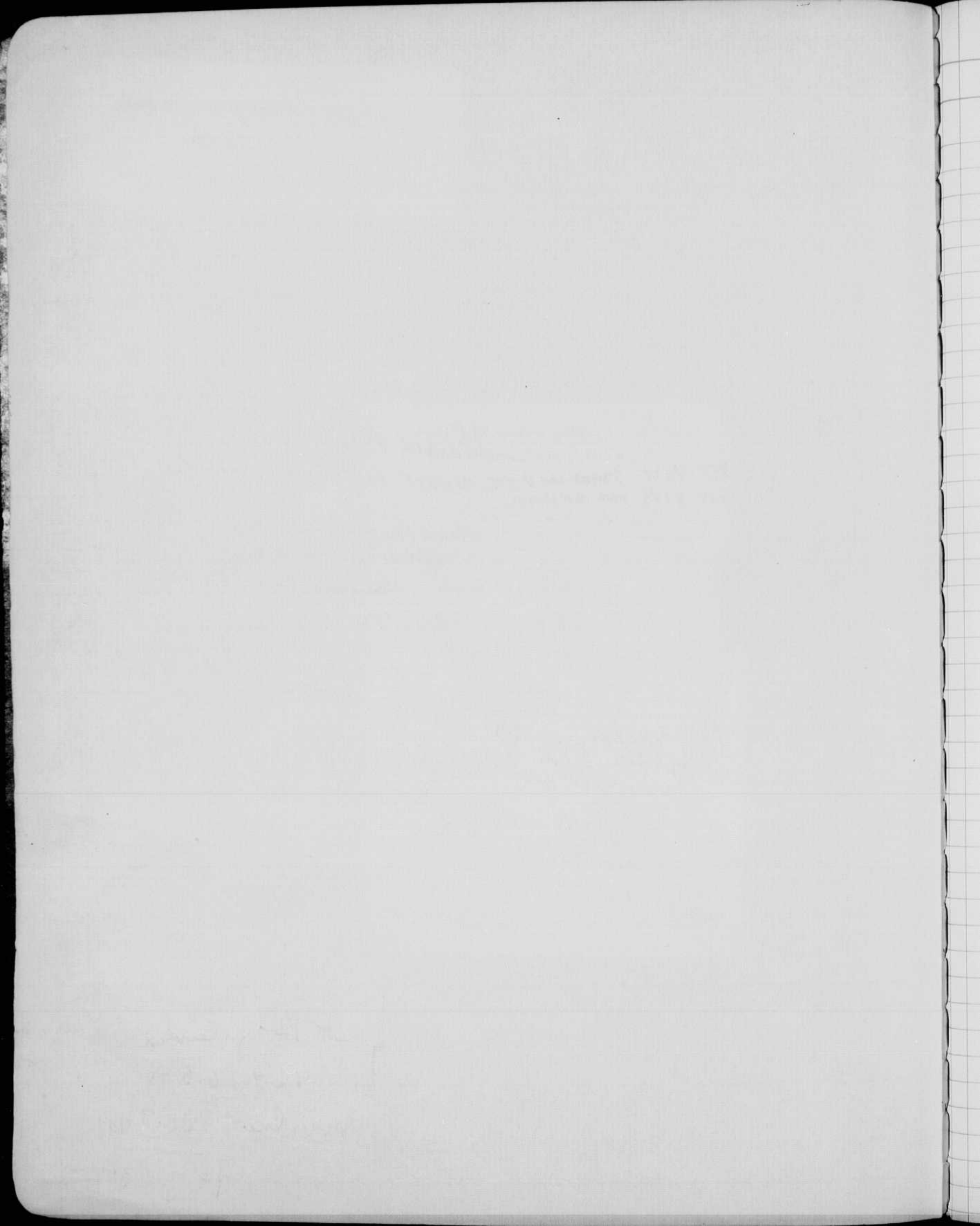
864-4740 10 20 10

"IF"  
copy

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Harold E. Edgerton.  
4-405  
June 20 Fri

Diary No.

July 10 82

The M.I. 515 Summer course was over this afternoon. Some 40 people came. Chris Miller was the leader. There was excellent cooperation from manufacturers.

Bob Shubert and I made a deal. He traded a beam of 10,000 made <sup>1290</sup> about 5 years ago for a Photar camera #364.

(11,000)

Ann Franzy called about a lost Heilicopter with her son above, 203 637-8525. West Hill is union & will have the 80th school.

(Block deal)  
(Methu Hill)

Leo Kaufman 30 teacher program planned 24 leaders to teach Science - Algebra. Was of Fri July 15, 1980

Gardner also called about this program, I made no commitment.

# MIT Summer Program Final Preliminary Schedule

## LECTURE SCHEDULE

*Harold Edgerton*

### MONDAY, JUNE 16 (Bush Room, 10-105)

8:30 Welcoming remarks, and program introduction Miller (30)  
 ✓ 9:00 Generation and uses of strobe light Edgerton (45)  
 9:45 \* \* \* COFFEE BREAK \* \* \* (15)  
 10:00 Light and photographic formulas Miller (30)  
 10:30 Schlieren photography (AUG 74) Vandiver (30)  
 11:00 High-speed videography (I) (Ames, Smith) Miller (60)

\* \* \* LUNCH BREAK 12:00 TO 1:00 \* \* \* (60)

1:00 High-speed videography (II) Miller (15)  
 1:15 The Spin Physics systems Pike (30)  
 20 W. 1:45 Applications of high-speed photography in industry Quinn (45)  
 5600 ret. 2:30 Pulsed laser lighting for videography/photography Saunders <sup>25 M</sup> (30)  
 216. 3:00 \* \* \* SNACK BREAK \* \* \* (15)  
 ✓ 3:15 Ballistic photography Edgerton (45)  
 4:00 Multiple image photography, Synchronization & Miller (60)  
 delay techniques, Instrumentation problems

=====

### WEDNESDAY, JUNE 18 (Bush Room, 10-105)

8:30 Rotating Prism cameras Shoberg (45)  
 ✓ 9:15 High-speed strobo-silhouette micrography Edgerton (30)  
 9:45 \* \* \* COFFEE BREAK \* \* \* (15)  
 10:00 Continuous lighting for high-speed photography Lemons (60)  
 11:00 Intermittent motion cameras O'Connell (30)  
 11:30 Film considerations for high-speed photography Quinn (45)

\* \* \* LUNCH BREAK - 12:15 TO 1:15 \* \* \* (60)

1:15 Data extraction from photographic records (I) Walton (75)  
 2:30 Application to explosives in the field (II) Chiappetta (60)  
 3:30 \* \* \* SNACK BREAK \* \* \* (15)  
 3:45 Sensitometry and densitometry Wyckoff (60)  
 4:45 The image converter ultra-high-speed camera Owren (45)

=====

### FRIDAY, JUNE 20 (Bush Room, 10-105)

8:30 Review of students' results Staff (30)  
 ✓ 9:00 Strobe lighting for time lapse photography (MOVIES) Edgerton (45)  
 9:45 \* \* \* \* \* COFFEE BREAK \* \* \* \* \* (15)  
 10:00 New methods for simplified lens evaluation Howland (45)  
 10:45 Review of students' results Staff (30)  
 11:15 Feedback session, closing remarks Staff (30)

Special Summer Program 6.51s

HIGH-SPEED PHOTOGRAPHY AND VIDEOGRAPHY

June 16 through June 20, 1986

Roster of Registrants

Mr. Michael E. Barnette  
U.S. Army Human Engineering  
Lab., Photo Dept.  
ATTN: SLCHE-ST (Barnette)  
Bldg. 459  
APG, MD 21005-5001

Mr. Gary L. Bays  
U.S. Air Force  
ASD/DPCT  
WPAFB, OH 45433

Mr. William Bishop  
University of New Mexico  
Campus P.O. Box 25  
Albuquerque, NM 87131

Mr. Reuben L. Boarman  
Boarman, Inc.  
3309 Gill Street  
Dallas, TX 75227

Mr. Alan H. Boyer  
Marken Corp.  
150 Congress Street  
Keene, NH 03431

Mr. Keith D. Buckley  
Goodyear Technical Ctr.  
Akron, OH 44316

Mr. George T. Carpluk  
Lawrence Livermore National Lab.  
Box 808, East Avenue  
Livermore, CA 94550

Mr. B. Michael Ciosek  
E.I. Du Pont de Nemours  
& Co., Ltd.  
Engineering Test Ctr.  
Wilmington, DE 19898-7104

Mr. Alan J. Corzine  
Olin Corp.  
Winchester Div.  
Bldg. T-189  
Shamrock Street  
E. Alton, IL 62024-1174

Ms. Katy Creel *Katy*  
USA-ARDEC  
SMCAR-MSA-P  
Dover, NJ 07801-5001

Mr. Manuel Davila  
University of New Mexico  
Campus P.O. Box 25  
Albuquerque, NM 87131

Mr. Richard T. Gibson  
Test & Evaluation  
Directorate  
U.S. Army Missile Lab.  
Redstone Arsenal, AL 35898-5250

Ms. Sharon M. Graybeal  
E.I. Du Pont de Nemours  
& Co., Ltd.  
101 Beach Street  
Wilmington, DE 19898

Ms. Elizabeth A. Harris  
Philip Morris  
P.O. Box 26603  
Richmond, VA 23261

Mr. Calvin L. Holser  
Chrysler Corp.  
Chelsea Proving Grounds  
Chelsea, MI 48118

Mr. James R. Hunter  
Lawrence Livermore National Lab.  
P.O. Box 808, L-346  
Livermore, CA 94550

Notebook # 36

Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 2 and 3.

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# Techniques in High-Speed Photography and Videography

1981

## SOME USEFUL EQUATIONS

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Cd=candela

t=seconds

s=ASA

G.N.=guide number

d=lamp-subject in ft

BCPS=beam candlepower sec

M=image magnification

R=reflector factor

$\tau$ =flash duration-sec

Input energy:  $E = \frac{1}{2} \cdot C \cdot V^2$

Lamp efficacy:  $\epsilon = \frac{\text{candela sec}}{\text{watt sec}}$

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Conversion of energy to light ( $1 \leq \epsilon \leq 4$  usually)

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in meter-candle-sec if d is in meters (This is the inverse square law, don't break it!)

Speed of photographic negative materials

$$\text{Speed} = S_x = \frac{0.8}{E_m}$$

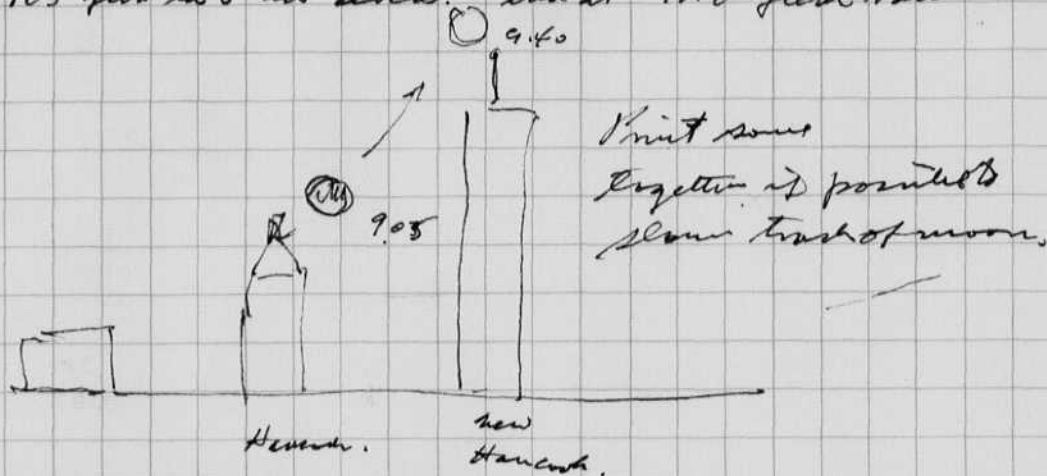
for density of 0.1 above base + fog



June 2 1986 David Edgerton

Moon rise photo on speed 400 film EK  
 time = 1/15 sec at f 8 at 5 min with intervals except for first 2 or 3.  
 to show path of the moon over Berk.

9.03 first in 5 min series. - end at 9.40 film ran out.



LM Rochester. Dr. Karl Blumstein  
 Endersbacher Str 18

7 Stgt 50 (Bad Cannstatt)

Te (0711) 52 26 74.

He gave me some color photos that are to be used in a magazine (transport) in a few months.

KS.

Fall 82

Richard Bryant

3311 1/2 Camino Co Stal

2-30 Oguchi - Machi Higashi - Ka

Osaka 541 Japan

Tel (06) 291 2851 Telex J63403.

*Miss Mullen*  
*cont and for*  
*Summer course*  
*1986*

Special Summer Program 6.51s

Mr. Garland R. Janney  
Photo Optical Test Branch  
APG, MD 21005

Mr. Richard A. Keith  
Naval Weapons Ctr.  
Code 6214  
China Lake, CA 93555

Mr. Robert E. Lee  
Lawrence Livermore National Lab.  
P.O. Box 808, L-153  
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Mr. Michael J. Libecap  
U.S. Air Force  
ASD/DPCT  
WPAFB, OH 45433

Mr. Louis H. Libin  
NBC  
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New York, NY 10112

Mr. Lynn E. Maclary  
U.S. Army Ballistic Research  
Lab.  
ATTN: SLCBR-TB-P  
APG, MD 21005-5066

Mr. Mark E. Mammele  
Atlas Powder Co.  
Reynolds Road  
Tamaqua, PA 18252

Mr. Gerald L. McCurdy  
Vought Aerospace &  
Defense Co.  
MS MSF-12  
P.O. Box 225907  
Dallas, TX 75265

Dr. Guy D. McDonald  
Johnson Controls, Inc.  
5757 N. Green Bay Avenue  
Milwaukee, WI 53201

Mr. David B. O'Connor  
Lawrence Livermore National Lab.  
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Livermore, CA 94550

Mr. Rodney N. Owenby  
Sandia National Labs.  
P.O. Box 5800, Div. 7132  
Albuquerque, NM 87185

Mr. Barrie R. Perilla  
Pennsylvania Power & Light Co.  
1321 N. Plymouth St.  
Allentown, PA 18103

Mr. Guido W. Politano  
Delco Remy  
2401 Columbus Avenue  
Anderson, IN 46018

Mr. William R. Richardson  
NASA Lewis Research Ctr.  
MS 5-2  
21000 Brookpart Road  
Cleveland, OH 44135

Mr. Jack R. Seath  
Canadian Forces  
CFB Cold Lake  
Medley, Alberta  
CANADA TOA 2M0

Mr. Jerry J. Seitz  
Los Alamos National Labs.  
P.O. Box 1663  
Los Alamos, NM 87545

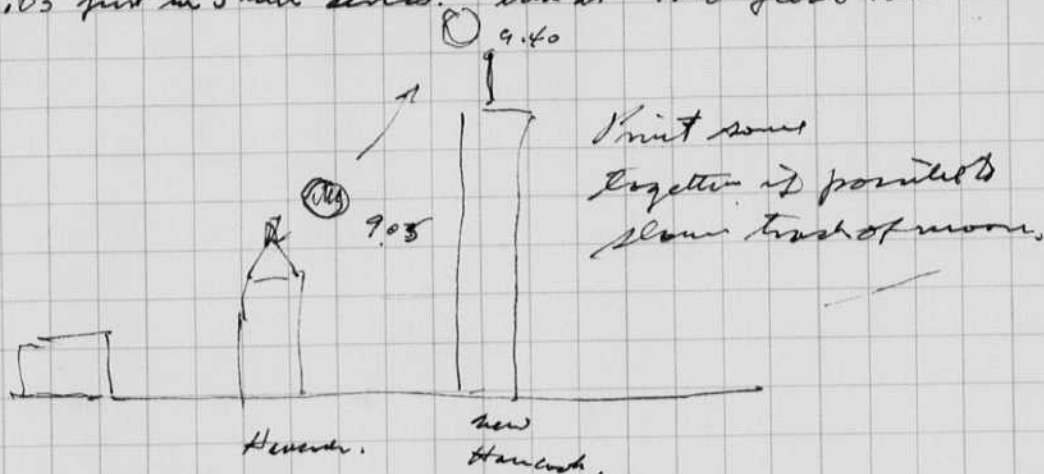
Mr. Mustafa Stationwala  
Pulp & Paper Research  
Institute of Canada  
570 St. John's Blvd.  
Pointe Claire, Quebec  
CANADA H9R 3J9

Mr. Jerome H. Stofletch  
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Mr. Jonathan E. Warwick  
U.S. Army Corps of Engineers  
(W.E.S.)  
P.O. Box 631  
Vicksburg, MS 39180-0631

June 2 1986 David Edgerton

Moon rise photos on speed 400 film EK  
time = 1/16 sec at f 8 at 5 mm with intervals of up to 2 or 3.  
to show path of the moon over Bahr.  
9.03 first in 5 min series. - end at 9.40 film ran out.



Mr Rochester, Dr Karl Bleumont  
Enderstrade Str 10  
7 Sgt 50 (Rad counsellor)  
Tel (0711) 52 26 74.

He gave me some color photos that are used  
used in a magazine (Travelport) in a  
four months.  
A.S.

Fall 87

Richard Bryant  
minolta Camera Co Ltd  
2-30 Oguchii - Machi Higashi - Ku  
Osaka 541 Japan  
Tel (06) 291 2851 Telex J63403.

*Miss M. H. ...  
 count ...  
 P  
 Summer course  
 1986*

## Special Summer Program 6.51s

- 2 -

Mr. Garland R. Janney  
 Photo Optical Test Branch  
 APG, MD 21005

Mr. Richard A. Keith  
 Naval Weapons Ctr.  
 Code 6214  
 China Lake, CA 93555

Mr. Robert E. Lee  
 Lawrence Livermore National Lab.  
 P.O. Box 808, L-153  
 Livermore, CA 94550

Mr. Michael J. Libecap  
 U.S. Air Force  
 ASD/DPCT  
 WPAFB, OH 45433

Mr. Louis H. Libin  
 NBC  
 30 Rockefeller Plaza  
 New York, NY 10112

Mr. Lynn E. Maclary  
 U.S. Army Ballistic Research  
 Lab.  
 ATTN: SLCBR-TB-P  
 APG, MD 21005-5066

Mr. Mark E. Mammele  
 Atlas Powder Co.  
 Reynolds Road  
 Tamaqua, PA 18252

Mr. Gerald L. McCurdy  
 Vought Aerosapce &  
 Defense Co.  
 MS MSF-12  
 P.O. Box 225907  
 Dallas, TX 75265

Dr. Guy D. McDonald  
 Johnson Controls, Inc.  
 5757 N. Green Bay Avenue  
 Milwaukee, WI 53201

Mr. David B. O'Connor  
 Lawrence Livermore National Lab.  
 P.O. Box 808, L-874  
 Livemore, CA 94550

Mr. Rodney N. Owenby  
 Sandia National Labs.  
 P.O. Box 5800, Div. 7132  
 Albuquerque, NM 87185

Mr. Barrie R. Perilla  
 Pennsylvania Power & Light Co.  
 1321 N. Plymouth St.  
 Allentown, PA 18103

Mr. Guido W. Politano  
 Delco Remy  
 2401 Columbus Avenue  
 Anderson, IN 46018

Mr. William R. Richardson  
 NASA Lewis Research Ctr.  
 MS 5-2  
 21000 Brookpart Road  
 Cleveland, OH 44135

Mr. Jack R. Seath  
 Canadian Forces  
 CFB Cold Lake  
 Medley, Alberta  
 CANADA T0A 2M0

Mr. Jerry J. Seitz  
 Los Alamos National Labs.  
 P.O. Box 1663  
 Los Alamos, NM 87545

Mr. Mustafa Stationwala  
 Pulp & Paper Research  
 Institute of Canada  
 570 St. John's Blvd.  
 Pointe Claire, Quebec  
 CANADA H9R 3J9

Mr. Jerome H. Stofletch  
 Sandia National Labs.  
 P.O. Box 5800, Div. 7132  
 Albuquerque, NM 87185

Mr. Jonathan E. Warwick  
 U.S. Army Corps of Engineers  
 (W.E.S.)  
 P.O. Box 631  
 Vicksburg, MS 39180-0631

## Drop breakup photo series.

B&W film at f 32.

Two lamps at 90° 250 BCP 25ms.



Drop at 120/sec. change nozzle and pressure to change size.

Enlargement.  $\frac{1}{2}$  on film



f 32 on plus x 4x5 film

Single flash 25ms as possible

Start the drop series of 120 cycle drops.

Keep photographing until we get some good examples

Start on 2nd floor camera but lens in magnification of 30.

Then 4<sup>th</sup> floor will take 12" of drops.

Special Summer Program 6.51s

- 3 -

Mr. James H. Westendorf  
Naval Surface Weapons Ctr.  
Dahlgren, VA 22448

Mr. Thomas A. Wynne  
Caltech/MS 111-115  
Jet Propulsion Lab.  
Pasadena, CA 91109

Mr. Drew D. Erickson  
Worcester Poly Tech Institute  
Dept. of ME  
Worcester, MA 01609

Mr. Allen Latham, Jr.  
Haemonetics Corp.  
400 Wood Rd.  
Braintree, MA 02184

Mr. John A. Saccoccio  
U.S. Army Materials Tech. Lab  
Arsenal St.  
Watertown, MA 02172

2  
19  
16  
37.

3 more

June 24 1986 Harold Eggerton (Walden Dr. at 9 am)

Esther goes with me at 11:30 am to  
Rochester NY. to attend the SPIE convention. I am  
invited to introduce Ed Ford who will speak on  
the one stop camera development.

Then to dinner at noon & give a lecture  
about leading lights. We come home then.

June 26, 1986 We returned from Rochester at 5:55 pm on  
Piedmont. 1 hour 45 min. tailwind!

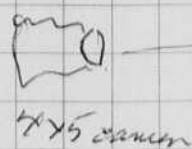
Lecture tonight at B.V. for Melcher, to Electrostatic Conference  
Mark N. Horowitz B.D. 110 Commonwealth St Boston MA  
02115

Sharon Brixy Grad Student - movie with graphite plate  
Oster Point Lab MIT Panensky

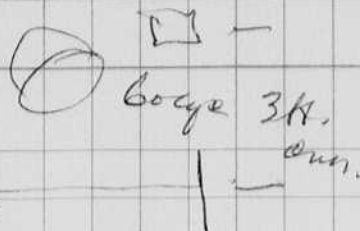
June 27, 1986 Lecture last night at B.V. for the  
Electrostatic Society (Jim Melcher).

Joe Edwards Anderson Computers 65 Payson Rd Belmont  
MA 02178  
has declaration from them from Korea. (314 of ICBM Price)

June 29 1986 Jensen.  
 Home Experiment microscope



4ft.



60 cycle

1st test

f 22

3 min DK 50

Thick.

1st test. focus for

Suggester got f 16  
 Develop 5 min.

mix film f 16 5 min dev. DK 50 2 lamps at 3ft +  
 film seeds.  
 focus N.G. exposure ok but blur (f 16)  
 aperture N.G.

1. More light sensor.

2. control wire and position better  
 N.G. out

Monday June 30 1986 H. Jensen

#1

microscope seeds

g Hold for drops.

Blink down.

60/sec., 3' from camera lens. mix film. 5 min DK 50, 2. Good camera at 2 feet side

The seed drops about 2 feet and then goes into a  
 spray. measure the speed of turn.  
 Speed of drop.

#2. Lamps angled down 2-120 cycle at 2 ft  
 f 16 mix film. Drop tried down. f 16

10:50#  
 am.

3 120 to

Looks ok but extra flares by camera

5 min f 16.

Top leg at 45°.

22

4 120 to Take out of slot N.G.

Sunbeam 38-584 3-4619

HAROLD E. EDGERTON (SCHEDULE FROM April 11 to August 11, 1986)

Harold Edgerton

4-405

- Fri Apr 11 Burton Corner Dorm, 5-7pm
- Mon " 14 NE Aquarium, 12:30pm meeting  
Bruce Dale, National Geographic Society (14, 15 & 16th)
- Wed " 16 MaryLou Dixon arrives, 2pm  
Faculty Meeting, Edgerton Award to Jeff Lang, Dept. EECS, 3:15pm
- Thu " 17 MaryAnne & Rosemary Hubbard arrive
- Fri " 18 Angela Conley & student (adm. office) photo interview, 3pm, x4791  
Channel 4, Edgerton & Gemeshausen, 8pm
- Sat " 19 Bob & Nina Edgerton arrive
- Mon " 21 MaryLou's birthday  
Estelle Jussin, writer from Abrams Publication, 10:30 to 12 noon  
Erla Zwingle - staying at the Hyatt (Home # in NYC 212-679-8192)
- Tue " 22 EG&G, Inc. Annual meeting, starts at 10:30am (Marriott, 110 Huntington Av.)  
Erla Swingle to interview you at MIT, 2:30pm  
Museum of Sci., Trustees Meeting, 4:30pm  
MIT Museum, Opening reception of Swiss exhibit, 5-7pm
- Wed " 23 Leave for Hickory, NC
- Fri " 25 dinner
- Sat " 26 Open house, Hickory lunch (Maybe)
- Mon " 28 Hickory, 4pm?
- Thu May 1 Leave for Nebraska
- Sat " 3 Woodbine for Jessie' 100th birthday
- Sun " 4 Return to Boston
- Mon " 5 Council for the Arts at MIT, 11 to 2pm  
Medical Apt. with Dr. Wolpow, 1pm
- Wed " 7 The Landers *Hermany*  
WGBH-TV - NOVA with Henry Becton, Pres. of GBH +(Dr. Landers)
- Thu " 8 Emeriti Luncheon, 12noon
- Fri " 9 ISP program, freshpeople, 40 in group, 3 - 5pm lecture, rm. 4-402
- Sat " 10 Photo exhibit
- Sun " 11 AMC, 5 Joy St., Boston for Sylvia Gilliman - judge contest, 4pm
- Mon " 12 Faculty Club, (Prof. Tom Kochan) for Edgerton Award to Jeff Lang, 12noon
- Tue " 13 Jack Naylor's house, 5:30 for Hamilton Club
- Wed " 14 Anthony's Pier 4, 12noon (?)  
Cliff Williams  
Museum of Sci. and the Boston Pops, 5pm
- Thu " 15 Saxon at 100 Memorial Drive, 7pm
- Fri " 16 Saxon's office (5-205) party for J Stratton's 85th birthday, 3pm
- ✓ Sun " 18 EE Dept. party at the Museum of Fine Arts, 6-8pm
- Mon " 19 PEO at 100 Mem. Dr. 6-8pm  
NE Aquarium, 12noon
- Tue " 20 MIT Museum, class of '27 meeting, 12noon / David White x477 followed by
- ✓ Wed " 21 BUMP Seminar @MBL, Rm. 32 Loeb, Woods Hole, 11:30 (45 min. lecture) lunch
- Sun " 25 PEO



Nov 29 1986 Jensen

Obs

1st test

✓

1.7m

2.0

Groups

#1

6

6

#2

3

MISO#

one

3

1

22

4

1

Sum

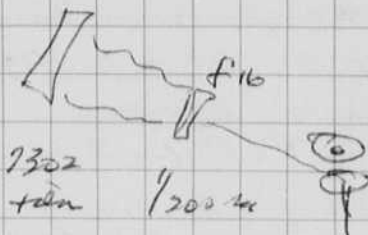
H. G. G. - Photo of gold (melted).

June 30 1986

2<sup>pm</sup> ERNESTO GUTIERREZ Rm 8-135  
MHD Flows in Matls. Sci.

X3-3222

Photos of Gold ball melted into  
hair frequency



28 mm  
2500fps  
at 1 mm

1. Blue Sensitive film to image light from Gold (yellow heat)  
9302 film
2. Strob light illumination, Problem - Shows  
mirror image of stroke on top ball.
3. 7302 film 1/2000 sec f16 no exposure due to overexposure
4. Trix 1/2000 sec f16. Very faint exposure of subject

Print by Lou to - to see the table.

July 22, 1986 Tuesday. 100 mem. drive Cambridge.

Ellen and Ches Dixon had operations at the Hockney

Hospital yesterday.

Bill MacRoberts helped me yesterday get a special stroke cone ready to ship to Bob Spertus at Argonne devices. A small short 1" gap neon lamp was used to give appearance and a short flash. Bob is photographing the rod and cooling of metal on a rotating disc drum.

To Hinton H.P. Aug 8 for wedding on Aug 10. 1 am Tues.

H&K go home with family to Winstan Salem.

Monday morning to Kebrant for (Liberty) H&K talk. - Slides.

Kens motel down Aug 17 to start suspect forms etc.

CAH Chicago from June 9, 1 am to 10. 26

Leave Chicago 210 - 5 Boston

Edna Guntell will see us in Chicago.

Handbook Aug 28

Mrs Smith 100 Sept 10 100 mem. drive.

Lectures:

Sept 22 MIT Lecture Sept 22 8pm 26-100. Slides - movies? - Students, Austin 3901 or 3911?

Sept 26 Cordova Museum 8pm Loc

" 29 4pm MIT ~~4-103~~ 54-715 Saver - 10 min.

St Paul min at 1 request - phone number 612 646-6104 DOZIER

Oct 11 Finnish Wedding Mark at 11 St Peter. Pam Meyer.

Evansville Ill. Plus K Photo display??

Oct 20 museum Winter evening lecture, min. Murlugan?

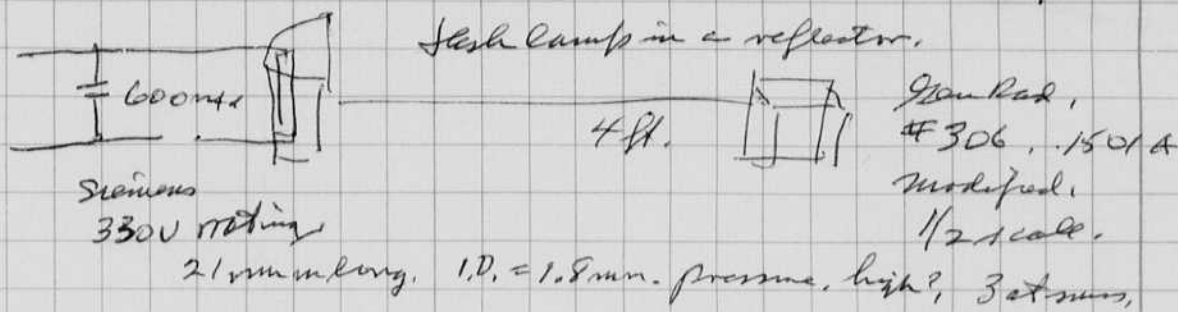
July 22, Tues 1986 100 Memorial Drive Cambridge Mass.

I worked on the revision of Electronic Flash Stroke Data. SPECTRA camera and slides.

H&K call Dennis tomorrow about weekend!

Tues July 29<sup>th</sup> 1986  
Havel Edgerton,  
Musc Roberts

Geo Harrison from Polaroid came in this morning with a batch of components of flash units.



300V Lamp Vertical.

48x16 = 768 BCPS.

$$\frac{300^2 \cdot 600}{2} = 27 \text{ watt sec.}$$

$$\frac{768}{27} = 28 \text{ with reflector}$$

" " LAMP HORIZONTAL 50x16 = 800 BCPS.

July 29 Geo Harrison brought 2 Japanese units with roller rod.  
Takahashi Jukushima + meter from Polaroid

1986 July 30 Lunch with Prof Schmidt. into roller rod  
Bob Buzamson runs Denver Hospital  
Jane O'Shea?  
We mistook the emergency dept.

Aug 1 1986 - Phone call from Natl Pub. Res. Work D.C.  
about Charlotte museum in Flycat. balloon?  
Call Bruce out on Friday.

81 82 83 84 85 86

1 2 3 x x 4,

Astron. Museum

Cambridge.

Sept 27 - out -

Pratt 3-456 MIT Lab

Tony 4415 office.

Plans are being made to use the ship, Edgerton, on  
Wed Aug 4 and Thursday Aug 5 with the Polaroid Museum  
plans to stand for vehicles.

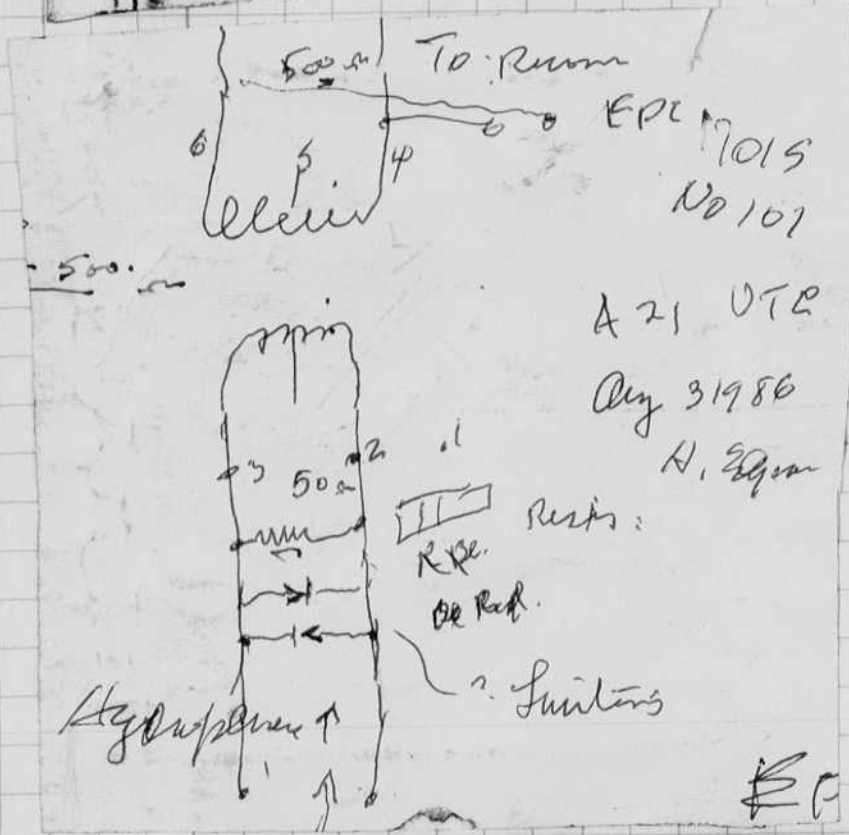
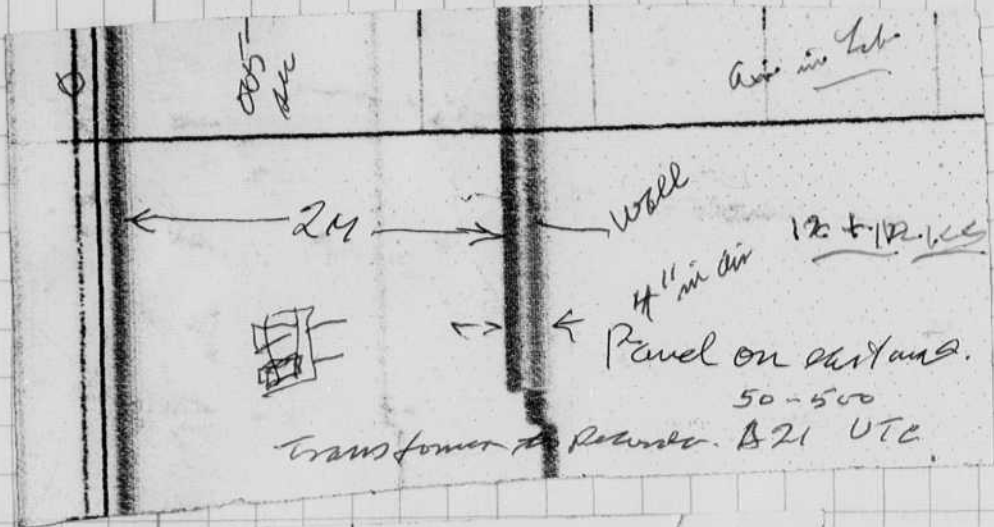
Rock Tomination Capt Edgerton will go to  
Newlett's Cove on Wed. The museum gear will be put aboard  
on Wed and tested for an afternoon on Thursday. In case of  
bad weather, the tests will be used on Friday.

Museum 749-4800 Ricketts Edg. 742-5780.

MIT 3-7136 Clifton.

Aug 4 1986 Harold Edgerton 4 - 406

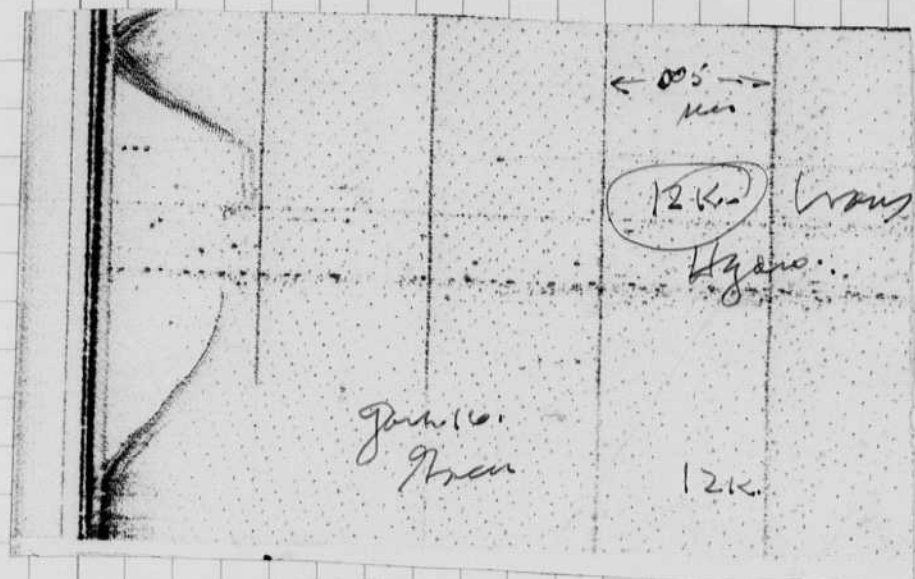
Tests made yesterday done with Peter and at Lab & Chas Room Door.  
 Sensor transducers 12K 6K 3.5 KC into mass Hyper phone. (Table Area)



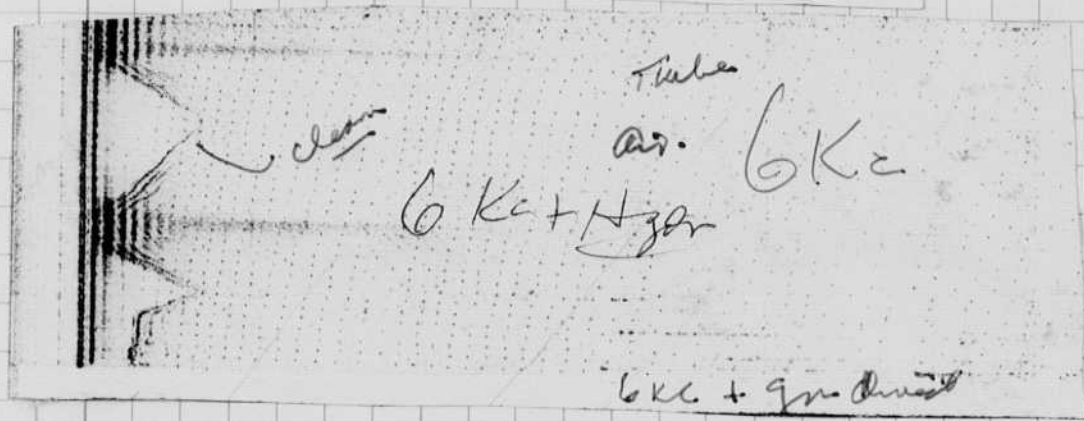
← Promotion  
 Mr Spaulding



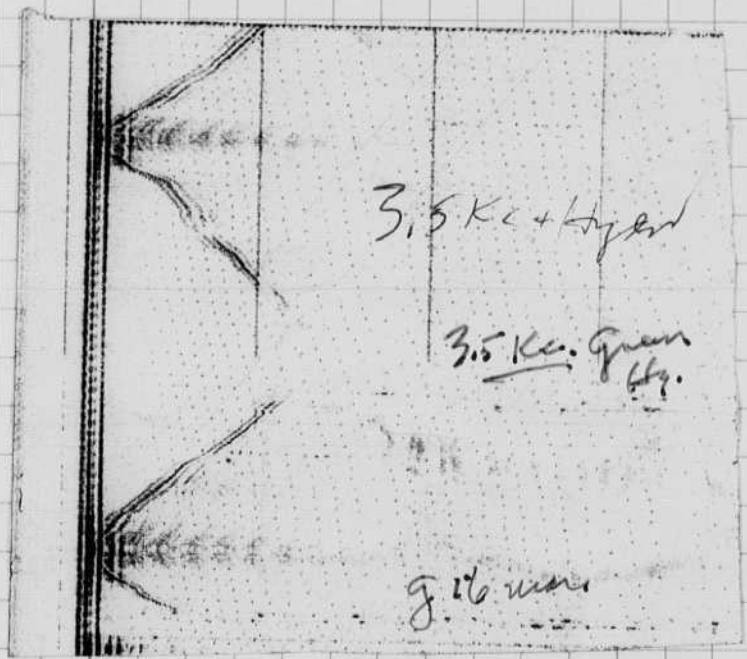
Enjoying the Aquarium's award reception and dinner are (left) Dr. and Mrs. Harold Edgerton (he invented stroboscopic photography and received the David B. Stone Award in 1982) and New England Aquarium chairman Mrs. Josiah Spaulding.



air



air

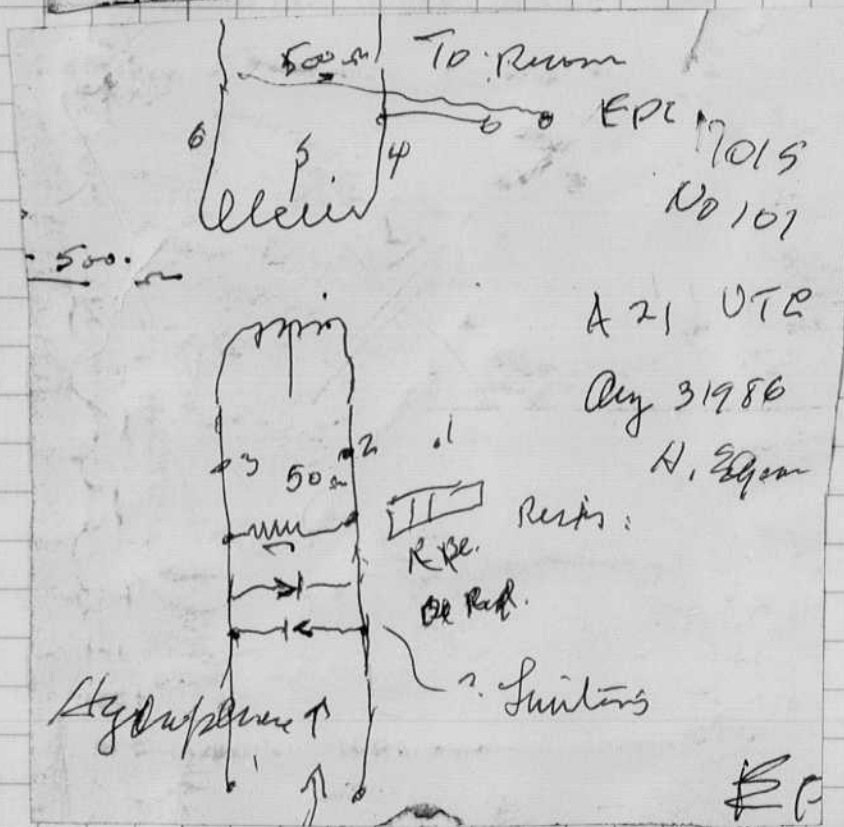
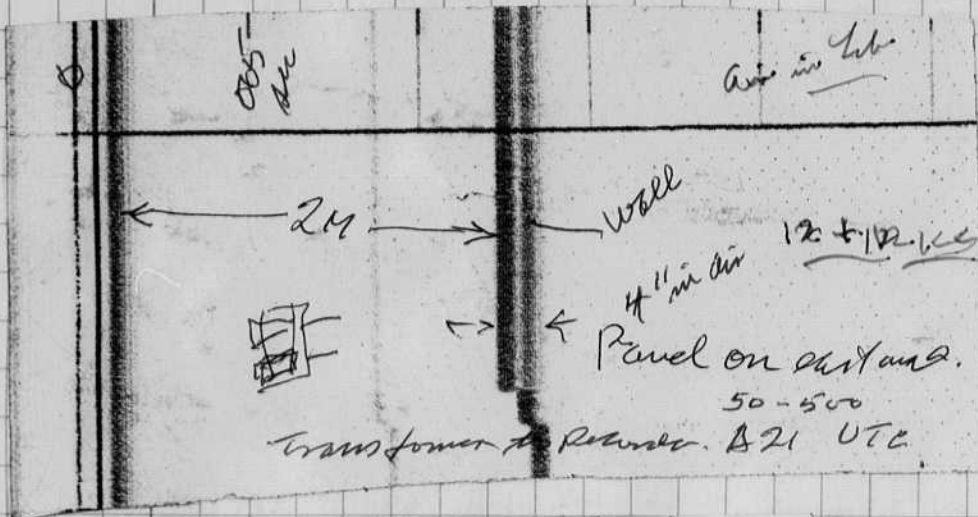


air

adjust to gain to get better signal.

Aug 4 1986 Harold Edgerton 4 - 406

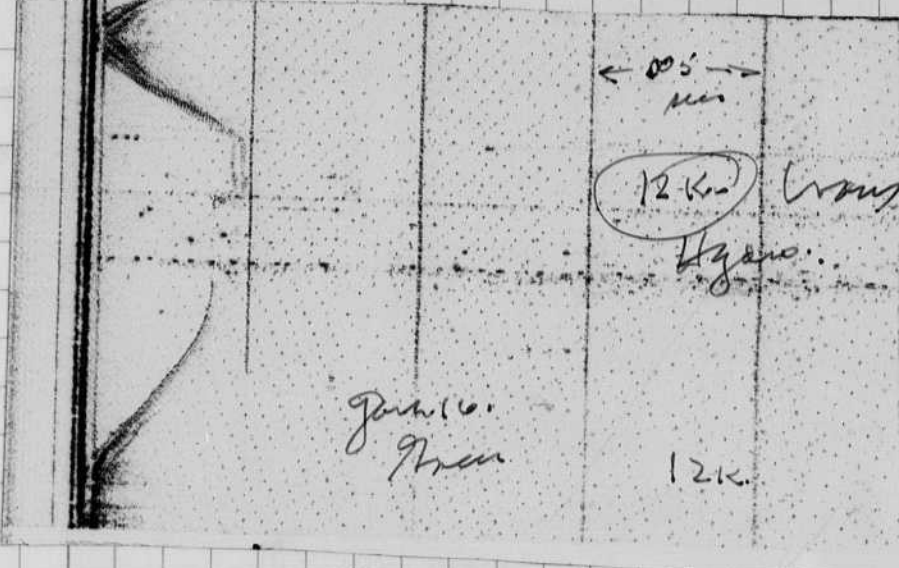
Tests made yesterday some with Peter and at Lab & Chas Rho. Dods.  
 Sensor transducers 12K 6K 3.5 KC in mass Ag 20 plane. (Teflon)



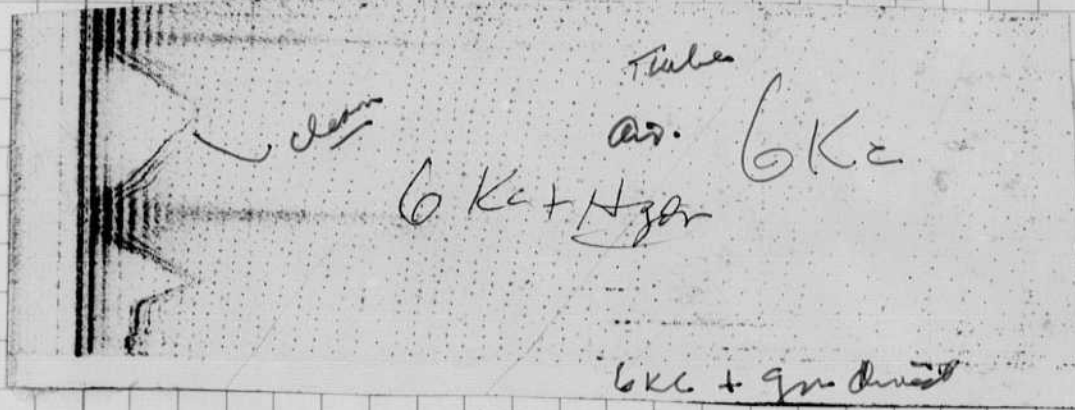
← ~~Spaulding~~  
 Mr Spaulding



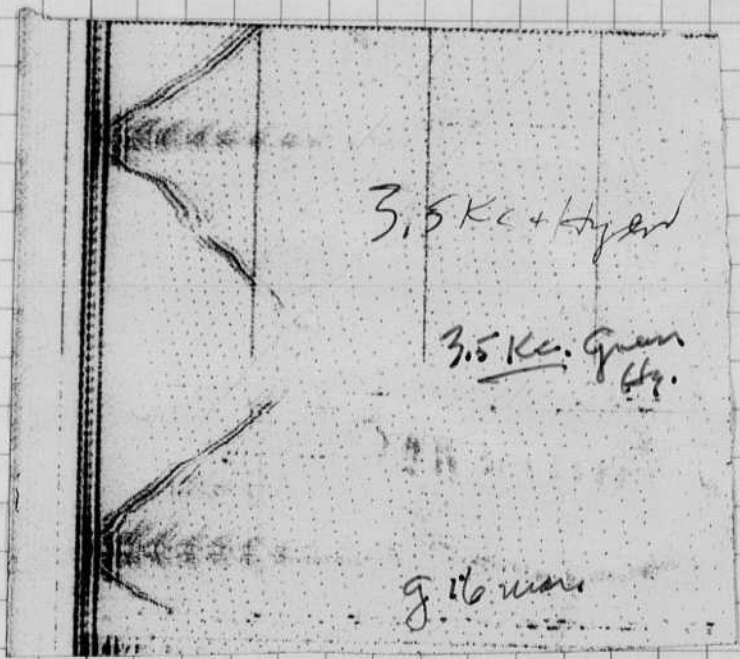
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air



air



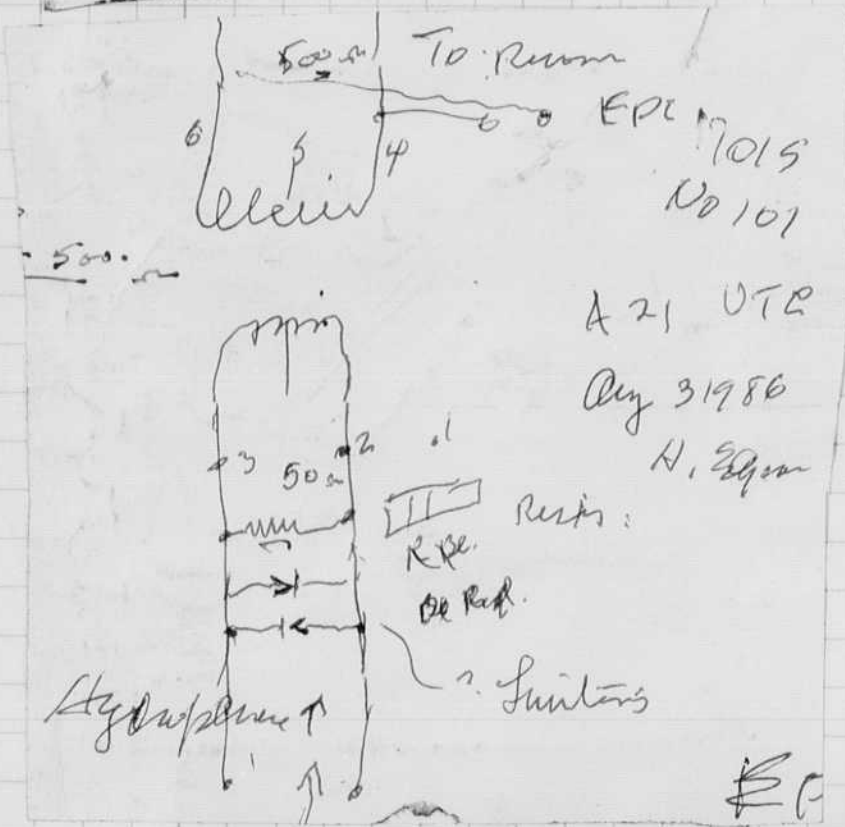
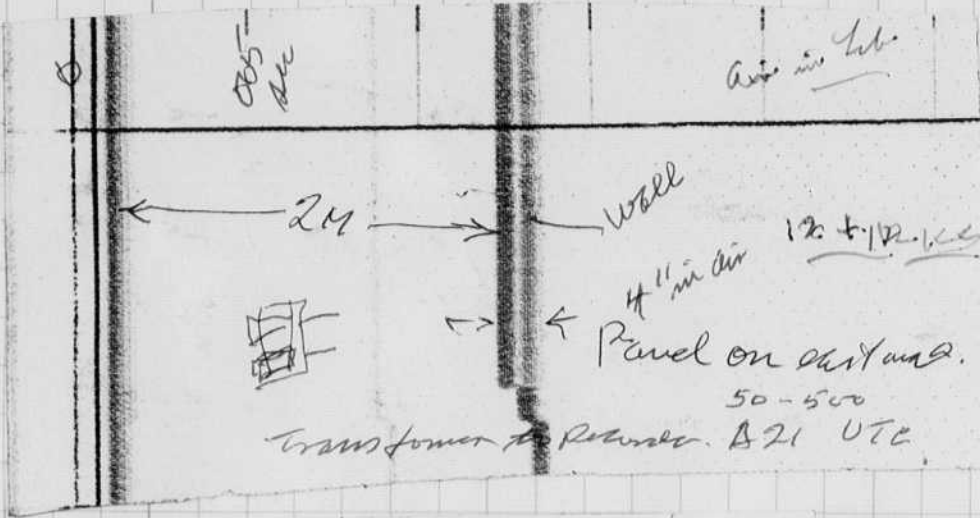
air

adjust to gain to get better signals.



Aug 4 1986 Harold Edgerton 4 - 406

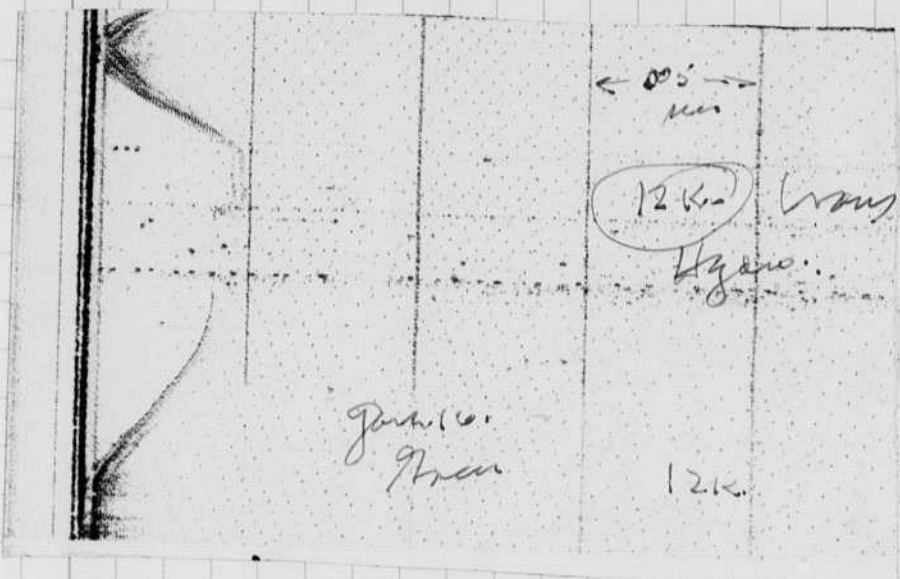
Tests made yesterday some with Peter and at Lab & Chas Rhea Dore,  
 Sensor transducers 12K 6K 3.5 KC into mass Ag or phase. (of table, of floor)



← Promotion  
 Mr Spaulding



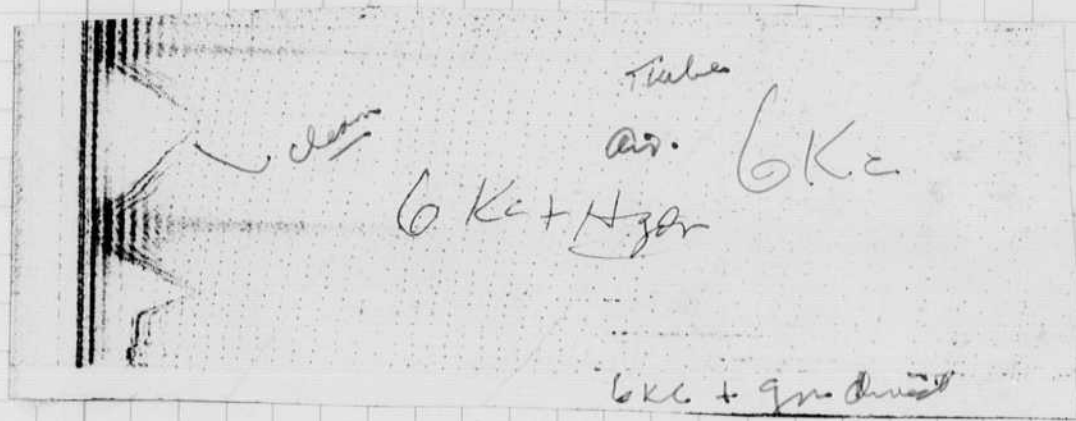
Enjoying the Aquarium's award reception and dinner are (left) Dr. and Mrs. Harold Edgerton (he invented stroboscopic photography and received the David B. Stone Award in 1982) and New England Aquarium chairman Mrs. Josiah Spaulding.



air

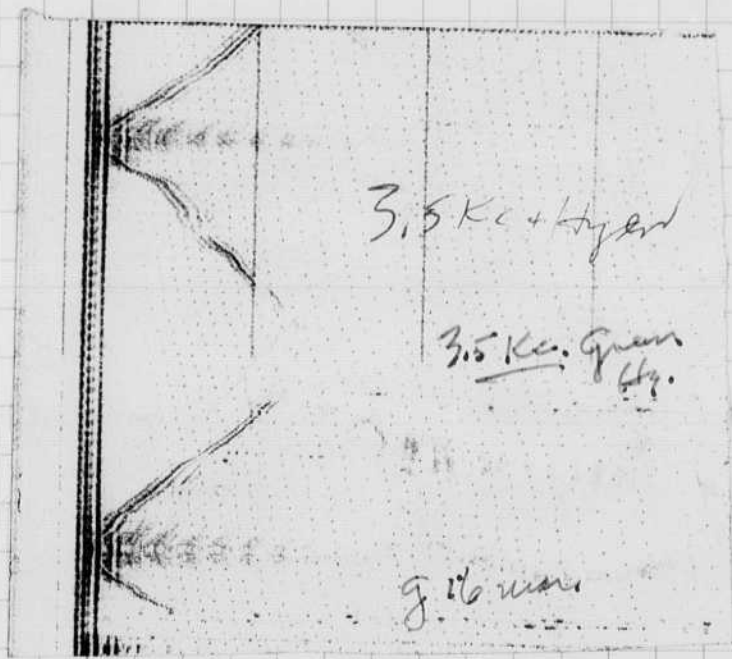
Jan. 10.  
Green

12 Kc.



air

6 Kc + green dust



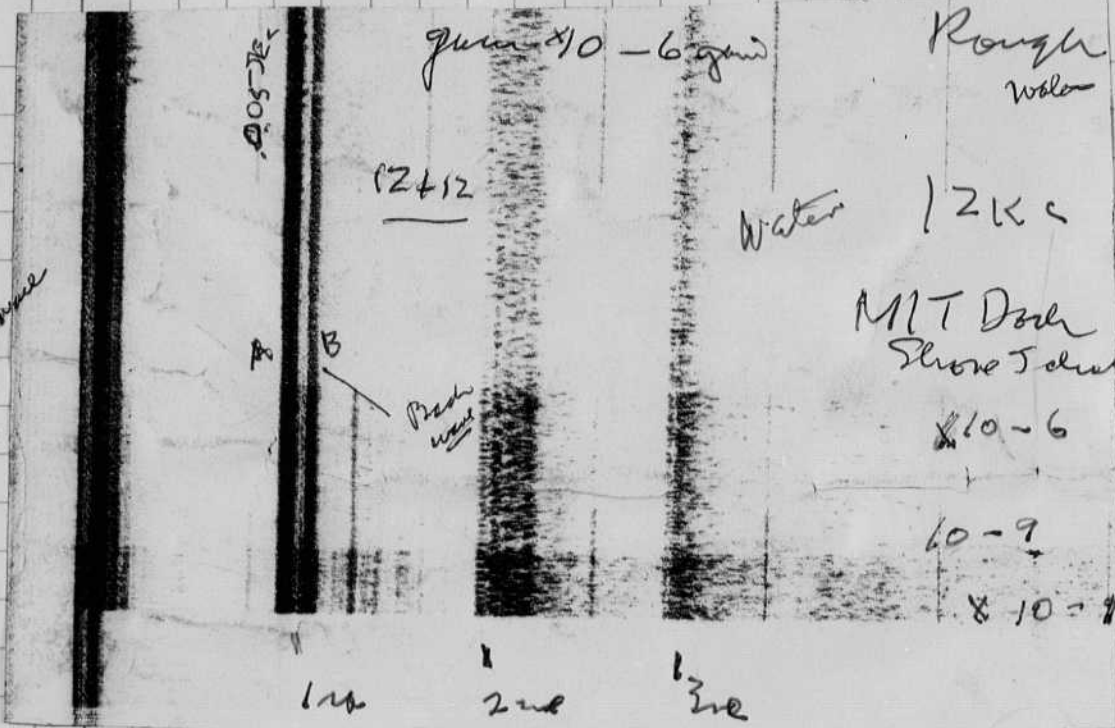
air

at just begin to get better signal.

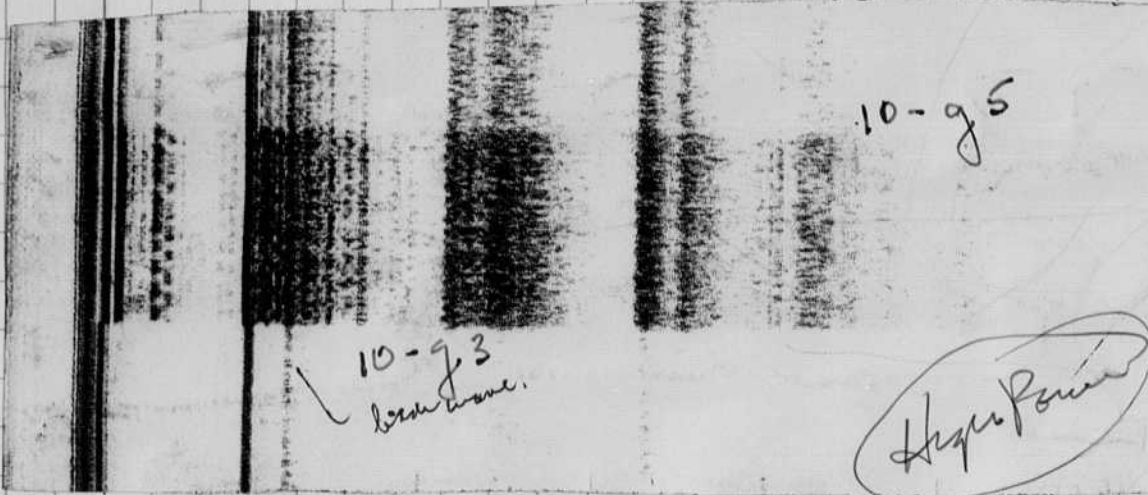
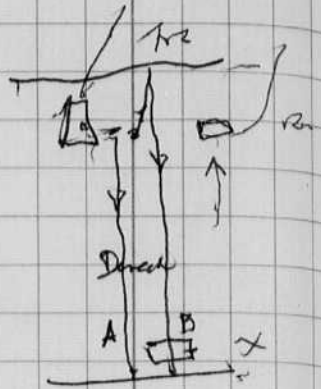
g 16 mm

Handed Reports

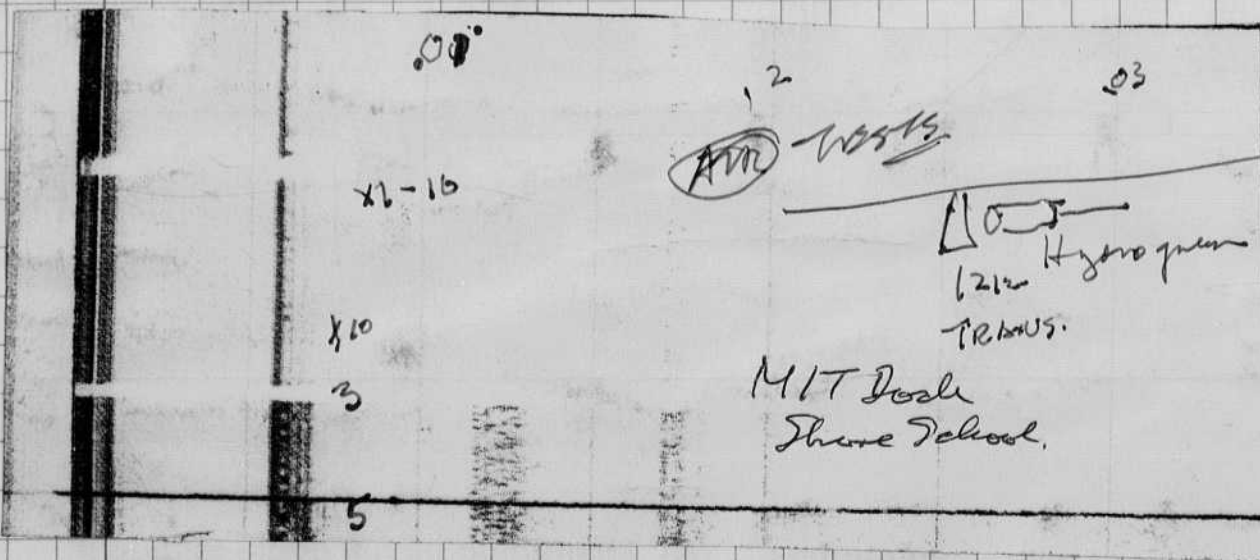
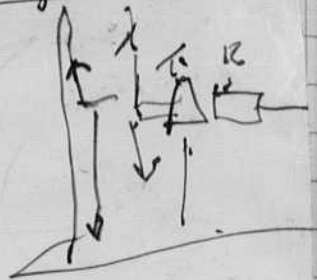
Old River. MIT Siding  
Doch. opposite  
School St.



Some small  
are to be  
in the  
transmission



Lined trans and  
Hypodermis

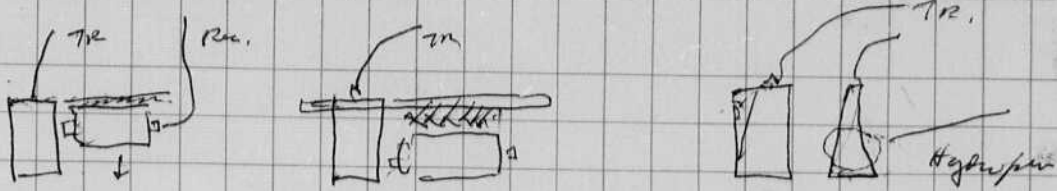


This assembly  
was mounted  
in wood and  
tested in the  
sink, on  
Aug 5 86

Aug 4 month 1986

15

Design a shield to reduce the "up" signal.



More experiments were made today with several transmitters and shields.

Conference # 11 with Long Cohen about EECI South Union Aug 5 1986

Aug 5 1986 Harold Edgerton

I worked with Belle Man Roberts all day on the development of a ring like the one above. We used a 12 Kc Zucca as the transmitter. The receiver was a mass layer plate (with a grant off). Plenty of wood was used to damp out the back wave and others of the transmitter. Numerous experiments were made in the sink in the lab. I will take the assembly to the Charles river tomorrow if time permits. I am very enthusiastic about the new arrangement.

I took the material about Electronic Tech. Stodd to Cohen at the RT room. He now has the entire package and said he would start at once to get out the 2nd edition. The revision was minor. I added a reference on the magnetic field shutter and showed some results.

I have been trying to get more definition. Then I will work on more penetration.

I hope to activate the 3" E.P.C. for this penetration experiment. It should be easier to carry around.



Columbus Ohio

Feb 20 1986

Whit &  
Larkin

AS ↑

Ames Dept.

Opposite MIT School  
Doherty School St.

June 10 - 6 gms

Rough water

Water 12Kc

MIT Doherty School

8-10-6

10-9

8-10-9

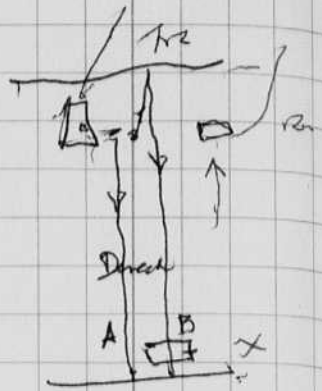
1st 2nd 3rd

0.05-75

12412

Peak

Some small amounts of lead in the transducer



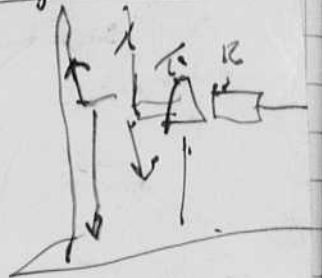
10-95

10-93

transducer

Hypodermis

Inward transducer  
Hypodermis



00

12

03

AVM - tests

1212 Hypodermis

TRANS.

MIT Doherty School

8-10

3

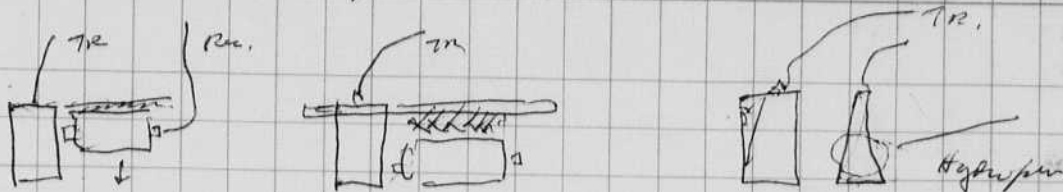
5

This assembly was mounted in wood and tested in the lab on Aug 5 '86

Aug 4 month 1986

15

Design a shield to reduce the "sub" signal.



More experiments were made today with several transmitters and receivers.

Conference at 11 with Long Cohen about Elect Search Under Aug 5 1986

Aug 5 1986 Harold Edgerton

I worked with Billie Mae Roberts all day on the assembly of a spring line of one about. We used a 12 Kc. source as the transmitter. The receiver was a narrow band plane (with a grantoff). Plenty of wood was used to damp out the back wave and others of the transmitter. Numerous experiments were made in the sink in the lab. I will take the assembly to the Charles river tomorrow if time permits. I am very enthusiastic about the new arrangement.

Took the material about Electronic Search. Took to Cohen at the MPT room. He was was the entire package and said he would start at once to get out the 2nd edition. The version was minor. I added a reference on the magnets of his clutter and showed some results.

I have been trying to get more definitions. Then I will work on more penetration.

I hope to activate the 3" E.P.C. for this penetration experiment. It should be easier to carry around.



Columbus Ohio

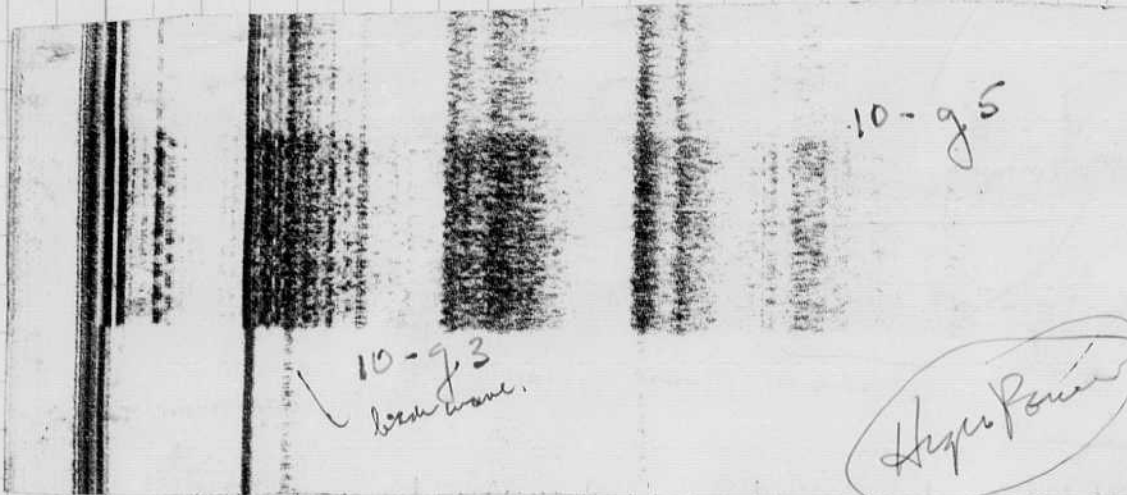
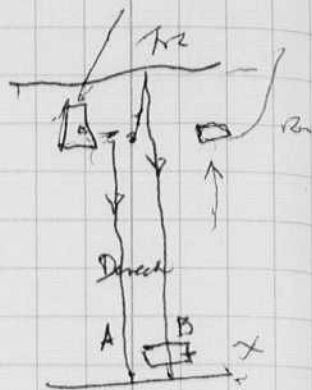
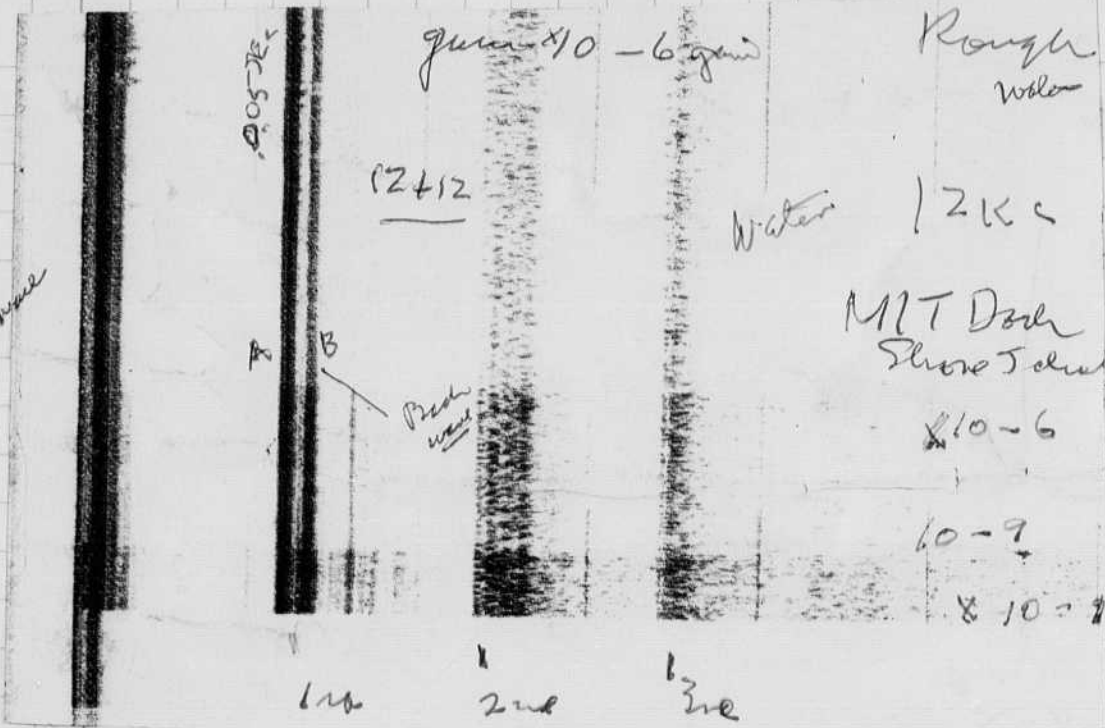
July 20 1986

Whitney  
Lester

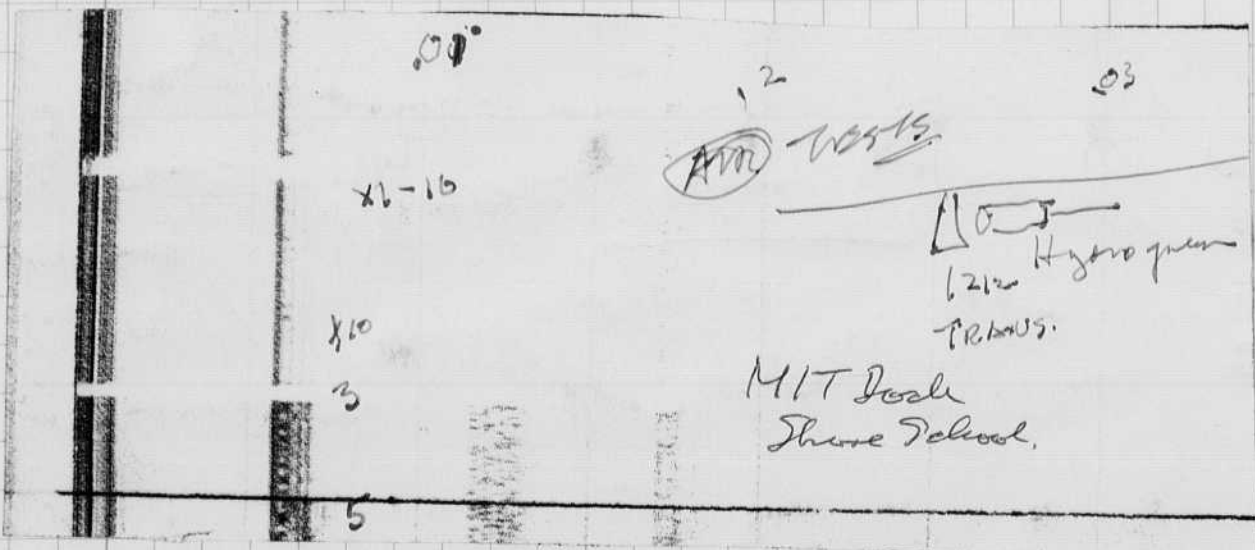
AS ↑

Harold Roberts

Old River - MIT Saly  
Doch. Opposite  
School St.



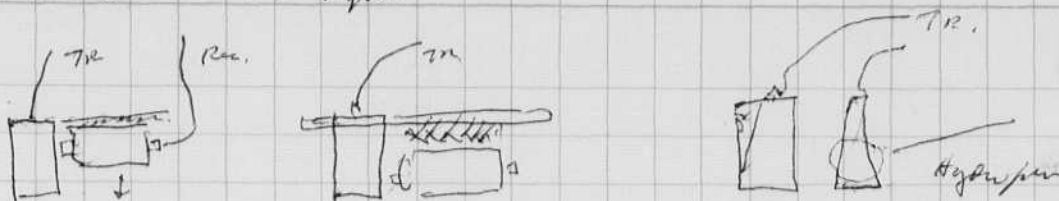
Low angle transmission  
Hydrogen



This assembly  
was mounted  
in wood and  
tested in the  
link on  
Aug 5 86

Aug 4 month 1986

Design a shield to reduce the "up" signal.



More experiments were made today with several transmitters and shields.

Conference at 11 with Long Cohen about ELET South Haver Aug 5 1986

Aug 5 1986 Harold Edgerton

I worked with Bill's Man Roberts all day on the assembly of a spring line that we about. We used a 12 Kc Quasar as the transmitter. The receiver was a mass hyper phone (with a grant app). Plenty of wood was used to damp out the back wave and others of the transmitter. Numerous experiments were made in the sink in the lab. I will take the assembly to the Charles river tomorrow if time permits. I am very enthusiastic about the new arrangement.

I took the material about Electronic Flash. Took to Cohen at the MIT room. He now has the entire package and said he would start at once to get out the 2nd edition. The version was minor. I added a reference on the magnets of his shutters and showed some results.

I have been trying to get more definition. Now I will work on more penetration.

I hope to activate the 3" E.P.C. for this penetration experiment. It should be easier to carry around.



Columbus Ohio

Feb 20 1986

Richard A.  
Leahy

↑



Notebook # 36

### Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 14 and 15.

Item(s) now housed in accompanying folder.

EDGERTON HB

FEB 25

6.163 STROBE PROJECT LABORATORY - SPRING 1987 ✓  
ROOM 4-405 253-4629

PERSONNEL

Dr. Harold E. Edgerton, 100 Memorial Drive, Cambridge, 617-253-4629, 864-4790  
Charles Miller, 116 Bingham Rd., Carlisle, 617-253-4629, 369-7074  
Jean Mooney, 27 Birch Rd., Watertown, 924-7124,  
Bill MacRoberts, 105 Whidden Ave., Whitman, 617-253-4629, 1-447-4172  
Tim Brehm, 27 Valentine St., Cambridge, 864-0635,

STUDENTS

Adams, Christopher, MIT - Burton House, Room 333A Cambridge, 5-8309  
N Athow, Jon, MIT - 500 Memorial Dr. Rm 416, Cambridge, 225-8816  
Carducci, Elizabeth, 410 Memorial Dr., Room 412B Cambridge, 5-8345  
Dewilde, Darlene, 473 Memorial Dr., Cambridge, 5-7503  
Friedman, Joel, MIT - East Campus, 3 Ames St., Wood 514  
Cambridge, 5-6544  
Goh, Meng-Yong, MIT - McCormick Hall, Room 323 Cambridge, 5-8523  
Goykhman, Dmitry, 22 Magazine St., Apt. #7 Cambridge, 491-6396  
✓ Halle, Michael, MIT - Senior House, Cambridge, 5-6680 Wa  
- Lee, Janet, MIT - 320 Memorial Dr., McCormick Room 507 Cambridge, 5-8587  
Licini, Joyce, MIT - Burton House, Room 254C Cambridge, 5-8263  
Lombardi, Chris, 4 Ames St., Cambridge, 5-6655  
Long, Gordon, 97 Bay State Rd., Boston, 247-8691  
McKenna, Michael, Senior House, Cambridge, 5-6685  
Merida, Sofia, 500 Memorial Dr., Cambridge, 5-8818  
- OConnor, Kevin, Kevin, Mr., 19860908, 233 Mass. Ave., Cambridge, MA, 02139, 661-4111, , 6, 19870606, Victor Zue, Parent, 19860522, 351 Mass. Ave. , 02139  
Ravese, Mary, 320 Memorial Dr., Cambridge, 5-8582  
VI - Roberts, Jim, Senior House, R102 Cambridge, 5-6102 ce  
Seiden, Alex, 64 Bay State Rd., Boston, 266-2827  
Shames, Arlene, MIT - Baker House, Room 334 Cambridge, 5-7334  
Spence, Hartie, 99 Bay State Rd., Boston, 266-7021 JJA -  
Steinbok, Victor, MIT - Bexley, Room 408 Cambridge, 5-9648  
Tam, Javier, 473 Memorial Dr., Cambridge, 5-7502  
Underkofler, John, 351 Mass. Ave., Cambridge, 547-4019  
Wethers, Kelly, 320 Memorial Dr., Room 406 Cambridge, 5-8546

THESIS STUDENTS

✓ Athow, John, 500 Memorial Drive, Room 416, Cambridge, 225-8816,  
Munson, Kenneth, Baker House, Room 438, Cambridge, 225-7188,  
Murgia, Marco, 500 Memorial Dr. - Rm 566, Cambridge, 225-8991, 253-8761  
Sisak, Steven, 58 Manchester Rd., ZBT House Brookline, 734-3650,  
Wilson, Jenneine, 29 Academy St., Arlington, 643-4544, 253-4048

STUDENTS 887

STUDENTS 87  
STUDENTS 1987

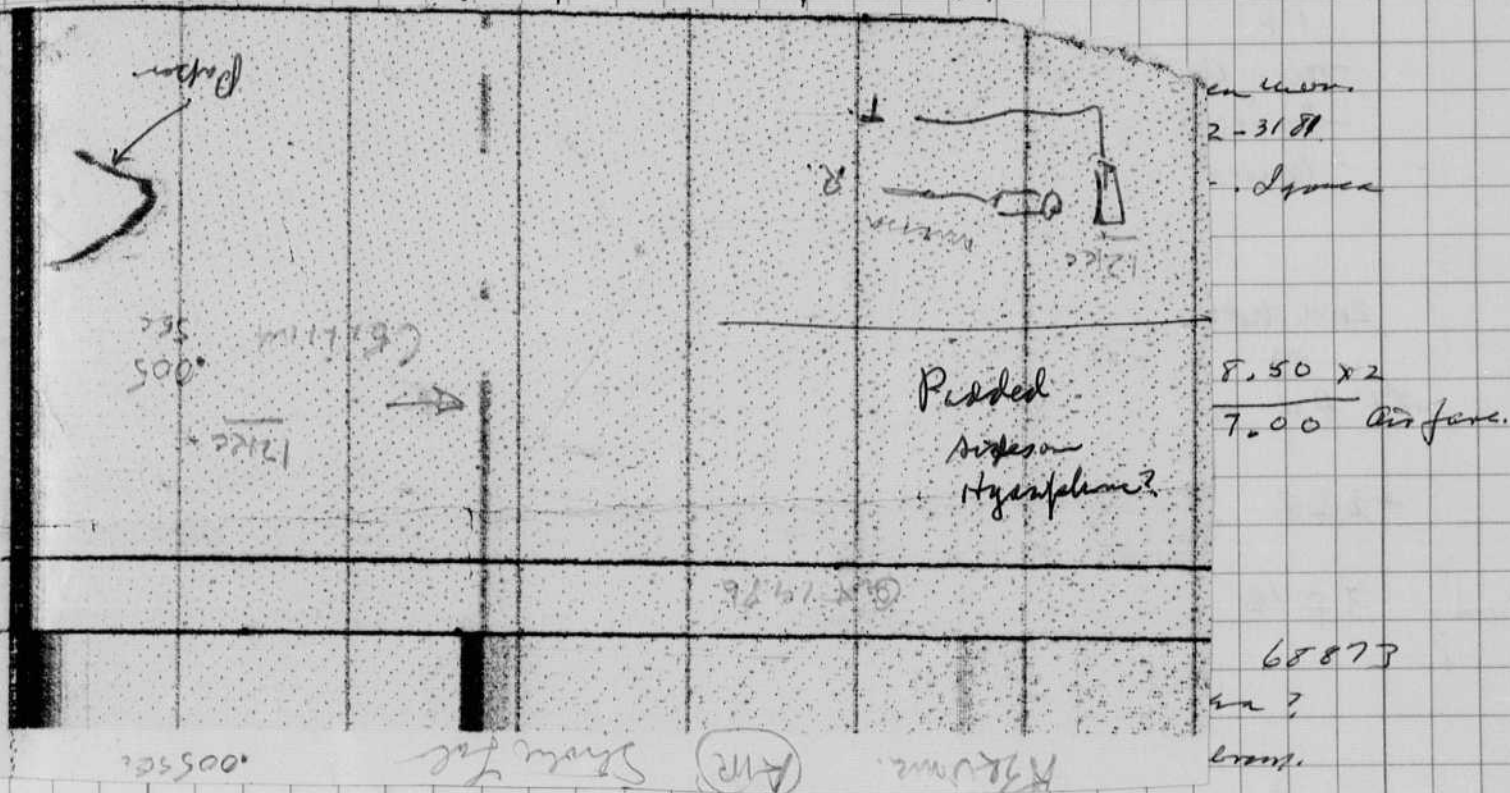


Aug 15 1986

Harvard Edgecombe Returns from trip to Highway 22, and Cannon Mountain.

Returned at 530 pm last night from Lincoln Vebor after 2 visits to Cannon. Trip included

Winterton Salem - visit by Dr. Jan Key and 2 children Rebecca and Emily, drove to Highway 22, for woods of Glenn Dixon and Kester Thayer



Aug 18 1986 H2 & Peter visit Propeller position

Loc 42° 22.63' 70° 44.75' Position ±.05' error.  
Boston Light.

W or A

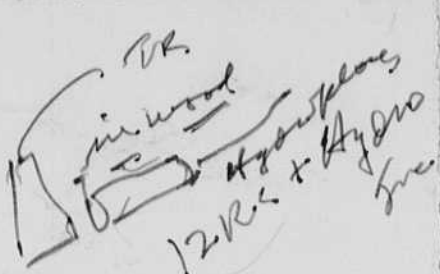
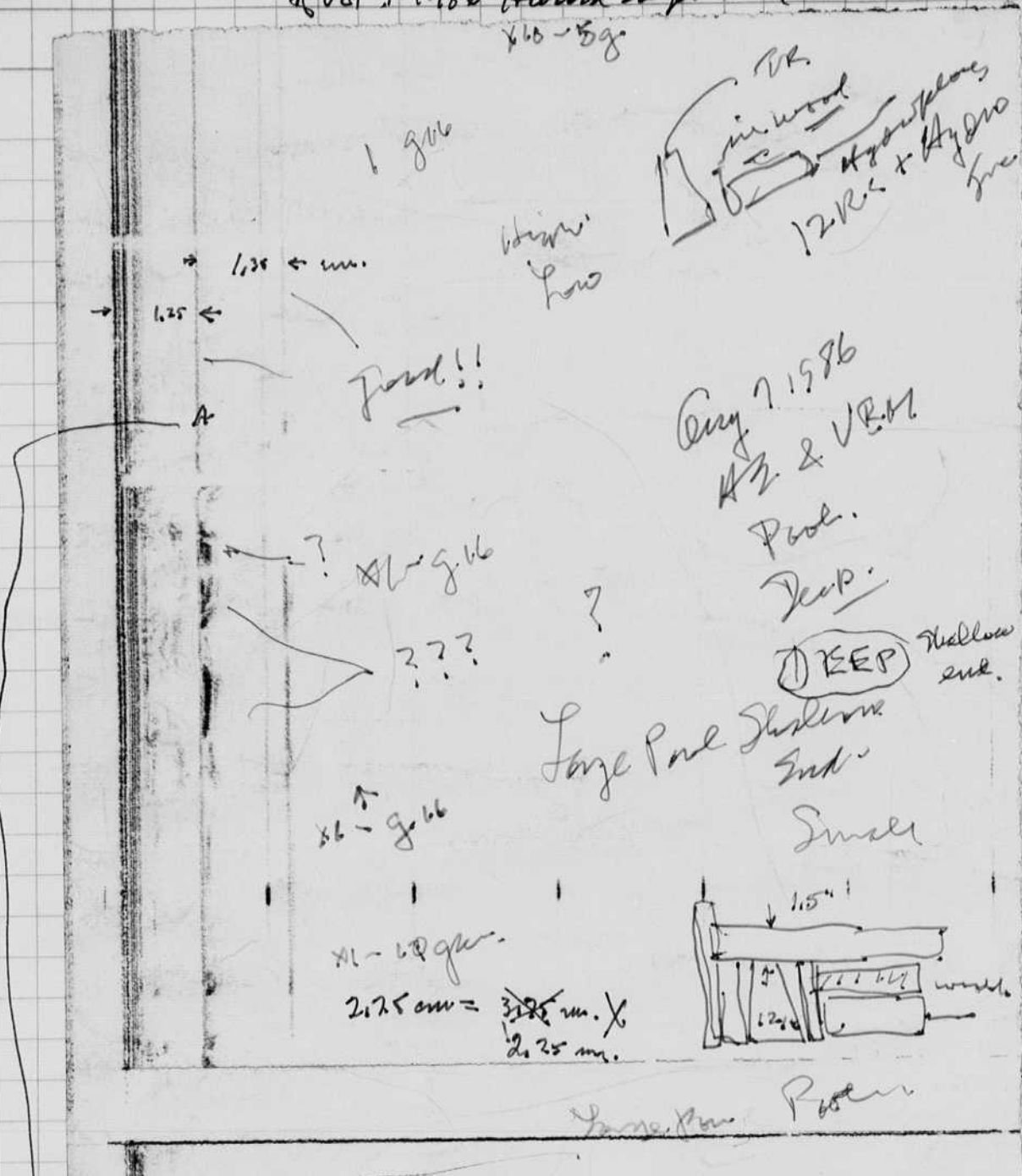
⊕  
Buoy on map

Hand DC

AB get boxes of debris. 13267 Locum Done Aug 21 1986

Rusty  
 AUG 7 1986 Harold Edgerton & V.E. Van Roberts

x66 - 8g



AUG 7 1986  
 H.E. & V.E.M.

Pool.  
 Deep.

DEEP shallow end.

Large Pool Shallow End.

Small

$$d = \frac{300}{2} = 150 \times 0.015 = 2.25 \text{ m}$$

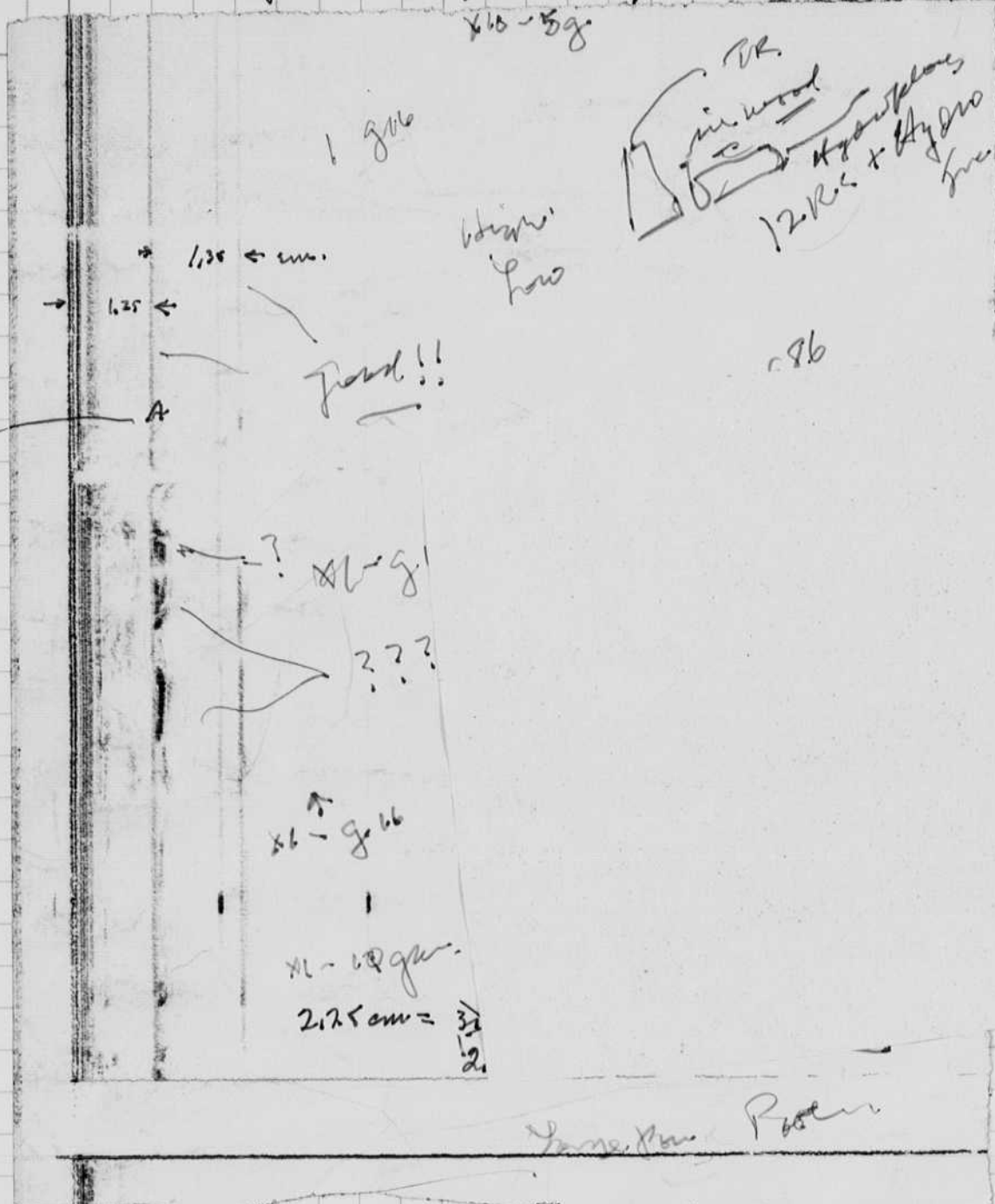
Torbo of B.P.C. around 100 and 12K + Hydroplone Drum in NW part at shallow end of the Big Pool.

There was plenty of wood around the torbo matter which floated at the surface of the water.

"A" I believe is the bottom echo. Lines are at 3.75 m spacing. 2.25 m.



Aug 7 1986 Hand Elogton & V.E. MacRobert



z 1504.015  
z 2.25  
m

Tests of B.P.C. around 101 and 12KL + Hydroplum Drum in NW part at shallow end of the Big Pond.

There was plenty of wood around the tests which floated at the surface of the water.

"A" I believe is the bottom echo. Lines are at  $\frac{3}{2}$  m spacing. 2.25 m.



Aug 15 1986

Howard Edgerton Returns from trip to Hickory N.C. and Aurora Nebraska.

Returned at 530 pm last night from  
Lincoln Neb after a visit to Aurora. Trip includesWinston Salem - met by Dr Jan Key and 2 children Rebecca and Emily,  
Drove to Hickory N.C. for wedding of Glenn Dixon and Kelli Kauri  
Sunday Aug 10 at 1 pm at church. Large Reception.Lecture to Systems and Circuits Symposium in Lincoln Neb.  
Cornhusker Hotel 10 AM? Lincoln Neb for Dean Liberty 412-3187.

Aurora Kans motel, Riley - Glen Albem Club Baker program. Issues

short trip.

VAH to closing 910 am. - after night at air port Inn.

Air tickets, Costa Chelas, Rainbow travel. \$638.50 x 2  
\$12.77.00 Airfare.

Hotel in Lincoln 54.58

" Aurora 34.25

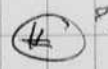
Expenses.

Hertz car 194.97.

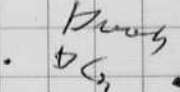
Roger Merchant 811 9th St St Paul Nebraska 68873

954-4994. Kans motel 415 9541 Aurora Nebraska?

Ken Wortman 694-3111. Aurora Nebraska - Ken Telron.

Aug 18 1986 H2 & Peter near Propeller PointLora 42° 22.63' 70° 44.75' Pointe +.05' am.  
Boston Light.W or A


Buoys on  
map.



Doubt  
D.C.

H2 get boxes of desert. 13267 Lorans Done Aug 21 1986

Aug 23 1986  
MIT 4-405.

H. 929  
KARI LKVAHLI.

(Diana) not here.  
1" long 1/8" diam.  
1.5 cm long.

movies of Tolichen small

Copypops (Woods Hole) 2 pair  
125 and less. small.  
250. large

Sun.

1st photos

F4

- out of focus
- frames overlapped too much
- camera didn't pull film fast enough

2nd photos

- F8

#1 f4 5302 film Low

over exp

#2 f8. 5302

Low.

over exp

3 f16 5302

Low Refocus 2" lens. Exp about right  
Sample habit of the last film.  
Copypops can be seen.



Experiments with Phonic IV camera. D.C. number.

cat no psi 164-8-132

SN 364 Input DC

Phonics Systems Bob Shoenly.

Santa Clara Cal. 95051 Aug 1986.

Parts just need

Fujinon conversion Lens SOLICOR

45 mm f2.9	210-202
50 mm f1.8	210-212
80 mm f8	210 008
165 mm f2.9	29304
210 mm f8	210-212

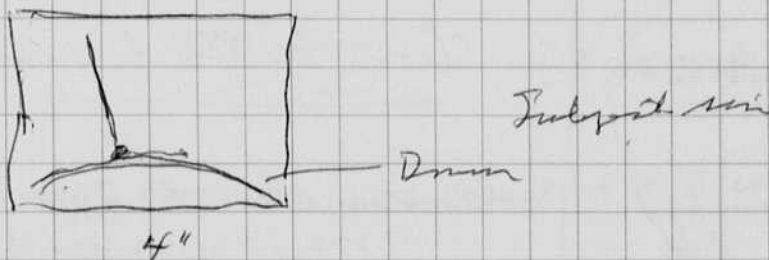
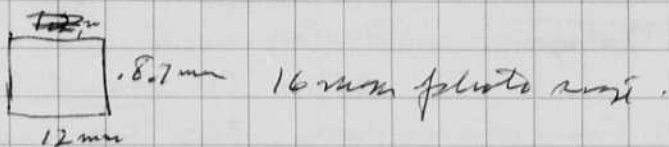
Fujinon Sprint motor II 29365.

Aug 25 1986 Monday.

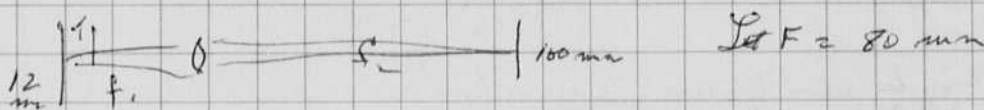
Harold Elgerton

Last night I heard to Bob Elgerton (Portrait) about the high-speed photography of the ribbon. He uses red hot liquid that hits a rapidly moving drum for rapid cooling.

Photo camera lens a 16 mm. focal. Pictorial area - 1 cm by



$$\frac{f_1}{f_2} = \frac{12 \text{ mm}}{4 \times 25.4} \approx \frac{12}{100} \approx \frac{1}{8} \text{ enlargement factor}$$



$F = 80 \text{ mm}$

$f_1 = 80 + T$

$f_2 = 8f_1$       $T = f_1 - 80$

$\frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{F}$       $F = 80$       $\frac{f_1}{f_2} = 8$

$f_2 = 8f_1$

$F = 80$

$\frac{1}{f_1} + \frac{1}{8f_1} = \frac{1}{F} = \frac{1}{80}$

$F \left( \frac{1}{f_1} + \frac{1}{8f_1} \right) = \frac{1}{80} F$

$F =$

$\frac{f_2 + f_1}{f_1 f_2} = \frac{1}{F}$

Aug 28 1986

Wilson Lombard used same circuit for time for journal. Works.

Many questions asked to edit.

Please call for paper experiments. will be here 2 or 3 1986

Aug 29 1986 Handed Edgerton.

338 03 22 336 1081 HAYDAR PASA - Istanbul  
 MU TEKNIK EGITIM  
 FAKULTESI  
 HAYDAR PASA

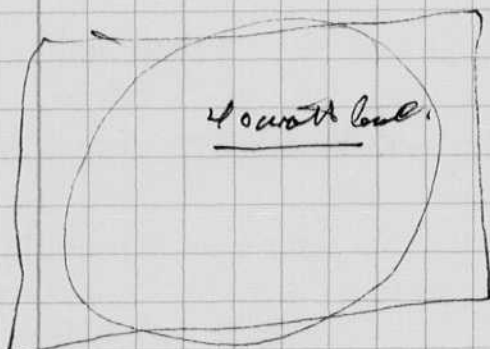
Dr. METIN YARÇIMCI  
 Istanbul, Prof. Metin Yarçımci, metin@yasar.com.tr Istanbul Turkey.

Discumette Golden Horn - no being cleaned up.  
 There is an artist museum at work on the city.  
 There is a rose color island in the pillar near St. Sophia mosque.

Photo test of PHOTO  
Southern

7302 film 16mm ASA 8  
 Meter needs 16.

250 - f4 read from meter  
 1000 - f14 f2 read  
 Lens is f4. 80 mm.



Lens 80 mm <sup>mm</sup> focus at 0.8 m

Operated at 1000 f.p.s. f4.  
 7302 film looking at  
 subject 40 watt lamp in the dark

! Exposure faint - very only on fogged spots,  
 note this film is only sensitive to blue light  
 The tungsten is weak in the blue!

not try higher power lamps.

I next used a projector lamp <sup>power</sup> at 1000 f.p.s. The film  
 broke on 3 tests, but on the next but with some  
 damage to sprocket holes. Exposure ok. at full aperture!!

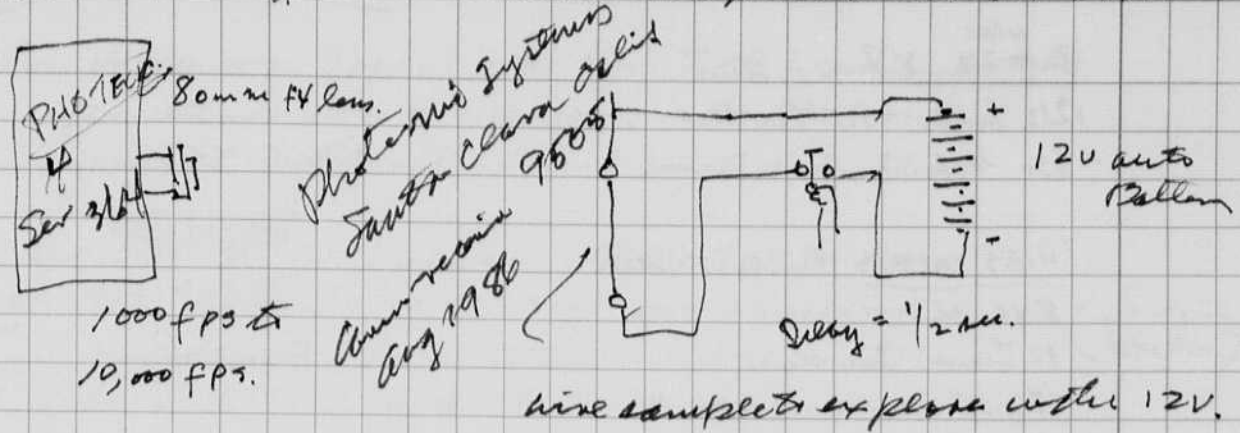
I talked to Bob Shoberg on Sat night Aug 29. He said to  
 use trix film with special perforations for a high speed  
 camera. I will get info on next Tuesday.

Subjects to study with high speed movies

Explosive wires. I plan to use short piece of bare wire  
 should across a 12 volt battery out type  
 (100 amp hour).

Samples Iron, Steel, Copper, Aluminum, Flint with # 18 or 20. Size  
 Brass, Stainless Steel.

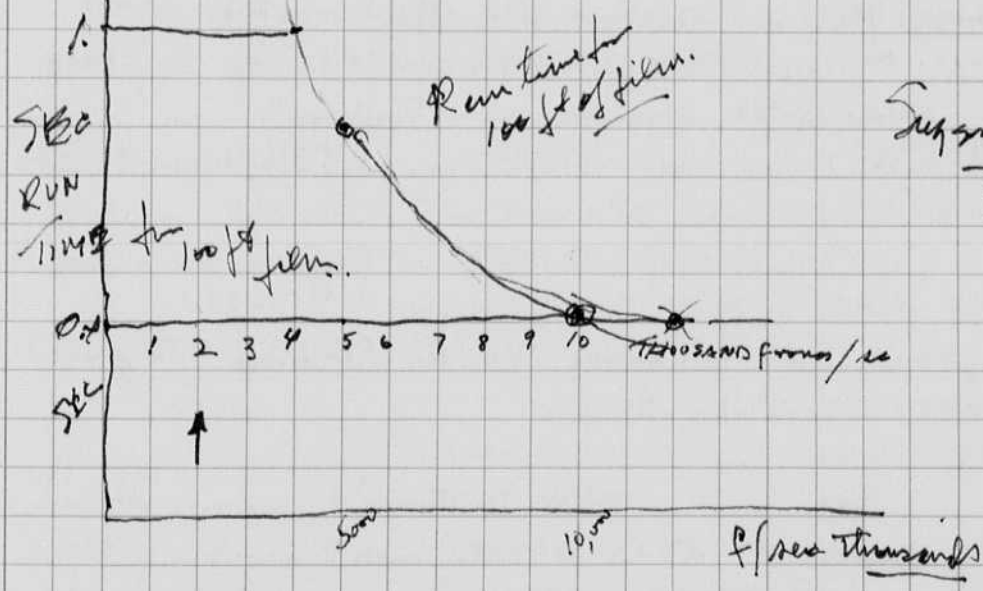
Handy, 26 motor  
 Aug 30 1986 Sunday. 100 mm Dr. Canon lens near B17 864 4790.



Back light water measurement lamp.  
 at 10,000 fps - 100 ft of film with 40 pictures per foot = 4000 pictures.

Run time =  $\frac{4000 \text{ frames}}{10,000 \text{ frames/sec}} = 0.4 \text{ seconds}$

at 5000 fps	the running time will be	0.8 seconds	0.8 sec.	100 ft film	32
4000	"	"	2.5	1 sec	4
at 2000 f.p.s.	"	"	5. seconds	x 2 per	8
10,000	"	"	0.4 seconds	0.4 sec.	1.6



Suggest 2000 fps. for first tests  
 R.T = 2 sec.  
 Set start at 1/2 sec.  
 then 1 1/2 sec for picture.

After first tests at 2000 fps. then stick with the camera gradually to 10,000 fps. - make adjustments for back light and alignment and start in delay of action.

Meeting of M.I.T. scheduled on Thursday Oct 23 at 8:30  
 Wednesday Oct 22

Boston Chestnut Wiermas Block.

Norman Dooling MIT Jan Grant.

Wed  
 Oct 22 8:30 am - Start.

12:15 Lunch MIT Jan club.

6:30 U.S. aquarium - Dinner.

THURS Oct 23 Boston theater

8:45 Club

12 Lunch Jan club.

3 pm closing remarks K.M.D.

3:30 Fab tours.

PHONE EDWARDS.

749-7800

742-5780 Rick

SAM Landsberger

3-2556 Cook RLB Help press - 1 hour of work etc.

Sept 2 1986 M.I.T. Vacation time over. Soon we will have  
 new crop of students.

Sept 4 1986 Monday Harold Edgerton.

Tim Boehm (Mech Eng MIT) met with Chris Miller today  
 and yesterday. He will be the assistant in the stroke Fab course for  
 few money returned from a imprints from the late Fab.

Mrs. Raykas and Chris Meier (Mier?) came in to look at pictures  
 for a book to be published by Abrams (N.Y.).

Sam Landsberger (MIT) is working on the under-water T.V remote  
 controlled vehicle. He cancelled out on a bid on the ship "Edgerton" today.

✓ RON KRUGER LASER INPUT WITH CORNENI where?

High speed video camera - shows action. 523,7900 by 2920

PHOTOIC CAMERA 10,000 FPS. SER N 364 DC MODEL D.C. 132V.

Photonic Systems Santa Clara Calif 95051 (Rock Aug 1986 photo & lenses)

FISHKEYS Corp. Lens: SONICOR

45mm	f2.8	210-202
50	f1.4	255-7928
80	f4.	210-208
165	f2.8	PIENTAX 29304
210	f4	210-212

Sept 10 1986 4:20 am

23

Harold Edgerton

Tom Uyemura (Japan) was here Sept 8, 9, enroute to Japan after attending the H.S. congress in South Africa.

We had a party at 100 memorial (dinner) on Sept 8. Eleven were present.

The class 6.132(?) started Sept 10 starts at 9 am. Tim Bohm (?) is to be our lab assistant.

A request came from lecture in 1987 on (?) to the Space club (?). I could show my slides and movies of the deep diving submarines.

(Julian Fictus)

Sept. 11, 1986 Sunday. I spent Fri-Sat-Sun cleaning out the stroke lab, lots of dust. Yesterday Bill MacRobert and I set up a bubbler.

He set it up yesterday.



Photostation at f 16 on

VXX film.

2-125 BCPS, 18 us bumps used

one on top at 3" one in bottom at 6"

Exposure ok. one bubble half way up.

Comment. The air bubbles are not spherical. The force of the water causes them to flatten.

Sept 15 morning 2<sup>nd</sup> class 6.163 25 students.

Al Branker (Aquarium) and Walter W (E-46) plan to take a 260 Ball Dive team to Biveroy to look for a concrete weight on Tuesday Sept 6 1986.

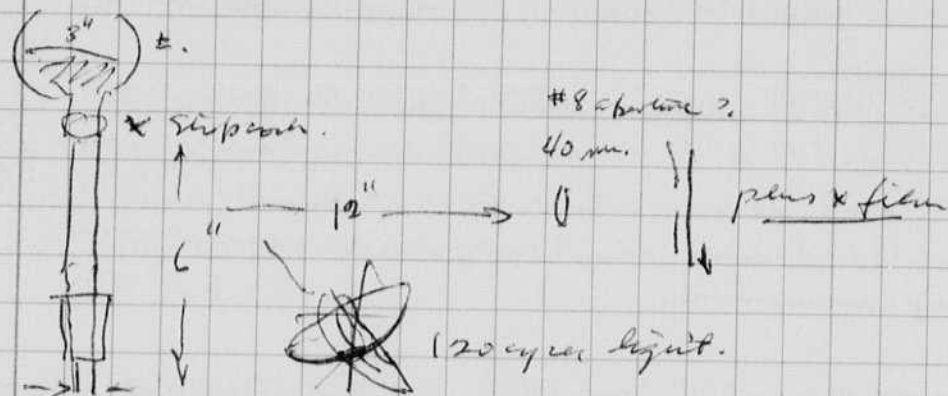
Aquarium tests, Married 30' at Atlantic Ave.  
Lapin, 20'±.

Dr Harrison Polansky. 577-

will lecture 9 am Oct 6 1986 morning. He comes in at 8:30 ok with the Miller.

Sept 18 1986  
H. EDGERTON BILL MACRUBIN.

120 cycle photo of Drop formation  
water into fluorescent dye, in D<sub>2</sub>O/20%



10 mm O.D. (10-11) O.D.

G. I.D.

12" to lens from 40 mm.



120 cycle light on low

85 BCPs.

25 ns.

(High  
230 BCPs  
35 ns)

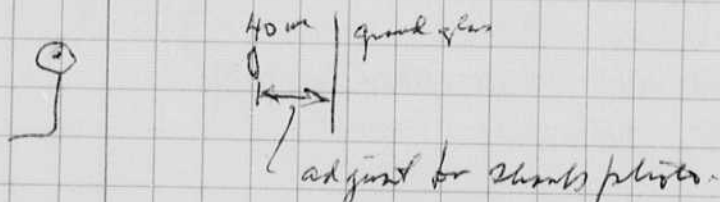
Lamps burned out.

New lamps tried. ok. concentrated covers

2 rolls taken. I burned the last to show the sequence.

10-11 mm diameter, (10.4 mm) width of glass tube.

2 vs. all done slightly out of focus!!!





Analysis of Drops 1.23 X 56.

Sept 19, 1986 ~~1.4-405~~ Dark room.

#1.  $10.38'' = \text{drop size} \approx 183 \text{ mm on film.}$

$$\text{Drop} = 0.91 \times \frac{10.38}{13.38} = 71.25 \text{ mm}$$

7.125 mm

7.112

7.12

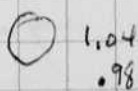


#2

→  
white  
spot.

Stand drop

$$\frac{10.4}{13.38}$$

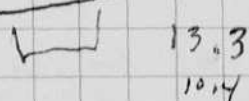


80.8

8.05 mm

73.3

7.33 mm



#3



$$1.04 \times \frac{10.4}{13.3}$$

81.3

8.13 mm

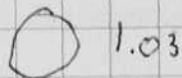
4 mm.

X

10.4

5

14.3



~~$$\frac{10.4}{13.4}$$~~

$$\frac{10.4}{13.4}$$

7.94 mm

79.9 mm

6.

10.2 mm.

$$\frac{10.4}{13.4}$$

7.91 mm

79.1 mm

7.794 mm  
avg.

James Weirburg pulls burger <sup>class 1952</sup> Sept 22 1986

412-884 1935

510 per phone call.

Found MIT David 2nd year grad of MIT -  
Photography in murky water

Sept. 29, 1986. 10 am meeting with Dr. Frank Selman at MIT. Rox Anderson showed us round Lasers. John Parvitz - took some Norm WIS #10161 took about a pleach removal system for the 1 mm extension in the heart.

Discussed electron lasers of very high power, Jack Massey - Stanford. (Check with Doc Pasfetti MIT), Lunch at Louis Restaurant.

I made enlargements of thousands negatives of water depth in 3' 13' and 28'. No. Presumably.

3'	441.7 ±	cm/sec.	See orig data.
13'	650. ±	" "	" "
28'	900 ±	" "	" "

PHYTOPLANKTON Jim Bowen MIT 3-5483

Dec 3 1986

489-0058

I discussed photography of Phytoplankton with Jim.  
MIT Room 48.308.

Oct 4 Sat 1986 4-405 MIT. Dinner last night at PIZZ, first walk  
Parr Way etc - technical photos of high speed. Esther went  
too.

We went to Minneapolis - St Paul on Oct 1 at 11:35 am  
on North west. met by Jim Poyier. Take road with  
me at the clubrooms museum. Landed at  
8 pm in a hall (Fishes of the city). 50 present - Dinner on  
afterwards. Home on Oct 2 North west 280 flight  
arrived about 2 or 3 pm. Robinson Hotel, in St Paul.  
RT from 370 50 for the end same for Esther

Mary Lou Dixon arrives from History U.C.

Glen & Rieth Low met her at the airport. Esther had a  
delicious swordfish dinner at our apartment, 100 Memorial Drive  
at 11-7A.

MARK SINGER computer center Harvard  
Santa Barbara Calif. called Sat Oct 4. Sat.  
Rocking chair - Demo at MIT.

1424 ALAMEDA PARK  
SIEGA  
SANTA BARBARA CA  
18051 962 1030 93103

DR GORDANA VUNJAK

BELGRADE UNIVERSITY - YUGOSLAVIA

MIT - CHEM. ENG. DEP. ROOM 16011

TEL. 253 0469

Vistop 1986

discussed stove  
light and  
some  
medical  
problem.

I showed them our  
stoveless system.

JEAN-FRANCOIS HAMEL (French)

RESEARCH ENGINEER - MIT

ROOM 66-325 , PH: 253.6593

Logotomija, Science Oct 1986 vol 234.

Russian Akademič Aleksandra Vinogradov. in San Francisco p 145

Logotomija, Stika Jassin RB BSSPNS 4 DG, Torkle Michigan Ann Arbor.  
p Reports 189. Oct 1986 Science.

4.5 2.5 " Droptop 4th 10.7 <sup>mm</sup> Glass Tube. H2 & Bill run

7 4

6 4

4 2

4 2.5

7.5 2

4 x 2

4 x 2

Base metal.

Towel



Pattern for  
the 4th floor

Harco at 3pm

Oct 19 1986 Harold Eyster.

Yesterday, Bill Mac Roberts and I tried the photo method  
drop from the 4th floor to the basement. We had problems  
with synchronization of the drops with the camera.

I tried to use  $1/10$  sec shutter with a 120 cycle shutter  
(multiplex). I was at 2-3 feet from subject. A velvet (black)  
background was used. Several trials were made on  
3 megas (Plus X at f11).

We watched the drop and closed the shutter as  
fast as possible. The timing was not good enough.  
The camera was set for 98 cm lens to drop which  
gives a 5% reduction of the subject.

Oct 14 1986 9 am - Just back from Sarasota Fla Sat night  
via at Santa with sister.

We attended the wedding of Bob Mark Pogue and  
Pam Meyer. Sister of Dr. John Manger of Palm Beach.  
Walter, Margy, and Jack Pogue were there.  
Lynn and Dick ~~from~~ from Sarasota.  
Margaret & Bob Robinson Sarasota.

Polovoid - Kent Buschle, Wed Oct 10 appt.

Oct 16 1986. HZ & UBM

Photo of drops.

1. Large Beach Beach

2. 10.7 mm magne.

3. Plus X

4. f16 10mm in diameter

5. 120 frames/sec

try them - try slow  
development.

Oct 27 1986, HZ & Bill Mac R.

4x5 camera shutter down



120  
multiplex.

Roller  $1/10$   $1/100$   $1/2$   $1/5$  sec  
= 0.160 seconds?

is measured with contact

Drop 1 sec. = .30 sec.

(as measured with strobe) = 0.3 ±

4.1 inches.  
 4.1 } as measured from  $\times 10$   
 4.05 }  
 4.0 }

$4.05'' \times \frac{10}{6.3} = \frac{6.48''}{2.5 \text{ inches}}$

Oct 23 '86

distance displaced

slutten del flæk = 0.160 m.  
 = 0.35 m

$v = 6.5 \times 120 = 790 \text{ M.} / \text{M.} \quad D = v T =$

Oct 29, 1986 color photos of coral (1st 1986) flap.  
 were used on

Kodak Navicord III  
 Prof. Teemtype 3, # 4106. (Oct 87)

Mounted at N.E. corner. Repaid oh by phone

all made at f 16

with two lamps at 2 ft on 45°

46° lenses

Black Back ground about 2 ft away.

Karen — called from NY. want a left to  
 right orientation.

(Send negative to New York) for printing.

$f = 30 \text{ cm}$  ?

color flip 1st 1986 by Bill MacPom

2 lenses (320 DCP) at 2 ft ±. on each side  
 f 11 on Kodakome 25.

Dist 80  
 3K for  
 printing  
 26 min  
 Oct. 30 1986

Room lights on! 1/2 sec shutter 30 cycles.

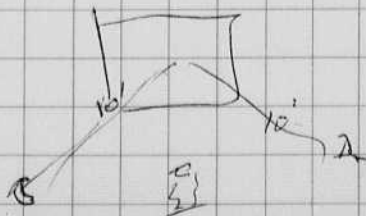
Oct 30, 1986 multiframe of Robinson and Emily Key.

Beamer

$NAPS = 350 \text{ low} \quad ASK65 \text{ color}$   
 $= 560 \text{ latags}$

$BA = \sqrt{350 \times \frac{65}{25}} \approx 30 \text{ fove}$

at 10' size + 305 on f 4 on H42



30 Nov 3 1986 Harold Edgerton.

MIT 4-405

Frank Rose  
Miss

2 pm lecture to  
physics  
teachers in  
Ypsi-Down  
Miss

Mr. Stodd  
& slides

Nov 1 Friday Estler and I went to Detroit on U.W. at 9:30 am. We were met by Mrs. Rose and son Tom. Lunch at Prof and Mrs. Versus home in —. Then I went to the school and gave a lecture at 3 pm to about 150 people. Most were physics Prof of 4 - colleges. Frank Rose arranged the

Then he and Mrs. Rose took me to Bob Edgerton's house in Pontiac. They Bob and Edgerton both is the Detroit airport to catch an 9:30 plane - which was cancelled. We left at 12:30 for Boston. Jean Mounsey and Welch Pogue met us and we all went to visit the PL&G factory in Salem Mass. a 25th birthday party was in force.

Nov 6 1986 HZ & Bill Wm

Colour neg of 9 film (PRG) - 100 neg. column.

film

1 <sup>st</sup>	Boxes	Leaking small film	Low 1 sec	30/ sec.
2	Coar	- Bial f	1 sec	30 v
4-11	30v	72	1 sec	30v
12-17	30	f16		
18-27	30v	22	Trigger at 2.5 ft.	
28-30	6v	11		
31	no film	8	"	"
32	no film	3.5	"	"
33	60v	8		
34	60v	11		
35	60v	16		
36 } 2	60v	22		
36	60v	16		

also Roll of Kodak 64  
at f16 30-40,  
some at f22, ?

John Mulvaney  
Miss

Comments:

\$16 - 22 mld  
2 camps at 2H,  
2 no BCPs seen.

KAREN ZARASON  
212-841-3691.

Discovery from 1925  
1977 Miller and Miller  
19920

235 5612

- 1 Boxes over exp
- 2 30. for fuel
- 3 20 Too high
- 4
- 5 30 ok
- 6 30 ok
- 7 30 ok

8

9 Community on  
10 color maps.

11

12

13 ok. flb. ok.

14

15

16

17

30 16.

Excellent, Transistor?

18

19

ok. freq.

20

21

22

ok.

23

24

25

26

27

ok.

28

29

30

31

32

33

ok

Slip out of track?

34

ok

35

36

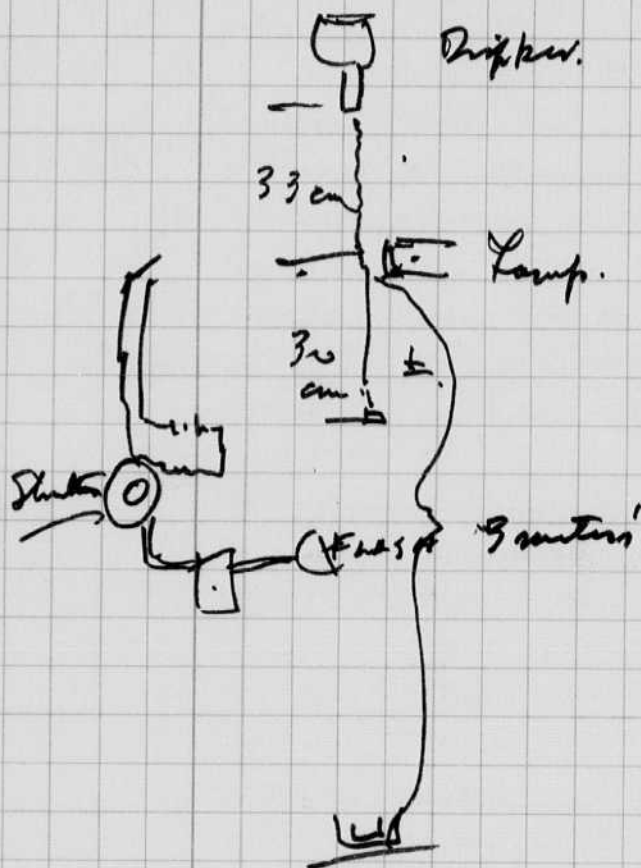
37

too

6th floor  
Dante cabinet

32 Nov 24/1976 Friday  
H. Edgerton

Yesterday Bill and I tried to measure the time (delay) of our shutter on the 4x5 camera. There is a button and push button to fire the shutter.



Bill observed the light hitting the liquid? water and trajectory. Then he pushed the button to trip the shutter.

The X count on the shutter fired the 25 ns lamp.

1. With out the shutter the delay was about (30 cm) distance as shown.

2. With the magnet and shutter, I was unable to find the drop in space.

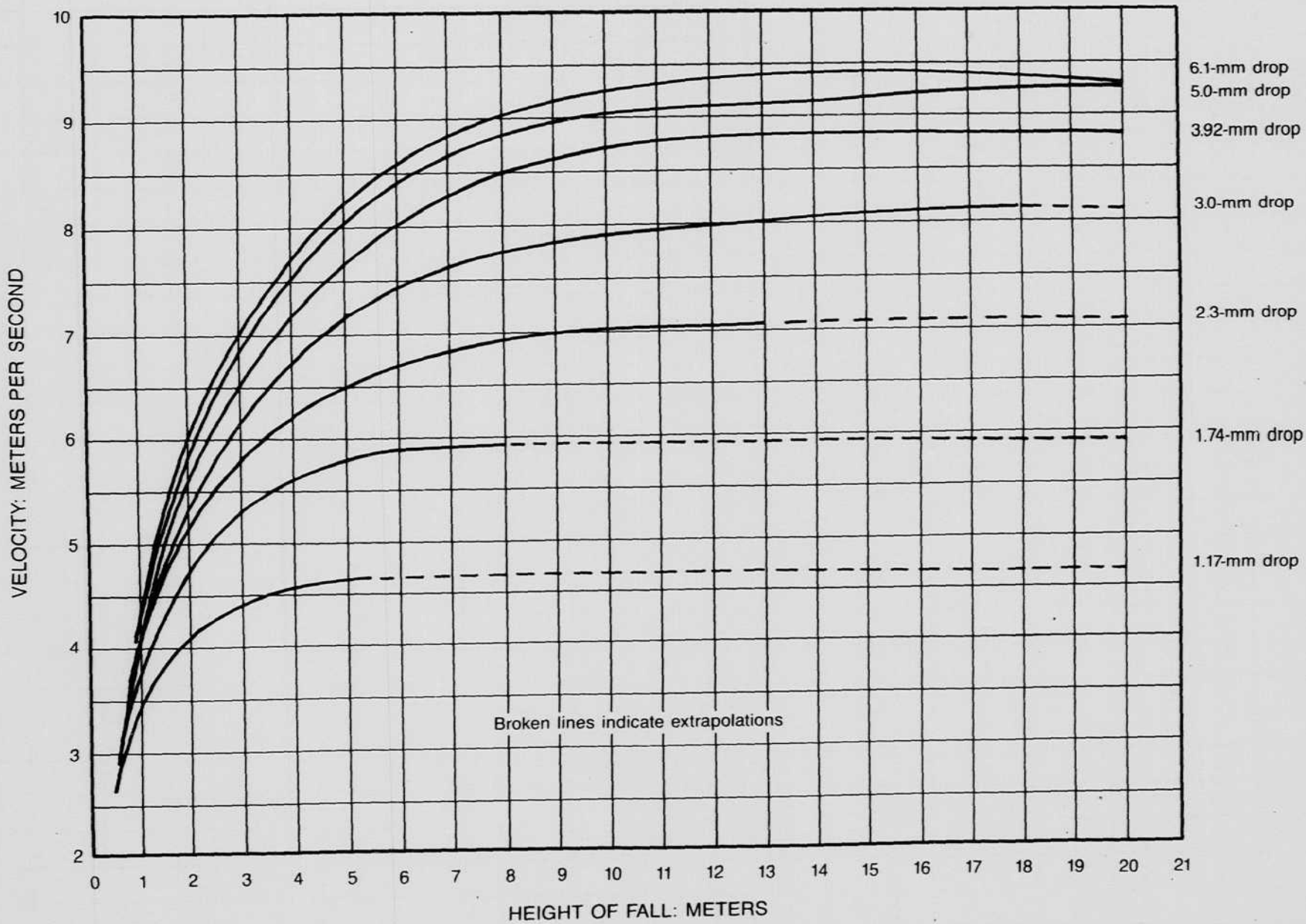
? Was the delay too long to observe?

To do  $\odot$  measure the time delay and average for a various delay.

Event unless the multiplex at 120 flashes / second will be triggered by the drop. These several pictures will be put on the same plate from several drops. Measure of size and velocity are contemplated.



PAPERS, HYDROLOGY—1941



1940  
Laws,  
not Bur Stal.  
Laws

34

Oct 1986 Harvard Edgerton,

Dick Shamp called for work on

1500 minutes as 2005  
 Tues repeat for Spallhaus. (then)

I said I could not come.

Two copies of Fover rings sent.

Dec 4, 1986. Geo Harrison } Palamed  
 Paul D'Amore } 5773940.

Meeting next week Wed 9am conf Room  
 565 Tech Square 2nd floor.

at M.I.T. Dec 3. Lecture by Elliott.  
 at Palamed on Dec 10 at 9am.

Prof NAFI ToK12 E34 ERL Turkish Prof?

Dr Yacov Rin Tues Dec 2 1986, 4pm 54-915  
 Ancient Water Wells and their uses in  
 the Tectonic Studies of the  
 Israeli West Coastline.  
 Geological Service Israel Jerusalem.

JEFF  
Appelbaum

U'DAH

Dec 11 1986

STROBE PROJECT LABORATORY - GOLD MEDAL CLASS

Dr. Harold E. Edgerton

Massachusetts Institute of Technology Fall, 1986

Charlie Miller



REGINA WASHINGTON

CHAS  
& Miller

IAN  
BREM

KARLA

ALICE

34

Oct 1986 Hawk Elgerton,

Dick Shamp called for work on

1500 manna on 2008  
 Tues report for Spulbaum. (then)

I said I could not come.

Two copies of Texas maps sent.

Dec 4, 1986. Geo Harrison } Palamed  
 Paul D'Amore } 5773940.

Meeting next week Wed 9am conf Room  
 565 Tech Square 2nd floor.

at M.I.T. Dec 3. Lecture on collect.

at Palamed on Dec 10 at 9 am.

Prof NAFI TOKIZ E34 ERL Turkish Prof?

Dr Yaakov Rin Tues Dec 2 1986. 4pm 58-915

Archeological Water Wells and their uses in

the Tectonic Studies of the

Israeli West Bank area.

Geological Service Israel Jerusalem.

JEFF  
Appelbaum

ODA

Dec 11 1986

STROBE PROJECT LABORATORY - GOLD MEDAL CLASS

Dr. Harold E. Edgerton

Harold Edgerton  
Massachusetts Institute of Technology Fall, 1986

Charlie Miller



REBECCA WASHINGTON

CHAS  
← Miller

TIM  
BRENN

KARLA

HEE

Notebook # 36

Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 34 and 35.

Item(s) now housed in accompanying folder.

\*\*\*\* TENTATIVE \*\*\*\* 9-16-86 \*\*\*\*

6.163 STROBE PROJECT LABORATORY - FALL, 1986  
 ROOM 4-405 253-4629

PERSONNEL

Dr. Harold E. Edgerton, 100 Memorial Drive, Cambridge, 617-253-4629, 864-4790  
 Charles Miller, 116 Bingham Rd., Carlisle, 617-253-4629, 369-7074  
 Jean Mooney, 27 Birch Rd., Watertown, 924-7124,  
 Bill MacRoberts, 105 Whidden Ave., Whitman, 617-253-4629, 1-447-4172  
 Tim Brehm, 27 Valentine St., Cambridge, 864-0635,

STUDENTS

✓ Jeffrey Applebaum, 405 Memorial Drive, Cambridge, 225-9123 N.Y.  
 → Shawn Brixey, W 1140 Massachusetts Ave., Cambridge, 253-6849 MA  
 → Brian Callaghan, 405 Bexley Hall, Cambridge, 225-9645 NY  
 → Cynthia Closkey, 433B Burton, 410 Memorial Drive, Cambridge, 225-8385  
 ✓ Michelle Dick, Newhouse 5, 475 Memorial Drive, Cambridge, 225-7636 S.C.  
 ✓ Fritz Fasse, A-304 Senior House, 4 Ames St., Cambridge, 225-6674 ME  
 ✓ Kenneth Fern, 500 Memorial Drive, Cambridge, 225-8723  
 → Mordechai Fester, 15 Portsmouth St., Cambridge, 354-6719 FL  
 → Nikoletta Fouska, 72 Electric Ave., Somerville, 623-3837 MA  
 ✓ Andrew Gerber, Hayden 512, East Campus, Cambridge, 225-6527 NJ  
 → Corrado Giambalvo, 343 Broadway, Cambridge, 491-1819 CANADA  
 → Shari Jackson, 500 Memorial Drive, #215, Cambridge, 225-8715 FL  
 ✓ Carla Kapikian, 362 Memorial Drive, Cambridge, 225-7392 NY  
 ✓ Alex Laats, Bexley Hall #309, Cambridge, 225-9639 MA  
 ✓ Sonia Leon, Baker #424, Cambridge, 225-7174 NY  
 ✓ Dan O'Day, East Campus, Hay 301, Cambridge, 225-6316 MA  
 ✓ Barbara Sannwald, 500 Memorial Drive, Cambridge, 225-8937 Co Denver.  
 → Jinwon Seo, 290 Massachusetts Ave. #315, Cambridge, 225-9689 CA  
 ✓ Eric Starkman, 3 Ames St., Cambridge, 577-8075 OH  
 → Harold Stern, 333-d Burton, 410 Memorial Dr., Cambridge, 225-8312 NY  
 ✓ Andrew Vyrros, Bexley #110B, Cambridge, 225-9610 NY  
 ✓ Deborah Washington, Burton 141F, Cambridge, 225-8155 NY  
 → Jenneine Wilson, 8 Chilton St, Cambridge, ???????  
 → Gene Zilberstein, 15 Portsmouth St., Cambridge, 354-6719 MA  
 ✓ Sheryl Zucker, 320 Memorial Drive, #528, Cambridge, 225-8608 MD

THESIS STUDENTS

Steve Sisiak, ZBT House, Cambridge, 734-3650  
 Becky Oh, 576 Next House, Cambridge, 225-8998  
 John Athow, 500 Memorial Dr. - Room 416, Cambridge, 225-8816  
 Karl Lindstrom, 500 Memorial Dr. - Room 416, Cambridge, 225-8775

Dec 13 1986 MIT 4-405 10 am. STROBE LAB.

Hand Equator.

Tim Brehm.

Susanna Morton

Henri Anzalone

Loetta Riley

James Sawyer

Rhea McDuffy

Max Sosa

Michael Rogers

Shari Dunnette

Jeffrey R. Myers

Lucky Dandhart

Russell E. Douceth

Scott Thomas  
D. Christopher Schaefer

Robert L. Walck

Volker Ritz

Jim Sims

Mark W. Rudin

JOSEPH BIEGER

LARRY & DEB SCALFF

Paul Garra (Dec 13, 1986)

Rose Dorman

Thomas Asher

David Kagan, Uni of Rochester.  
Photography class visit to MIT

Demonstrations until  
noon.

with out job card.

Uni of Rochester

Prof.

(24)



Jan 6 1987 9am

37

Power Lecter H-405

698-6844 Home

Household Equipment 4629

Jeff Stevens  
11 - Clay St  
Milton

DEVANG SHAH Macgregor A-324 x5-7496

777 67th Ave

Karl Ellefsen x3-7874

12 Colaba,

(Jan 1987)  
calendar

Ian Harris x3-6323

Times - Publications

CHOONG SEOW x5-6319

Joel Friedman x5-9240

Shawn Mamros x5-9639

measures  
given  
H.P.  
equipment

Bob Dolba: 556-7320. Boston. Mass.

400 Wallon Ave. Boston, 02401.  
Wid.

Jeff  
Wilson.

Benny Fell. author Jan 7, 1987.

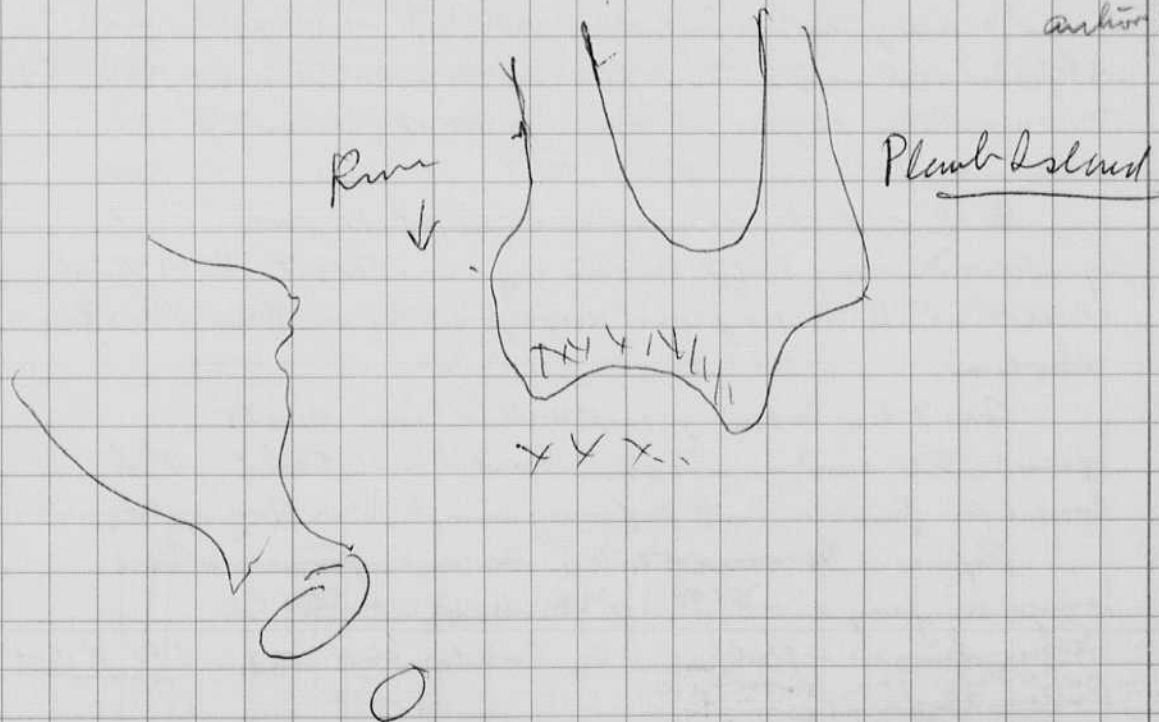
Whitell J. → 1-948 2410 -

Ronald J. man, 40-50.

SAGA America - Times Books 1980  
(Random House).

SAGA AMERICA

Books.  
Random House  
author Benny Fell.



Jan (1987) Bill MacRobert and Peter Min Bay looking for rathons.  
RPC house shows extra signs

Jan 13 1987. 100 Memorial Drive Cambridge Mass apt 11-6A.

8 pm. I went to the EPC lab today with Bill Mac Roberts in his auto. We took two sonar penetration drivers with a pair of Marson 12KC transmitters - receivers & there was 160 ft cord from the driver to the receiver. This is for Chas Soter (Cornel) to use at Helix. We have been having problems with blotches on the records. Finally this one of the units quit yesterday.

After considerable testing by Mike Murphy and we finally get it going by the use of a different amplifier chip LF 353 (faster and less current etc). Also we put two diodes on the input of the receiver to short out the large initial signal when the transmitters fire.

Diodes 1N4937 High speed rectifiers 1¢

Rated 600 mcs 1 amp peak.

Apparently there is quite a signal when the pulse current goes into the 12KC Marson transducer. Then there is coupling into the input of the amplifier due to the long parallel cables. More shielding would be of benefit. However the new diodes and the faster amplifier circuit make the unit operable.

Probably the input and output cables should be shielded and separated for better operation. At the moment the signals (initial) occupy about .0025 sec of the input.

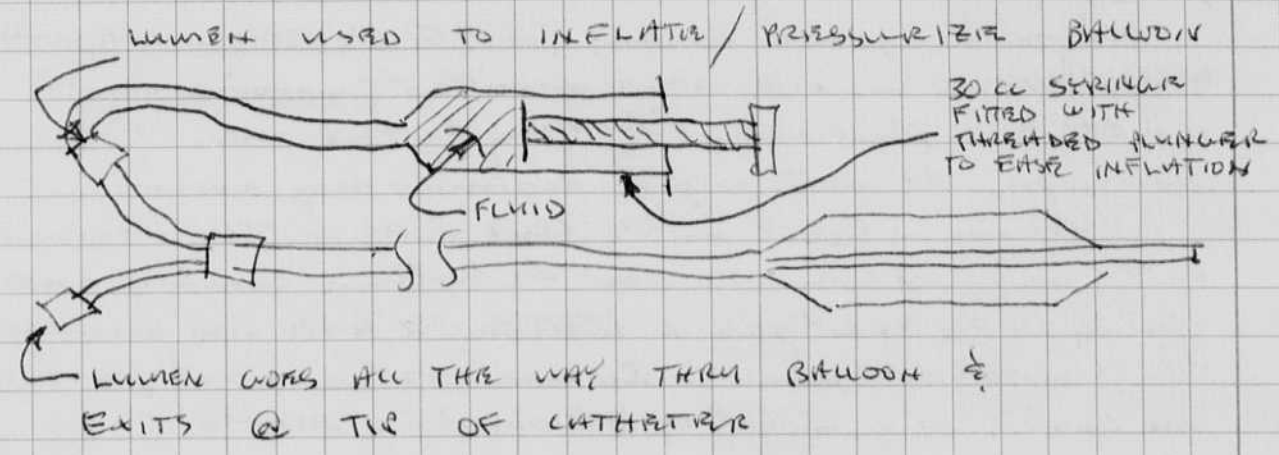
Bill and I returned to MIT at 11 pm. The equipment was tested in air again. Next it will be opened in the M.I.T. pool and finally in the Boston Harbor.

Next the Cornell group will be invited to operate the unit in Boston and then take it to Cornell for further tests before going to the Bay of Corwith.

Reference is made to the sonar penetration image on page 249 of the book entitled Sonar Images - Published by Prentice Hall, U.S. 140 St. Clair St. bottom surface.

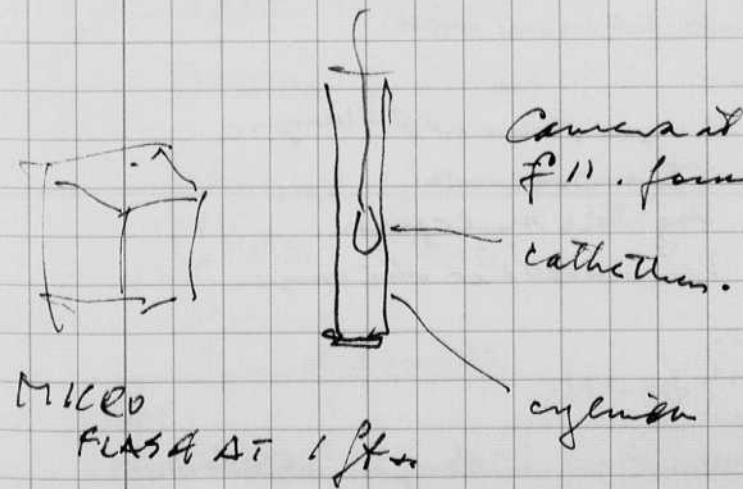
MANSFIELD SCIENTIFIC INC  
MARK HANDMAN  
Mark Holman  
BALLOON DILATATION CATHETER BURST  
135 FORBES BLVD  
MANSFIELD, MA 02048 1-339-4112

1/14/87 Harold Edgerton



BURSTING PROCEDURE: BALLOON IS FILLED WITH FLUID WHILE AIR IS EVACUATED. SOME AIR IS INTRODUCED (~ 15 CC STP) TO MAKE A LOW ENOUGH NOISE TO TRIGGER STROBE UNIT. SYRINGE IS THEN ADVANCED SLOWLY UNTIL BALLOON BURSTS. (BALLOON WILL TYPICALLY BURST @ APPROXIMATELY 70 PSIG.) BALLOON IS BURST INSIDE CLEAR POLYCARBONATE TUBE TO AVOID MAKING A MESS WITH THE WATER INSIDE THE BALLOON.

f11 w/ MICROFLASH ~ 1 FT AWAY FROM BALLOON w/ PLUX X FILM



2. times no photos. Did not trip the flash.  
#3. Put the milk up there above.

Jan 22 1987

100 Memorial Drive Apt 11-7A Cambridge Mass. 10 am

I am waiting for Gus Kazapas to bring in the titles for a new book to be published by Abrams, N.Y. He will go over the captions for accuracy. The book is scheduled for next fall.

On Jan 20 I gave a lecture from 9 to 10. Then we went to the SD 150-10N research ship near the Aquarium with an EPC mast penetrator. Peter Mini helped me. The noise from the boat's engine disturbs my sonar.

There was a lobster on the slip under a T.V. receiver on the lower cabin. We saw the bottom clearly and the fishing at the coast guard station. A book was made on the leopard trol camera that was lost several years ago no luck! A comment by is below the muds!

Another expedition for the Propeller is scheduled for Jan 27 Tues on the Voyager (V) out of the Aquarium. Blake will bring their first scan. Doug Hall is the capt of the Voyager, out of the Aquarium.

Gus Kazapas came in about 12:30 to check the captions to be used in a new book about my paper photography. The book will be published by Abrams press N.Y. Gus Major editor. "Astounding?" title

Schedule for

Gally Proof Feb 5

Proof May 4 color

Proof June 1

10,000 copies Sept 11 at Book Stores #30 Hard back

9 1/2 x 11 1/2 156 pages 100 B&W 25 color.

Cost \$1000?

300 copies - 50 to Gus with proofs advance sale

Prints to Gus on slide 1. Wrecked Plane at Ft Myers

2. H.E. on sonar

3. Dog Fair Mulefeen Dob.

4. Panzer 1940 at die expo. Panzer.

5. } from D.I.T.

Stones & Bullet.

6. }

I signed my name in pencil on a large collection of black and white prints for Gus to sell. There is a big snow storm on today. Gus and I have had dinner late because of the snow. Roads bad!

NEWS  
TO  
GUS K  
Jan 22 87

from the office of Prof. Harold Edgerton  
Room 4-405, x 4629

December 31, 1986

TO: I.A.P. Room 7-108

SUBJECT: Schedule for my I.A.P. program

DAY	Date	Time	Place	Lecturer
Tuesday,	January 6,	9 - 10am,	4-402	by H. Edgerton
"	"	13, 9 - 10am,	4-402	by H. Edgerton
"	"	20, 9 - 10am,	4-402	by Martin Klein, <i>Cancelled</i> Klein Assoc. N.H.
"	"	20, 10- 4pm,	Boston* Harbor	Klein/Edgerton <i>cancel Klein</i> <i>Pinger demonstration</i>
<i>Cancelled</i>	"	27, 10- 4pm	Boston* Harbor	EG&G, Inc/Edgerton

*Martin Klein called & cancel due to a 4" snow storm.*

11.15 Jan 20 1987 Agreement "EDGERTON"

Harold Edgerton 3-4629 MIT  
Olga Sanchez 225-6555 Chem

Donna Jean Kaiser 225-6551 ME

NEIL DOTTERTY 629-2113 MS ME  
MIT  
Sub.

Joel Friedman 225-9240

MIRIAM CALDWELL 354-4544 Phys  
Shawn Mamros 225-9634

*M.I.T.* JEFF STEVENS 648-6844 787-6711

DANIEL T. COBRA ... Rm 36-615, X3-7319 6712

Samuel Landsberger 868-5346 Sub

Chris Saito 206-7273 Sub

Peter mini

etc.

1. Went to look for the tunnels! There was a lot of noise from the engines. Led weights were used to hold the transducer down. The long cable reduced the signal.

2. The TV was used to look at the bottom of the hole. When the camera was last used several years ago, it was not seen.

Capt.  
Fair note.

On Jan 20 we used an EPC Recorder and a 12Kc - 12Kc Transducer receiver.

Jan 22 1987

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On Jan 20 I gave a lecture from 9 to 10. Then we went to the 120th St. research ship near the Aquarium water and EPC must penetrate. Peter Mini helped me. The noise from the boat's engine disturbs my sense.

There was a robot on the ship with a T.V. screen on the back cabin. We saw the bottom clearly and the failing at the coast guard station. A book was made on the Electrolux time camera that was lost several years ago no lunch! A comment by is before the monks!

Another expedition for the Propeller is scheduled for Jan 27 times on the Voyager (1) out of the aquarium. Blake will bring their rise seen. Doug Hall is the capt of the Voyager, out of the aquarium.

Gus Kazapas came in about 12:30 to check the captions to be used in a new book about my former photography. The book will be published by Abrams press N.Y. Chas Meyer editor. "Astounding?" title

Schedule for  
Gally proof Feb 5  
Proof May 4 color  
Proof June 1  
10,000 copies Sept 11 at Book Store #30 Hard back  
9 1/2 x 11 1/2 156 pages 100 B&W 25 color.  
Cost Stones?

300 copies - 50 to Gus with proofs advance sale

Notes  
to Gus K  
Jan 22 87

- Points A Gus on board
1. Wright Plane at Ft Meyer
  2. H.E. on Somerset
  3. Big Fair Mulcaster Dob.
  4. Panzer 1940 at die camp. Pan com.
  5. } from D.I.T. Stone & Bullitt.
  6. }

I signed my name in pencil on a large collection of black and white prints for Gus to sell. There is a big snow storm on today. Gus and I had dinner late because of the snow. Books bad!

from the office of Prof. Harold Edgerton  
Room 4-405, x 4629

December 31, 1986

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"	"	20, 10- 4pm,	Boston* Harbor	Klein/Edgerton Pinger demonstration <i>cancel Klein</i>
<i>Cancelled</i> "	"	27, 10- 4pm	Boston* Harbor	EG&G, Inc/Edgerton

*Martin Klein called & cancel due to a 4" snow storm.*

11.15 Jan 20 1987 Agreement "EDGERTON"

Harold Edgerton 3-4629 MIT  
Olga Sanchez 225-6555 *cham*

Donna Jean Kaiser 225-6551 *MI*

NEIL DOTTERTY 629-2113 *MSME MIT Sub.*

Joel Friedman 225-9240

MIRIAM CALDWELL 354-4544 *Rob*

Shawn Mamros 225-9639

*Milwton* - JEFF STEVENS 698-6844 787-6711

DANIEL T. COBRA ... Rm 36-615, X3-7319 6712

Samuel Landsberger 868-5346 *Sub*

Chris Saito 206-7273 *Sub*

*Peter mini*

*BR.*

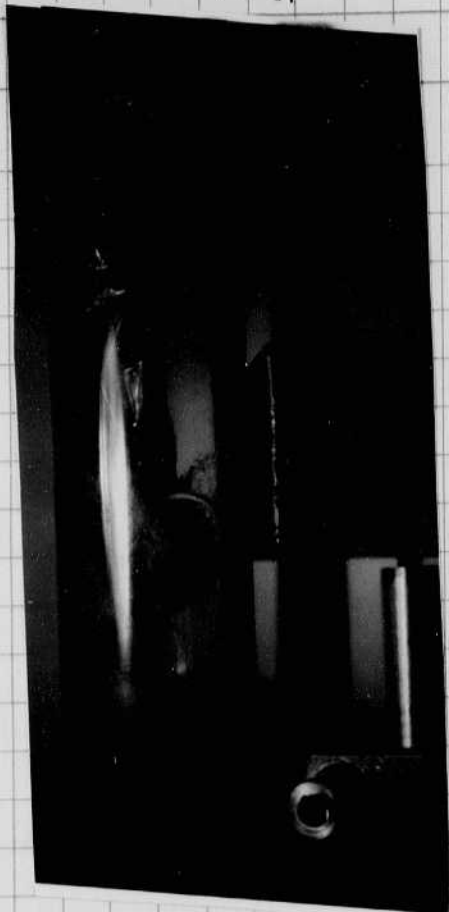
1. Went to look for the tunnels! There was a lot of noise from the engines. *Sub* had weights were used to hold the transducer down. The long cable reduced the signal.

2. The TV was used to look at the bottom of the hole box where the camera was lost several years ago. It was not seen.

*Capt. First note.*

*on Jan 20 we used an EPC Recorder and a 12KC - 12KC Transducer receiver.*

Harold Edgerton - Jan 24 1987. 100 memorial drive  
Cape Cod, Mass.



Taken on Jan 24 1987  
with the microscope  
at 11 on plus x plus  
lamp at 1 ft ±.

Microphone trigger  
when the collector  
brake, no door  
pressure.

Bill Singer  
movie for  
Polaroid

Jan 29, 1987. Harold Edgerton 4-405

Berry Clifford - called to talk about the  
Pirate ship Whydah which is being repaired  
off Wellfleet Cape Cod.

WHYDAH?

Agreed to give a lecture Tues Feb 10 at 6:50  
in 4-402 for OVT students. Agreed with Esther & Israel's names.

Jan 30 1987.

Shadow photo. Elkh. light

35mm	343.	15 min OK 19 2763	0.44	0.44
	424	10 min 7302	1.94	1.90
	424	10 7302 Mally Bay.		

Feb 4, 1987. Dentist replaced gold crown on upper left side which fell  
out at lunch at home.

Polaroid Co wants some more footage of the use of their film. I  
suggested better photo with the Elkh equipment. - such as  
cutting a playing card. This will be done Friday morning in  
4-403 the large dark lab.

The class 6.163 started a new group today. Class Miller and  
Timothy Brehm (last). Two sessions of 3 students. 24 students ±

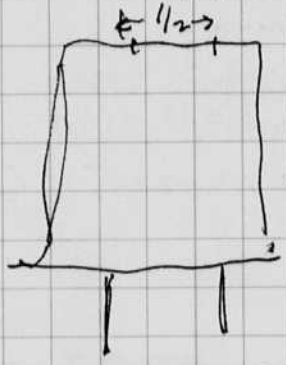


Phone call from Dr. Robert A. Chant, Univ of Louisville  
 0-502-588-5668 about repair of TV and  
 light. Suggested 60 cycle light from a Strobelase.

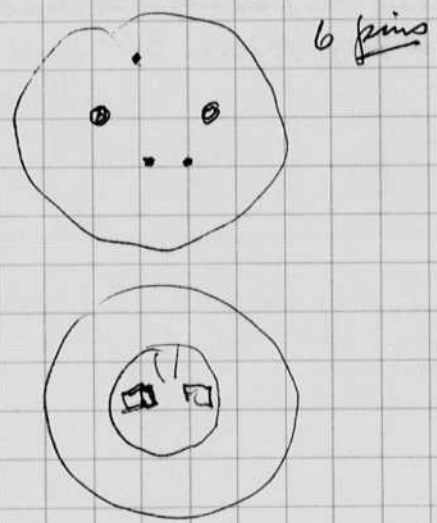
camera NT50  
 30/sec

High School group from Windroster nears, visited the Stroke Alley.

Feb 6 1987. Gap Lamp. FX-193V  
 metal case V.V. Window.



I noticed that the quartz window glows with a blue light after the flash. Then the blue light gradually decays in about 1/2 of a second.



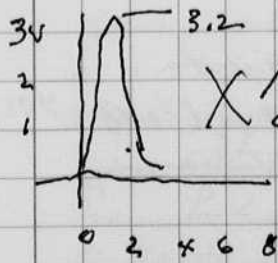
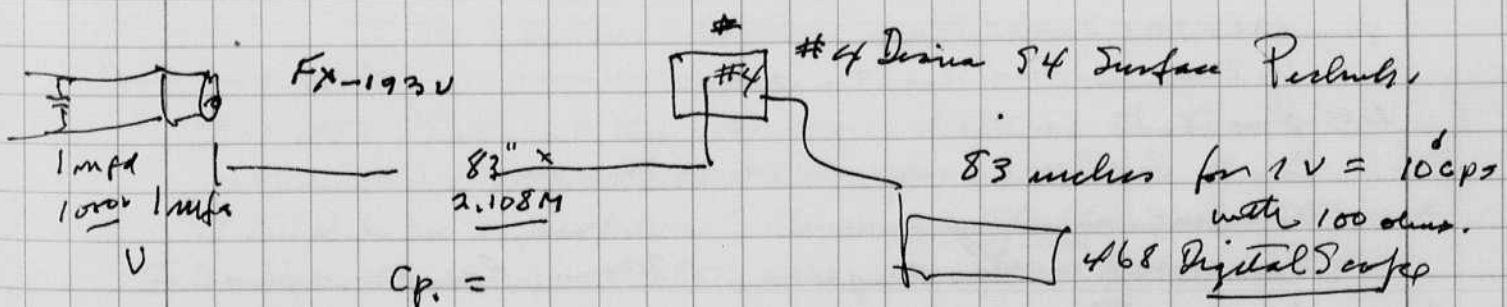
Perhaps I should put an aperture over the front of the lamps to effectively reduce the size of the gaps.

The window now is 1/2" in diam. the gap is about 1/8 of an inch.

Close up of over about 1:1.

Trigger light 1 second f 32 on Plus x film DK 50 1/10 mm. 1/3 volts 4 mtd.

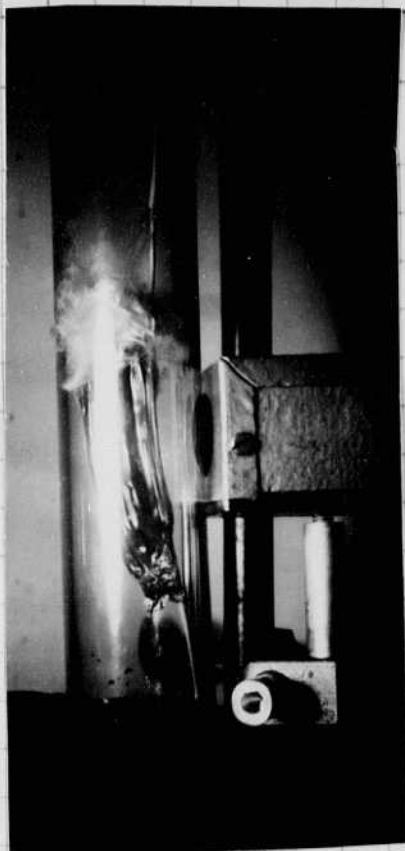
Feb 7 1987 Sat 12:36 noon. Sunny - cool.



1 us to 1/3 peak. up and down.  
 output =  $3.2 \times 1 \times 10^6 = 3.2 \text{ cps}$   
 wrong calc!!

cap = Sprague  
 CP 70B 1EL 50V K  
 Rated 300V 0.5 mfd.

$0.28 \times 10^6 \text{ cp} \times 2.5 \times 10^6 = 0.7 \text{ cps}$   
 $0.15 \times 10^6 \times 2.5 \times 10^6 = 0.375 \text{ cps}$   
 2 us delay from trig when on 1000V supply! (1400V better!)

Harold Edgerton - Jan 24 1987. 100 mm monovalent Drier  
Chamber. 2.5 in.

Taken on Jan 14 1987  
with the microscope  
at f 11 on plus X film  
lamp at 1 ft E.

Microphone trigger  
when the collection  
broke, no door  
pressure.

Jill Singer  
more for  
Polaroid

Jan 29, 1987. Harold Edgerton 4-405

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Jan 30 1987.

Shadow photo. Elkh. Light

Review

35mm

343.

15 min DK 19 2363

0.44 0.44

424

10 min 7302

1.24 1.90

424

10 7302 Mally Bay.

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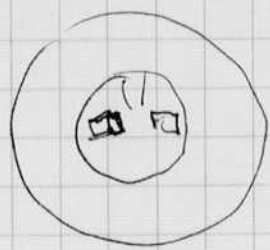
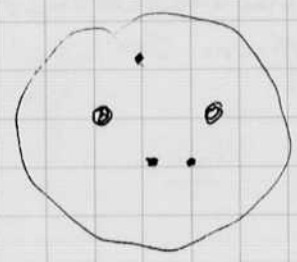
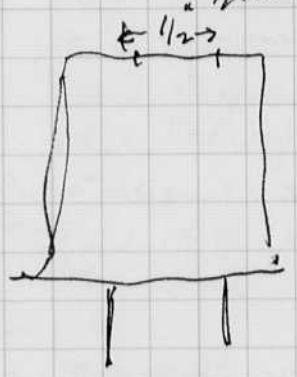
The class 6.163 started a new group today. Class Miller and  
Kimothy Breckm (last). Two series of 3 students. 24 students

Phone call from Dr. Robert A. Chand Univ of Louisville  
 0-502-588-5668 about repair of TV and  
 light. Suggested 60 cycle light from a Strobel.

camera NT50  
 30/sec

High School group from Winchester Mass. visited the Stroke Alley.

Feb 6 1987. Gap Lamp. FX-1930  
 metal case V.V. Window.



I noticed that the quartz window glows with a blue light after the flash. Then the blue light gradually decays in about 1/2 of a second.

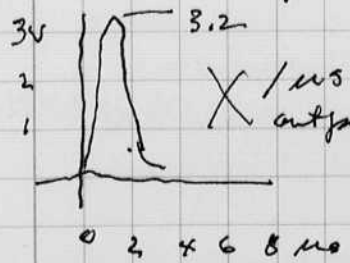
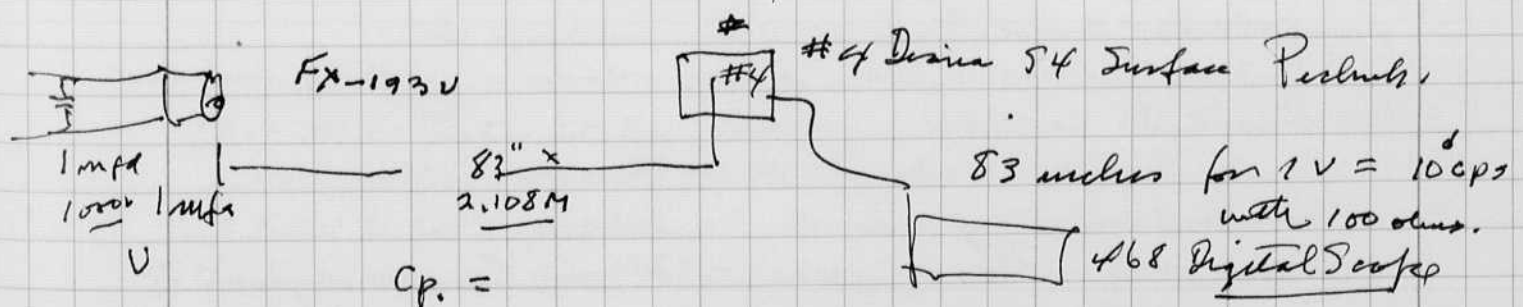
Perhaps I should put an aperture over the front of the lamp to effectively reduce the size of the gap.

The window now is 1/2" in diam. The gap is about 1/8 of an inch.

Close up of arc. about 1:1.

Trigger light 1 second f 32 on Plus X film DK 50 10 mm. 1/3 volts 4 mtd.

Feb 7 1987 Sat 12:36 noon. Sunny - cool.



1 μs to 1/3 peak. up and down.  
~~output = 3.2 x 1 x 10<sup>-6</sup> = 3.2 cps~~  
 wrong calc!!

cap = 3 pique  
 Cp 70B 1EL 504K  
 Rates 3000V 0.5 mtd.

$$0.28 \times 10^{-6} \times 2.5 \times 10^6 = 0.7 \text{ cps}$$

$$0.15 \times 10^{-6} \times 2.5 \times 10^6 = 0.375 \text{ cps}$$

1950V

1000V

2 mtd delay from trig when on 1000V supply! (1400V better!)

a Washer with a 6 mm diam hole was  
 from first over the 15 mm hole in the 195 U.

1350V 1 mt. 2,108 mt #4.  $E = 0.2 \times 2V \times 2 \times 10^6 = \underline{4/4 \text{ cps}}$

Square Jessie unit. 35 years old Black anodized sheet.  
 New Rodium. Insulation on trans improved. New  
 caps 6 mt d (old one was 4) The 4 blew out!

#1 Dist. 2,108 mt #4  $9.5V \times 10^6 \text{ c.p.}$   $95 \times 7 \times 12. \mu s \times 10^6 = \underline{1140} \text{ # cps}$   
 Dur = ~~7~~  $\mu s$ . 12 DK 50. Room Temp.

Density = 0.25

DIST = ~~7~~ 12  $\mu s$ .  
 35 cm

#1 a ~~2108~~ 4,56 mt d Stragoc was connected in parallel to the 1 mt  
 Total cap = 5,56 mt d. 1500V. #343 FILM 50  $D = 0.5$   
 $D = 35 \text{ cm to film}$

DIST = 30 cm 343 film 4,56 mt d 1500V  
 10 min DK 50. Water from front. Anodized.  
 Shows particles

Unit. 10 mm same.

Feb 10 1959. Elisha Tander, Orni (m) avram — and Ann Rothstein?  
 were in quarts for Sunday Feb 8 noon. Jean Murray also.

Elisha is enroute to Texas about his book on the ancient Rome  
 found at Atila level.

Yesterday we had another snow storm — not too bad but  
 lots of wind.

Feb 11 Day Jim Prather, senior started his thesis. Shelled some  
 with lamp, feng, and processing.

Chair mount. Los Angeles — movie camera square to  
 camera.

Feb 12? Student Talent show at Stratton Bldg. Sat? night

9 pm Judge Dean McKay Megan Smith HS. + Roger Malloy (Crosby) 492-1000  
 Auto manual Regis Per Herman O'Say Student TV? and other

TV

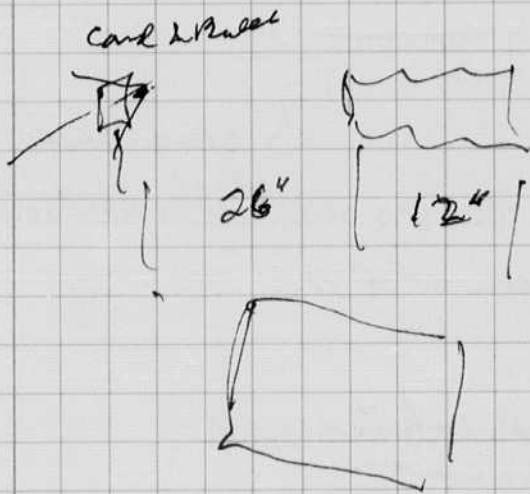
Several Bands and comedy acts by students.

The Chedd. Angier Production Company / Polaroid

Movieproduction co  
 Chedd. Angier  
 70 Coolidge Hill Rd  
 Watertown, MA 02172  
 Phone - 926-8360

- Graham Chedd (director)
- Jill Singer (producer)
- Sherry Cassiter (associate producer)
- Rich Lerner (director of photography)
- Steve Izzii (sound recordist)
- Roger Hancock (assistant camera)
- Dave Christopher (gaffer)

type 59 80 / Spek color. Exp ch at f 6.3 Exp ch.  
 f/6.3 lens in Lab. camera. Image not 1:1.



f/6.3 lens in Lab. camera.

Exposure on white card  
 Bullet under exposed, with Plate  
 2nd photo with white leadogram <sup>background</sup>

Traces of a bullet  
 cutting a card. for use  
 in Polaroid

I should have examined the light to hit the  
 leadogram back of the bullet.

We should have taken other photos with  
 B&W. film. or more with color.

The scene was lit by the 2 photos.

July 4 1987. Lecture at the Kenmore Hotel in Boston on (4pm)  
 submarines for ultimate depth. Urban water ex. powder.  
 I talked to 300 ± people at the Science fiction convention at  
 the Kenmore Hotel in Boston at 4 pm. most of the group were  
 young and way-out. Many had strange costumes etc. I gave out  
 a lot of books - exhibits etc and lectured with slides about  
 the Batygrapher, etc, etc. (400 attendees)

afterwards I saw a laser exhibit in one of the rooms.

- Ines Lockwood John Lang (MIT) Phil Sorell N.Y.
- Al Walker Rutgers Mike Grant Jon ... 1982? (guest)
- Mike Izzii 43 west monmouth 2 Phil Ras 400 attendees of the convention.

Feb 17 1987.

H. Elgerton

10:10 Pattern started in right



Some color on edges

It has been a long time

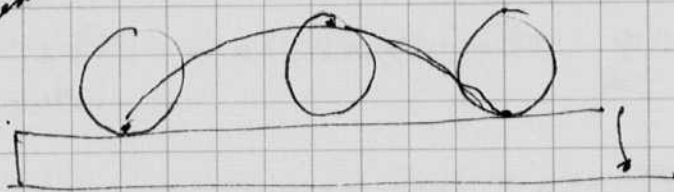
since I had these patterns in my sight!

Note:- the pattern in my eye was gone in about an hour!

Photo of a barrel with a ~~lot~~ black end and a  
spot on the circumference.

W. Gladus / second column  
the action was caused by Bill Mac Roberts.

Prints must  
be in w.r.  
note: Put small lights  
on the edge and repeat.



Double light  
at 1/2 pm

Stroke end  
at 1/2 pm

10 min in DK 50 on plus x film at f 11.  
Contrast was low.

Comment:- Taper spot and whiter.  
f 16 aperture. 15 min development.

Feb 21 1987 100 mmoid Ori April 11-7A 11-6A. Cambridge Mass.

Sho Webster from Chicago brought in a Hologram  
made with a 20 mW Ruby Laser. It was hung  
on the wall in Stroke Alley near my office in 4-005 V.M.S. Mass  
Kagafas was in Chicago with me when this Hologram  
was made.

Today I printed 3 negatives showing an  
exploding wire with strong backlight to overcome the  
normal light from the meeting wire.

A circle of wire expands when pulsed with a  
strong current. Its own magnetic field tends to make the  
circle larger. Then it creates pinches (2) and  
breaks up into particles if the energy is enough to  
melt the wire.

Chester Lu's name was on the film envelope as  
a date of 1972. I went to the library to see if he wrote a  
thesis. No record!

Feb 26 1987

H. Edgerton

Starting 60 years with Esther.

Came to Sarasota at 3 pm on Piedmont.

ESTHER AND HAROLD EDGERTON, TRIP TO FLORIDA, FEBRUARY/MARCH 1987 (617-864-4790)

\* (MARY LOU DIXON, NORTH CAROLINA, 704-322-6686)

- FEB 26 - Thu Lv. Bos. 3:15p Delta #427/249 - Ar. Sarasota 7:55p
- \*FEB 26 - ~~Thu Lv. N.C. 4:55p Delta #937/249 - Ar. Sarasota 7:55p~~  
(Stay with Margaret and Bob Robinson 813-366-2705)
- FEB 27 - Fri - 7:30p lecture at the MUSEUM OF FINE ARTS, "Adventures with High-Speed Photography" Patti Buster, 813-896-2667/Carol Upham, 813-360-5432  
Return after lecture to Sarasota with the Robinsons & Lynn & Mike Farrow
- FEB 28 - Sat - at Margaret and Bob's
- MAR 1 - Sun - pick up a Hertz car after breakfast and drive across Florida with MaryLou to Harbor Branch Oceanographic Institution, 5600 Old Dixie Highway, Ft. Pierce, Attn: Dr. Ned Smith, 305-465-2400 - stay at HBOI apt.
- MAR 2 - Mon - lecture on "SONAR" at Harbor Branch, 11am
- MAR 3 - Tue - " " "HIGH-SPEED PHOTOGRAPHY" at Harbor Branch, 11am  
- in the afternoon, leave for Boca Raton
- MAR 4 - Wed - Lecture at FLORIDA ATLANTIC UNIVERSITY, "High-Speed Photography" afternoon, & evening Attn: Prof. Ray McAllister, 305-426-0808 (H)/ 393-3441 (W)  
2 rooms-Holiday Inn on the Shore, 2809 So. Ocean Blvd, AIA, Highland Beach, 305-278-6241
- ~~MAR 5 - Lv. for Key West~~ *cancelled*
- MAR 7 - Lv from Key West to West Palm Beach
- ~~Mar 4 - Lv W. Palm 12:55p Delta #122 - Ar. Boston 3:31p~~ *11:30 am*
- \*MAR 7 - Lv W. Palm 11:05a Delta #788/895 - Ar. Greensboro, etc. 2:25p

(HERTZ 1-800-654-3131)

*Cancelled Auto since Mary Lou and Chris will have car. HZ*

*Mary Lou and Chris Dixon came in their new Chrysler NEW YORKER.*

*Mar 9 1987. VDA Skawinski called from NY, about  
fellow artist. 4c id from Paris.*

Feb 17 1987.

H. Elger

10:10 Pattern started in right



Some color on at eye

It has been a long time

since I had these patterns in my sight!

note:- The pattern in my eye was gone in about an hour!

Photo of a barrel with a ~~lot~~ black end and a spot on the circumference.

No glasses/second when the action was caused by Bill Mac Roberts.

Prints made  
Feb 17 87.  
note. Print made right  
on the edge and repeated.

Stroke light  
at 1/2 pmStroke end  
at 1/2 pm10 min in JK 50 on plus x film at f 11.  
Contrast was low.Comment:- Taper spot and white.  
f 16 aperture. 15 min development.

Feb 21 1987 100 mmoid Ori April 11-7A 11-6A. Cambridge Texas.

Sho Webster from Chicago brought in a hologram of me made with a 20 mW Ruby Laser. It was hung on the wall in Stroke Alley near my office in 4-405 V.H.T. Press Kayfer was in Chicago with me when this Hologram was made.

Today I printed 3 negatives showing an exploding wire with strong backlight to overcome the normal light from the meeting wire.

A circle of wire expands when pulsed with a strong current. It's own magnetic field tends to make the circle larger. Then it creates kinks (2) and breaks up into particles if the energy is enough to melt the wire.

Chester Lu's name was on the film envelope as a date of 1972. I went to the library to see if he wrote a thesis. No result.



Feb 26 1987

H. Edgerton

Starting bookings with Esther.

Leave for Sarasota at 3 pm on Piedmont.

ESTHER AND HAROLD EDGERTON, TRIP TO FLORIDA, FEBRUARY/MARCH 1987 (617-864-4790)\*(MARY LOU DIXON, NORTH CAROLINA, 704-322-6686)

- FEB 26 - Thu Lv. Bos. 3:15p Delta #427/249 - Ar. Sarasota 7:55p
- \*FEB 26 - ~~Thu~~ Lv. N.C. 4:55p Delta #937/249 - Ar. Sarasota 7:55p  
(Stay with Margaret and Bob Robinson 813-366-2705)
- FEB 27 - Fri - 7:30p lecture at the MUSEUM OF FINE ARTS, "Adventures with High-Speed Photography" Patti Buster, 813-896-2667/Carol Upham, 813-360-5432  
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2 rooms-Holiday Inn on the Shore, 2809 So. Ocean Blvd, AIA, Highland Beach, 305-278-6241
- MAR 5 - Lv. for Key West ~~cancelled~~
- MAR 7 - Lv from Key West to West Palm Beach
- ann 4 - Lv W. Palm 12:55p Delta #122 - Ar. Boston 3:31p <sup>11:30 am</sup>
- \*MAR 7 - Lv W. Palm 11:05a Delta #788/895 - Ar. Greensboro, etc. 2:25p

(HERTZ 1-800-654-3131)

Cancelled Auto since Mary Lou and  
Chris will have car. HZ

Mary Lou and Chris Dixon came in their new Chrysler NEW YORKER.

Mar 9 1987, VDA SKawinski called from NY, about  
fellow in NY - 4c from Paris.

Notebook # 36

Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 46 and 47.

Item(s) now housed in accompanying folder.

# COURSE 6.163 - STROBE PROJECT LABORATORY

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE



MASSACHUSETTS INSTITUTE OF TECHNOLOGY

C A M B R I D G E , M A S S A C H U S E T T S 0 2 1 3 9

C. E. Miller

Room 4-405

Tel: 253-4629

Strobe Project Lab is a 12 unit course which may be used to satisfy either the Institute Lab or the EECS departmental lab requirement. The following information pertains to the beginning of the semester.

A sign-up sheet is posted on the bulletin board outside room 4-405, and acceptance to the course is on a first come, first serve basis. It is preferable to plan to take the course in the sophomore or junior year. Freshmen may be excluded, and scheduling problems may present problems which seniors cannot resolve prior to graduation.

Class meets for lecture Mon. & Wed. from ~~10-11 am~~ <sup>9:00 - 10:00 am</sup> each week.

Each student will be assigned to a small lab group which will meet for 3 hours once each week during a designated period (morning or afternoon, Mon. afternoon through Thur.).

Attendance will be taken at class and at lab sessions (100% required).

All laboratory work will be performed during the assigned periods, and will consist of various laboratory experiences and a project. A bound laboratory notebook will be used to chronicle your work in the lab, and will form a portion of your grade.

Several or all of the experiences will be the subject of lab write-ups (individual effort, all must be turned in and on time).

Each group may select, or will be assigned a project which will be worked on during the mid-semester lab sessions. A project report will be required, and will be due prior to the end of the semester. The project report may be either an individual or a group effort.

## First class meeting

Fill out BOTH SIDES OF CLASS CARDS AND INCLUDE PICTURE!

Fill in ALL requested information on the front of the card, and be sure to provide us with a registrar's mug shot. Include ALL phone numbers at which you may be easily reached. Keep this information up-to-date during the semester.

On the back of the class card, X out those periods during which you have other class commitments (course numbers are not necessary).

If you have partner or period preferences, note them on margin on back of the card. Labs are usually 9-12 and 1-4 or 2-5, Mon. afternoon, and Tue. through Thur. Be forewarned that the nature of our scheduling problems typically precludes the possibility of satisfying preferences.

Required materials to be provided by the student are a copy of "Electronic Flash, Strobe" by H. E. Edgerton, and a bound lab notebook (COOP COMPUTATION BOOK, 152 Numbered pages/11<sup>3</sup>/<sub>4</sub> x 9<sup>3</sup>/<sub>8</sub> inches).

Dudley St. 6.613  
1987

MIT Stroke Lab.  
6.163 6.163  
1987

Mar. 10, 1987  
#2.

Boyd Olympe Selwyn Lee phone & on mesa about  
course. We discussed penetration course.  
I gave Ed. Curley ETC the phone no  
813-315 14652

LUCY TAYLOR 3-3461 now at San Francisco  
(from Oakland)

Mar 1987

March 22 - the ice is almost gone on the Charles River Basin  
Yesterday the ice was 50' off the shore opposite my apartment  
11-7A in 100 memorial line Building.

I plan to write an article about flash dunes  
and out post.

The lamp will be give a resistance depending  
upon its dimensions. (assuming a gas fill of 10cm<sup>2</sup>).

26  
Fri Jan 29, 87 Water in sink with aeration  
with 1/20000. f<sub>22</sub> filter  
blends at 1/10 ± 250000 and 26 us.  
Sat. 27 '87 Aeration of flask f<sub>22</sub>. Brian Don.

Exp for much 10 mm - in Deval 775% 75°  
The water was full of bubbles about  
1/8 inch in diam when the  
aerator was used on the pen set.

Calculator for field use.

$$\begin{array}{ccc} 35 \times 1.1 & (35 \times 1.1 \times 100) & \text{Paper} \\ \downarrow & & \downarrow \\ d_1 & d_2 & \\ \text{At } 0.8 \text{ } d_1 = \frac{5}{10} d_2 \text{ and } \frac{1}{f} = \frac{1}{d_1} + \frac{1}{d_2} & & F d_1 = 35 \\ & & d_2 = \end{array}$$

$$\text{Try } F = 35 \text{ mm. } \text{mag} = \frac{d_2}{d_1} = 10$$

$$d_1 = \frac{1}{10} d_2$$

$$\frac{d_1}{F} = 1 + \frac{d_1}{d_2} \quad d_1 = F \times 1.1 = 35 \times 1.1$$

$$d_2 = 10 \times 35 \times 1.1$$

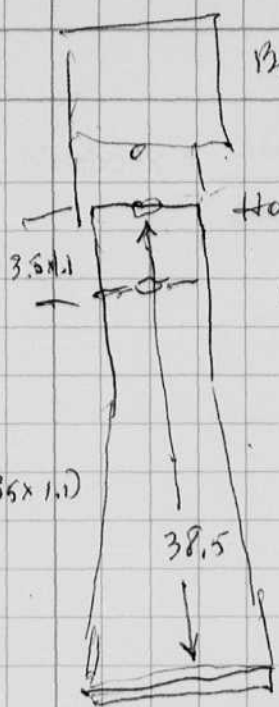
$$d_1 + d_2 = 35 \times 1.1 (1 + 10)$$

$$d_1 + d_2 = 35 (1.1 + 10 \times 1.1) = 35 (1.1) (1 + 10) = 35 \times 11 \times 1.1$$

Print maker of 35 mm film.

Print of parallel bands.

x10 enlargement.



HOLE FOR FILM

LENS 35mm at 1.1 at f16

Lens set for 10x1  
enlargement.

x10 (35x1.1)

$$\begin{array}{r} 35 \times 10 \\ 1.1 \\ \hline 35 \\ 35 \\ \hline 385 \times 10. \end{array}$$

425 polarized

Patron Beaumont (H...)

2.3 11/25 2772 How  
91 other

2nd

GKE  
Mann  
Apr 2  
81

GKE Mann:  
Wasson Hydropur  
in wood.  
= close!



Beam

Cylinder

Book

trans on floor

Nov. 10, 1987  
H.Z.

Boyd Clayton Selwyn J. on phone & on memo sheet  
concern. we discussed function room.  
I gave Ed. Curley & Co the phone no  
813-315 14652

LUCY TAYNTOR 3-3461 now at San Diego.  
(from Dallas)

Nov 1987

March 22 - The ice is almost gone on the Charles River Basin  
Yesterday the ice was 50' off the shore opposite my apartment  
11-7A in 100 memorial line Building.

I plan to write an article about flash dunes  
and art part.

The lamp will be given resistance depending  
upon its dimensions. (assuming a gas fill of 10cm<sup>2</sup>).

26  
Fri Jan 29, 87 Water in sink with aeration  
with 1/20000. f<sub>22</sub> flux  
2 lamps at 1/10 ± 250000 and 26 us.  
Sat. 27 '87 Aeration off flux f<sub>22</sub>. 8 min down.

Exp. for 10 min - in Deval 275% 75°  
The water was full of bubbles about  
1/8 inch in diam when the  
aerator was used on the faucet.

Calculator for field use.

$$\begin{array}{ccc} 35 \times 1.1 & (35 + 1.1 \times 100) & \text{Paper} \\ \downarrow & & \\ d_1 & d_2 & \\ \text{At } 0.05: & d_1 = \frac{1}{10} d_2 \text{ cm} & \frac{1}{f} = \frac{1}{d_1} + \frac{1}{d_2} \\ \text{Try } K = 35 \text{ mm.} & \text{Mag} = \frac{d_2}{d_1} = 10 & F \times d_1 = 35 \\ & d_1 = \frac{1}{10} d_2 & d_2 = \end{array}$$

$$\frac{d_1}{F} = 1 + \frac{d_1}{d_2} \quad d_1 = K \times 1.1 = 35 \times 1.1$$

$$d_2 = 10 \times 35 \times 1.1$$

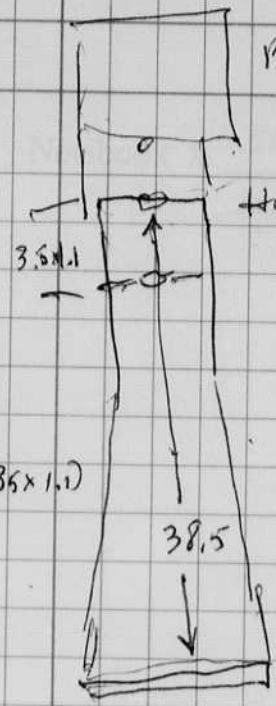
$$d_1 + d_2 = 35 \times 1.1 (1 + 10)$$

$$d_1 + d_2 = 35 (1.1 + 10 \times 1.1) = 35 (1.1) (1 + 10) = 35 \times 1.1 \times 11$$

Print maker of 35 mm film.

Box of normal lenses.

x10 enlargement.



HOLE FOR FILM

LENS 35mm at 1.1 at f16

Lens set for 10x, enlargement.

x10 (35x1.1)

$$\begin{array}{r}
 35 \times 10 \\
 1.1 \\
 \hline
 35 \\
 35 \\
 \hline
 385 \times 10.
 \end{array}$$

4x5 polaroid

Peter Beaumont (H...)

2-8 11/25 2272 Home  
91 eff

2nd

GKE  
Mann  
Apr 3  
81

GKE Mann  
was a Hyaspur  
in wood.  
= close!

50  
50  
50

Beam

Cal

Book

trans on floor



Nov. 10, 1987  
H.Z.

Boyd Chryzel Selwyn Lee phone & on using steel  
rover. We discussed foundation rovers.  
I gave Ed. Curley ETC the phone no  
813-315 4652

LUCY TAYNTOR 3-3461 now at San Francisco  
Nov 1987 (from Daalim)

March 22 - The ice is almost gone on the Charles River Basin  
Yesterday the ice was 50' off the shore opposite my apartment  
11-7A in <sup>the</sup> 100 memorial line Building.

I plan to write an article about flash dunes  
and cut part.

The lamp will be give a resistance depending  
upon its dimensions. (assuming a gas fill of 10cm<sup>2</sup>).

26  
Fri Jan 29, 87 Water in sink with aeration  
with 2 probes. f<sub>2</sub> = flux  
2 probes at 1 ft & 250 B.C. and 26 ms.  
Sat. 27 '87 Aeration of flux f<sub>2</sub>. Brian Don.

Exp. pressure 10 mm - in Devel 275% 75°  
The water was full of bubbles about  
1/8 inch in diam when the  
aerator was used on the full cut?

Calculator for field use.

$$\begin{array}{ccc} 35 \times 1.1 & (35 \times 1.1 \times 100) & \text{Piston} \\ \downarrow & & \downarrow \\ d_1 & d_2 & \\ \text{At } 0.6: & d_1 = \frac{5}{10} d_2 \text{ mm} & \frac{1}{f} = \frac{1}{d_1} + \frac{1}{d_2} \\ \text{Try } f = 35 \text{ mm.} & \text{mg} = \frac{d_2}{d_1} = 10 & d_2 = \\ & d_1 = \frac{1}{10} d_2. & \end{array}$$

$$\frac{d_1}{f} = 1 + \frac{d_1}{d_2} \quad d_1 = R \times 1.1 = 35 \times 1.1$$

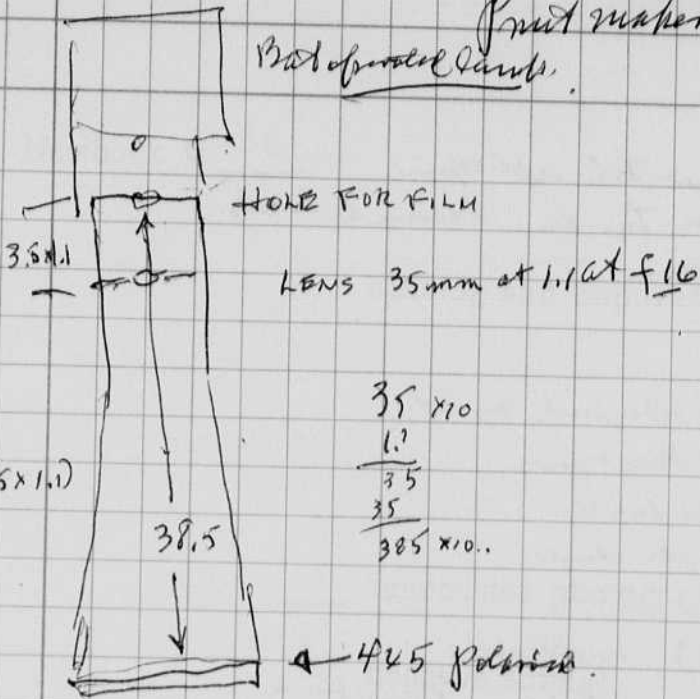
$$d_2 = 10 \times 35 \times 1.1$$

$$d_1 + d_2 = 35 \times 1.5 (1 + 10)$$

$$d_1 + d_2 = 35 (1.1 + 10 \times 1.1) = 35 (1.1) (1 + 10) = 35 \times 11 \times 1.1$$

Print maker of 35 mm film.  
Box of parallel plates.

x10 enlargement.



Lens set for 10x,  
enlargement.

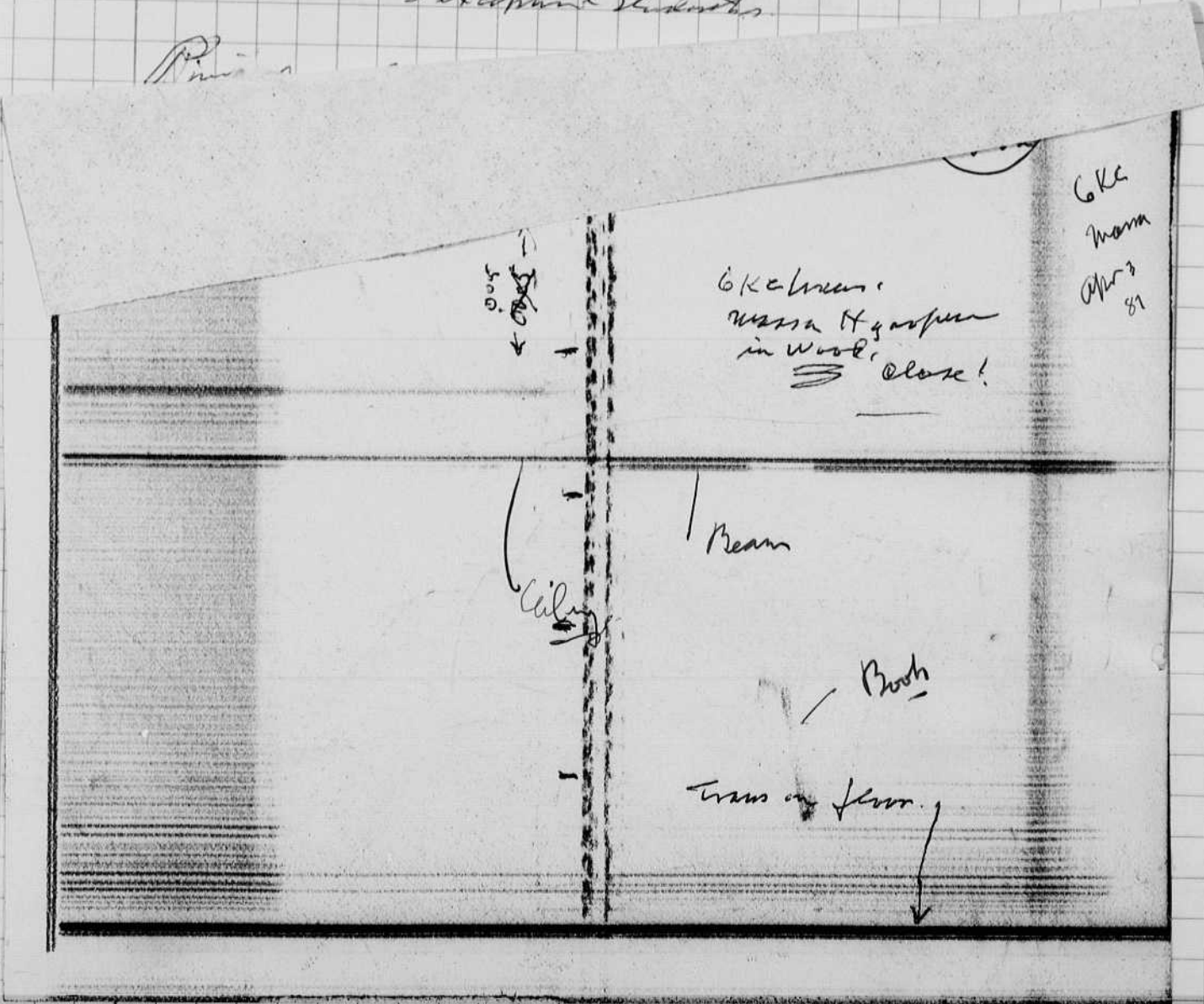
x10 (35 x 1.1)

$$\begin{array}{r} 35 \times 10 \\ 1.1 \\ \hline 35 \\ 35 \\ \hline 385 \times 10 \end{array}$$

Peter Beaumont (Harrow)  
 Holderness, common Lakeville.  
 Physics Dept.  
 5 exceptional students.

203 - 435 2272 Home  
 203 - 435 - 2591 office

Print



6Kc  
 Mann  
 Apr 3  
 89

6Kc lens.  
 Wassa H gaspen  
 in wood.  
 close!

Beam  
 Booth  
 trans on floor

April 6, 1987 (84 today)

## Harold Edgerton.

Esther and I went to Brewster Fri aft April  
 Piedmont 37. 615 - 834. met by Jan Toyden Rebecca & Emily,  
 Drove to Winstan - salmon to Jan's House.

April 4 Birthday party

Mary Lou and classic

Ellen Law, Bill Dixon, Susan Bryant, Bernice.

Mary Ann, Bud Hubbard & Rex Mary.

Big dinner at Jan's House - extra food.

Henry and Dixon came after drink

Return to Boston Apr 5 at 3:30 (late), met in

Boston by Keith Law, Ellen came with us. Rain!

Bob Rios is due today at 10 am with Sony V.W. T.V. for trial at Loch Ness.

Bill MacKintosh is making a camera.

6 sec intervals. Shutter is flushed by a capacitor discharge.

The film is going to slow, there blur will be not object visible.

## April 12, 1989 Harold Edgerton

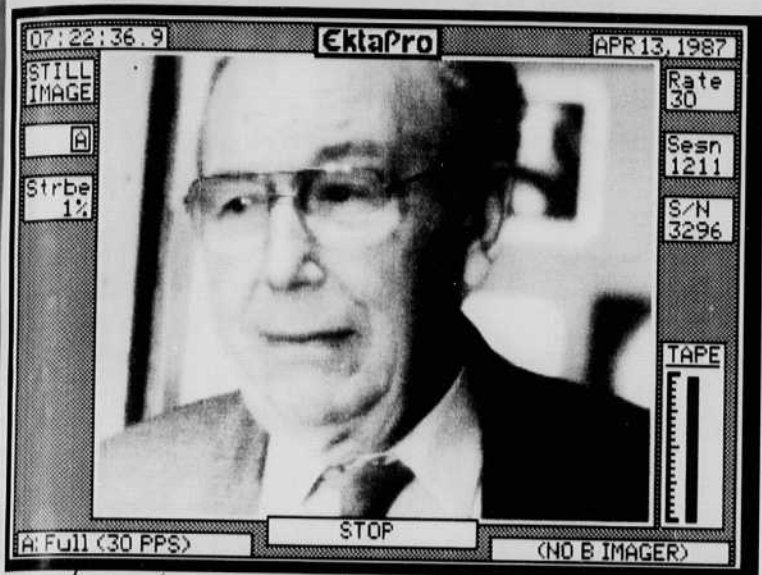
On Friday April 10 I went out to Boston Harbor on  
 the VOYAGER from the N.E. Aquarium. Some 25 students etc  
 went along, Martin Klein and Greg Koon brought a Klein  
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John Hill may help John Mills also. The  
 comment from the Wellington is missing. It should be  
 described with side scan. Harriet Withers' college

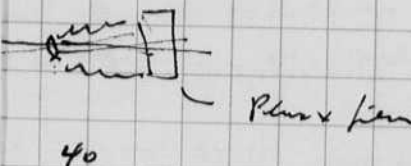
Explosion W. end under bed light



AROLD EDGERTON 1987

lens 4" diam fl about 10".

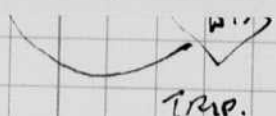
a stereo photo,



Bruno  
Walter  
3039 MIT  
English  
Singer!

slide.

Hugh Mellaly v  
Eastman Kodak Co  
Guilford Conn 06437  
Apr 14 1987 203453 0343



April 31 1987 Esther went with me to N.H. to the Hyatt hotel at Grand central to attend a 500 banquet of the Int. Photo. c. Cornell Capra. I received an award for achievement in photography. I was a plus sign square object with a n internal film-shaped band. We returned to Boston the next morning on the 7:30 shuttle P.A. and could direct go to the P.A. meeting in the Ritz Carlton Hotel. Prob and many low wire line. Also Dixon attended the Howard Fair School alumni meeting.

May 2 1987

100 mm wire on coil, 2500. Bill MacRoberts got almost finished the 35 mm continuous motion film camera. 8 sec per standard. 3 1/4" high frame. A commutator feeds a capacitor into a mechanical shutter (est 1/10 sec exposure). The blur due to film motion is negligible.

$$\text{Blur} = v \times \Delta T \quad v = \frac{2 \text{ cm}}{8 \text{ sec}} = 0.25 \text{ cm/sec.}$$

Estimate.  $\text{Blur} = 0.25 \times \frac{1}{100} \text{ sec} = 0.0025 \text{ cm} = 0.0025 \text{ mm}$   
 Run Time 100 f x 16 pics/frame = 1600 frames  
 $1600 \times 8 \text{ sec} = 12800 \text{ sec} = 180 \text{ min} = 3 \text{ hours. (for 8 sec rate)}$

180  
69 10800  
0  
78  
40

April 6, 1987 (84 days)

## Hansel Edgerton.

Esther and I went to Greenwood Fri aft April  
 Piedmont 37. 615-838. met by Jan Tyndrum Robson & Emily.  
 Drove to Winton - salmon to Jan's House.

April 4 Birthday party

Mary Lou and Charles

Ellen Law, Bill Dixon, Maria Bryant & Bennett.

Mary Ann, Bud Hultak & Rox Myers.

Big dinner at Jan's House - cake for all.

Henry and Dixon came after church

Return to Boston Apr 5 at 3:30 (late), met in

Boston by Keith Law, Ellen came with us. Rain!

Bob Rino is due today at 10 am with Sony V.W. T.V. for trial at Loch Ness.

Bill Woodhouse is making a camera.

6 sec intervals. Shutter is flushed by a capacitor dis charge.

The film is going to show, there blur will be not objectionable.

## April 12, 1987 Hansel Edgerton

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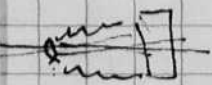
John Gull may be in John Mills also. The  
 comment from the Wellington is amusing. It should be  
 recorded with side scan. Herriet Watson's ally



HAROLD EDGERTON 1987

lens 4" diam fl about 10"

a shadow photo.



Plan x lens

40

plate.

Branie  
Walter

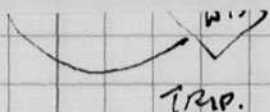
3039 MIT

English

Singer!

Hugh Mellaly v  
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Apr 14 1987 203463 0343



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May 2 1987

100 mm or 100 mm, 250.

Bill MacRobert's got almost

finished the 35 mm continuous motion film camera. 8 sec per standard 3 1/4" light frame. A commutator feeds an capacitor into a mechanical shutter (cost 7/10 sec exposure). The blur due to film motion is negligible.

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Run Time 100 f x 16 pics/ft. = 1600 frames

$$1600 \times 8 \text{ sec} = 12800 \text{ sec} = 180 \text{ min}$$

$$\begin{array}{r} 180 \\ 6 \sqrt{10800} \\ \underline{0} \\ 78 \\ \underline{0} \\ 0 \end{array}$$

$$= 3 \text{ hours. (for 8 sec rate)}$$

April 6, 1987 (84 days)

## Hansel Edgerton.

Esther and I went to Provincetown Fri aft April  
 Piedmont 37: 615 - 834. met by Jan Tynkum Release.  
 Drove to W. with - return to Jan's House.

April 4 Birthday party

Mary Jan and Charles

Ellen Law, Bill Dixon, Maria Bryant &amp; Bernice

Mary Ann, Brock Hubbard &amp; Roxie Mary

Big dinner at Jan's House - cake &amp; fruit.

Henry and

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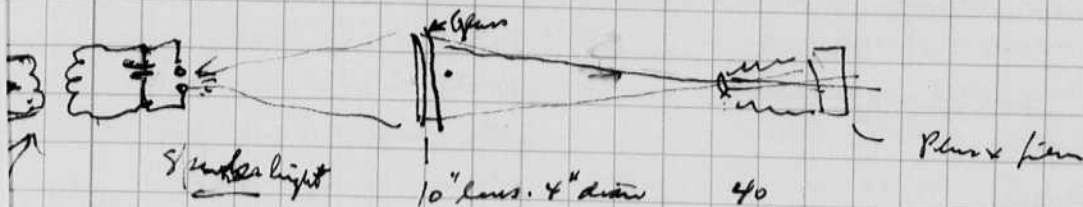
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 Turnout from the Wellington is missing. It should be  
 searched with side scan. Heriott wither's college

Esther's plodding work under backlight

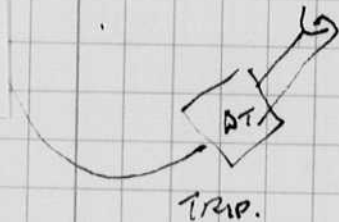
Apr 12 1987. 110 pm.

Backlight. Condenser lens 4" diam fl about 10".  
 Set up camera under aperture.  
 to find min spark length for a shadow photo.

Bronnie  
 Walter  
 3039 MIT  
 English  
 Singer!



While to see photo.



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$$\begin{array}{r} 180 \\ 69 \overline{) 10800} \\ \underline{6} \\ 48 \\ \underline{48} \\ 0 \end{array}$$

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Notebook # 36

Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 50 and 51.

Item(s) now housed in accompanying folder.

1987

*BONNIE Watson* - 3039. 200  
7 years.

*2873*  
*FATTE O'CONNOR* 317.546  
*and her*  
*Tom Wang Jr*

*Theo Theoharis*  
*2:53-28*  
*Theo Harris*  
*Judge, Literature.*

# ALL- TECH SING

*BILL WEGENER - Jr*  
*ALEX ROSEN - 5-7104*

## STUDENT CENTER COMMITTEE

*Her and Bonnie got the  
Bowling Pins! - She don't know as to me.*

ALL TECH SING

1987

Next House

G and the Clefs

Burton House

Tom Lehrics

*Eric  
Brunson  
Burton*

TEP

That Makes Three

with a return appearance by  
Julio Friedmann

Sponsored by the Student Center  
Committee in cooperation with the  
Campus Activities Office.

Thanks to

Toscannini's

Uno's

MIT Phisical Plant

Our judges

Prof Theoharis Theoharis  
Literature

Prof H. (Doc) Edgerton  
Institute

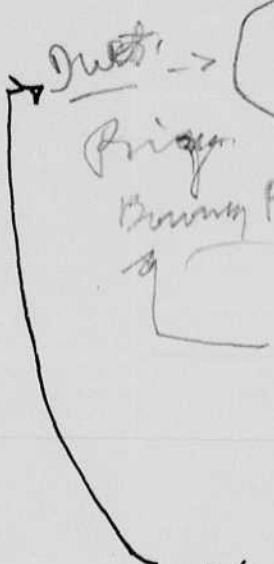
Bonnie Walters  
} 2022. Coordinator  
Committee On  
The Ritting Requirement

*Singer*

PRESENTATION OF BIG SCREW by APO

ALL TECH SING WINNER ANNOUNCED  
PRESENTATION OF EGBERT

*Next House*



*We sang a lot of old songs*

*Bonnie Walters & Herud 22*

~~May~~ MAY 4 1987 Monday

The 1987 All Tech Sing was held on May 2 1987 in  
Walker west Hall.

Bill Wegener in charge      Sing  
Alex Rosen 5-7104. asst

Judges Theo Theoharis 253-2800? MIT

Bonnie Walters 3-3039.

Harold Edgerton 3-4039. MIT

Dr. Wolpew at 2 pm - Nerves specialist, Monday.

ERIC REIDEMISTER 3062 Room. Basement

Comm. - Brooklyn. 3-6064

May 6 1987, M.I.T. Chas. class - 9 am

Lunch with Chas. Muller,

Recorder - their presentation at 2 pm.

All Tech Sing 1987.

Judges, Bonnie Walters 3039. (writing requirement)  
Theo, Theoharis - 2253 - (1823)?  
Harold Edgerton.

Bill Wegener, II. in charge.

Alex Rosen 5-7104 helper.

May 7, 1987 Thursday.

A 35 mm camera for elapsed time is being  
made. It takes 100 ft of 35 mm film. The film  
runs continuously at an 8 sec interval. The shutter  
is flashed from a capacitor discharge into the shutter coil.  
Exposure is about .01 sec. ± which should produce a  
blurred photo.

The core was finished today and ~~is~~ is now at  
15 feet deep in the MIT Hall to check for leaks. We plan to  
use this camera in Tech Men in a certain position at a  
place to see animals.

May 8 1987 Friday. Harold Edgerton

Esther went with me at 5:30 am to Woodchester road on Rt 40 and 9, Turnpike. We arrived at the Woodchester Foundation for Environmental Photography at 9 am - a visit was made of steel arms water

Thomfield (Kip) Sluder, Grant Fairbanks and Robinson was in charge. Then at noon a shower and my lunch - meal slots - paper with slides - and shadow photography. Then lunch at - arrived Boston. We were in Boston by 3 pm.

May 12, 1987. Expect visitor from Florida, Sarasota. Afternoon with Bob Ogilvie - man of fine arts.

May 20<sup>±</sup>, 1987 Sat. Mus of Si Pops concert several days ago. Ruth Appen Madam Renjies Dorward - Howland.

Esther and I went to AURORA to attend the with grand ceremony of the High School, Laguna 20 min talk. 87 graduates.

I lectured Friday at 3-5 to the V. Bush Fellows Olivea Beasethi Italy.

- Wm Booth Texas
- James Borg Honolulu
- Robert Baderi Calif?
- Judith Horsman Oklahoma
- Mary Power Memphis
- Margami Sun Wash DC
- Palmer Texas Atlanta
- Joe Vranquez Denver.

Bush fellows at  
MIT Journalists

Vester M & Elmy - Dresden. 253 - 3442  
Linda Lowe

Eliza Faden due on Monday at the  
Genetic Museum at Harvard.

May 21 1987. Storke Lake.  
Monday.

Program at Harvard Semitic Mus at 6 pm.

SARAH ARENSON

3275, ינסון, תל אביב



8 Calamity St. TIVON 36000 ISRAEL Tel. 4-931644

Omaï Linder (LINDER) ירדן / ים

66 Pearl St Lamb, MA. 02139 ☎ 547 7958

Gabriel Ben-Dor 24 Oren street, Haifa, Israel

URI KELLNER

18 PINE DRIVE

GREAT NECK ESTATES N.Y. 11021

Yael Metser, Haifa University, Division of Public  
 Affairs and Information

Here I am for the hundreds of times and  
 still an adviser as for the future

□ 77 □

Elisha May 23/1987

A movie of Sardinian Archaeology was shown Harvard Semitic Mus  
6 pm +  
8 pm +  
 on Monday, May 25 1987 Foundings in the Sea

Wally Schauer, & Judy Wray  
 Alan Miller Director. Harvard.

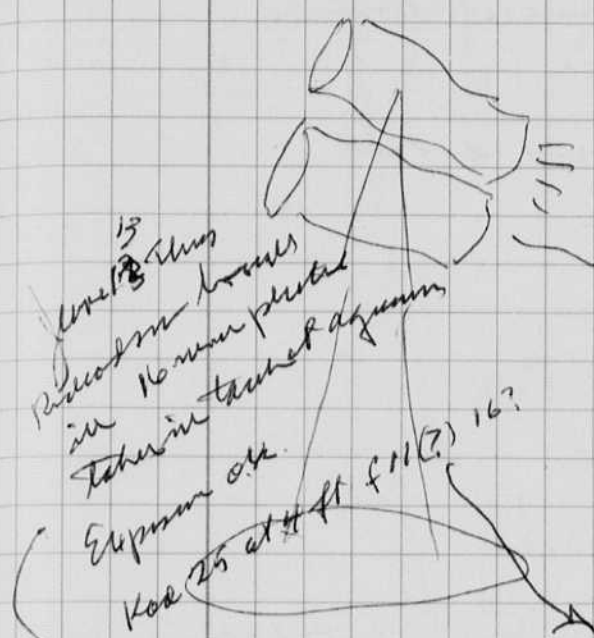
Boonin Ben Dor Rector of Heita gave an address  
 Great unity & pluralism in Higher Education.

Manfred Klein & Deanna,  
 Wally Westphal - Director.

May 29 1987 Harold Edgerton MIT

100 Main Drive Cambridge Mass. 02142

Yesterday I worked with Bill & Marc Roberts on the elapsed-time movie equipment.



3 batteries 225 words in series.  
 fash 1200 BCPS +  
 f11 5 ft focus Kodachrome 25.  
 4 -volt bats. 24V for motor,  
 Rate 50 seconds between photos.

Bill Robinson  
 973.5252

We tested it in the MIT pool for leaks, all seemed to be ok.

Bill Robinson of the Aquarium took it to the Aquarium on May 29 today. He will try it in marine at 300' deep to find out what Trallops do!

I spent today from 4 to 2:30 at the 60 State St Club on the top floor. I was at the board meeting of the Massa Co. Frank and Ernest Massa were there. Mrs. K is the Lawyer. Tom Conn was there as well as too others from the Massa Co.

June 1, 1987 Harold Edgerton Graduation at MIT 1000 in Eastern  
 Bender from Lawrence Robinson & family.

June 1987.

Under water elapsed time 35 mm camera looked with front lens, H<sub>2</sub> & VE mark.  
 Lamp at 2.5 ft 85 BCPS. to a plant.  
 Rate 8 seconds between photos.  
 Film - 25 ft for East, opened in Dark Room seen through,  
 but developed - needs more light!  
 try again.

June 1987 Friday Harold Edgerton

MIT High-Speed Seminar held this week  
 June 10 - 14. 32 attended from all over U.S.A. Banquet at  
 Faculty club at MIT on ~~Thursday~~ <sup>Wednesday</sup> night June 10. Brian  
 Roshover talked about Earth water.

June 10 Wed 1987 3pm meeting at Bob Rinos apt at  
 Harbor Towers.

Present Bob Rinos  
 in Curtis  
 ' —  
 Harold Edgerton  
 Chas Wydroff.  
 Bob — Roshover.  
 Frank Massa.  
 Don Massa.

Discovered source - Navy AHS 137. ask loan to take to  
 Tech News.

June 17 1987 Seminar at UNICREST BEARHILL RD FOR  
 FRANK GIBSON by 124th group.

Harry Maxwell Hanning  
 Roger Cotton  
 Tony England Source operator

Frank works at Venture Capital Har Square.  
 Maxwell pretty after 16 years.



June 17 1987 Fri 4:40 MIT

H. Edgerton

Bronner, Small 4 mfd - spray coil Ring # 7.

0 5 10 15 20 25  $\mu\text{s/cm}$

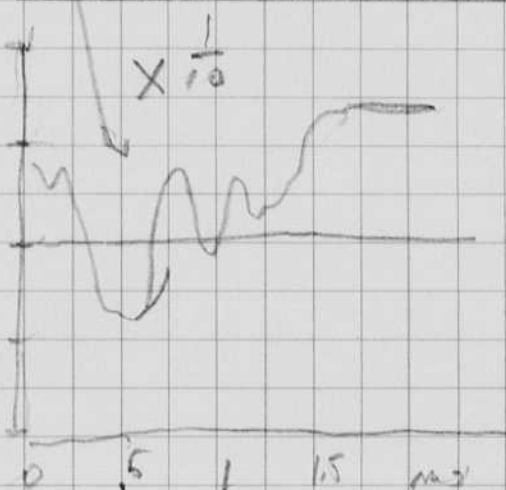


$\frac{1}{2}$  cycle = 2ms +  
margin 2.5ms.

1 cycle = .4  $\mu\text{s}$ .

$$f = \frac{1}{.4} = 2500 \text{ cycles}/\mu\text{s}$$

Pulse length = 2ms.

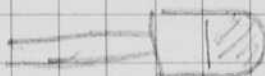


phen

Should be great  
for mud penetration!

Olyat, complete design  
and operate in  
Boston Harbor.

Mike  
see 20' +

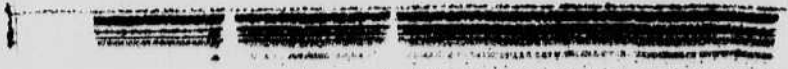


Rubber covered

17015 #101

17015 #101

12 KC



13 14  
Long Cable

TR  
12  
Hyd

12 KC  
Hyd

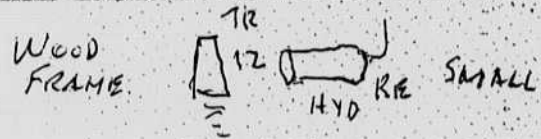
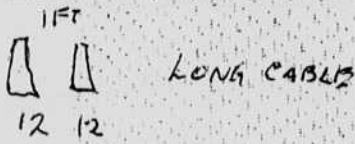
Wood  
Shield

WOOD FRAME.

6 12 16

6 12 17

16



17015 #101  
6 KC



6 KC

17015 #101



6 KC TR  
No cable  
on shields

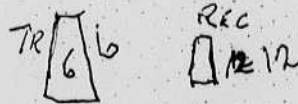
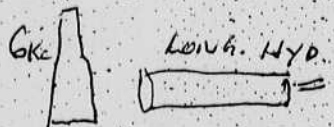
6 KC TR  
12 12  
Repair Shields

Shields  
gms

↑  
out  
↓  
Cable

6 12 16

6 10 12 17 gms



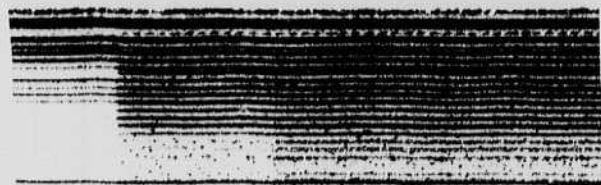
HIEE,  
June 3 1987

AROLD ED WERTON

3.5ke

1701-5 #101

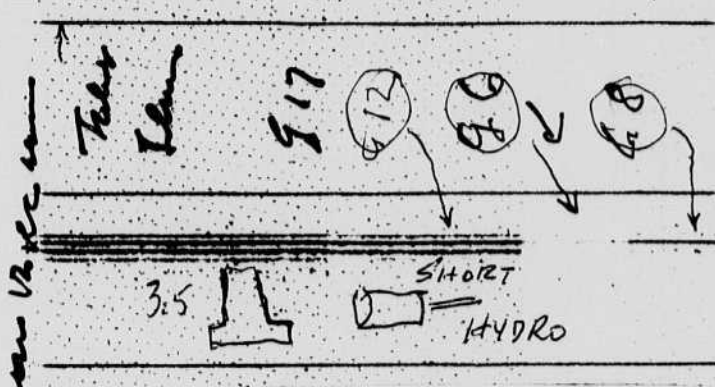
1701-5 #101



3.5ke  
open  
shunt

5000 Hz  
from 219 Hz

6 gain  
17 17



JUNE 3 1987

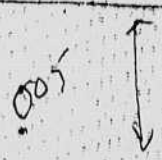
Harold Bowers

Room 4-405 ceiling

12.1cc



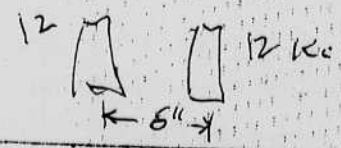
Printer records  
with various  
hyperflores



June 4 1987  
H. Edgerton

ceiling

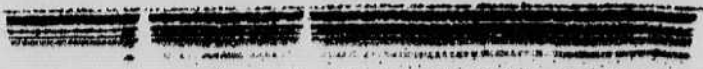
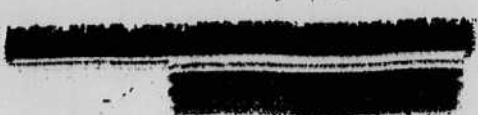
6 12 16



17015 #101

17015 #101

12 KC



15 11  
Long cables

TR  
12  
Hyd

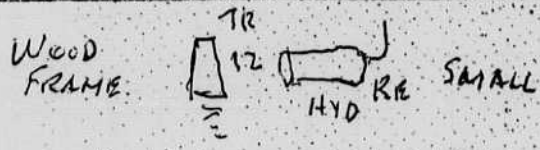
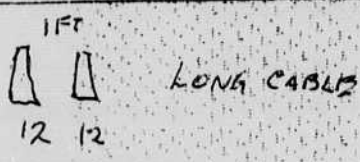
12 KC  
Hyd

WOOD FRAME.

6 12 16

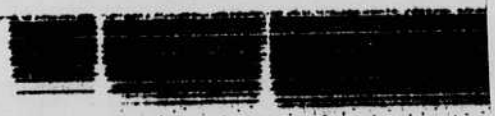
6 12 12

16



17015 #101  
6 KC

17015 #101



6 KC TR  
No cone on thrust

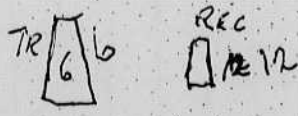
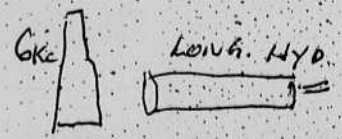
6 KC TR  
12-12  
Dipole Shields

Shield  
gun

Column

6 12 16

6 10 12 17 gun



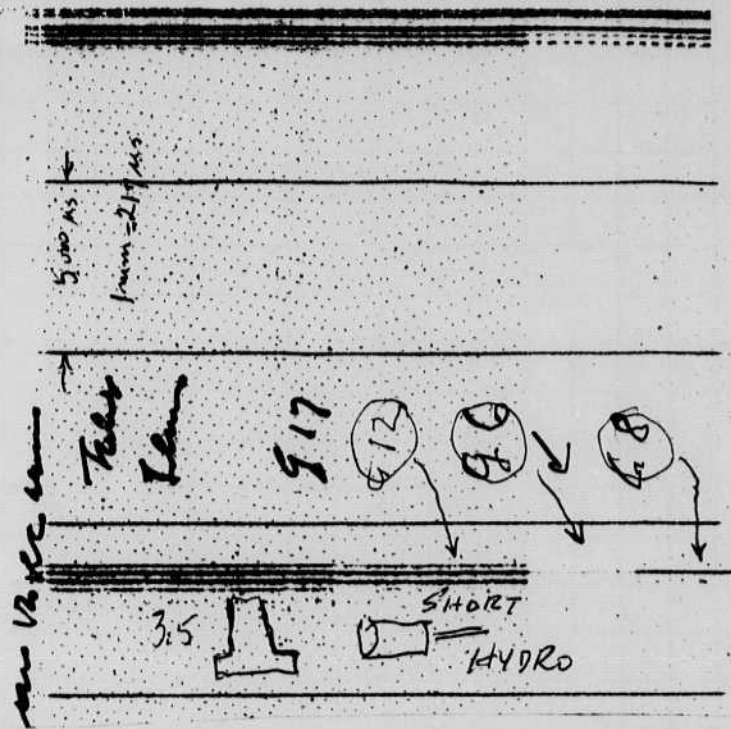
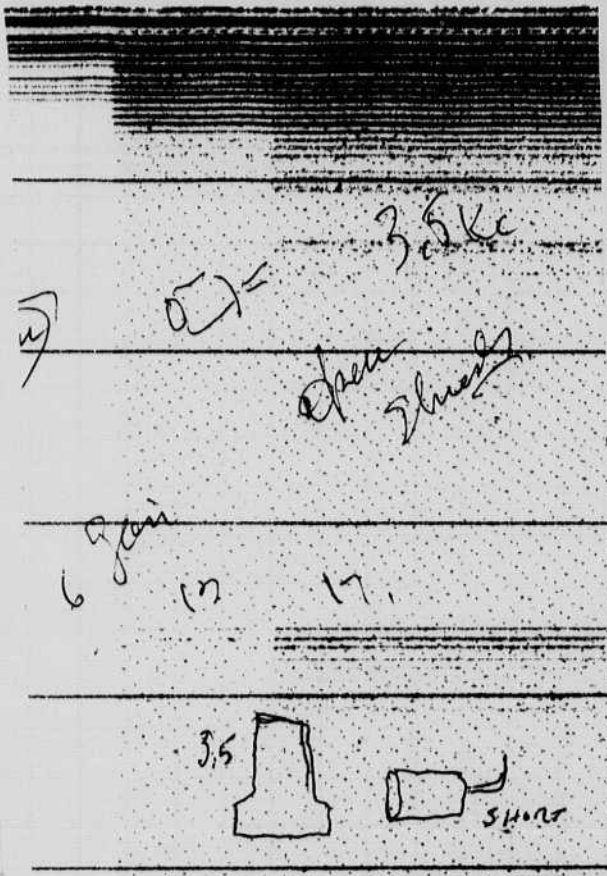
H.E.E.  
June 3 1987

AROLD EDVERTON

3.5Kc

1701-5 #101

1701-5 #101

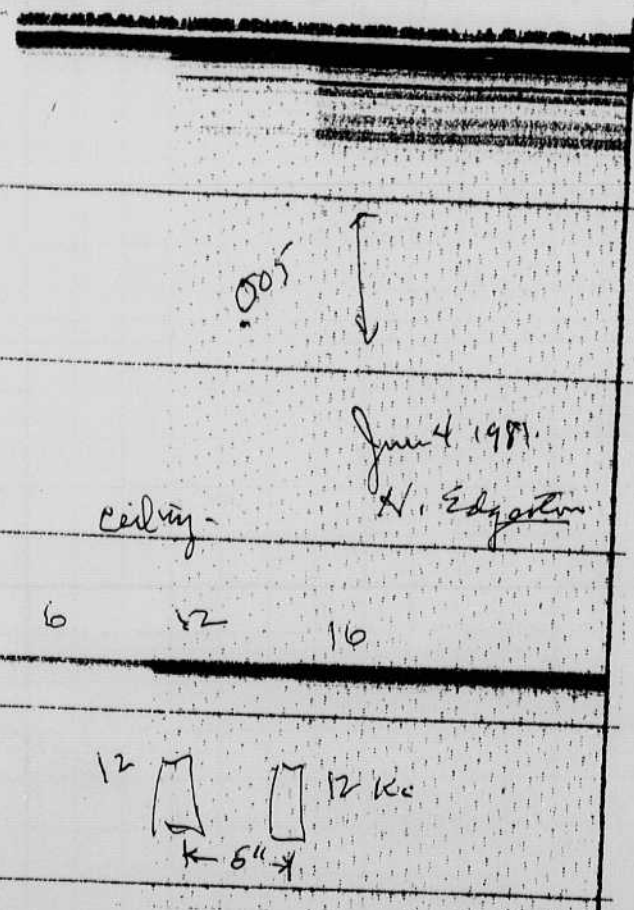


JUNE 3 1987

Harold Edgerton

Room 4-405 ceiling

12 100



Printer records with various hypophones

June 22, 1987.  
D. Edgerton.

Larry and Colin Helson were married several days ago in Westport. Eithan and I went with them.

Joe Klinck called from N.J. He is experimenting with Bombers. He wants to find some lead lines and long ago.

He told me of the Republic which was lost south of Martha's Vineyard under a large cargo of gold coins. 240 feet deep.?

June 24 1987. Mani experiment  
Don Massie

Experiment for June 25.  
Tape from Mani with  
signals from whales.

3.3 kHz signal, 25 ms 100 ms signal.

many pulses heard.

Less of activity -

may take several

photographs of soups.

Massie J-9 w. S. may, Brookland.

(V.S. may). Experiment send sound from  
Humphreys.

Hydrophones.

(Hy 5 - 15) Hydrophone. -

(TR 25)  
(TR 16)

Record sounds in water. -

Prey study - Pilot whales - 3 young.

(M1002)  
point whale

August 6<sup>th</sup> dinner - Echoes from whales.

Lightfield Ammunition Corp Box 162

Adelphi N.J. 07710

William S. ~~County~~ County consultant. Longboat Key Florida 33548  
815 383 6665.

Dusan Lewis - Tal Review - Build photos.



June 24 1987

H. Edgerton.

I went to the N. E. Aquarium at 8 am for a  
ride on the diver ship. Don Mason, Poling Mayblum  
(Howard) are two others there. We went out to  
Hanes light and then returned because of bad weather. The  
wind was blowing from the East.

Jean Louis Michaud (France) was here at 1:30 to see  
me (REMEMBER). They make an occasional ROV and other  
oceanographic devices.

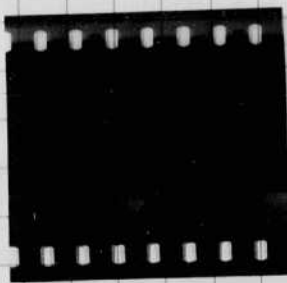
July 15 1987. H. Edgerton.

Used by \_\_\_\_\_ with Inl. Camera outfit to discuss  
underwater photography.

Exposure of Positive 35mm film (402?) at  
f/4.2 into Daylight on the background  
from the window with light. Cloudy day!

Exposure on the daylight.

Exposure too much and 2 flash bulbs 25 mg  
(110 to 195) 2 BCP's on each of 2 lamps at  
5 ft from subject. It might have been ok  
if there was no daylight!



Marian Manichant  
New AGE 9.

Ani W. Manichant  
5 YEARS OLD.

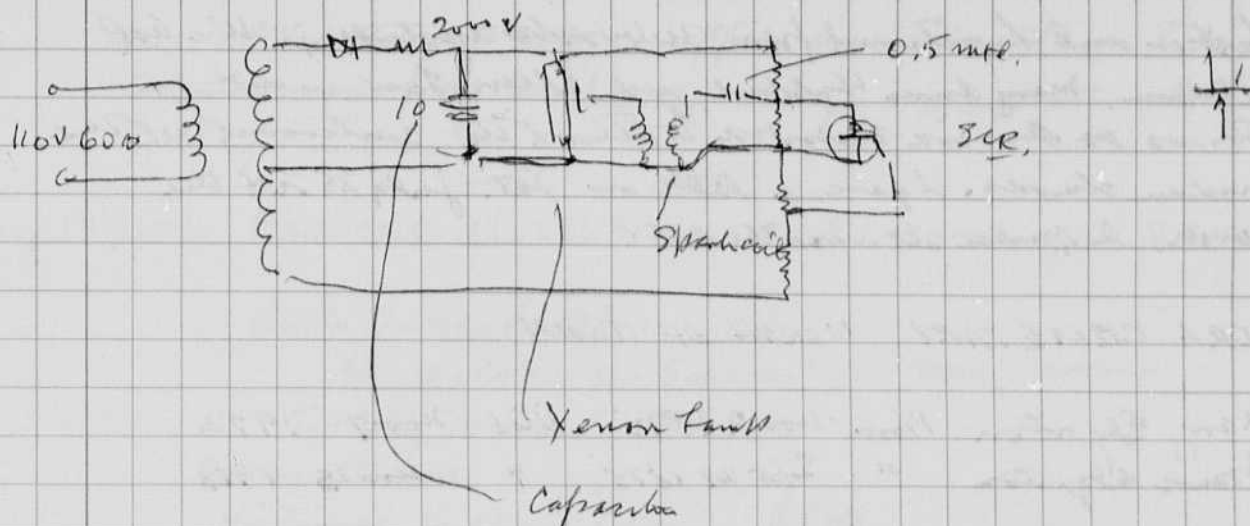
STOCK 32 5302 Fair Grain Pos film 100'  
8 sec intervals. f/11.

Conclusion The 5302 "positive" slow film is  
"too good" in the Charles River even at 1 meter deep.

Suggestion: Buy Plus X film over processed. f/4.5  
1, 2, 3, and 4 intervals. Order plus X film 100 ft on core. w/ 1/2000.



600 cycles strobe July 1987 Sat.  
 P. Eggerton.



Operation... Change on pos cycle.

Discharge when neg voltage arrives.

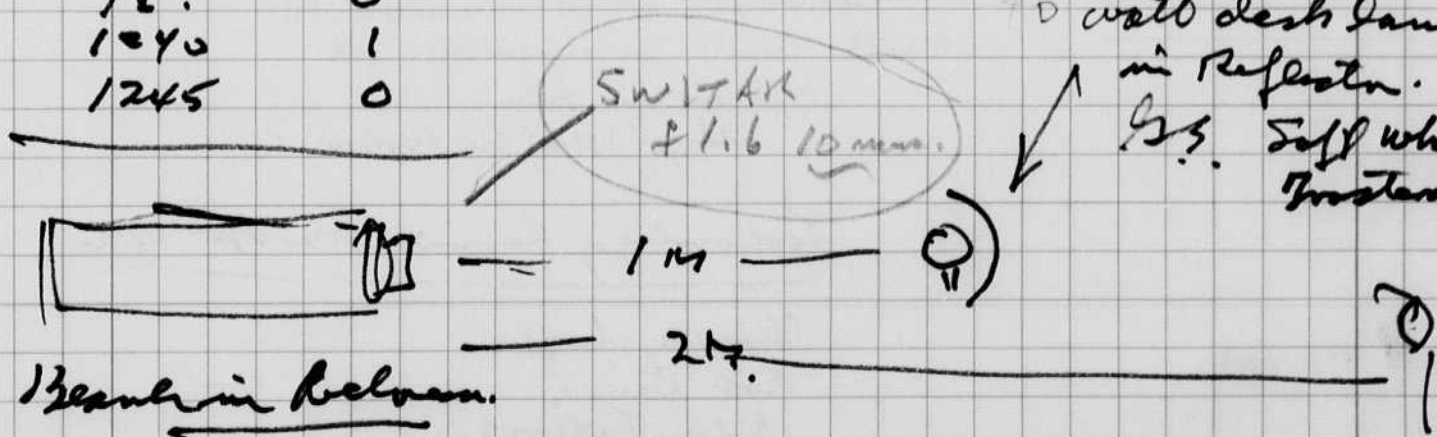
Should be accurate in the cycle.

Convert circuit to 120 cycles - another complete discharge circuit and lamp as per the neg pulse.

Chen Ruar 35mm. P<sub>x</sub> xxx film. 12 noon  
 12:33 514 when 9:00am!

12:36 0  
 12:40 2  
 12:43 0  
 12:44 1  
 12:45 0

! Water in camera!!!  
 Shutter sticks open!  
 O with desk lamp  
 in reflector.  
 35. Soft white  
 Frostard.



Exposure loss!  
 R. W. L. 1.1 several days old! Green Rev.  
 Film Dark.

June 23, 1987.

D. S. Johnson.

Larry and Colin Gibson were quarried several days ago in Westport. Either one or I would auto loan.

Joe Klimm called from N.J. He is experimenting with Bombers. He wants to find some lead bars led long ago.

He told me of the Republic which was last month of Martha's Vineyard under a large cage of gold coins. 200 feet deep?

June 24 1987. Mani experiment  
Don MannExperiment for June 25.  
Tape from Mani with  
signals from whales.

3.3 kHz signal. 25 ms, 100 ms signal.

many pulses heard.

Lots of activity -

may take new photos

photographs of groups

Mann J-9 w. 5, many, Broad lead.

(V.S. many). Experiment send sound from  
Humphreys.

Hydrophones.

(Hy 5 - 15) Hydrophones.

(TR 25)  
(TR 16)

Record sounds in water.

Brey early - Pilot whales - 3 young

(M1002)  
Pond holesAugust 6<sup>th</sup> 6<sup>th</sup> - 3 hours for whales.Lightfield Communication Corp Box 162  
Adelphi N.J. 07710William S. ~~County~~ County consultant. Longest Key Florida 335418  
813 383 6605.

Susan Lewis - take Review - Build photo.



June 24 1987

H. Edgerton.

I went to the S. Agassiz at 8 am for a  
ride on the Voyager ship. Don Messer, Dudley Mayblum  
(Harvard) and I was there. We went out to  
some light and then returned because of bad weather. The  
wind was blowing from the East.

Jean Louis Michard (France) was here at 1:30 to see  
me (I REMEMBER). They wish to see a ROV and other  
oceanographic devices.

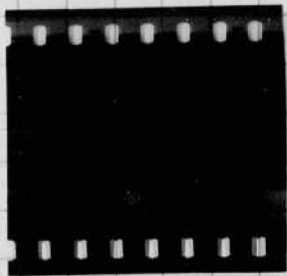
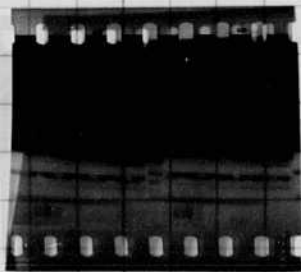
July 15 1987. Harvard Edgerton.

Visit by ——— into Ind. Lab. office to discuss  
underwater photography.

Exposure of Positar 35mm film (7402?) of  
f 4.2 under Daylight on the background  
from the window with light. Cloudy day!

Exposure ok in daylight.

Exposure too much under 2 flash banks 25 m9  
(110 70 195) 2 BCPS on each of 2 banks at  
5 ft from subject. It might have been ok  
if there was no daylight!



Mariam Manichair  
New 49E9.

Ani W. Manichair  
5 YEARS OLD.

STACH 32 5302 Fair Max Pos film 100'  
8 sec intervals. f11.

Conclusion The 5302 "Positar" slow film is  
"too good" in the Charles River area at 1 meter deep.

Suggestion Try Plus X film over processed. f4.5  
1, 2, 3, and 4 meters. order plus X film 100 ft on core. w/ 1/2 pool.



July 29 1987 Monday. 4-405 MIT Cambridge Mass.

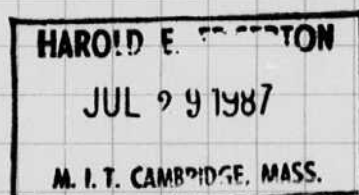
Esther and I returned from Network yesterday. We had  
 Baldwin, Mary Anne Hubbard, and Ellen Law went  
 with us to Aurora Cemetery to attend the centennial of the  
 Christian church. I gave a talk on Sat. July 25 at the  
 church, I started out near the end!

AURORA CEMETARY NORTH OF TOWN

Mary Edgerton Born Nov 2 1875 Died Nov 7 1972  
 Frank Edgerton " Sept 29 1875 " Nov 25 1963

William Stewart 1879-1952  
 Clara " 1878-1967

Bill Mac Roberts is back after a medical problem. He  
 has been out for 5 weeks.



Lord's Photos of several years ago a  
 Published in the Tech Review

Lens 10mm focal length  
 Aperture f/1.6.

Kodachrome film  
 Kopy's pod for track ?

Technology Review Mar-Apr 1976

Chris Wychoff  
 Bob Rines,  
 John Fathall.

Aug 7 1987. Howard Edgerton

65

Esther & I returned from Cleveland last night after a talk at the Case-Western affair denouncing the 100th anniversary of the Muckelsson survey experiment. with J. P. Sigot met us.

Aug 12, 1987, Back still after trip to Cleveland. Work after 2 days rest

Anta Antela (left) infected!

D. Wolsten & Schwartz. Many colors

Let's see red and spots!

Optimal Path!

Histamine. pills 2/day. I do.



Sub 4 Reson.

② 994(?) visual.  
Photo cell out  
cell metal dist 6' ±.

Peak  $0.4 \times 0.6$   
Dur 150  $\mu$ s

Output = 90 B.C.P.S.

a bright metal behind the reflector doubles the light!

Aug 20 - 21. Alan Yates Conference.

330 chosen. Aug 20 first hour anderson (NRL)

We also saw some streak photo.





Photo #1. 60 cycle light. no exposure? !!!

#2. 60 cycle light. Dropper - Liquid drug 60 cycle  
10 min in DK50? f11.

may be more DK50

3. 60 cycle 10 drop frames. f11. 109 mm lens at 630 mm  
5/8" emergence.

Get Scale to show emergence



4. 60 cycle 4 drops on plate f11 109 mm lens at 630 mm  
DK50 from bottle fresh.  
10 min development.  
Trap about 2 ft from drops and above.

FILM 4x5 Eastman 4052. ARACOR  
10 min in DK50.

This is a sample - fine grain instant plate.  
heavy base.

4 min development.

Scale in photos 60/sec.

5042 negative from film. Looks ok.

The large droplets are as all being  
violated by when they leave the rear of blade of the  
Leder device.

Today measure the performance at  
greater emptying distance. Plot velocity vs distance  
for different sizes of drops.

Aug 30 1987 4-405

Copy of photos. 1:1 + f16 40 56? 10 mm DK50 old.  
60 cycle strobe lamp at 15 ft - 800 turn scale (Luo) 2 ft  
Exposure ok. + Linear Box

#1 Aug 30 1 fresh f16 for scale.

30/sec 20 for drop. Large on July. 10 mm DK50 f11

note your photos of Drop not good due to angle of photo.

Drops slight by under exposure. (see p 8?)

Notebook # 36

### Filming and Separation Record

1 unmounted photograph(s)

     negative strip(s)

     unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 66 and 67.

Item(s) now housed in accompanying folder.



Dr. Edgerton

Aug. 15, 1947

at  
Bentley's 25th

Anniversary  
Open House



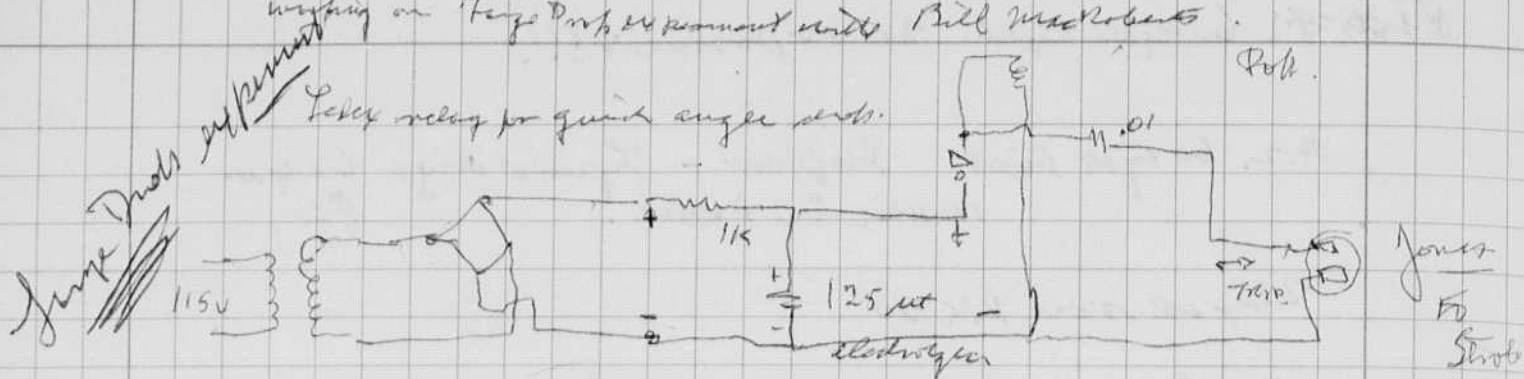
06450

PHOTO BY ELSIE JONES OF MERIDIAN LT.

Aug 19 87 H, Edgerton 4-405 and Feb.

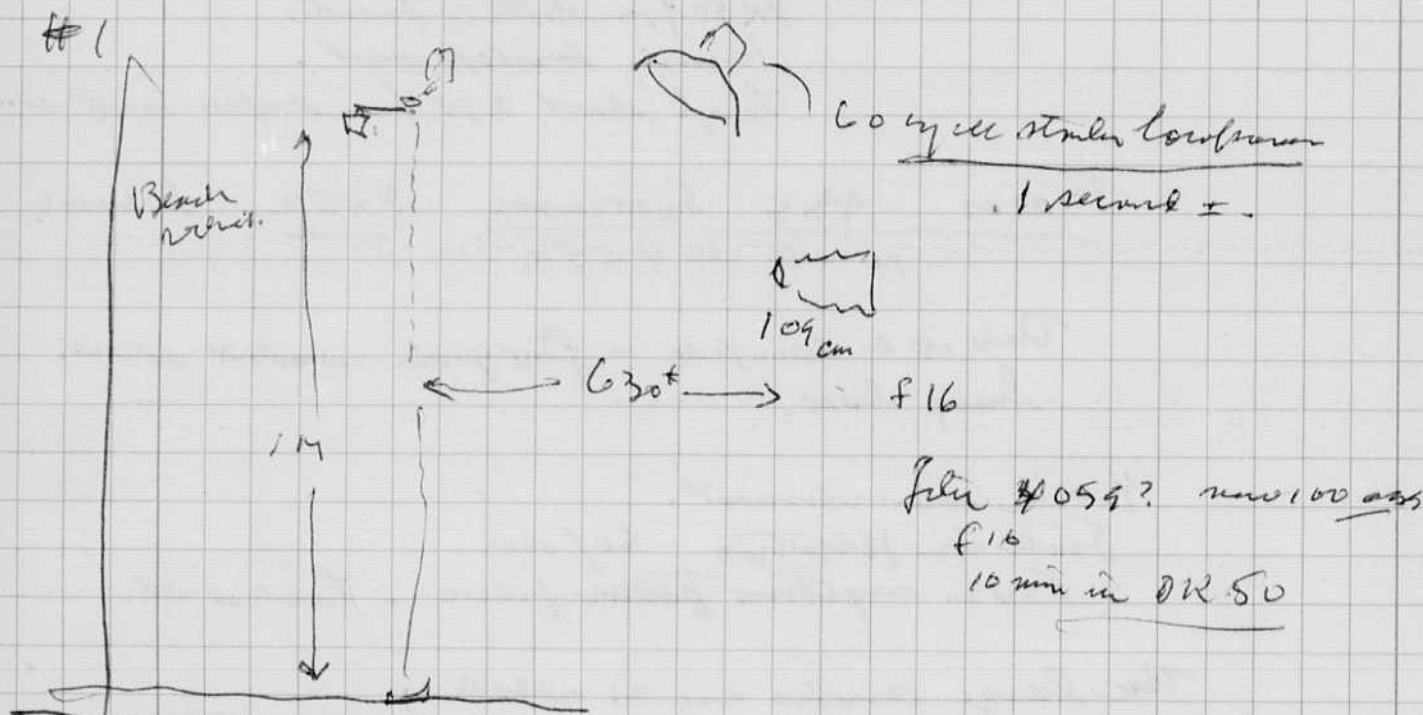
LEORX relay system

working on large DMB experiment with Bill MacRoberts



Aug 18 1987 Tuesday My medical problem is still worse and I have a "skin" condition on legs arms etc. Mary Nelson and Dr. Schwartz have been seeing me.

Aug 20 1987 Thurs. HZ & USM Rn



#2 I used a 1 meter stick with 1 meter scale. (60 cycle operation). Lamp power.

Aug 21 1987, Same as cent 127mm lens. Angles to get dropper & floor

4.57 #3 f8  
10mm

from Blurred !!

Aug 25 1987 HZ & Bill MacR.

- #4 P16 60w no image
- #5 f16 60w Better?
- #6 f11 60w 2 exp Scale 1 frame
- #7 f11 60w 2 exp 2nd 1 frame
- #8 f11 60w Small Drop. 1 frame on table Lamp at 45° 4 ft.

Aug 27 1987.  
Humboldt & marsh.

4052 FILM  
ASA 100

#9  
Small Dropper. - 1 flash on 2 sec. 60+ a drop.  
(many more) to show  
different phases of Drop break up  
+ more. 10

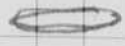
Aug. 28 1987. 4-4051 NT Hand 52 years:

The above 10 exposures were studied.  
6 negs show a single large drop - very flat.

3 1/2 negs show double drops. Spherical

1 neg shows large drops + small drops.

So it appears that break up occurs  
between the 2nd and 1st flashes (1/2) away.  
The break up drops fall in not count out.  
Perhaps this is due to the variability in drop size  
as found by the Lohse video.

 v.  
Freshman  
10000  
Christine MIT

Aug 29 1987 Sat 11 am.  
Photo of Lohse Drop Maker  
#11 4052 film.

Linear bank in  
square aluminum box  
8" to bank.

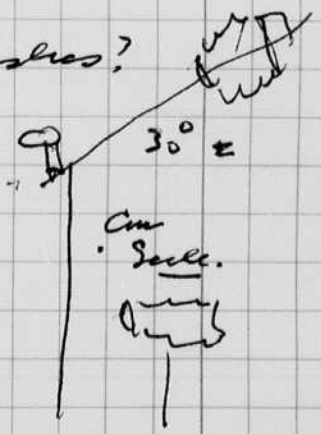
#1  
Drop of water with 1" seal  
fluorescent dye on blade.

- 1. at next exposure
  - 2. 20/sec. at (5 on linear seal) 4 flashes?
- DK50 developer 10 min.

#2  
Another large drop on Lohse  
camera at 0°.  
1st flash at Rest position  
3 flashes (20/sec four  
auto control).

#3.  
Small drop on Lohse can scale 1 flash  
Goques: 8 time scale.  
#8 ~~500~~ 4052 film 10 min Dev DR50

(See p 67 below)



observed, the  
drop does not  
go vertical!  
Lohse bank  
Even bank.

Cont Aug 30 1987. H. S. S. bottom of p 67!

#3. LFDBX. More camera back  
 more background. Forward.  
 more lamp away. 2 to 3 ft.  
 f11 to f6.3 4053 2 film.  
 30 cycles 25 on tube real.

Single flash should show large drops.

A standardized drop is needed for  
 this experiment..

Black velvet background at 1 ft back of  
 the drops. Perhaps this should be  
 further away.

X above was at f8 instead of 6.3 !!

Note. Background too close. more away to  
 2 ft +.

Open lens to f6.3 for more  
 exposure.

Back up with reflector!

#4 Aug 30 87. Fedex. multi flash strobe  
 30 cycles 25 time setting.  
 f6.3. 4053 film. 10 mm DK50.

Zero flash at 30 cycle 25 time also!  
 Large H<sub>2</sub>O + Fluorescence dry.

Background (Black velvet) moved to  
 3 ft from 1 ft. New out of light beam.

Note. The lamp should run longer!  
 dry 40 instead of 28!

Drop set up for 28' drop. Lamps at 3' to side 95°

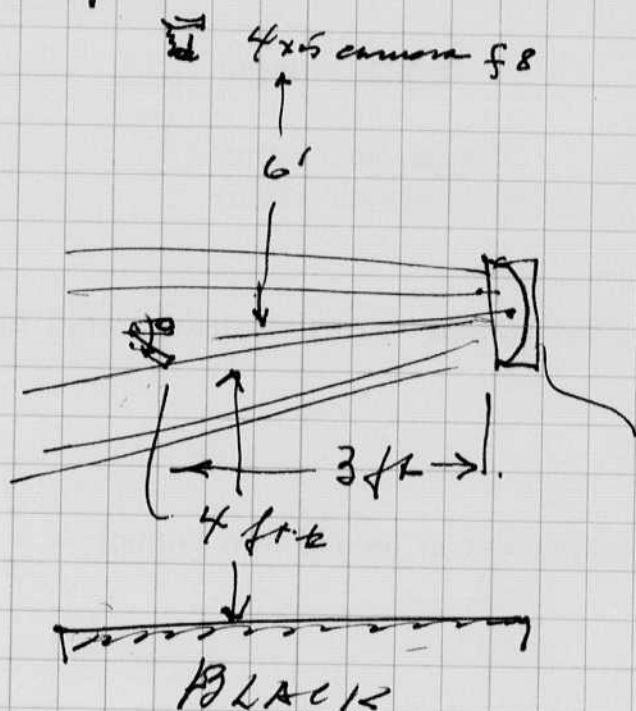
Lens changed to 127 mm,

f 8. film 405491 10mm DK 50.

set at 6 ft from a water scale and  
the ladder released. Target drop, 30 cycles,  
Flashes limited by covering lens.

Black velvet curtain at 4 ft from subject.

Linear lamps in Al reflector at 3 ft from  
subject.



Boycell stroke  
at 3ft

Low power

30 cycles 40 or more times

Beam cut off at 1.5 sec

Note: Exposure weak on the first 6" of travel  
Either the lamp up or more higher!!

Sept 14, Bob Ruess and ce  
Lian(?) from China came for dinner and  
conversations.

24th went to see Dr. Wolfson - after a  
restless night, preattending short and hard.

Pulse higher - pressure high. Dr. W took me to

let me out of hospital for 24h - they  
said that I had had a slight heart attack.



Notebook # 36

### Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 70 and 71.

Item(s) now housed in accompanying folder.

Pat LELE

E17-434

3-5235

Hyperthermia for  
Cancer Therapy

Notebook # 36

### Filming and Separation Record

1 unmounted photograph(s)

     negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 72 and 73.

Item(s) now housed in accompanying folder.



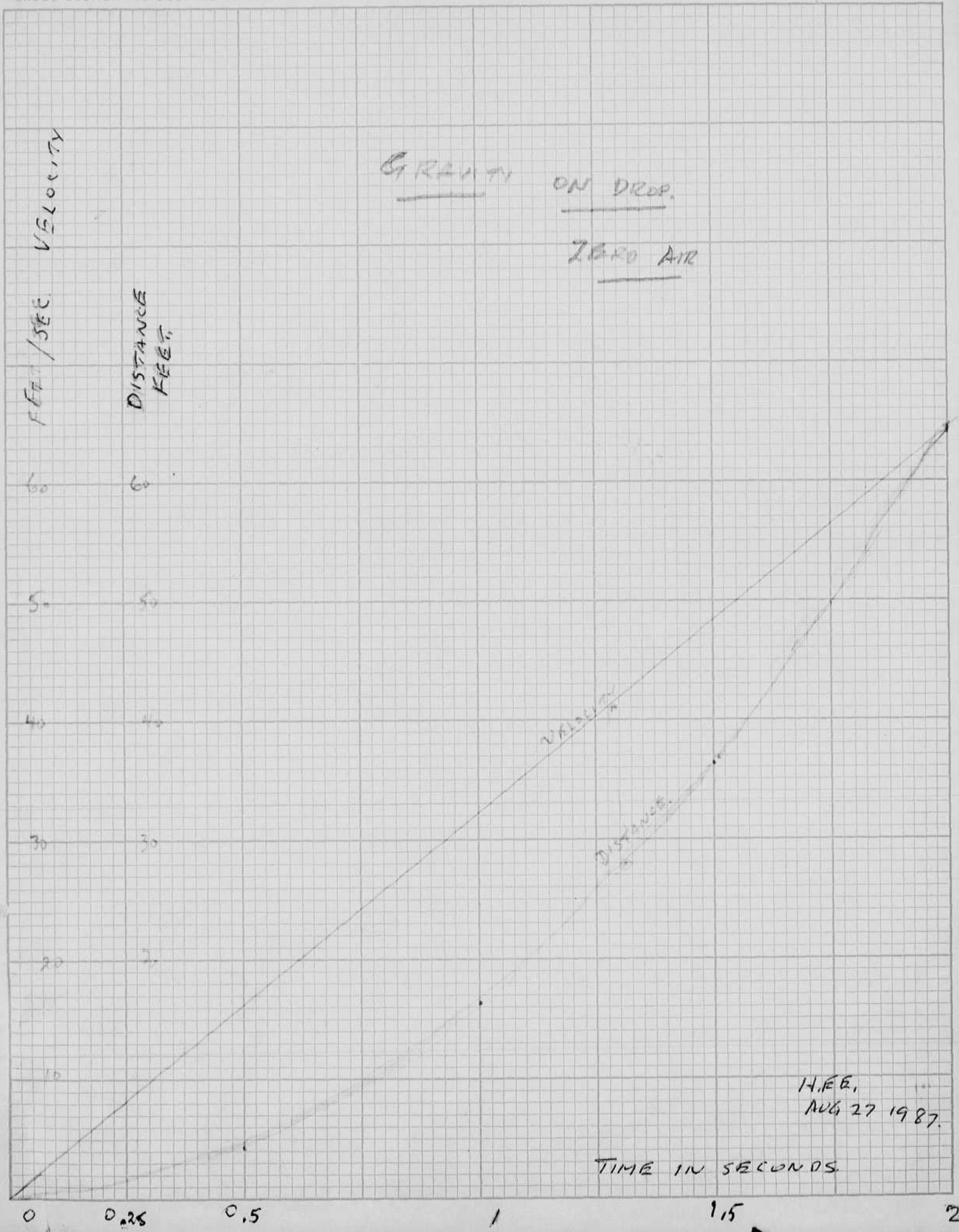
Sept 21 1986

67



Sept 21 1986

27



H.F.E.,  
AUG 27 1987.

TIME IN SECONDS.

Sept. 23 1987 Wednesday -

I returned on Sept 21 from the Mt Auburn Hospital

in Cambridge. I went in on - had a fall in the  
lab and damage my ribs. Then I had a Mountain of  
lungs as probably several large small heart attack.  
I went home on Sept 21. I went to the hospital on Dec 14.

Miss Kaufman will bring me 50 copies of  
"Riparian time" a book by two authors from.

1987, activity.

ADRIAN SHINE Oct 10 1987 organized

a lot of. please create a new folder for photos.  
Boat will not be together.

See clipping for Boston  
Oct 10 1987.

Telephone call. Oct 12 1987 from

Kenneth Saulin 11-9A. 100 Merrimack Drive.  
481 491 2836. phoned me, he wants to meet.

(Suggested by Mrs. Smith), 100 Merrimack Drive

10 am Vse Oct 1987, Harvard Edgerton.

Still waiting from hospital diagnosis afternoon. ~~missed~~

Now at home Oct 11.7A. 100 Merrimack Drive. Cambridge Mass.  
I am just beginning to walk from hospital. don't blink!!!

A ship was christened Oct 31 1987  
at the academy, Mrs. for MIT. Marnes - Edgerton.  
Capt. E. F. Bruce

Clifton MIT

Annie Smith, John Smith

Ami Chomsky's? Bruce.

John Carpenter

Les Martin Benson

John Morony.



Cambridge Mass.  
100 Memorial Drive

PHONE INTERVIEW NOV 3, TUESDAY 1987.  
CHICAGO TRIB LARRY TELL. phoned. 1/2 hour conf.

Discussed book "STOPPING TIME" Abrams press.

NO 5 1987. Nina Edgerton here on road from Pontiac.  
NINA left on north west to Boston also at 1130±  
on Nov. 7 1987. She was here for 4 nights.

NOV 11 1987 Cambridge Mass. Vacation today  
Anniversary for World War II.

253 3913  
Bell on  
Chapel.

BELL ON CHAPEL  
BELLON CHAPEL ATMT. 3913 phone.

I worked with Bill. Mike Roberts and Connor Moran  
in the basement of the chapel. The electric  
circuit was open with bell did not ring.

We left it going - every hour 9 am to 5 pm.  
I believe it makes 4 Bongs.

The bell circuit can be opened by  
removing a plug in the system.

To do. Put tape on plug under air stream  
about stopping the ringing.

Steve Annunzio is Moran's Boss. 5202

Valerie Shaw Jessy to Dr. Wolcott  
Teacher's Union, 42 West St no 29  
Roxbury 02118  
617 286 2544 (FRENCH)

SECRETARY

RONALD HOSKENS (Pres of Uni of Nebraska) Photocopied  
write about LOU CHARNO a photocopied (color)  
to make a portrait of me to be exhibited at the  
Uni of Nebraska. She is from Kearney City

Nov 12 1987. Snow Storm last night - about 6" wet, cold.  
The air port will be closed until 10 am.  
Mr. Newman from Nebraska called to say he was  
stuck in it. I tried him about snow storm

Nov 15. Snow all melted!

Country Club will be here for lunch Nov 15 Sunday.

Telephone Interview 3:30 pm Nov 14 87

Behorah? Bloom @ st 25 852.  
Sacramento Bee. -

Lecture Nov 13 at U.C. Aquarium by  
DAVID SMITH, Researcher & Ecologist  
Harvard Univ of Comp Zool. 7:15 pm photo him. 1/2

Plus Kayate 1-369-6276 Home  
1-486-8448 Work.

Nov 17 1987 Tuesday - HAMILTON CLUB MEETING  
at the COUNTRY CLUB - Bob Ogilvie took me in his car.  
Plus Kayate gave a talk about my book and photos.

Nov 18 Wed 1987. Mr. NICK BASGARD of the Worcester Telegram  
is due at 11 today for an interview.

My Book "Storing Time" seems to be going fine. A second  
printing has been ordered.

BIG DROPS 1" plus 3

ALLEN FISHER Exploration S.F. Calif.  
Nov 19 1987. Tangy surface water. At least  
method of form very.

Oscillations are a problem  
What can be used to damp out oscillations?  
How about surface tension?

Dec 19 87. Los Amaronil Dr. Canals. Nov. Tuesday.

Lunch with Mrs. Emilee & Ruth Appan.

We had dinner with Ruth Appan yesterday  
in her apartment. She has returned Germany!

Harold Edgerton.

DEC 14 1987

Steam Brake due in morning.

Atom Bomb Photos

Dept of Energy  
Public Affairs  
Nevada Operations  
Las Vegas 89114

John Campbell. 762 234-2521

Nevada Region 667-7000.

Atom Bomb Photos for Jerry Marshall. BV.  
who is writing a book on super war

JAN 6<sup>6</sup> Lecture - by Alvin H-HOS at 11-12 on Steam Photos  
80 attended in Room 10-250 from 6 at 11 am.

Bob & Liz Edgerton Eric & Denise were here on  
Jan 1, Denise made a 14" circle glass - Corn picture  
to hang in the window.

DENISE TAKASAKI.

1225 ROMANO AVE NW ALBUQUERQUE N.M. 87102.

Jan 9 EWEN & KEDD were here for lunch  
First dinner - excellent.

Boston - N.E. 453.60 Fund of Chem

Round Trip ticket to see Richard Edgerton & family

Museum of Dev - Check for 5000 sent to  
R. Nicholas for MIT students.

Stephen Malinath

Cayman Wm

(T.P. P.)

Students.

Jan 26 1988 H. Edwards

77

Watch Pogue from Washington DC is here  
to collect historical grounds.

We visited N PV Visual Projects center  
on Sunday with Mrs Keyes, Linda &  
Colonial Linn with family, Anne & Peter.

Lunch today Jan 26 with Professional Jobs Agency.  
Mrs Keyes: 3 employees of film center.  
Dis can display for April. Photos!

### UNITED SILVER WINGS.

my card returned.

I sent \$75 to United in Calif  
on Apr. 88. for reversal.

Returned card + 2 \$25 checks for checks

1-800-628 2868 phone & Calif.

when above arrive -

JAN 28 1988 H. S. G. & Norman Ross Roberts

Drop Breakoff Experiments.

July #1. Plus & minus fib. 10 min in air.  
10 min in Dew

DK50 - 10 min

Camera to dist. - 35 to lens front

Dist. front cylindrical Ref.  
about 21 across. 90° light.

Comment. -

Fine. Under of dorsal image.  
Mach and dark!

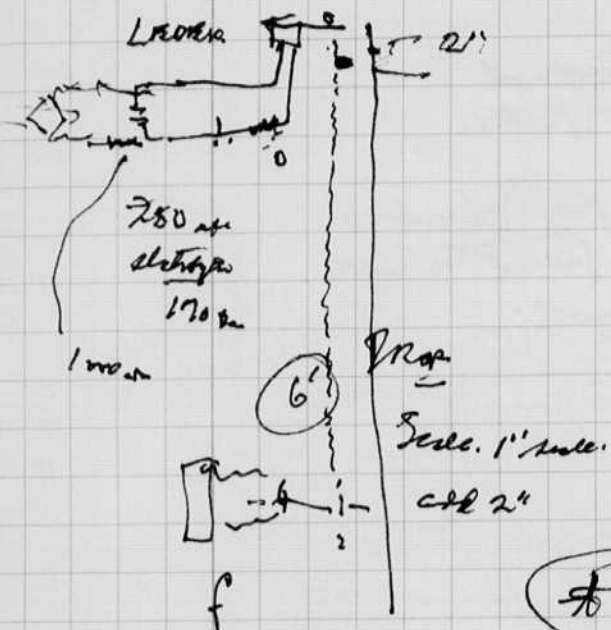
Changeon Realigner eight 25" to Max  
29" to Min

Optics blank.

#2 - source set f 11 Exp ok.  
60 flashes/sec  
10 min DK50.

Dist 2" to scale.

Leads - Higher in cylindrical  
Reference.

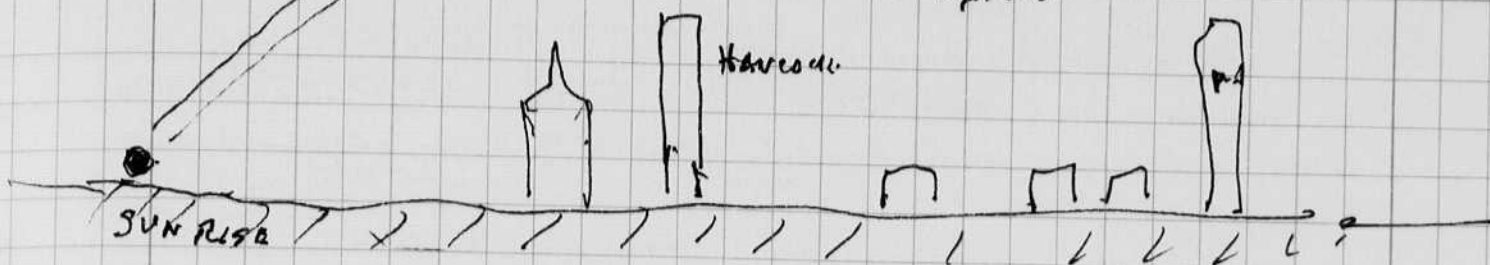


Jan 19 1988 Fri.

9:10 am

sunrise at 7:10

Harvard Edgerton



Common lens meter exposed by direct sun light.

SHADOW PHOTOS.

7:15 Jan 31 88 Sun Rise over Boston.

Letter for Mary Know about Chert & Jan. Jan 29, -

Feb 11 1988

Ventures for W.L. 01!!

Vallie Lohki 578 3705 500  
510.

Harvard Edgerton  
Chris Miller.

W.L. 01

Jeff Proger.

TRAGERS

Borrowed microscope illum. for one month.

28001

Jogar ty John T. Hartung Prof  
327 5 881 Hartung M.C.

March 1988

Phone call.

He says description is in vol 3.

MAR 7 1988

Sunday.

Esther and I returned yesterday from HICKORY N.C. where we have been for 2 weeks with our daughter Mary Lou. She has had a metal frame on her head for 5 weeks to help her with her cancer on her neck area.

The affair was resumed on Mar 4 or 5 and a magnetic Resonance study made. A problem exists on the side of the neck which will be treated with X rays. Mary Lou has been under treatment for thromb for about 2 weeks.

Mar 7, 1988 - RICK WESSERL, 5-88484, 500 more in  
next house, message - 3-81761. Thrombosis  
Crew,

1<sup>st</sup> of words 9. I met with the class with class number. Penet  
→ Photo copying was discussed. I gave them a photo of the "String"

Per Buckley 648 0129 Boston Sea Ravens.

Dryden Honey - B666 790 910 Bundling was  
Side Room

Cowley - 284-8174, out of town.

March 17 1988 To WHOI with out Professor (MIT crew) to  
attend "Fog's moon over America" (BADDOROCK)  
Impromptu Pop Sub Group  
Tab.

Bundling concerns in @L. transmission - concerns!!  
Paul the Fog Service. WHOI

April 4 1988 Monday. - Esther and I were in HICKORY N.C.  
with Mary Lou for the past 2 weeks. She is having a hard  
with cancer. Chronic thromb started about 5 weeks ago. She has  
been wearing a head clamp because of neck vertebra problems!

Sunday Easter we had dinner at the Cowley Club in X  
and her father's 6 grand children. The number of Lynne's son,  
daughter, husband and son, some 26 there.

HANCOCK Bldg Apr 9 1988.

HANCOCK

81

Comprehensive article in the Boston Globe of  
April 9 1988 written by Robert Campbell

Cambridge Wm Lemmensier Engin.

Victor Melcher N.Y.

60 Story Bldg. 790 - 60 floors

Had Heavy V cobb 1 M PRI & Partum.

10,344 frames of glass 4 1/2' x 11 1/2' glass panels.

Jan 20 1973. Hadn't missed many broken glass windows  
Only design of Double glass changed to  
single glass.

Demolition for renovation

2 300 tons of lead in flashes on opposite ends of  
the 58 floor aluminum ends.

Open in 1876

Call Wm. L. E. MESSURIER about 2-300 tons blades of lead  
Camp. Street Engin.

- BRUND THURLIMANN ZURICH Sw. Tel Buildings expert.

Experiment measure motion of 300 Ton Lead Blades. 1

night photo  
155 SQUADRON  
Michael Vidar

WALTER HAZEL BAKER.

5128 WEST HANSDALE CIRCLE

LITTLETON COLO. 80123. has vest

PH. 1-303

1-303-979-4561.



10  
April 1988 Sunday,

David Ogden

a title (proposed) and a list of chapters have been prepared for a possible book.

An exhibit is being prepared for the  
Presidential Building. - Top floor.

STROBE BEACON ON GREEN BLDG. Sealed flashing

April 1988 Tuesday. - I note that the  
beacon on the Green Bldg. is not working properly.  
There are long time delays between flashes which are  
weak. Solution: Remove and repair in Lab.

This was installed on \_\_\_\_\_ by Alan and Ellen Dixon

April 21 1988 Mary Lou is 57 Today

BEACON on Green Bldg. went out last week  
the flashes are weak and irregular.

New Lamp from EG Co. # 277 - 3130 Lamp,

Baron Marker,

Neo Moulded EG Co. -

There were 2 layers  
of this yellow plastic  
over the joints!  
Both removed! today

Start April 21 1988  
new flash assembly.

The old joints were  
very dark.

Bill and Robert and a  
student Steve (?) installed  
the Beacon. Phone no  
253 - 38663 in  
building on green Bldg.  
When?



MAY 1 1988

83

SUNDAY AM

0215. The Green Belt beam

is off. Start time? 3 days run.

June 6  
Summer

May 3

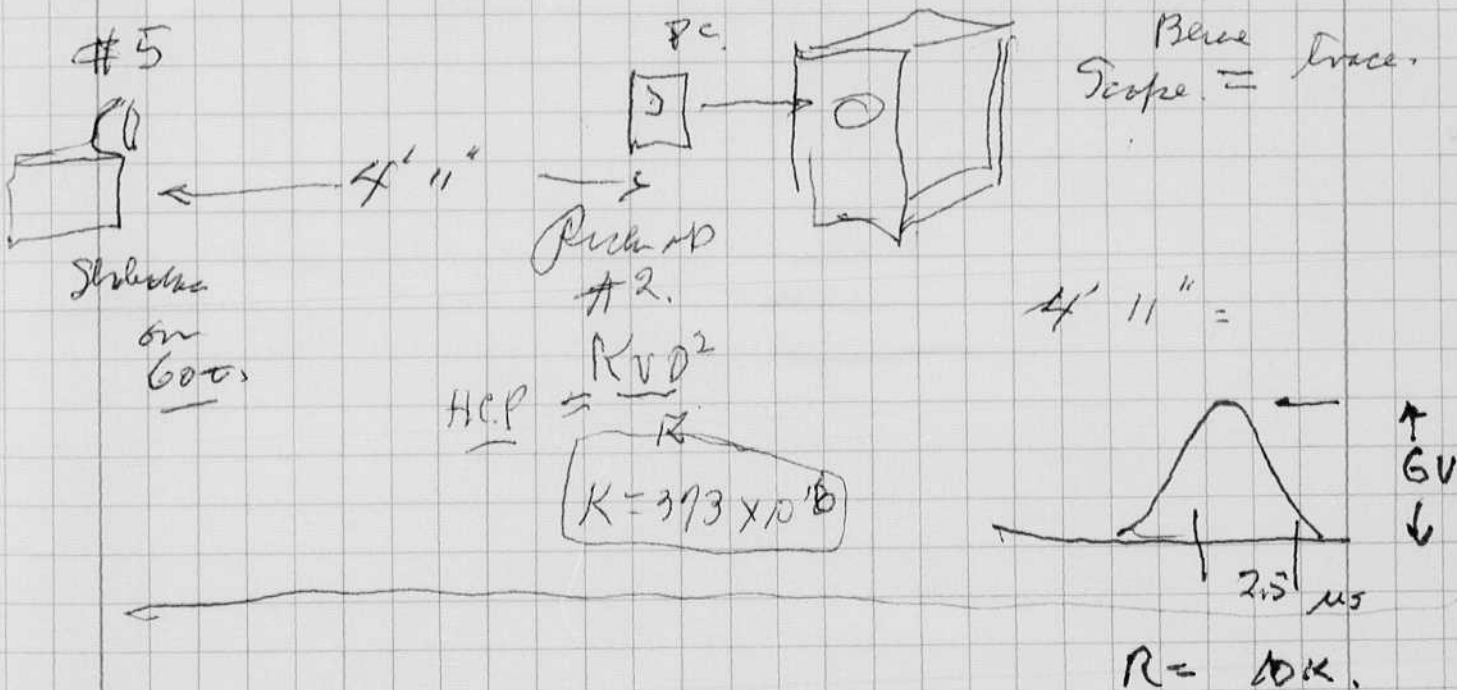
MAY 3 Beam in now on at 10 am ~~April~~ 1988  
The ac plug was out!!! why,

#2 & Maz.R. Unpack .5K 125 from B466.

night	c = 1. mtd.	4,000	Counted.
Twilight	c = 10 mtd.	4,000	20,000
Dawn	c = 100 mtd.		200,000

Sample in 77-3245  
R5R9 103.8. on box.

May 6 1988 Friday  
Spent on bench in Lab.



10  
April 1988 Sunday

→ Sewed together

A table (proposed) and a list of  
questions have been prepared for a possible book.

An exhibit is being prepared for the  
Prudential Building. - 2nd floor.

STROBE BEACON ON GREEN Bldg. Seaboard Fisheries

April 1988 Tuesday. - I note that the  
beacon on the Green Bldg is not working properly.  
There are long time delays between flashes when the  
beacon is on. Solution: Remove and repair in Lab.

This was in sketch on by Har and Elton Dixon

April 21 1988 Monday Lewis 57 Tower

BEACON on Brown Bldg. went out last week  
the flash is weak and irregular.

New Lamp from E.G.G. # 297 - 3130 Lamp

Baron number.

200 Main Street Bldg. -

There were 2 layers  
of this yellow paper  
around the lamp.  
Both removed & used.

Start April 24 1988  
new flash lamp.

The old lamp was  
very weak.

Did some Roberts and a  
student Steve (?) installed  
the new lamp. Phone no  
253 - 3866? in  
building on Green Bldg.  
When?



MAY 1 1988

83

Sunday AM

0215. The Green Belt program

is off. Start? 3 days run.

June  
Summer

May 3 Learn in row on at 10am April 1988  
The ac party was out!!! why.

#2 & Mick. Impact - 5K 125 from B466.

night	c = 1. mtd.	4000	consent
twilight	c = 10 mtd.	4000	20,000
Daytime	c = 100 mtd.		200,000

Lamps in 77-3205  
FSQ 103-2. embryo.

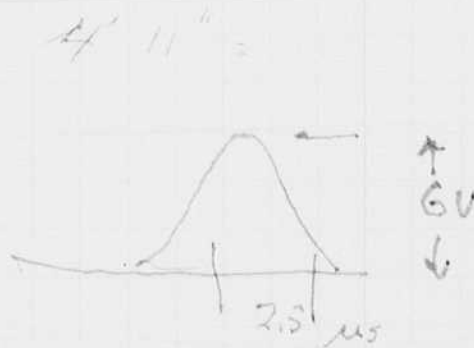
May 6 1988 Friday  
Changes show Summer in Feb.



Micro  
on  
600.

$$HCF = \frac{K D^2}{R}$$

$K = 393 \times 10^6$



R = 10K.

1988  
May 6, 1988, Hans Edgerton

Student 'U' experience good from her  
rather. She was in class class a lot term.

Erithen and I walked her home about 7 pm.

(Dr.) MARY ELIZABETH EDGERTON  
MOBIL RESEARCH & DEVELOPMENT CORP.  
P.O. BOX 1025  
Princeton, NJ 08540

Called to  
see me.

Edgerton Homestead: 705 EAST 2ND STREET  
RIO GRANDE CITY, TEXAS 78582

May 17, 1988



Class  
muller

AM

LIGHT OUTPUT FROM EG&G BEACON SS-125  
PHOTOCELL #1 (DORA) USING 1P39 PHOTO TUBE WITH WRATTEN 106 FILTER

PHOTOCELL CALIBRATION @ 76" AND  $R_L = 1K$ , 1VOLT =  $10^6$  PEAK CANDELA  
VISUAL RESPONSE

MEASUREMENTS DONE AT 152" (FLASH LAMP  
TO PHOTO TUBE.) PHOTO TUBE 7 3/4" ABOVE FLASH LAMP. (ELEVATION  
2°50')

DATA FROM TEKTRONIX MOD. 585 OSCILLOSCOPE

INTENSITY MODE	VERT. CM, @	DIAL VOLTS =	TOTAL VOLTS	HOR. SPACE	HOR. DIAL	DUR. $\mu$ SEC.	DISTANCE	B.C.P.S
DAY-START	4 x	5 =	20	2.8 x	200 $\mu$ SEC =	560 x	FACTORY	44800
LATER	3.6 x	5 =	18	" x "	=	560 x	=	40320
1 HR.	3.3 x	5 =	16.5	" x "	=	560 x	=	36960
TWILIGHT	3.5 x	2 =	7	3 x	50 =	150		4200

NIGHT  
AVERAGE  
2.0 x 0.5 = 1  
2.5 x 20 = 50 x 4 = 200  
TIMES 7 FLASHES = 1400  
IN 100 msec.

Installed May 25, 1988 on 60th floor of  
Prudential building looking out a window. MAY 24, 1988  
Operating on twilight setting (midpower) 4200 B.C.P.S.  
V.G. MacRoberts

Sunday May 1988, the beam can be  
seen clearly at night from my apartment  
#2A at 100 Memorial Drive. It has cleared  
at a 6 second interval except for two Sat  
and Sunday morning. Why off. -?  
There is a big exhibit of high-speed  
photos in the Prudential Building. See Article.

1988  
May 6, 1988. Hansel Edgerton

Student 'V' experience good lesson for  
rather. She was in class class a best term.

Edgerton and I walked her home about 7 pm.

(Dr.) MARY ELIZABETH EDGERTON  
MOBIL RESEARCH & DEVELOPMENT CORP.  
P.O. BOX 1025  
Princeton, NJ 08540

Called to  
see me.

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RIO GRANDE CITY, TEXAS 78582

May 17, 1988



Class  
muller  
Hansel

LIGHT OUTPUT FROM EG&G BEACON SS-125  
 PHOTOCELL #1 (DORA) USING 1P39 PHOTO TUBE WITH WRATTEN 106 FILTER  
 PHOTOCELL CALIBRATION @ 76" AND  $R_L = 1K$ , 1VOLT =  $10^6$  PEAK CANDELA  
 VISUAL RESPONSE

MEASUREMENTS DONE AT 152" (FLASH LAMP  
 TO PHOTOTUBE) PHOTOTUBE 7 3/4" ABOVE FLASH LAMP. (ELEVATION  
 2°50")

DATA FROM TERTRONIX MOD. 585 OSCILLOSCOPE

INTENSITY MODE	VERT. CM.	DIAL @ VOLTS	TOTAL VOLTS	HOR. SPACE	HOR. DIAL	DUR. μSEC.	DISTANCE	B.C.P.S.
DAY-START	4 x	5	= 20	2.8 x	200 μSEC	= 560 x	FACTORY	44800
LATER	3.6 x	5	= 18	" x "	"	= 560 x	"	40320
1 HR.	3.3 x	5	= 16.5	" x "	"	= 560 x	"	36960
TWILIGHT	3.5 x	2	= 7	3 x	50	= 150		4200
NIGHT AVERAGE	2.0 x	0.5	= 1	2.5 x	20	= 50 x	4	= 200 TIMES 7 FLASHES = 1400 IN 100 μSEC.

Installed May 25, 1988 on 60th floor of  
 Prudential building looking out a window. MAY 24, 1988  
 Operating on twilight setting (midpower) 4200 B.C.P.S.  
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Sunday May 1988, the laser can be  
 seen easily at night from my apartment  
 #2A at 100 Memorial Drive. It has started  
 at a second interval except for Sat  
 and Sunday morning. Why off. -?  
 There is a big w/ light of high-speed  
 photos in the Prudential Building. Joe Arnold.



TECHNIQUES IN HIGH-SPEED PHOTOGRAPHY AND VIDEOGRAPHY  
 Massachusetts Institute of Technology Summer Session June 6-10, 1988

MORNING LECTURES

AFTERNOON LABS

Synchronization/delay/timing in photography	Miller	(35)		
Measurement of light/photographic formulas	Watson	(35)	Schlieren/NAC color video	Clayton *
Pulsed X-Ray photography	Webster/Kennedy	(30)	Hycam/oscillography	Quinn
Image converter cameras	Owren	(35)	Pulsed X-Ray photography	Webster #
Rotating prism cameras	Shoberg	(45)	Synchronization and delay	Staff
Ballistic photography	Edgerton	(45)	Front light bullet photog.	Staff
Intermittent motion cameras	O'Connell	(20)	Local pin-registered	O'Connell
Schlieren photography	Vandiver	(25)	Photoe rotating prism	Shoberg
			Image converter/CCD camera	Owren
			Measurement of light	Watson
			Mech/elec shuttered video	McGhee
			* with Vandiver	# with Kennedy
Data extraction and 3-D analysis in HSV	Walton	(25)		
The still video system	McCurdy	(20)		
High-speed videography	Miller	(35)	High-speed micrography	Staff
Copper vapor pulsed laser lighting	Picarello	(15)	Still-video camera	McCurdy
Digital annotation and data extraction from film	Pendley	(30)	Ektapro 1000 video	Mellaly
Silhouette Photography of bullets and bugs	<del>Edgerton</del> Miller	(15)	Copper vapor laser lighting	Picarello
			SP2000 video	Thomas
			Shadow photography bullets	Staff
			Film annot./data extraction	Pendley
			Imacon 790 image converter	Kosel
			Multiflash large subjects	Staff
			3-D analysis video images	Walton
Sensitometry and densitometry of films	Wyckoff	(30)		
Review of student results	All	(15)		
Photography of explosives in the field	Chiappetta	(45)		
Applications of high-speed photography to industry	Quinn	(45)		
Time lapse photography/mixed light sources	Edgerton	(30)		
Pulsed laser photography of laser impacts	Stern	(30)		
Film considerations for high-speed photography	Quinn	(45)		
Continuous lighting for high-speed photography	Lenons	(45)		
Graduation - PROGRAM ENDS AT 11:30 a.m.	All	(15)		

VENING EVENTS

MONDAY: "Jam Session"  
 TUESDAY: Vendor Interaction  
 THURSDAY: Banquet at MIT Faculty Club  
 Speaker: Mr. Sam Raymond  
 Benthos, Inc.

See McCurdy  
 2110 Chestnut St  
 Arlington MA 01761

76 013  
 76013

Color photos  
 no credit

CEM 5-22-88

Chris Miller

(3 all-inless) 3 ±

Det June 4 88 HSE.

M. & J. Prud  
Des Nandy.

236-3401  
87

The Strobe lamp on the Prudential is not  
operating tonight (Sat). There is an excellent  
display of photos at the Reading on the 30th floor  
(Observation floor).

JUNE 13 1988 Eric Edgerton and Denise  
were married in the Salsbery Spring Garden  
Church on June 11 at 3 pm. About 100 + friends  
and relatives attended.. ✓

Aunts Harold & Esther Edgerton,  
Chas and Mary Lou Dixon from HICKORY NC.

Bill and Marie Dixon

Raymond & Barrett.

Jamie & Lynda Kay

Rebecca & Emily.

Mary Anne & Brett Hubbard.

Rosemary & William.

Ellen & Keith Law

Mary Ellen & Walter Pogue

John.

Barbara & Johnny - Larons.

Anne & Stephen.

Terry Pogue.

" Parents and friends of the bride.

FRIDAY JUNE 17 1988

Harold E. Roberts.

Runs Karyofans at 1 am.

JULY 2 1988, I have not been faithful with entries into this log book.

Bill & Marie Dixon from Raleigh N.C. are here to visit. Her sister Maria is visiting them. Bryan & and Barnett 3 are here also. I took some multiple flash photographs of the boys yesterday. The camera <sup>remains</sup> mechanism mounted on the bench with last roll of film. The Fuji film was on the Karyofans.

I have been going to Dr. Leonard Wolstony at the MIT ~~med school~~ for physical checkups. He has me on pills on heart and incipient cancer. He has given me all kinds of tests which are done regularly. MIT Medical keeps good records.

At 85 years old I find my eye sight is failing.

I am dizzy, most of the time

I get tired when I walk.

Can't see clearly.

PIZZY

TIRED.

BLIND.

LOCK NESS WILD LIFE RESEARCH

Conference BOBINES

CHAS WYCKOFF

HAROLD EDGERTON

Bob commented the Navy will run experiments. There has been a delay since the Navy medical equipment in the mine plants in the service are (?).

Camera I for almost the shallow camera which needs to be tested and used in the Lake Loch.

Camera 100 ft film - 16 photos / second.

Lens 2" Water corrected?

Shutter speed 1/100 sec.

Tests. - Very light exposure "flooded" #4?

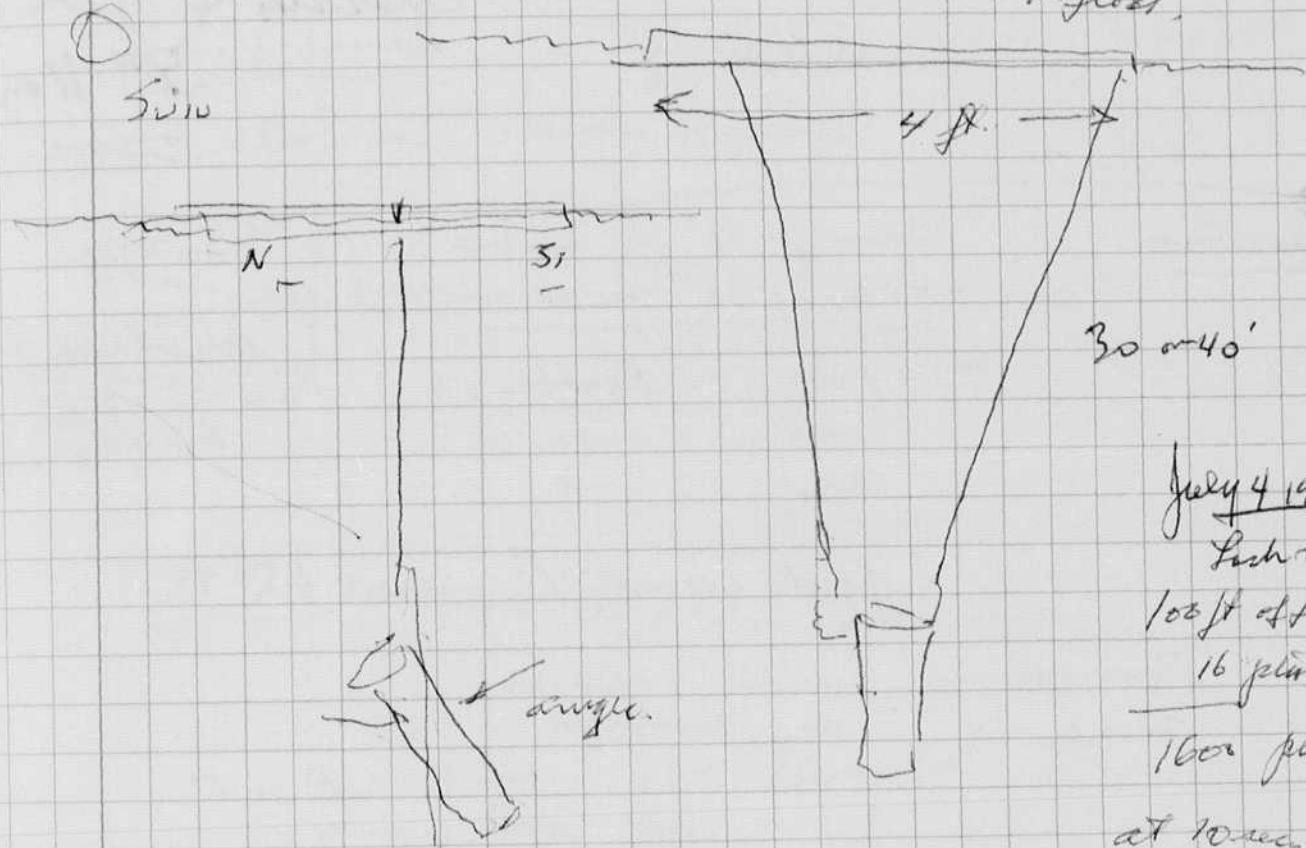
in front of columns at MIT.

Rate 1800 12 seconds between pictures.

Tests to be done Tues. July 5 by H3 & Wycliff & name

1. Logs lost in MVT Pool
2. Operational test MVT Pool layout?
3. Operational test at Lees Run.

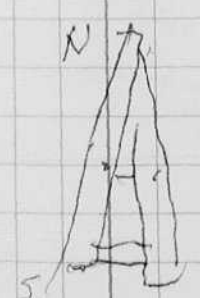
A. Pick a place with 40 ft  $\frac{1}{2}$  depth.  
 Sus. and camera from 2x4 float.



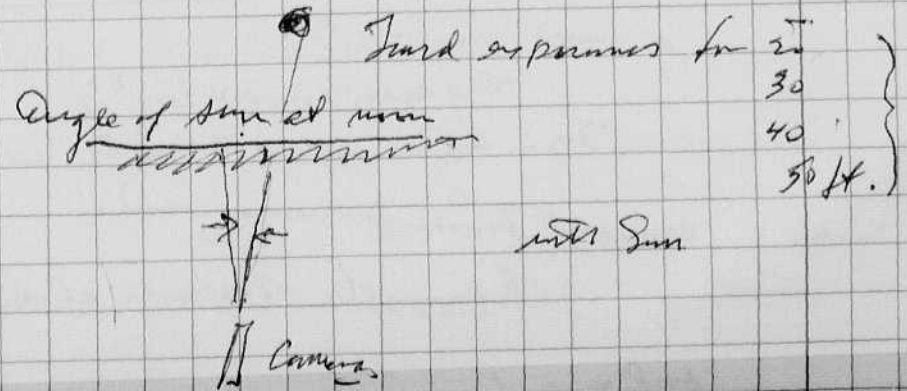
July 4 1988. work on  
 Lake near, Chocoma.  
 100 ft of film Red light  
 16 plates for  
 1600 pictures.  
 at 10 sec = 16 sec.

$$\frac{160}{60} = 2 \frac{2}{3} \text{ hours}$$

1. Camera re-angled.
2. 2x4 float Burgomaster

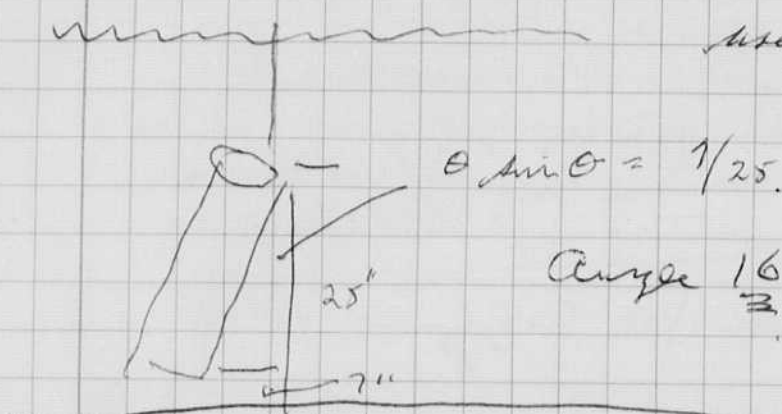


float for camera  
 run



July 5 1988 Harold Edgerton Bill MacRobert

Camera for shadows in Tank room.

Camera in air 24 #.  
in wateruse plastic film camera  
in Plastic Bottles.Chassis & Trip  
5# 11oz.Clear Room.Camera 11# in water  
" 24# in air

5302 film

1 m Process

Amput key Hinge

2 m "

End film 1 pm

3 m.

float up at 1/2 meter. (1?)

Dew machine.

meters ?

Ocean Engineering

Tank shadow camera pictures using 5302 film of Bill MacRoberts  
2 pix at 6 ft, 2 pix at 12 ft, 2 pix at 18 ft, 2 pix at 24 ft & 2 pix 34 ft  
all in air. Processed 2 min in Dektal 3 or 4 to 1  
Best focus about 12 ft.

July 8 1988: Pos film 5203 is too slow to use in  
water! A few small pictures by Wyden & MacRoberts  
showed nothing!

Try again on 2x or 3x film.

Try in the 1 m room to see if the lens is

concealed from under water case.

Experiment Vertical at noon up. to see

bird on surface. ?

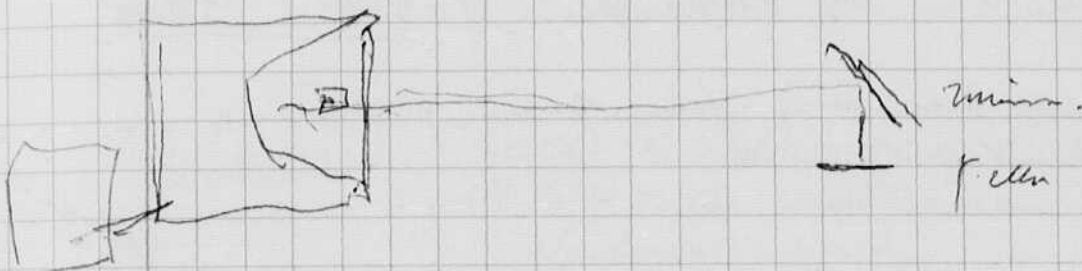
July 20  
19 88  
H. E. Egan.

July 15 I went to the  
Whitt House to be presented a  
medal by Pagan  
medal of leadership.

Wynne and Bill McE and Peter Mum  
have been taking pictures in the MIT Boat for a  
Losh news effort.

The camera will be below 20 to 50 ft down  
with 35mm film shooting up. No strobe will be  
used.

Kari Lovell 1-548 3705 Ex 50K  
Bos Uni Marine Problems



Robert Braden 857- 7310 MA, Geo  
Continental Jones

mei mei Wang. 440 Elm St  
changing office now

381 654 6433 H  
301 496 1779 W.

Visit by Capt Pease son of Forrest Pease  
who we know long ago  
when he worked for A.O. Little.

Tom Fleet Inmost Pease III  
31 Maple St  
Jouettville R1 02853

401 49 0285

He has a phone number...

July 29 1988

SODICE.

Hanced Edgerton.

Lectures to students on today and yesterday about the stroke.

Soper called from Washington. He is going to Halifax to meet the next week or so with Kromfild.

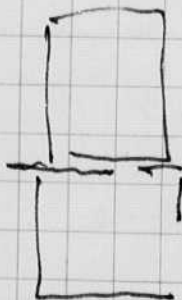
Aug 1, 1988. Monday.Tomorrow I will work on the  
Shelton photography of capillary cell withKeri LaVallieof Woods Hole. 1-548<sup>548</sup>-3705We have been using fine grain positive  
film in direct silhouette.

Now we will try

Technical Pan Film 4415 E.K.

Liquid developer. TECHNIDOL  
Cat no 108-5845.Mumford Tolson  
called.

any supply of capillary on all days in Jan since

\$66 #1. N.G. Under developed. 12" (K&D) 2 min?2 12" Paper mask.  
Some eyes further(No Fog)

Aug 3 1988

7302 with camera lens at 12"

2 min. Dev - still bleed. Reductions.

Aug 11 1988 - Dave left for vacation - to the Siberia R.R.

Walden Benches will arrive at 100 main Dr at 6:30 pm  
allan of The Crest of the Wave, 1975

Aug 17 Monday 3pm Keri La valle.  
Copepods & Algae - Filamentous

main floor + Pent light at 20" t.

Notice some exposure under the water. !!

Aug 22 [ Dr. Peter Lewis Eye  
mentioned T.V.  
OTC 26 (3) <sup>mass</sup> Harvards 1-272-3395  
(Mr. David Proetta)  
will demonstrate at MIT. ]

Conference ROCK NESS  
at Bill Kenes apt.  
Harbour Towers.

DAVE NELSON (John Bergelson), Sonar. 13A.

Charlie Wajskopf. reported on sonar.

The Sonar 13A is a gift of the  
navy. 250 pound transmitter.  
Nelson gave a long account of  
the operation.

UROF Kamdonon Pashonhoff 69  
5x 8653 253-5961

SEPT 7

SEPT 7 1988 HAROLD EDGERTON.

BILL  
KELVIN McALLISTER (friend of FAU) Ocean Stud  
MIT 5-331 3-3947  
9. Hawthorne Place 11-1 BOSTON MASS 229 0877.



SRPT 1988. 100 MEM FOR CAMBRIDGE MASS

NINA EDWERTON just left for NEPAL to study  
Dancing. ADDRESS of LO SANG CHOD  
from Bishu BIR, GUEST HOUSE  
Edgmont. ROAD NAI H KATHMANDU  
NEPAL.

1892 MIT FRESHMAN MING SHING LEE McCormick Don  
CLASS

FATHER WANG-YIEN LEE

MOTHER SHONG S LEE

4 LAKEVIEW DRIVE  
MASON CT 10445-0400.

515. 424-5234.

3-3947 9 HAWTHORNE PL H-J 0211-2344  
5-331 KEVIN McALLISTER Son of Roy At San Antonio, TX  
oceanography grad student. at MIT. 22-0879

MARY RO ~~6~~ 10 Great Barrington Light?

SUPERBORNE mass 01770.

Velocity of Light, experiment.

Summer. ELLEN DIXON 202 293-2856 Wash Washington DC

LAVALLE

KARI LAVALLE (8)

548-370 (500) W.H.T.O

M-W 725-5664 Boston

1-508 548-3584 Fall Mountain, Home.

EYE PETER LOO 529-0958,

3-8256

WICHT REVIEW

S CH LEE PER JOHANN

EDIPON

COREY 262 1217. wahant.

MOSQUITO PROPOSAL I will loan lamps 25us.

Left Friday for HICKORY N.C. to see dear daughter  
 Mary Lou & by on. returned Tuesday Sept 26, 1988.  
 She is recovering from cancer.

FRIDAY, OCT 7 1988.

Margaret Robinson, my sister, is here from  
 Florida with Betty? for a visit. Dinner  
 her last night with Ann AARONS. Ann now  
 lives on Beacon Hill and works in Boston.

I called MIT Press CORIKKE about  
 books. Electronic flash sells about 400/year  
 moments of vision " about 400/year.

Revision of E.F. should be done  
 in 1989. Fall with Terry Cohen.

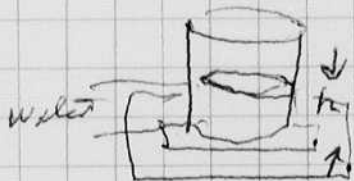
Jean Mowrey returned from results  
 on Oct 5. She and I do not communicate. I  
 urged Dick Callagans to help her find another job.

Silhouette: Margaret & friends from Florida at State Fair, 018  
 Sunday Oct 9, 1988.

Silhouette photography, suggestion:

Use developer liquid to cover more volumes.

use glass container so film will not be wet.



Cement plate on top of cylinder

FILM.

Use more powerful sparks.  
 Volume = area x h cubic cm  
 Range of error in photos.

I discussed this with Ken LaVelle (Sunday)  
 today 1-508-548-3581 Telemonitor.

MA.F M.T.W. 725 5664.

628 6047  
 PHIL SOUOE

TH F. WHOI 548-3705 (50x1)?

B.U. Student.

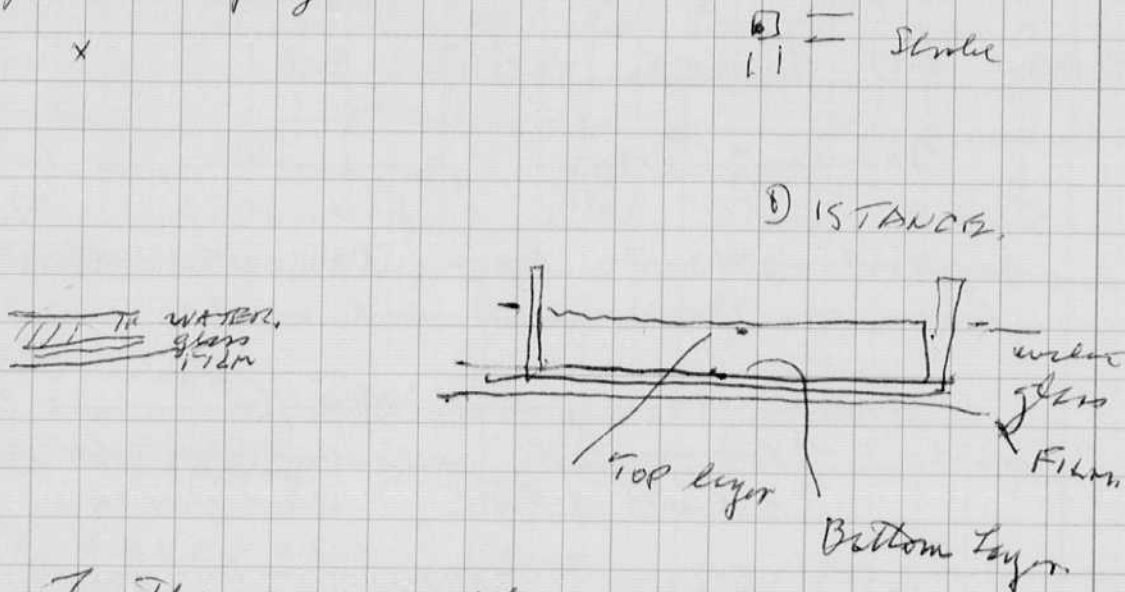
Photography, interested

WHOI on MIT Line 188-0111 information

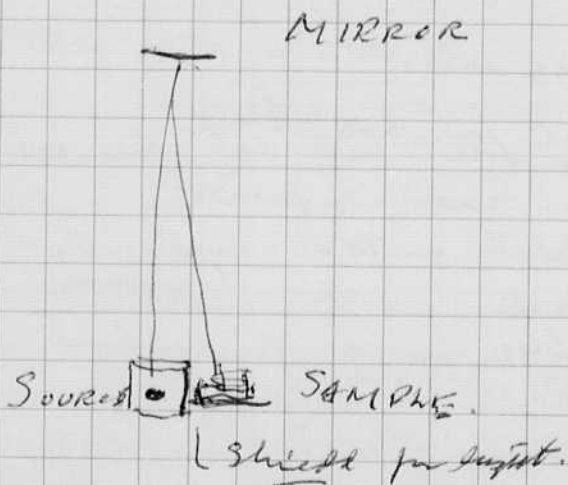
MIT.

Oct 10, 1988  
 Harrod Sedgerton.

The definition will be decreased with the extra glass shown in the system on the previous page.



For this system there will be a thin layer of glass between the film and the subject. This will improve the resolution some. Every emphasis should be put not obtaining a small source at as large a distance as practical.



Here is a way to reduce the size of the equipment.

Oct 10 88 cont. I bought some 2x2" glass plates of thin glass, also one 3x3" glass plate tomorrow I plan to cement a beehive ring 1 cm high on them for the THICK experiments with Shinar photography. The microflash point source will be used as a point source. The glass will reduce the V.V. from the flash.

Catherine ROCCIO and her mother will be in the class Monday. Her mother, Mary, was a student of mine years ago. She measured an velocity of light,  $3 \times 10^{10}$  cm/sec.

Sunday Oct 15 1988 Harvard College.

John and Barbara Rosasco live from Belmont. Anne and Jennifer their daughters also, Anne has a job in Boston. John (?) a drummer via the friend of Ann.

Mary Rose Rocchio (mother of Catherine) will be in the E. 161 class on Monday's. She did the velocity of light experiments of 32 years ago.

Oct 15 Sunday, analysis of shadow patterns.  
Ring into 1 cm depth.

Oct 15 88

#1, Dry, shows dust. 1:4 Debit 3 mm.

Print

#2, Water 1 cm deep 3.2 cm diameter. 1 D, many particles.

Print

3, Dry, 5 mm 3 min. D. Debit 1:4 oil, with increase of exposure when water is put on the surface.

4 Wet 1/2 cm deep. Subject 1/2 cm. surface particles? 5 min. D. 1:4 oil Debit.

5 1/2 cm deep 3.2 cm i.d. Shows particles in volume. Shows corner of film paper holder.

Print 3 and 5. Enlarge 6x films or more.

Sat Oct 28 1988 MIT 4-405

Volume - Palatin plerogymy in way.

Lecture Nov 2 - 1988 Physics 8.02 12 - 2:00

Jan Levine? Priscilla Song senad  
McCormick 0-332 225-8524

Notebook # 36

### Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 96 and 97.

Item(s) now housed in accompanying folder.

The Washington Times  
WASHINGTON, D.C.  
D. 104,890

F-Edgerton  
NOV 17 1988

**BURRELL'S**

# Stop the action for Edgerton

By Harvey Hagman  
THE WASHINGTON TIMES

7402B

**H**is photography is faster than a speeding bullet, his wit almost as fast. He won an Oscar in 1941 for his film, "Quicker 'n a Wink." As an inventor, he has been compared to Thomas Edison.

As a marine archaeologist, he discovered the sunken Civil War ironclad, the USS Monitor and it was his sidescan sonar that led to the discovery of the shuttle Challenger's shattered cabin. During World War II he helped ensure the success of the Allies' Normandy invasion with his nighttime aerial reconnaissance.

Tonight, Harold "Doc" Edgerton, father of stop-action, high-speed photography, who pioneered the use of stroboscopic light to freeze on film movements invisible to the eye, will be honored by the National Geographic Society. He is one of 15 men and women, including Sir Edmund Hillary, Jane Goodall, Jacques-Yves Cousteau and others, who will receive Centennial

Awards for expanding man's knowledge of the earth and its inhabitants.

The wealthy 84-year-old Boston resident, who shares more than 40 patents, still works in his Massachusetts Institute of Technology lab. He recently said in a telephone interview from there, "I joke when I say I'm leaving all the difficult projects for the next generation. I don't want to be selfish. But anything I can't do easily, I'm leaving for them."

The retired — he technically retired in '68 — but not retiring, professor is working on plankton photography — "those little things swimming around in the sea, millions of 'em and they're hard to photograph.

"Nobody else is doing it. I'm looking for projects nobody else is doing so I won't have any competition. The problem is you can hardly see 'em. It's hard to get the camera in the right place. It is pure research. Pure research is not having the slightest idea what you're doing. I'm good at that."

see DOC, page E2

02



Cary Wolinsky/© 1988 National Geographic Society  
Dr. Harold E. Edgerton

The Washington Times  
WASHINGTON, D.C.  
D. 104,890

F-Edgerton  
NOV 17 1988

**BURRELLE'S**

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THE WASHINGTON TIMES

7402B

**H**is photography is faster than a speeding bullet, his wit almost as fast. He won an Oscar in 1941 for his film, "Quicker 'n a Wink." As an inventor, he has been compared to Thomas Edison.

As a marine archaeologist, he discovered the sunken Civil War ironclad, the USS Monitor and it was his sidescan sonar that led to the discovery of the shuttle Challenger's shattered cabin. During World War II he helped ensure the success of the Allies' Normandy invasion with his nighttime aerial reconnaissance.

Tonight, Harold "Doc" Edgerton, father of stop-action, high-speed photography, who pioneered the use of stroboscopic light to freeze on film movements invisible to the eye, will be honored by the National Geographic Society. He is one of 15 men and women, including Sir Edmund Hillary, Jane Goodall, Jacques-Yves Cousteau and others, who will receive Centennial

Awards for expanding man's knowledge of the earth and its inhabitants.

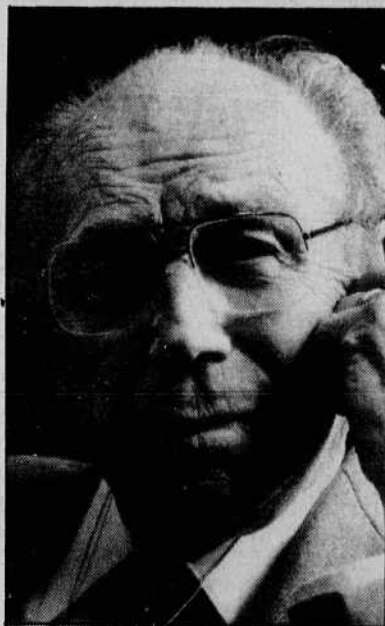
The wealthy 84-year-old Boston resident, who shares more than 40 patents, still works in his Massachusetts Institute of Technology lab. He recently said in a telephone interview from there, "I joke when I say I'm leaving all the difficult projects for the next generation. I don't want to be selfish. But anything I can't do easily, I'm leaving for them."

The retired — he technically retired in '68 — but not retiring, professor is working on plankton photography — "those little things swimming around in the sea, millions of 'em and they're hard to photograph.

"Nobody else is doing it. I'm looking for projects nobody else is doing so I won't have any competition. The problem is you can hardly see 'em. It's hard to get the camera in the right place. It is pure research. Pure research is not having the slightest idea what you're doing. I'm good at that."

see DOC, page E2

02



Cary Wolinsky/© 1988 National Geographic Society  
Dr. Harold E. Edgerton

The Washington Times  
WASHINGTON, D.C.  
D. 104,890

F-Edgerton  
NOV 17 1988

**BURRELLE'S**

# Stop the action for Edgerton

By Harvey Hagman  
THE WASHINGTON TIMES

7402B

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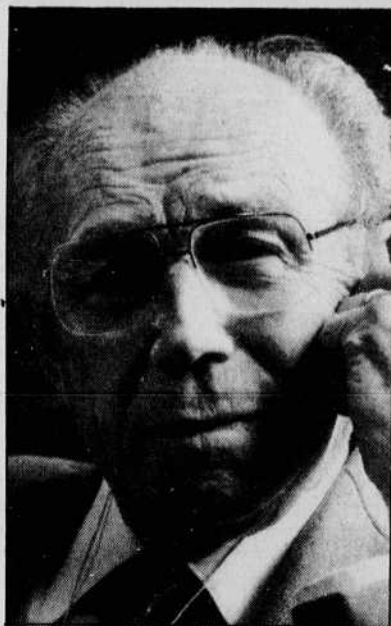
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see DOC, page E2

02



Cary Wolinsky © 1988 National Geographic Society  
Dr. Harold E. Edgerton



ing with the director, Mrs. Stanman draws in pen or pencil and water-

wrong. It's possible to misinterpret the sketches."

ages from their circumstances of creation and thus refuse to con-

one of my friends said, 'Why don't you do something useful with that thing. Get it out of here.'

"I said: 'What is there besides motors?'

"He said, 'The whole world is full of things that move.'

"I said: 'Oh yeah, sure enough.'"

Soon, he linked the strobe to a camera.

The resulting photos caught the lightning-flash of hummingbird wings, froze a bullet piercing an apple at 1,900 mph and showed the pin-wheel parabola of a diver. They revealed that cats lap milk with the underside of their tongues and that bats often catch prey with their tail membranes.

His electronic technology development company, EG&G, that he founded with two former students, now employs 47,000 people.

"The strobe light has been very satisfactory," he reflected. "You see them everywhere, on airplanes, at

airports, in cities, and they should have more of them. Strobe photography has revolutionized photography. You can hardly buy a camera without a strobe built right into it."

It even played a part in the Allies' landing in Normandy in June 1944. "The Air Force asked me to build a big strobe. We put it in an airplane so we could photograph the terrain from a mile high at night. They wanted night shots. So we made them a big strobe, got them all kinds of pictures. . . . In one shot we could see a bicycle proceeding toward Nancy, France. Those photos provided valuable military information."

His invention of side-scanning sonar helped him find the Monitor in 1973. "That was a a tough job," he recalled. "Cape Hatteras is the worst possible place to have a wreck. The winds are bad, the storms are bad, your boats are bouncing up and down all the time, but the side-

scanning sonar did the trick. National Geographic gave me an area 5 miles by 15 miles and said it is probably in that area. Sure enough, we found it right on the edge of that area after we were out there for a week or so."

Mr. Edgerton collaborated with Mr. Cousteau and was dubbed "Papa Flash" by the latter's crew for his photographic work in underwater discovery. His cameras eliminated flashbulbs underwater and opened the ocean's abysses to photography.

Later, he worked with treasure hunter Mel Fisher, who found the rich wrecks of the Santa Margarita and the Atocha, "but not when he hit the jackpot. We were using a side-scanning sonar. We had some misunderstandings. I told him to toss in the buoys [to mark underwater sightings by the sonar] and they'd look somewhere else.

"We never found anything except

treasure buried in various places. I hope I don't find any pots of gold. When you do, there are all kinds of complications."

Marine archaeology has always fascinated him. He has been involved in marine searches in Greece, Turkey and throughout the Mediterranean. In the early '80s, he joined the Alexandria Project, a search for the tomb of Alexander, when it moved its focus to the harbor at Alexandria, Egypt. "We were using sonar, looking all over. There's supposed to be a big lighthouse there, too. Nobody knows where it is. They still don't."

As a teaching professor in electrical engineering he has seen generations of MIT students. Of modern students, he said, "They're smarter today. They know where they are going and have a lot of ideas. I was just a farm boy wandering around."

NOV 3 1988

I gave a lecture to 76-100 or more at 8 pm, 300+ students were there. RAIN.

NOV 22 1988 Harold Elyton.

There was a "100 year" celebration at the Nat. Geo. Society on Nov. 17. in Washington D.C. Esther went with me. We were met by Bruce Pale and took the Sheraton Hotel room 8006. (Nov. 16). The big banquet was on Nov. 17 in the main ball room. At 8:15 PM Capt. J. Y. Converse, some 12 people were guests of honor headed by Brad Washburn. The banquet was presented a Tiffany Glass sphere. Speeches of honor. We were given a champagne glass and 1 minute speech!

[ Nov 22 1988 Harold Elyton  
 and 2 Frank Schmidt, Estlin and 2 LG  
 came to a luncheon at the

Nov 29 1988 3 pm. Esther, Sylvia and I returned to Boston on yesterday from Pontiac where we spent several days with Bob & his.

Bob now starts a new job at Uni of Mich. I don't wish there are too students there - all commuters from the area. The school is now and will be a challenge for Bob. It's a testimony an honest drive. He will teach physics.

Dec 1 1988. Dr. Prime & Luther. I'll be there eight pulses.  
 Still photos - discussed movies.

J.B. and Dally Hensley were here for lunch. I suggested he make a look around his left work.

Dec 8 1988 J. Holt Sandberg, Lucien Univ.

Invt 200 P.O. Box 82555

68501 - 2555

Visit to Stroke Lab.

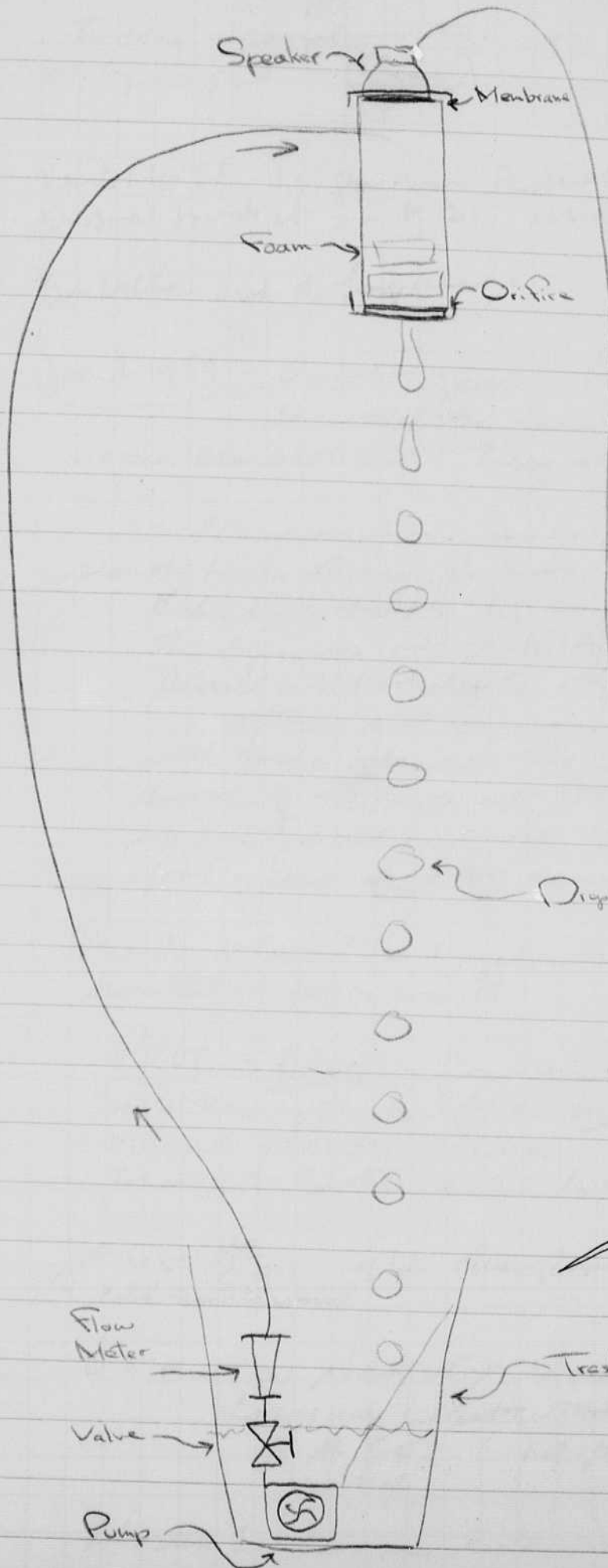
H2 - 10 am.

402 492 - 2151

TIMOTHY C. HILLIARD, Uni of Michigan  
 Foundation.

Dec 27 1988

99



Allen Wilson

12/21/88

MIT Room 4-410

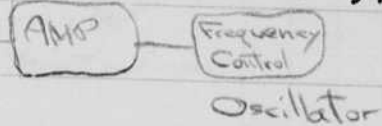
Stroke Lab

St. 415 566 2436  
Home

BkP. 415-563-7327  
7337

1265 3rd ave  
S.F. 94 122.

Exp. 3601 - Lyon St.  
20 Watt 94123 HF



Large drops!! 1"

*Harold Gentry*

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Dec 8

Visit to St  
H2 =

Dec 27 1988

Harold Edgerton.

Tuesday - several visitors.  
Book by TESLA (Cheney).

Dec 31 1988 1:45 pm room PR Room Welles is brought  
in some bread at 2 - to 2:15 even.

Bob Holden died of lung cancer.

Jan. 2, 1989 Another year. I am visiting  
Dr. Wolstey about once a week, down  
on a low salt diet! Digging etc. - now 85 years old.

Plans are being made to a Boston Harbor  
scow or two bronze propeller.

Edley will supply the scow.

The aquarium will supply the boat.

Driscoll will have charts etc.

after a side excursion - work  
will make plans for the future.

Hopefully the prop will be brought  
up and placed in some conspicuous  
spot - such as at the aquarium.

Mark de Caw (Los Angeles Calif) was  
here today for a visit.

P.ROP 5 Blade. Connie (Cornelius) DRISCOLL  
collection by phone. 2 blades up. 3 in mud.

MOBILE TANKER COLUM

T-2 on T-3. Feb 25 15 23 last date. ✓

Jan 5 1989 The Ches. River is frozen again.  
cold north wind.

EDMUND HARBURY Princeton

LIVING LIGHTS BOOK. Princeton Press

@ B 64

1940. p 297. Harbory.

# 34.

Elmer Lumber gave lecture Jan 2 at 8 pm  
about a week at his Kibitz.

Jan 17 1989. Harold Elyton

Bob. Elyton (son) was here on Jan Sat, Sun  
to interview the Mus of Science. (Educational job)  
Sylvia came by on Sunday.

MIT Press CATHY SCITRREGARDUS 3-6150,  
ERS. 845 sold 545  
Mount of View 2888?

BO LIZ KUSHNER 944-8700  
Dial 1-800-248-4884?  
Photos of Bill Bourne in color. 3

IAP LECTURE: UNDERWATER PHOTOGRAPHY  
Room 34-101 at 4pm on JAN 23 Monday 1989  
about 150 people were there.

MARINE IMAGING SYSTEMS  
4 PARLOWS LANDING RD  
POCASSET, MA.

Fixed camera.

MIKE STEWART  
STEWART HARRIS, Texas

Feb 16 1989 Harold Elyton

March 2 1989 Thursday, Slide in from Allen Wilson  
Explosion S.F. Exp. Case  
Sep 89.

March 6 1989 Harold Elyton:

Last night, Sam Raymond president of the BBN7405  
Co of Salem was talked to me and Edith. He was  
worried about a "take over" of his company. I have about  
20% of the stock including stock given to my relatives.

Sam has more. Between the two of us plus our relatives  
we should be able to buy out Ron Church and Gary Hayward etc.  
Sam will furnish information later to pass on to  
my relatives to whom I have given stock in BBN7405.

Mar 9 1989 N. Edgerton

101

Amy Mattison fell in sea while Maximilian Tralman is in England.

Trustees meeting at the house of Paul yesterday.  
Chimallors strike, exhibit does not operate. The double anther  
stroke evolution in operation. The stroke control is broken?  
The pump does not make drops.

Bell Amphiboly  
Kenneth Pearson 589-0161 Service dept  
JERR SLONMAN 1903 of 500 Service dept.  
The small stroke on the roof of the Museum of  
Science was not working such a corrosion. More  
going on. It has started for many years.

Apr. 14, 1989 The birthday (April) affair  
is over.

Esther went to Edgy Salem on April 4 in a  
Limousine with Mary and . We saw  
the line of street equipment, car production, etc.  
then lunch with Judy Pizzini and Paul Beach.

On April 6 the exhibit in the Computer  
Bldg opened. Cake and everything. Big crowd  
should visit for days of constant. Courtyard  
gave a lecture in Knickerbocker from 1 to a full house.

A German photocopier was here this  
week for a Hamburg paper.

Apr 20 1989. Present was Spawles & Krishna  
called on the State Lab to discuss the  
new afternoon.

April 28 Friday 1989.

I lectured in Rolla Mo on April 26  
D. J. ADAW and now and took me to and  
from Rolla Univ of Mo. He is a Plaqueis prof.  
Dinner with Martin & Pally (?) JISCIT & KEY & chedman  
unary to . Lecture at Spawles State Phytology.  
Home on April 27 via TWA.

Notebook # 36

### Filming and Separation Record

1 unmounted photograph(s)

     negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 100 and 101.

Item(s) now housed in accompanying folder.





3  
Photo by i.c

German photo album  
Apr. 1988.

Apr 12 1989 Ted Tsch



Captain Jacques Cousteau was here last week for the opening of Stopping Time, an exhibit of photographs and memorabilia of Harold E. (Doc) Edgerton, in Compton Gallery. Long time friends and colleagues, Doc has been aboard several of Capt. Cousteau's voyages. The opening of the exhibit also marked Doc's 86th birthday. —Photo by Donna Coveney

This week in sport

Apr 12 1989 Tech Tech.



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—Photo by Donna Coveney

This week in sport

JUNE 1 1989 Monday

Harold Elyton

Just back from North Carolina (Hickory). Estlin and I have an apartment 201 in Independence Manor. in Hickory NC as arranged by our daughter Tracy Low Fox or.

We spent about a week there. My son had arranged for a T.V., bed-living room furniture etc. manager is Mr. McDonald.

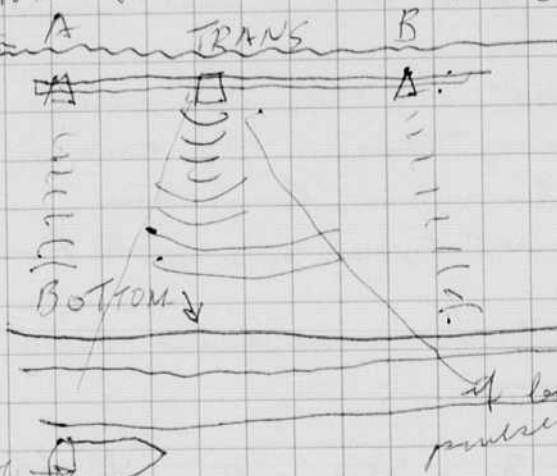
I took a strobe to the museum at Winton. They had sent it to me for repair. A new resistor and a new lamp was installed. The old lamp (631-PLC) was black. It was in on a push button so the lamp should last longer. ~~But~~ McCoy was the technician at the museum. The manager was Sublyin? Sandra Roberts asst.

243 THIRD AVENUE PO Box 2431 HICKORY NC, 28600  
704 322 8169 phone. CATAWBA Sci Mus. Center to Art.

Today I told Peter Mini about a special way to find "small" substation targets. The key to this after is to use two receivers connected so that the common signals are cancelled and any single signals come through. This method should be very helpful to find small targets that are usually overlooked.

Cont June 1 1989  
Harold Elyton

Special considerations.



The transmitter is located at T between two hydro pickups.

The output of the two pickups is connected so that the signals cancel out. The transmitter is cancelled.

SEARCHED

Buried bomb in <sup>map</sup> reflector from the target. There is a strong rumor that a 100 pound bomb rolled off the deck of an aircraft carrier. Divers and sonar could not find it!!

June 1989

Harold Edgerton apt 11-9A 100 Memorial Dr, Concord,

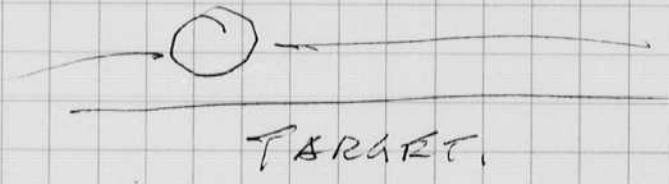
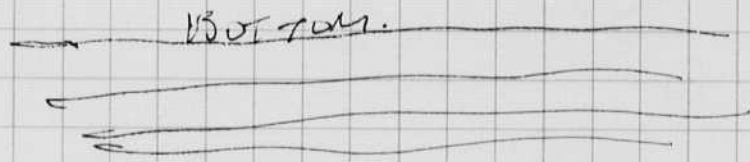
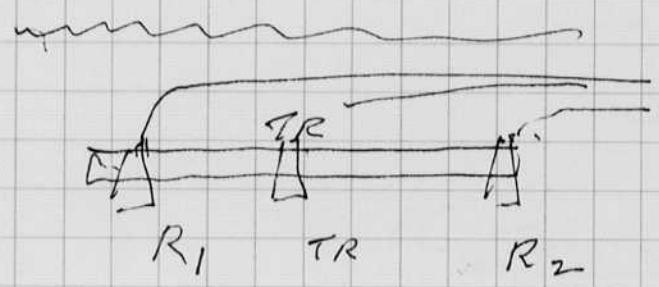
Subbottom targets (shallow),

Probably 12.1c e s sat id factors,

one transmission

Two-piechaps in series (opposite) phase  
Separate shielded cables.

The assembly must be pulled at a very  
slow velocity so that a target (small) need  
not be missed.



6.163 Spring '89



Jason  
Beardsley

Rob  
Newman

Yashodhan  
Naravane

Scott  
Stevens

Rama  
Rao

Jeff  
Applebaum

Allan  
Duffin

Pat  
Leonard

Muriel  
Medard

Theodore  
Tso

Flora  
Tsai

Joe  
Lichy

Jenifer  
Tidwell

Lindasusan  
Ulrich

Charlie  
Miller

Harold  
Edgerton

Farzana  
Khatri

Brian  
Kelly

Michael  
Ward

Scott  
Sikora

Jennifer  
Hamel

Jeeyoon  
Lim

Maxima  
Trachtman

Chan  
Yoo

Merwin  
Chan

Jerry  
Sasser

Brian  
Bradley



6.163 Spring 1999



Jason  
Beardsley

Rob  
Newman

Yashodhan  
Naravane

Scott  
Stevens

Rama  
Rao

Jeff  
Applebaum

Allan  
Duffin

Pat  
Leonard

Muriel  
Medard

Theodore  
Tso

Flora  
Tsai

Joe  
Lichy

Jenifer  
Tidwell

Lindasusan  
Ulrich

Charlie  
Miller

Harold  
Edgerton

Farzana  
Khatri

Brian  
Kelly

Michael  
Ward

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Sikora

Jennifer  
Hamel

Jeeyoon  
Lim

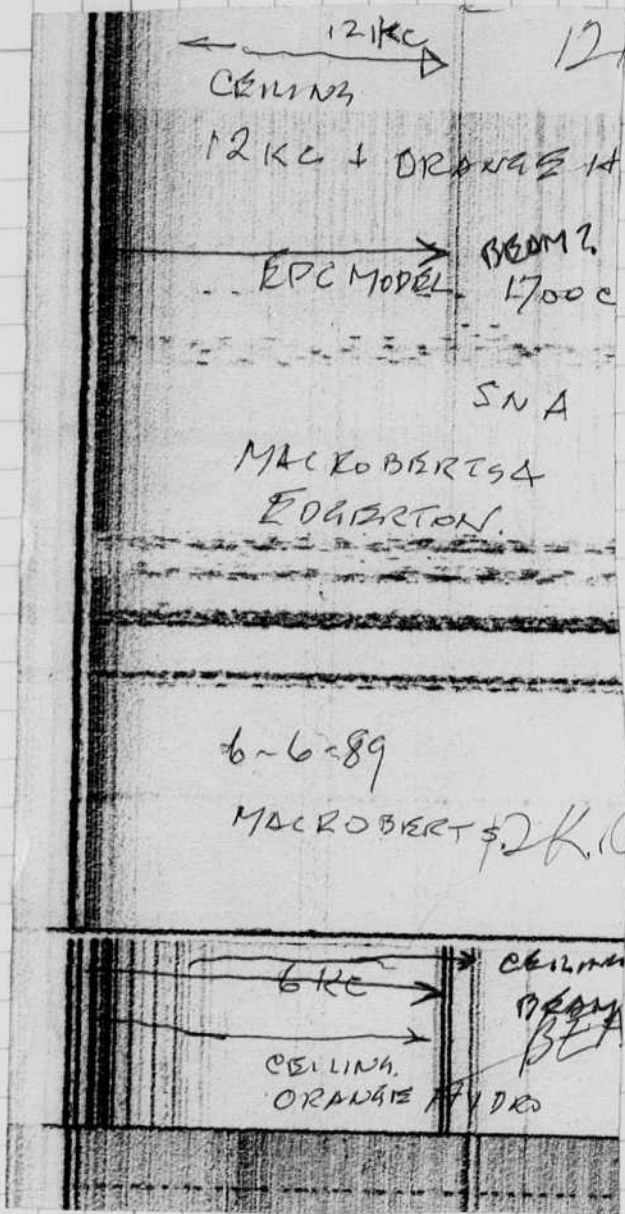
Maxima  
Trachtman

Chan  
Yoo

Merwin  
Chan

Jerry  
Sasser

Brian  
Bradley



Lab test of Tower  
E.P.C. Receiver.

12 KC Transmitter  
Mussa. Prod.

Also 6 KC (Mussa)  
Transmitter.

Next try the equivalent  
in the beam.

I now use two  
separate cables to  
1. transmit and 2. to receive  
this only down the cross  
talk for short distances.

one line

rooms  
at  
Hotel,  
SMPTC.

May 18 89



XEROX

HAROLD

THURSDAY

EDGERTON

Thursday Morning - May 18, 1989 18

Session D1: EDGERTON IMAGING SYMPOSIUM  
Co-chairs: Charles W. Wyckoff, Brite-Line, Inc. and  
Louis Rosenblum, Photographic Resources

Ultra High Speed Flash Photography  
John W. Mitchell, University of Virginia

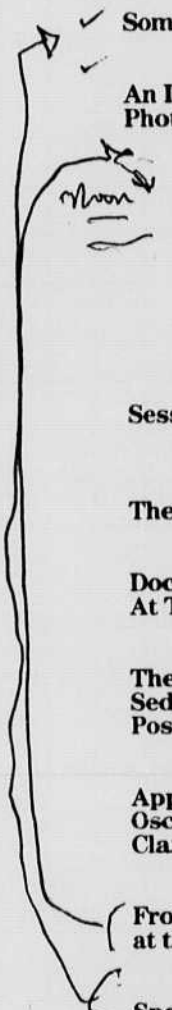
Capturing Picosecond Electrical Pulses  
J. A. Valdmanis, University of Michigan

Small Light Flashes  
J. S. Courtney-Pratt, Physics, Inc.

Some Stroboscopic Spinoffs in Photographic Technology  
Andrew Davidhazy, Rochester Institute of Technology

An Image-Preserving Optical Delay for High-Speed  
Photography  
Edward F. Kelley, National Institute of Standards and  
Technology

MILLER.



Thursday Afternoon - May 18, 1989

Session D4: EDGERTON IMAGING SYMPOSIUM  
Co-chairs: Charles W. Wyckoff, Brite-Line, Inc. and  
Louis Rosenblum, Photographic Resources

1:30

The History of Edgerton Deep Sea Camera Systems  
Samuel O. Raymond, Benthos, Inc.

Doc Did It First - Building On the Edgerton Foundation  
At The National Geographic  
Emory Kristof, National Geographic Society

The Gulf of La Spezia, Italy: A Case History of Seismic-  
Sedimentologic Correlation with a Remote Sensing  
Postscript  
Lloyd Breslau, Arctec, Inc.

Application of High-Speed Cinematography,  
Oscillography, and Streak Photography to the Study of  
Clarinet Reed Vibration  
William G. Hyzer, W. G. Hyzer Associates

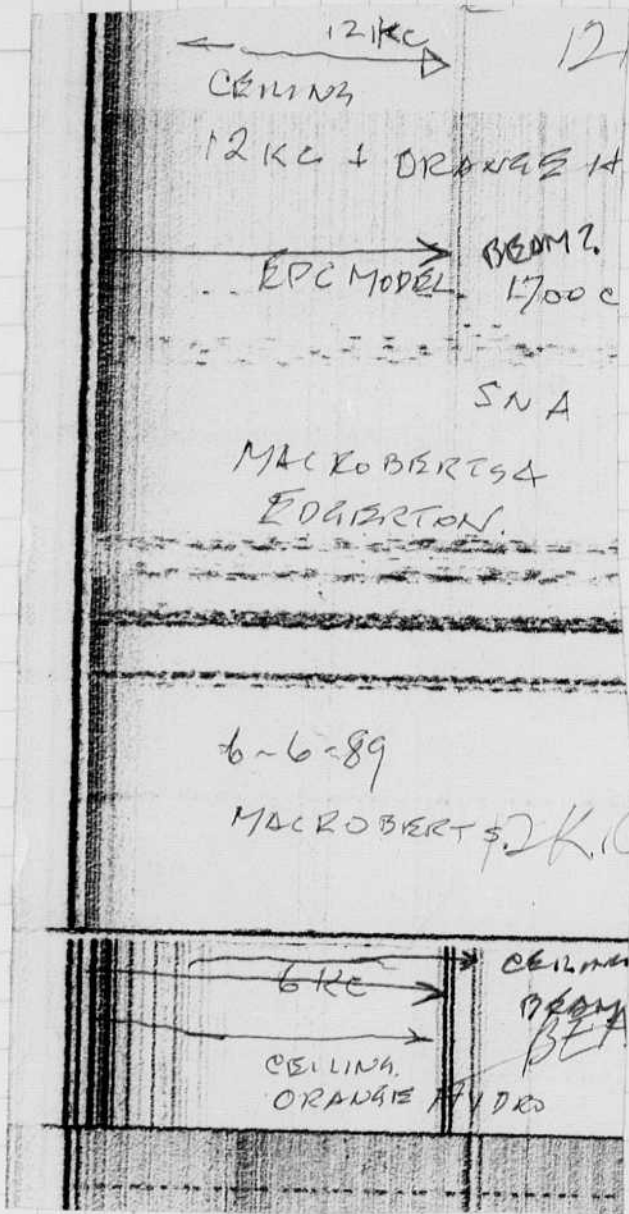
LAST  
TALK

From Pre-student, to Student, to Assistant, to Teacher  
at the M.I.T. Strobe Lab  
Charles Miller, M.I.T. Strobe Lab

BORN  
1932.  
Works like Lee.  
Tech Inst.  
Essex - Ex. Lab.  
Cleveland -  
Coast Guard Training  
gale.  
Open. Robin.  
BEAR SEARCH.

Sparking Three Generations  
Robert H. Rines, Franklin Pierce Law Center

Ed. KEVIN. Policy. Legitimizing. Look this up.



Lab test of Tower  
E.P.C. Receiver.

12 KC Transmitter  
Muzza, Ind.

Also 6 KC (Muzza)  
Transmitter.

Next try the experiment  
in the ocean.

I now use two  
separate cables to  
1. transmit and 2. to receive  
this ends down the cross-  
talk for short distances.

one line

XEROX

HAROLD

THURSDAY

EDGERTON

18

(7)

Thursday Morning - May 18, 1989

Program  
at  
Hotel,  
SMPTC.

May 18 89

**Session D1: EDGERTON IMAGING SYMPOSIUM**  
Co-chairs: Charles W. Wyckoff, Brite-Line, Inc. and  
Louis Rosenblum, Photographic Resources

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John W. Mitchell, University of Virginia

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MILLER.

noon

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William G. Hyzer, W. G. Hyzer Associates

LAST  
TALK

**From Pre-student, to Student, to Assistant, to Teacher  
at the M.I.T. Strobe Lab**  
Charles Miller, M.I.T. Strobe Lab

BORN

Worked like hell. 1932.  
Tech best.  
Essence: Exalt.

**Sparking Three Generations**  
Robert H. Rines, Franklin Pierce Law Center

Cleveland -  
Coast Guard training,  
gale,  
Open. Robie.  
BEAR SEARCH.

Ed. KELLY. Bury. Lightning. Look this up.

Handed Edgerton.

Thursday <sup>MIT 29</sup> June 29 1989 MIT Street Talk.

I will now outline my activities for a week or so.

IP SB meeting on May 18. See program p 107

Lunch at Betty's expense.

Commenced June 5th Monday

Sat ~~July~~ June 17.

Pain in chest. After supper - To MIT and then to Auburn Hospital.

Problem. Embolism (?) clot in lung?  
Relief came shortly after arriving at the  
MIT Auburn Hospital

Dr. V put in a filter at 9 pm (5 min)

June 23 out of INFIRMARY (MIT) to 100 summer drive.

Monday June 28 Block talk MIT

Wed - June 26 Dr. Walsby with Esther.

Discussed talk to England Bradford to  
give talk - then to Lockwood.

Reims. Myself. Needleman. Cottman.  
Gordon. Mackenzie.

Bob Wiener from N.W. with books & signs 10 am  
10.30 Breakfast - conference.

July 1 1989. Esther and I went to  
London on TWA (after Brit Airways cancelled).  
Then to BROAD FORD England where  
Colin Ford had arranged a lecture at the  
Museum of Photography & Video.

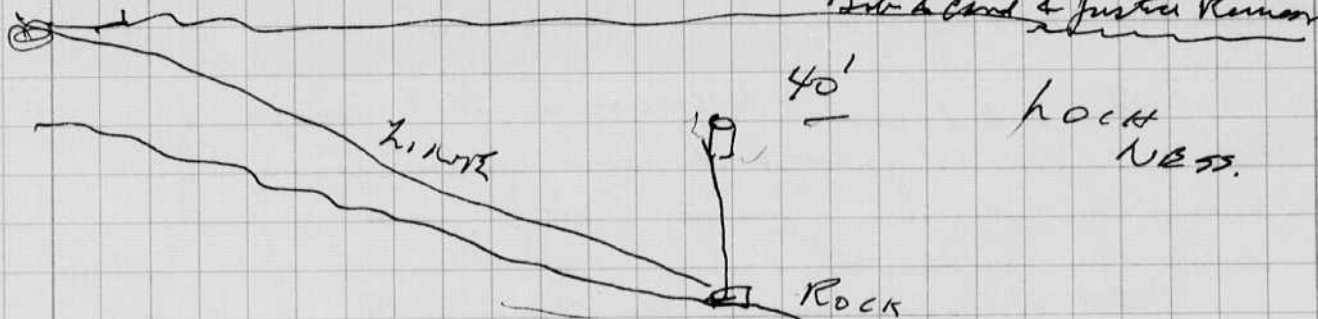
Next to Scotland, Inverness, where  
Carl and Bob Rein met us on July 4. Then to  
Dumfries where we stayed with  
Gordon Macintosh (NYC 1988).

Returned to Boston on July 8 1989  
via Pan-Am to London. Then BOAC to  
Boston.

Paul Kronfield had a crisis  
about the purchase of a side scan  
sonar from RGA Ltd. Mr. H. H. H. had  
promised to buy the equipment - but  
failed to do so when payment was requested.  
Estlin and I arranged to send  
112800 to Kronfield (in Lynch) co  
for the side scan on July 11 1989

LOCK NESS July 4, 5, 6, 7, 8. 1989

Chas Wychhoff and Bob Needham took the  
cameraman in a row boat. Estlin and I stayed  
with Bob McInerney.  
Bob & Chas & Justin Remon



Film 2475  
1600 ASA  
Hardman,  
Thin base. Thin emulsion.  
130' on Reel,

FILM Dewini  
Stemmer tank for

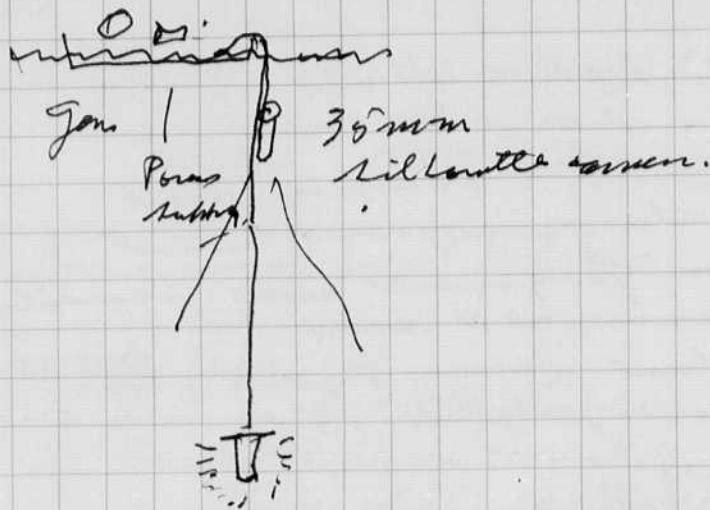
5 1/2 to 6 sec between exposures.  
1/25 sec exp(?) Tap dia change into coin tap.  
Lens f 4.5 Focal length = (9)

Adrian Stinson helped us in Scotland.  
He has been at Loch Ness for some time. He  
set up the museum at Drumochter, 8 miles



July 1989 Cambridge Mass 100 memorial Orvis

Bill Mac Roberts, Tony Olympos and I used  
one stock light for use in. Took Mess.



National Museum of  
Photography, Film and  
Television

Princes View

Bradford

West Yorks BD501R

Tele (0274) 727488

Fax 0274 723/55.

Colin Ford Keeper

Duty Officer Roger Taylor

Sat. July 29 1989.

Esther and I went to Concord N.H. with  
Oss & Helen Wyckoff to hear a musical  
play by Bob Rios (music author and  
orchestra conductor).

Title of performance by Community  
Players "NOTHING SO IMPORTANT" at the  
Amherst Theatre. 8pm. July 28.

Harry Heinemann (B.S.). wrote the lyrics.  
The play was given in Belmont Mass many  
years ago.

O'KEEFE (DARVEY) funeral July 20 1989  
was at the church of Saint Agnata  
of Loyola, Chestnut Hill Mass. Her mother  
& step, Brian and wife attend ed - with  
many friends. John K. Spade. (KULHARSKI),  
Pres of B.C.C.

AUG 30 1989

HAROLD EDGERTON

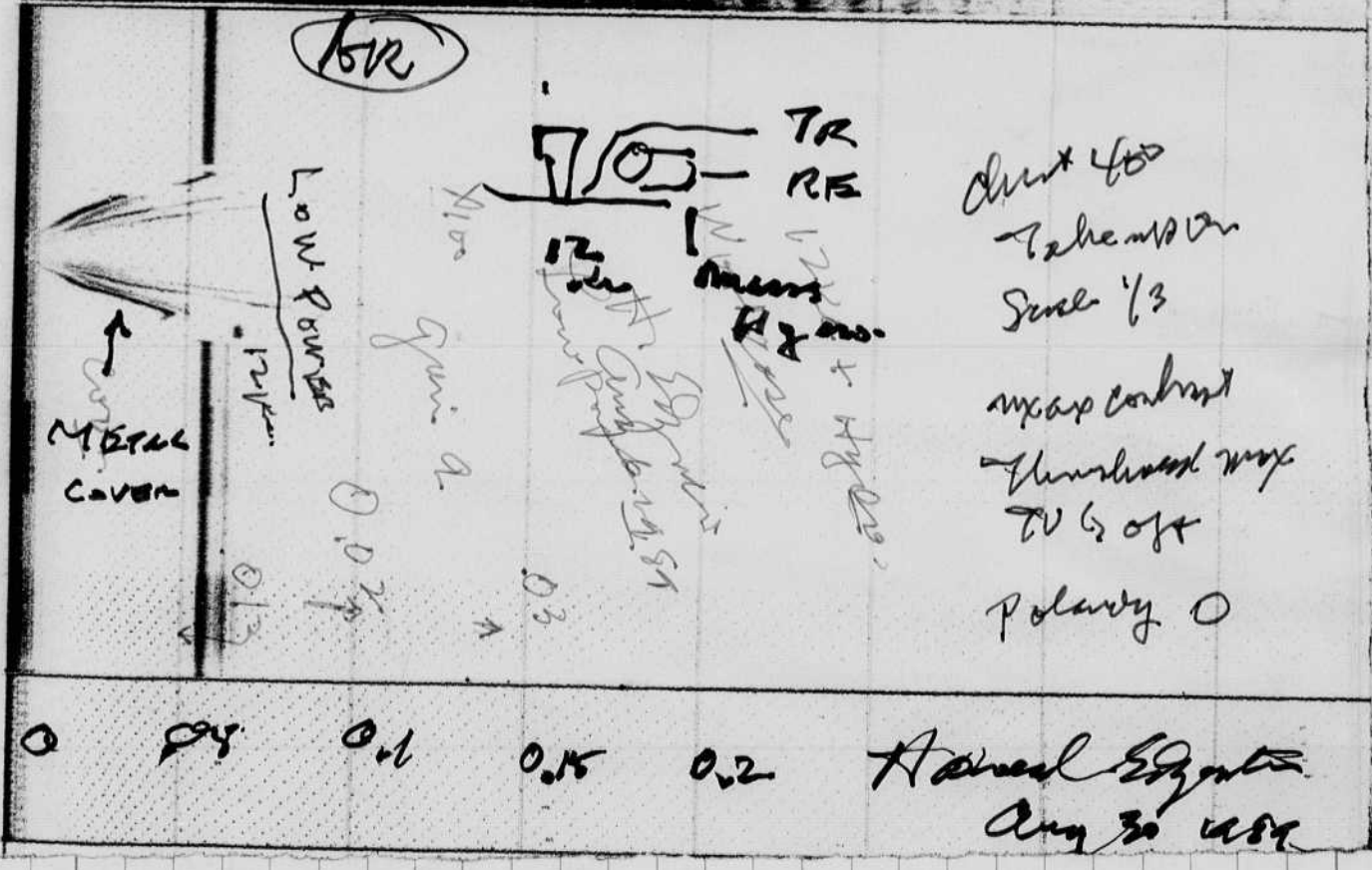
TRIP WEST is over, Esther and I want to  
leave in order to attend the opening of the

photo exhibit at the Bellery. To King & Moore  
photos!

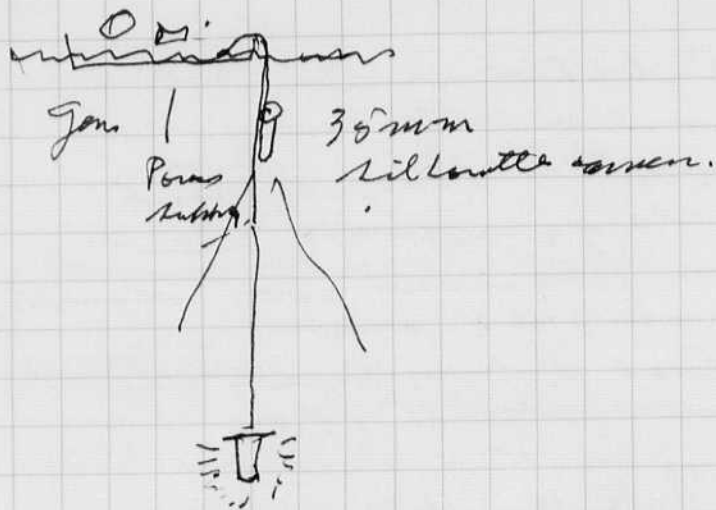
Amended next step to meet with  
reps of the bank who are negotiating our forms.

Test of Hg amplifiers and transmitters for  
the power penetrator. After some time I have  
finally decided to purchase a 12 KC mesa  
transmitter and a mesa Hg amplifier.

200g 21



July 1989 Cambridge was 100 memorial Drive  
 Bill Mac Roberts, Tony Olegatos and I worked  
 over studio light for use in. Took Mess.



National Museum of  
 Photography, Film and  
 Television

Provincetown

Bradford

West Yorks BD501R

Telex (0274) 727480

Fax O.R.T. 723/55.

Colin Ford Keeper

Deputy Officer Roger Taylor

Sat. July 29, 1989.

Esther and I went to Concord N.H. with  
 class & Helen Wychert to hear a musical  
 play by Bob Rios (music author and  
 orchestra conductor).

Title of performance by Community  
 Players "NOTHING SO IMPORTANT" at the  
 Amherst Music Theater. 8pm. July 28.

Harry Heinenman (B.I.T.) wrote the lyrics.  
 The play was given in Belmont Mass many  
years ago.

O'KEEFE (DARVEY) funeral July 20, 1989  
 was at the church of Saint Agnata's  
 of Loyola, Chestnut Hill Mass. Per mission  
 & wife, Brian and wife attended with  
 many friends. John K. Spore. (KULHARSKI),  
 pres of B.C.C.

AUG 30 1989

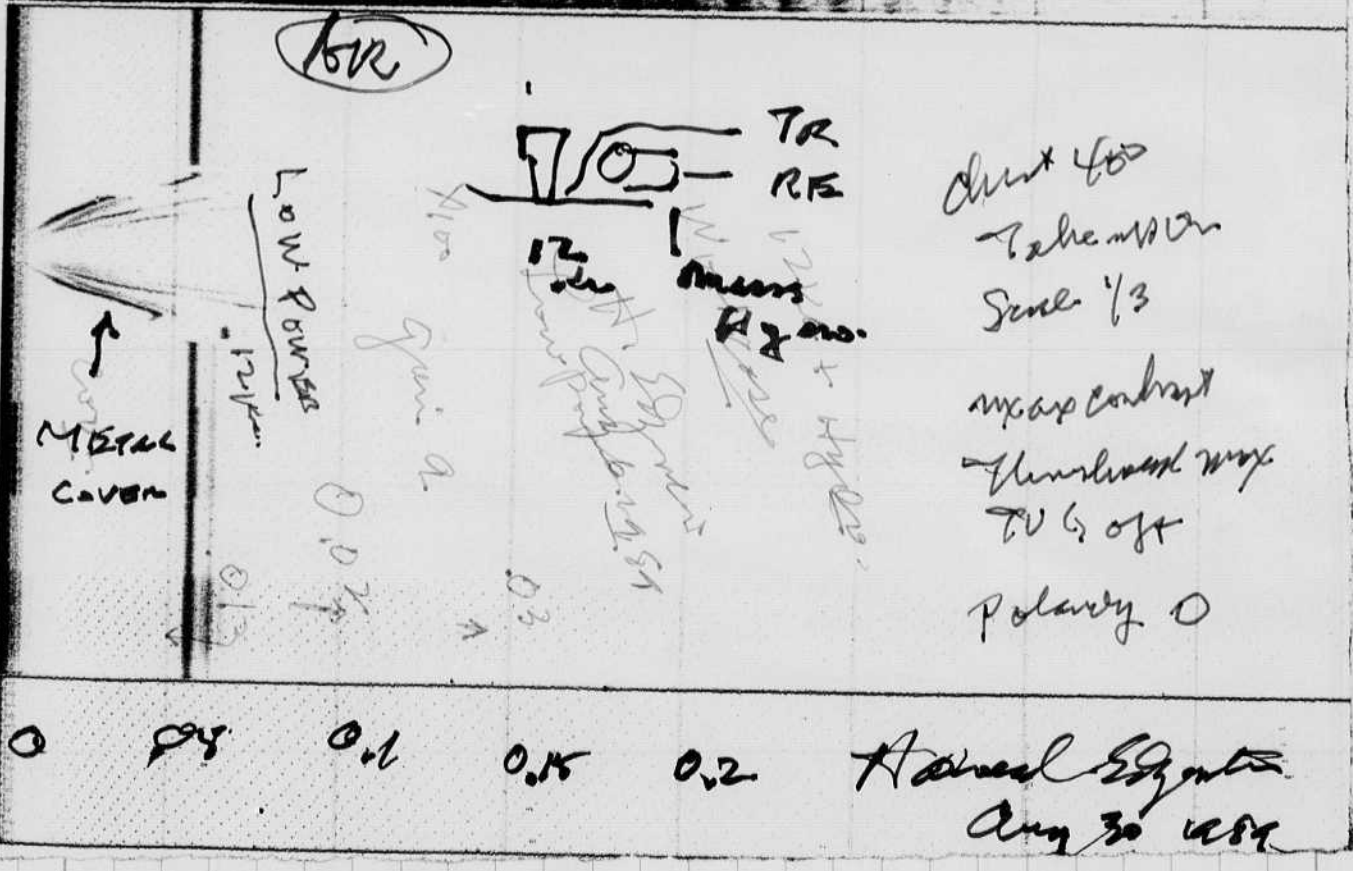
HAROLD EDGERTON

TRIP WEST at over, Esther and I went to  
Lester's lab to attend the opening of the  
photo exhibit at the Bellcoy. 16 Aug 2 1900  
photos!

Amma'lle went out to meet with  
reps of the bank who are negotiating our loans.

Test of Hyampulmons and Transducers for  
the power penetrator. After some time I have  
finally decided to purchase a 12 KC mesa  
transmitter and a mesa Hyampulmon.

200g 25



Aug 30/1989  
A. S. G. ...

EPC Down  
Tests

H<sub>2</sub>

MIT  
MIT  
MIT

500 lines/width

0	0.05	0.1	0.15	0.20	0.25	0.3
			0.15	0.20	0.25	0.3

REC.  
0.15 | 2 Kc Trans Water  
Hydrophobic Trans.

1.5 x 1 gain

2nd.  
3.1 x 11

WATER TEST

MIT Pool up end.

2.5 x 1 gain

H. S. G. ...  
MIT Pool.

MIT Down Pool.

WATER ACTION

Lab ceiling  
110V or  
50Hz

Sept 16 1988

Harvard Dept

Back from HICKORY N.C. where Ester  
and I spent some time with Mary Lou Dixon.  
She is in the middle of cancer problems.  
at present she is taking medicine thru a  
tube to her heart. She has a sore spot on  
one of her legs. She does not drive her  
auto & since 3 weeks.

Ester and I have a room 201 in the  
Independence Hall old folks home.

Sept 21 1989

I lectured to 6.163 on

Mammography on Kuller &amp;

Photography, 20 Students

Letter from YU from Singapore.

Her mother has a school there.

ADDRESS YU

Tokio. Card from Singapore. 1989

Sept 25 - The new optics at MIT Program  
MURPHY, VINCENT was in Sept 27. Thursday. Wants to  
get more people in his order graphy club.

Oct 2, 1989. Monday. MIT term started.

Oct 3 Banquet at 4 Seasons Hotel MIT

NOV 11 1989 Holiday Armistice of War.

Ester and I were at Hickory N.C. at  
the Independence Inn for a week. <sup>Mary Lou was</sup>  
Spent on Sat(?) for a tumor on her back bone.  
She is recovering now!

Aug 30 1989  
A. G. G. G.

EPC Down  
test

Hz

MIT  
MIT  
MIT

500 lines/width

1x2

.05 .02 0.25 0.3

0.1  
1.5x1 gain

0.15 | 2 Kc Trans Water  
Hydrophone Trans.

1x2

2nd.

WATER TEST

3.1x11

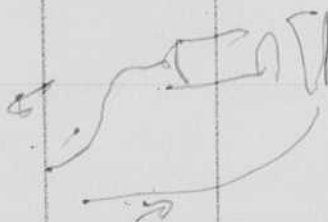
MIT Pool 4/1 end.

2.5x1 gain

1x2

1x2

H. 2.9x11  
MIT Pool.



4 ft deep MIT Swimming Pool.

WATER ACTION

Lab ceiling

110V ac  
line

Sept 16 1988

Lanard Epstein

Back from HICKORY N.C. where Esther and I spent some time with Mary Lou Dixon. She is in the middle of cancer problems. at present she is taking medicine thru a tube to her head. She has a sore spot on one of her legs. She does not drive all auto & since 3 weeks +.

Esther and I have a room 201 in the Independence Hall old folks home.

Sept 21 1989

I lectured to 6.163 on

Mammography on 14th

Photography, 20 Students

Letter from U from Singapore.

Her mother has a school there.

ADDRESS YOU

Tokio

Card from Singapore. 1989

Sept 25 - the new officers of M.I.T. Program  
MURPHY, VINCENT was in Sept 27. Thursday. Wants to  
get more people in his archeology club.

Oct 2, 1989. Monday. MIT term started.

Oct 3 Banquet at Parsons Hall MIT

NOV 11 1989 Holiday Armistice of War.

Esther and I were at Hickory N.C. at  
the Independence Inn for a week. Mary Lou was  
operated on Oct(?) for a tumor on her back bone.  
She is recovering now!



Wed Nov 15 1989

Dan and Edgerton. 4-405 AMT.

Many Lu is still in the hospital at Washington U.C. where she had a serious operation on her spine and neck. There was a cancer tumor pressing on the spinal cord. Myrtle Esten and I will go to N.C. soon?

I still talk to Paul Percival Esten about the stroke case.

22 Nov Wed. J. Fred Dussler and son Tom from W.H.O. where here. Lecture on Hypertension and color slides.

Dussler will go to Rutledge (N.J.) next year.

DEC 19 1989. Esten and I leave on apartment no B 201 Independence Manor in Durham N.C.

My Lu is recovering from a bad operation to remove a tumor. We are now in Cambridge for a few weeks.

At the special lecture for Maria Litta at the Carolina Science Museum, Durham N.C. I showed them some slide examples about a month ago. I plan a lecture on Underwater photos and another on "uses of Fossil".

Jan 2 1980 4-405 MIT  
Harvard Algebra.

Arner and Simon Linder were at 100 when  
I was for lunch yesterday.

I am writing to Deception about the  
strong tower signal of VENICE.

Notebook # 36

### Filming and Separation Record

1 unmounted photograph(s)

\_\_\_\_\_ negative strip(s)

\_\_\_\_\_ unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page 114 and 115.

Item(s) now housed in accompanying folder.

# Strobe Laboratory



Alok Goel

John Simmons

Simon

Eisinger

Andrew Crabtree

Dan Rivenbark

David Lee

Pi Lam

Albert Woo

Todd Sachs

Josh Duke

Mike Chandross

Charalabos Papadopoulos

Michael Frumkin

Su Varadarajan

Brian Leibowitz

Trinnie Arriola

'Doc' Edgerton

Lorraine Brown

William B. Buckner

Jill Halpern

Darcy Prather

Towashi

Eleanor Egan

Bob Ramstad

Tony Gerber

Meryl Alford

M. Kyle Kapuscinski

Michael Pieck

Adelina Yen

Charlie Miller

OH WOW !!!



1989  
Street Lake  
Cem

A. S. Johnston

**BLANK PAGE(S)**

Notebook # 36

### Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page \_\_\_ and \_\_\_.  
*inside back cover*

Item(s) now housed in accompanying folder.

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Notebook # 36

### Filming and Separation Record

\_\_\_ unmounted photograph(s)

\_\_\_ negative strip(s)

1 unmounted page(s)  
(notes, drawings, letters, etc.)

was/were filmed where originally located between page \_\_\_ and \_\_\_\_.  
*inside back cover*

Item(s) now housed in accompanying folder.

Δ[.file: ROSTER 2-20-87

6.163 STROBE PROJECT LABORATORY - SPRING 1988  
ROOM 4-405 253-4629

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Charles Miller, 116 Bingham Rd., Carlisle, 1-369-7074  
Jean Mooney, 27 Birch Rd., Watertown, 924-7124  
Bill MacRoberts, 105 Whidden Ave., Whitman, 1-447-4172  
Brian Barth, 407 Memorial Drive, 225-9547, 494-0330

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Battige, Ken, Next House Rm 305, 225-8739,  
~~Blout, Ben, 4 Ames St., 225-6650,~~  
Chen, Elsa, 4 Ames St., 225-6102,  
DeCanio, Ken, 475 Memorial Drive, 225-7609,  
Feltman, Andrew, 58 Manchester Rd., 253-6778,  
Gaspar, Zsuzsanna, 428 Memorial Drive, 494-9225,  
Hudson, Paula, 4 Ames St., 225-6296,  
Kim, Susan, 52 Massachusetts Ave. 302, 225-9632,  
Kwan, Deanna, McCormick Hall, Room 233, 225-8493,  
Lee, Jean, 3 Ames St., 225-6428,  
Lewis, Penney, 410 Memorial Dr Rm 523G, 225-8436,  
Liu, Tom, 111 Bay State Rd., 253-3157,  
LoBrutlo, Peter, 450 Memorial Drive, 225-9205,  
Natarajan, Priyamvada, 320 Memorial Dr., 225-8656,  
~~Newman, Robert, Senior House, 253-3191,~~  
Platakis, Steve, 58 Harvard St., 899-7851,  
Roman, Barbara, 355 Mass. Ave., 253-6799,  
Sabatini, Antonella, 770 Boylston St., Apt 18A, 266-9069,  
Suziedelis, Aras, 450 Memorial Drive, 225-9388,  
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Wayshack, Corinne, Burton 432D, 225-8383,  
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Weiss, Yoel, 410 Memorial Drive 225-8547,  
Westlund, Ken, 518 Beacon St. 266-5950, 536-1300

AURORA COURT HOUSE STROBE LIGHTS

Buddy HANSEN

FT-218 Lamb 5

Int Jensen

694.6111

Capt Williams

694.2006

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DEC 21 1997 DAVID RAGONE (metal mng dept.)

237 3658

Case Prof

52 W. ... ?

Wellesley, Mass

---

ERIC EDGERTON

1225 ROMA AVE

DEVOISE YUKO-TAKA HASE

ALBUERQUE N.M.

87108

505-247-8608. phone.