

HAROLD E. EDGERTON

PAPERS

MC 25

Series III

Laboratory Notebooks

Number     

Dated 29 June 1947 to 17 August 1947

# Compositions

Property of H. F. EDGERTON

M. I. T. CAMBRIDGE MASS

JUNE 1947. H Bird Zink & Wm 1947

Address \_\_\_\_\_

Return to ✓

1947.

Harold E. Ogerton  
M.I.T. Cambridge, Mass.



Bill Mac Roberts and  
transportable used for the  
hummingbird expedition to  
Colorado and California.

Room 20D102

Exp. tests.

June 29 1947 #3 Edg.

Calibration of light meter 929 phototube.  
G.R. Wood box model Simpson 200 uameter  
143 Switch 1      127 Switch 2. Bat check.

Basis for calibration - Kodatron at  
M.I.T. with specular reflector  
considered to be satisfactory  
at guide factor of 40 with  
daylight Kodachrome. Set up at  
 $8\frac{1}{2}$  ft f 4.7 and paper filter  
adjusted to give 100 reading for  
the above. Nicks were put in the  
Polaroid attenuator for  $5\frac{1}{2}$  light  
points with filters of 2, 4, 8, 16, 32.  
f stop numbers were marked  
in pencil below nicks.

Standard FT-14 no 3 101 mt 2000 volts 6800  
distance for 100 reading on 1 scale =  $27.5''$  <sup>lumen sec.</sup>  
for f 4.7  $\frac{680}{27.5^2} = 7.7$  candle inches. <sup>sec.</sup> (inch candles <sup>sec.</sup>)

Return To ✓

1947.

Harold E. Edgerton  
M.I.T. Cambridge, Mass.



Bill Mac Roberts and  
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Room 80D102

Exp. texts.

June 29 1947 HEEJ.

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Return To ✓

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Exposure tests. Contrast Process Ortho.  
127 mm lens. Sheet cut film  $3\frac{1}{4} \times 4\frac{1}{4}$ .

①. Distance lens-subject 15 inches.

aperture f22. CC15 filter

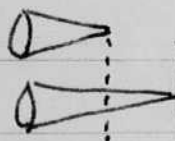
3 bulbs on 75mf 2800v 12" 18" top 16"

Exposure about right.

Meter reading 190 at the subject.

Since the lens is extended to produce a large picture, the light must be increased above that required at a large distance.

With a 1:1 image, the light needs to be increased by ~~four~~<sup>FOUR</sup> for the same aperture setting on the lens.



The meter polaroid and the 3 paper filter was removed from in front of the photovell. at f22 without a filter the meter read 105! with filter 72!

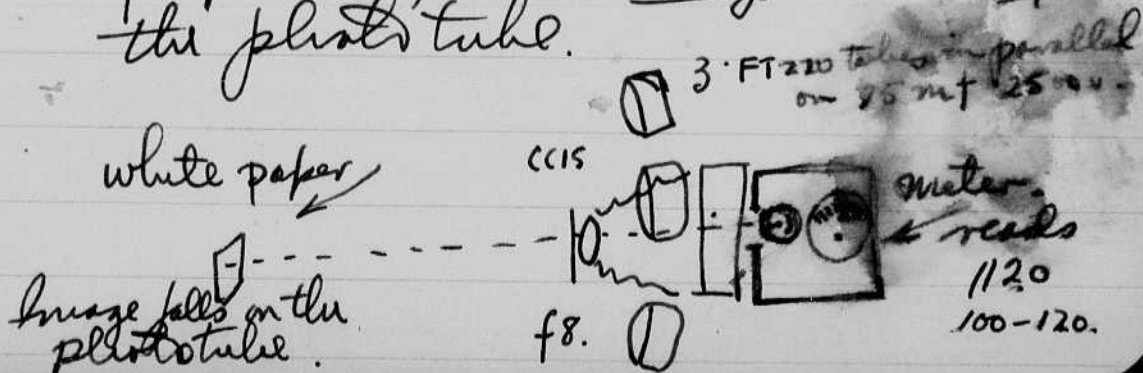
4 ft lens to Subject Kodachrome  
75mf 2500 volts 3 lamps. Daylight CC15.  
meter reads 115 when at f8 4 ft.

<sup>best.</sup>  
Two exposures of Bobby were made at  
f8 and f11. Background 5 ft back  
of Bob. Yellow with Red and White  
Nebraska Banner.

3 Bob and Bill with watermelon f8 4 ft. OK.

meter in camera test. Ground glass  
removed from camera. Polaroid  
and paper filter removed from  
meter.

Camera lens set at f8 with CC15 filter  
meter reads 112 with white  
paper  $8\frac{1}{2} \times 11$  image covering  
the phototube.



7 ft Camera-Subject. Kodachrome  
Daylight CC15  
f4.7 75 ft. f. 2500v. 3 lamps in parallel  
meter reads

OK

One exposure made of Mary Lou & L.  
Background 8 ft from camera.

Meter in back of camera with  
ground glass removed.

Meter reads 110 with lens at f4.7  
with a CC15 filter over lens.

White card 8'1/2 x 11 at subject 7 ft.

3 ft. camera to Subject Kodachrome  
f 11 75 m / 2500 volts. 3 lamps around camera.  
meter reads. CC15.

one photo of Bill eating water-melon  
f 11. 8 ft to Background.

15 INCHES. Camera-Subject Kodachrome  
75mf 2500 V Blamps CC15  
f16

Bob close up #6

Meter in back of camera  
f16 lens. White card. CC15 filter  
reads 98. 15 inches to subject.

Exposure Ok.

10 INCHES. - Camera-Subject Kodachrome  
f16. 75mf 2500 volts CC15  
3amps.

Close up of Esthers eye.

meter in back f16 lens as before  
with cc15 filter. white paper.  
meter reads 98. 10" to subject.

12 FT

35mm Kodachrome  
CC15.

12.3? f4 - 8ft with old Port without filter.  
Kids with Lobsters.

ok.

best  
10ft

f4. Bills soapbox derby car. best. ✓ 40

f5.6 . . .

f8. . . . Dark.

f16. 3+ 2+ Portrait lenses Lamp 8" from Meter. Subject

-best

f16. 3+ 2+ .. .. ∞ 16" .. ..

f16. 3+ .. .. ∞ 15" .. -

Best f16 3+ .. .. ∞ 21" .. ..

at Rochester

Sylvania Portable

f 8 ? 4ft.

f 4 10ft. CC15

Dark.

July 3, 1947.  $3\frac{1}{4} \times 4\frac{1}{4}$  Kodachrome. CC15.  
Ektachrome

All tests before were on old film Results showed  
guide factor of 32.

Kodachrome f7, 8, 9.5 CC15  
1 2 3

Ektachrome 1, 2, 3. CC33  
f7 8 9.5

one full load

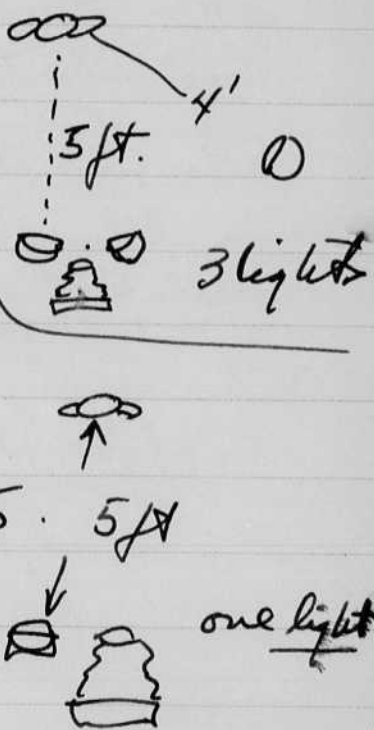
Ektachrome f7 8 9.5  
5 6 7 CC33

Kodachrome 5, 6, 7. CC15. 5H  
7 8 9.5

meter f8 5ft. 70 meter

July 22 1947 f8 5ft 68 meter  
checked.

This gives o.k. photos  
with Kodachrome and  
Ektachrome.  
cut film size.





Evergreen Colorado July 14, 1947. Monday.

Evans Ranch photos of Broadtail on nest.

Walker Van Ripper  
Robert Miedrach

3 1/4 x 4 1/4 camera Kodachrome (2 lots one has 1/2 stop slower)

f 16.

Lens - subject 15" one lamp. CC 15 filter.

a few photos were taken at f 22 with new Kodachrome.  
Some were taken with 2 lamps and blue background.

35 mm photos with 3+ portrait lens on camera 13" to sub.  
all pictures taken at f 16. CC 15 filter.

Meter reading of single lamp at distance used  
for above photos. f 16 - 130

July 17: just found that  
2+ was accidentally used  
instead of 3+.

Evergreen Colo.  
Three Trees. Cottage.  
C.L. Krause  
Albion Nebr.

Evergreen Colo. July 15, 1947. Tues.

More photos were taken today of the female broadtail on the nest in the blue spruce on the Evans Ranch. Walker Van Riper set up his equipment and camera while Bob Niedrach worked on open flash. We were rained out at noon.

I took 35 mm with 1 and 2 lights of the setup and the bird with (3+ lens at f16). also shot some black and white with the medalist. Used a guide factor of 40 to 50. Shutter at 1/200. The nest was in the shade and the day was cloudy.

In the late afternoon I took two photos of swallows at a nest in an abandoned hotel west of Evergreen. 35 mm 4 ft f16. CC15 filter.

A grey headed junco is building a nest in our yard at Evergreen.

We saw two Ouzel (American Dipper) nests west of Evergreen.

Flycatcher (Western) was seen on a nest.

Blue Bird (mountain) have been seen.

Look up Wheeler's books on the outlin and out worm.



Red flower 4x f11 Sun-Wind 11200 see CC15. Transportable.

~~July~~ Evening again to Evans Ranch to shoot # Bird  
Broadtail on nest. Mary Lou went along.  
Photos at f16 with lamps on camera Tenth  
35mm on magnet control as before except with  
3+ lens at 13". Blue flower - Penstemon.

July 19. Took Bill and went to Bendemer abandoned  
camp to work on Rufous. I had put up a  
post in the flower field for them to use  
as a perch. No action when we arrived.  
as it was a very clear hot day. Shortly  
Walker and Bob came and we left for  
Evans Ranch. More photos taken of the  
bird on the nest.

Afternoon at Mt. Evans with family. Saw  
Wayne Hazen at Doolittle Ranch south of  
Idaho Springs.

July 20 Evans Ranch Bob and Hammer.

2+ on 35mm two lamps 20" ± f16 CC15.  
19 1/2 inches lens to subject.

No luck at Bendemer with Rufous  
Tried Robin nest with 4 young. 3 left nest.  
Climbed flat top "Bat" mountain.

Drove to Dr Sanders but was too late for Broadtail.

Under  
stamped  
Data from  
Wishard

→ Trial Ektachrome 15" camera 15" light side  
f22 CC33 20" camera light. Hand with  
push button and feeder. Red background  
12" back of subject.

July 21. To Denver in am. Saw Harrington, E.K. at noon and at 2 pm  
showed slides. M.I.T. meeting in evening at al Perlman  
40402 Bayaud. Nelson. 5 total.

July 22 1947. Evans Ranch with Van Riper. Rained out. No males present but several females, all nesting. Our prize bird is on the nest. Her eggs should be ready to hatch soon.

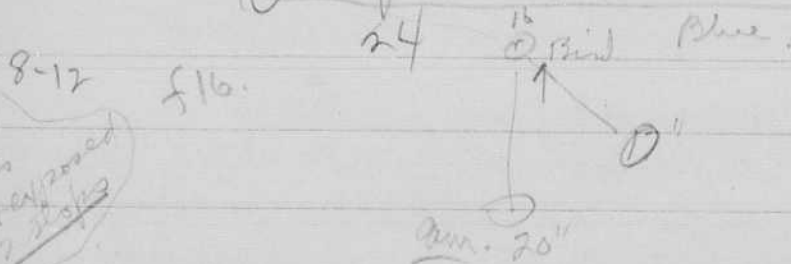
We had lunch in our cabin and then tested the out front of our flash units. Nine 109 Vans 5 or 7. #1  
Vans 15 #2.

Voltage of capacitors is 1700. 45 m+ and 56 m+.

Reflectors - Dull and cylindrical with lamp far from focus.

July 23 1947. Bailey 7 am H Bird female B. and L. f16 & K. m. 2 lamps  
10 am. Tanager on feeder f16 36" (one without CC 15)  
35 mm f16. 2 lamps.

July 24 Evans Ranch 16" to lens. 45 m+ lens,  
H Bird First Egg on 12 20" main light  
1-7 mm Background 16" from Bird. 20" side  
Blue Background 20" " "



July 25 Monday Gallup N.M. Left Evergreen about 9 am.

Camera repaired at Lindall's shop. 35 mm green painted model out of focus. Colo. Mus at noon.

Took photos of Walker Van Riper's pigeons at 1:30. Left for South about 2, with stop over at Garden of the Gods near Colo Springs. Over night at Walensberg (?)

July 26 Saw Rufous against Evergreen trees

in Wolf Creek pass (10,800) shortly after going over the top. Saw two other birds on fence and telephone wires in meadow near the bottom but could not identify type.

I saw several hummers on the road into Mesa Verde park. Heard several in the morning, Broadtail males. A bird flew past the square tower ruin and one was in the path almost at the balcony house. I believe it was drinking at a small spring that is on the north side of the ruin.

At the base of the entrance mountain where the sloping part meets the vertical rise I saw numerous birds flit across the road. A female broadtail was observed, ~~but~~ I believe she was nesting since she left in a hurry after eating.

On July 27 Sunday night after spending all day at  
Mesa Verde, we had a flat tire at Sheep Springs  
so we camped overnight. Dogs, horses, mosquitoes  
bothered some. Up at 5 and drove towards  
Gallup. 6 miles out I spotted a large  
number of Rufous  $\Phi$  birds in a patch of  
wild flowers along the road. We worked  
photos on them until about 8, when  
we left for Gallup for breakfast.

The Rufous males would circle out into  
the field whenever a truck or car would  
pass. He would immediately fly back  
to perch on the phone wire or on  
his perch. We could go to about 6 ft  
from the bird. He would defy us as well  
as any interloper into his territory.

I first tried my +3 lens on the  
~~31~~ 35mm without success. Then I set  
for 4 ft at f16  $1/200$  sec. and took two  
or three shots. Also made some at 6 ft  
f11.  $1/200$ . The sun was fairly bright  
at 7:30 am.

Wed. July 30 1947. On July 28 after breakfast at the El Rancho we went back to the patch of plants 6 miles north of Gallup. More efforts were made to photo Rufous. It was almost impossible to get him to come to a place where we would set the camera. Left early afternoon for West stopping overnight at Winslow in auto camp (West end).

On July 29 left Winslow and saw Dr. Miniger's museum about the meteor crater. Then on to the Grand Canyon. No birds (#) were seen from Gallup to almost the Grand Canyon since the country was very dry and hot. A flock of Rufous was located 200 ft of the <sup>El Tower</sup> Hotel in a patch of thistles. Stayed overnight at Bright Angel Lodge.

Up early 6 to work on birds. Saw two young males go to the ground three times during fight over who owned a thistle patch. Finally one bird left.

Old Kodachrome f16 with camera at 15 inches from subject. Also shot some at f11.

Wisher says Ektachromes sent to Washington were underexposed one or two stops!! when I talked to him by phone today.

Setup for bird sitting on perch on bush. <sup>3 1/4 x 4 1/4</sup>  
Camera - subject - 15 inches, slightly at 17" side and 20" side.  
Check this for exposure when in LA. In date Kod. CC15 filter.

↑  
exposure perfect.

f11?



H Birds - Grand Canyon July 30 1967 Wed

Ektachrome f 11 Camera - Sub 21" Main light 23 Side 15.  
CC 33 filter. Bird up into thistle. First three shots the side light was 23"  
Background Dark fence. 28" back of subject. ↑  
Shutter 1/100 sec. Jhr.

35mm Kodachrome f 11 and f 16

July 31 35mm of male Rufous near stone fence  
13" camera - subject 3+ lens CC 15, f 16.  
2 lamps 13 and 12 inches slightly below camera

8/2 Ektachrome 3 1/4 x 4 1/4 f 11 CC 33. 17 and 23 lights  
15" to subject. 1/400 sec. Bright Sun Hummer Rufous.  
1. Blue Background.  
2. without Blue Background & Rock.

31 Thursday - Left at noon 4 pm for Long Beach. Overnights at  
~~Kingman~~ Kingman - Chloride. Bad  
Jan Belt. Friday 4:30 am start to Long Beach 4 pm.

Sat. Aug 2. With Berij Tucker to Modjeska Canyon for H Bird  
photos.

Jussia test photos 3+ lens 35mm 13" f 16, f 11 white back.  
Modjeska canyon f 8 5.6, 4, 4, 8, 8 white 1+ 39" 22"-36"  
Blue f 8, 8, 11, 8, 11, 5.6, 4, 3.5 f 16 20" 14.  
Red →

Sun. Aug 3. With Tucker and Paul Durham to Modjeska canyon.

Ektachrome 3 1/4 x 4 1/4 of birds. f 8 f 5.6  
with 2 lamps. 22" and 16" ?

Mon. Went to L.A. Hollywood to get films processed.  
Lunch with Altkin son 7273 San Monica  
Bill Tucker. John Andreas.  
Estuar. Jack Burns Jones Walter Bant.  
Called on Everglow (Photostat) and Wilcox.

From form # 42.03 # 329.68

August 6 1947. Wednesday. Tucker Sanctuary  
Kodachromes CC33 15" two lights f11 White  
background. 3 photos.

Kodachromes 3 1/4 x 4 1/4. Two lights f11 CC15. 15"  
white background. Red and Wallpaper?

Roll 1 35 Kodachromes. f16 two lights 13" 3" lens.  
a few at f11

Roll 2 35 Kod. f16 side light 14" top 13" Pattern Background. f16 3".  
15" back of subj.

At night I reloaded Kodachromes 3 1/4 x 4 1/4 and began  
so I could shoot more the next morning.  
also shot another roll of 35 mm f16 with lights  
about one foot away. Some with side and top  
lights.

Aug 7.

a dozen B2W were made of the birds 15" from the  
3 1/4 x 4 1/4 5 1/4" lens. f22 and f32. Three lights  
on sides and top. ~~White~~ Dark Red  
background.

I left about noon Aug 7. from the Tucker Sanctuary  
for San Juan Capistrano. Several pics were  
taken of the pigeons. Miss Judith Maxwell  
1816 Ford Stokton Dr.  
San Diego 3 Calif.

J. J. Cromwell 685 East  
Troy and Treasure Blvd So.  
Bixta Laguna Beach

Aug 8. Santa Catalina Island 10 am boat. Left family  
in Long Beach. Duhamer is fixing my car.  
Rain (liquid sunshine) at boat's departure.  
4 flying fish seen en route.

Bird Park - Les Mobley & wife. no hummers  
Honey Creepers from central America 30 species  
single feeding habits to birds. Sharp bill  
with long tongue. Blue male Green female.  
One photo was taken at f11 with a +2 lens 19 1/2"  
Indian Hill Mynah bird - excellent talker. Large  
black bird with yellow markings on the head.

In the evening I followed the Blanche W boat which has the search light for observing the feeding fish. Photos were taken. B&W with f 4.5 and f 11 openings set for 30 ft. Two lights were used, high so that some top lighting would result. On the way back a fish hit me on the shoulder and flopped into the boat. Took two pics of Gretchen Bott and Joan Anthony holding the fish. These girls are Islanders who wanted to ride the Blanche boat but there was no room.

Capt. Walton.  
Herdersandg.

Alma Overholt Publicity  
Ted. Sierks. Photo.  
Bud Wright  
Dorcas Haugh. Secy.

- Aug 9. Saw a Humming bird near the town of ~~St. John~~ Aradon but could not identify. The hummers are migratory on this island. Troupial yellow.
- Aug 10 more photos at the Bird Park. Toucans - green.  
Left on 4:30 boat. Honey Creepers.  
Bill Wignah.
- Aug 11. Worked on auto - new tires. generator.
- Aug 12. Robt S. Woods Azusa Calif. H. Birds  
Cereus cactus. background. 6 species allen.  
Calliope.  
Anna  
Costa.
- Aug 13. Long Beach Rotary. Wed. B.F. Tucker.
- Aug 14. collect
15. Left L.B. at noon Mt Wilson - Kniggin
16. one night at Proctorville Biss at 1
17. Sequoia forest. one night at Bakersville top hat  
Lontanna flower

18. Over night at Las Vegas car heating. Redstart flushed, and clean.
19. " at the Gap Ariz.
20. Trip through Utah. Kayenta lunch, overnight at Ponderosa at Montecello Utah. Mrs. Olivia Hyle
21. Drove to Bailey Colo. B.T. Carroll Ranger Cafe. Jack Fitzgerald. Tonalea end of the water. Red Lake Ariz. Floyd Boyle Jack Heltz.
22. Ranger Cafe has row of feeders on the front of stone Fitzgerald house Rufus young male. Two lamps about a foot away f11 f12 Red background on 5 pics of same bird. Trouble with auto brakes Frasier garage.
23. Up at 5am to shoot birds on east side of the Bailey Hotel. Male Broadtail did pose for me. Left at 10.45 for Denver. Lunch with Van Riper at the cactus club. Left Denver at 3pm for overnight at ~~Fort~~ Julesburg Colo.
24. Arrived Aurora about 2 pm.

Aug. 1948. Tests with exp. meter 2" enlarger lens.  
f 22 Exposure ok on B&W with Panchro Press type B.  
Enlargement 111

Kodachrome. (old.) 3 1/4 x 4 1/4 Ground Glass meter  
reading 10-20-40 White  
the 40 reading gives the best picture at (f 11) <sup>card</sup> or 16.

August 17. Large fly photos B&W 3:1 enlarge f 22  
Kodachromes 3:1 enlarge f 16 no filter.



Transportable used for  
colorphotos in Colo and Calif. 1947.

75mf 2800 volt auto 1, 2, or 3, FT-220 tube.  
10 volts D.C. storage battery.

Aug. 1948. Tests with exp. meter 2" enlarger lens.  
f 22 exposure ok on 132W with Pandoro Press type B.  
Enlargement 1:1

Kodachrome (old.) 3 1/4 x 4 1/4 Ground Glass meter  
readings 10-20-40 White  
The 40 readings give the best pictures at (f 11) or 16 <sup>card</sup>

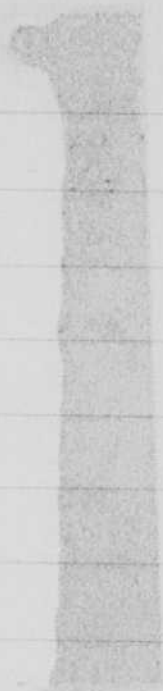
August 12. Large size photos 132W 3:1 enlarge f 22  
Kodachrome 3:1 enlarge f 16 no filter.



Transportable used for  
color photos in Colo and Calif. 1947

75 mf 2800 volt into 1, 2, or 3, FT-220 tubes.  
10 volts D.C. storage battery.





Aug

