

EXP. NUMBER MI	EXPERIMENT/SUBJECT Metal Deformation	DATE 11/2/05
NAME Heather Coffin	LAB PARTNER	LOCKER/DESK NO. COURSE & SECTION NO.

Materials

- ring stand
- clamps
- plexiglass
- extension cords
- laptop - Dell Latitude
- Floodlight -
- tape measure
- tape
- cut off hardy
- brass 3lb hammer

Objectives

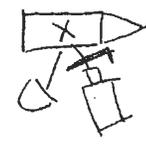
- hit melting metal
- hotter metal over hardy w/ sledgehammer
- series of images along break process
- metal w/ soda can
- metal w/ ice cube
- Twists
- forge weld

Trial 1 - Session 2 < saved >

105 mm lens, $\sigma = 55\text{cm}$, camera height = 84 cm

hitting really hot metal w/ sledgehammer
EDR exposure on (Phantom V program) (20)

- Post Trigger = 1
- staging light 70 cm, 90 cm tall from subject
- removed stage light
- aperture on f/4



- when metal burns, ruins crystalline structure; makes it really brittle
- burned = 2600 - 2800 °F
- metal 3/8" square stock mild steel
- obtained cool footage, out of focus
- hammer - 3lb
- resolution 1624 x 512 pixels

Trial 2 - Session 2 < saved >
- moved camera to 40" away, 33" tall
- same metal, hammer + process
f/4

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Session 2 - Trial 3 <saved>

Metal rod $3/4"$ x $1/4"$ breaking over cutoff hardy

- capturing 1st hit in breaking process
- camera 40" away, 33" tall,
- heated up close to burning

Session 2 - Trial 4 <saved>

- 3rd hit on metal rod from above.
- same setup as above.

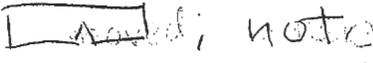
Session 2 - Trial 5 <saved>

- striking burning rod (same rod as above)
- hope to break it.
- hitting on narrow edge
- made a dent

Session 2 - Trial 6

- new rod, same thickness ~~es~~ dimensions
- hitting on narrow side again

For Final Project: 

want: ; note  40" away, 33" tall
 then measure vol. displacement vs. velocity of hammer going in.

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EXP. NUMBER EP	EXPERIMENT/SUBJECT Metal Deformation	DATE 11/9/05	28
NAME Heather Coffin	LAB PARTNER Strobies	LOCKER/DESK NO.	COURSE & SECTION NO. 6.163 W2-5 Group

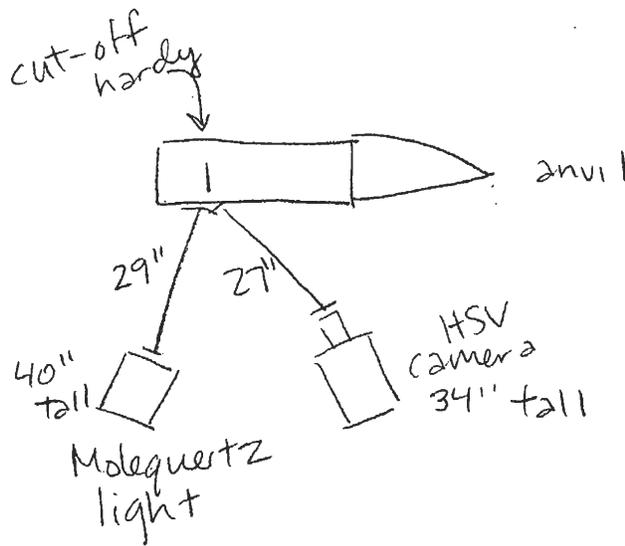
* get specs on 50, 105, + 50-80 mm lenses today! *

→ need f/# + ss for images taken with D100 on 11/2/05

• memory card - email Dr. Bales about getting the pictures

105mm lens: NIKON Micro-NIKKOR ^{SN} 227395

• new material: tongs

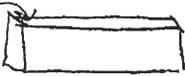


metal rod:
3/8" x 3/4"

set aperture at
f/4, 105mm lens

• same computer settings as in previous labs.

• "Hitting rod from solid to broken" in two pieces; capturing each successive hit w/ HSV

• hitting metal on thinner side to see deformation more easily  • metal reheated between each hit

Trial 1: 1st hit - metal burning 2600-2800

Trial 2: 2nd hit - " " "

- metal rod bent, hammered back to straight
- camera recentered

Trial 3: 3rd hit - burning, direct hit.

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EXP. NUMBER FP	EXPERIMENT/SUBJECT Metal Deformation	DATE 11/9/05	29
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- 4th hit not recorded; metal straightened
 Trial 4: 5th hit, beautiful, sweet success

Trial 5: 6th hit, nice!
 - metal burning

- metal heated for a really long time -
 - removed to cool, computer ran out of space,
 but emptied some files + back on track

Trial 6: 7th hit - broke the metal

- end of breaking first rod -

↳ same process w/ smaller metal; $\frac{1}{4}$ " x $\frac{1}{4}$ "
 - hit

Trial 7: hit + miss - metal makes squiggly shape
 - burning before when hit,
 then hammered back to
 straight 

Trial 8: 1st hit - direct hit on $\frac{1}{4}$ " x $\frac{1}{4}$ "
 - nice indent, metal burning
 - second hit, not recorded

Trial 9: 3rd hit, almost straight on, metal burning

Trial 10: (metal melting and bending on its own)
 - metal orange-red (cooled) when hit
 - 4th hit

Trial 11: - metal burning, 5th hit; metal bent,
 indent not enlarged (much?)
 - need to review video to check if indent
 changed

Trial 12: - 6th hit; metal burning; hit breaks metal hit
 - metal heated

↳ smaller metal takes as many hits (-1) as
 larger metal (perhaps due in part to "user error")

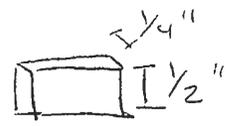
- end of $\frac{1}{4}$ " x $\frac{1}{4}$ " rod -

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EXP. NUMBER FP	EXPERIMENT/SUBJECT Metal Deformation	DATE 11/9/05
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- start of 1/2" x 1/4" metal rod -

• rod hit w/ 1/2" side facing camera



- Trial 13: 1st hit, a little off center but made measurable indent; metal burning

Trial 14: 2nd hit, nice! metal burning

Trial 15: 3rd hit, metal burning. A little off center, but displaced a large amount of metal.

Trial 16: 4th hit, nice, but not much add'l displacement noticeable to the eye.

Trial 17: 5th hit, metal burning; rod broken in 2 pieces w/ this hit.

• varying force used / melting of metal prior to hit.

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EXP. NUMBER FP	EXPERIMENT/SUBJECT Images in Drops	DATE 11/16/05
NAME Heather Coffin	LAB PARTNER	LOCKER/DESK NO. COURSE & SECTION NO. 6.1163 WZ-5

- Strictly imaging ideas:
- glass balloon
 - something like peppermint Lifesavers.
 - smashing/forging glass
 - melting metal
 - Prince Rupert drop.
 - viewing cracks in breaking glass
 - bullet + prince rupert drop breaks.
 - soldering w/ HSV
 - smashing pumpkins + other food.
 - kite images w/ remote control.
 - soda cans w/ sledgehammer
 - reflections in water drops

★ seeing images in water drops ★
get • glass beads or marbles

- background - magnification,
- how to project pictures?
- use rose photo!

needs: ↙ Arlis ↘ Heather ↘ everyone
projector, color HSV, pictures
glass beads or marbles
• milk drop setup w H₂O

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EXP. NUMBER FP	EXPERIMENT/SUBJECT Images in H ₂ O drops	DATE 11/23/05
NAME Heather Coffin	LAB PARTNER Strobies	COURSE & SECTION NO. 6.163 W2-5

Water drop images

• Test w/ dropping marble

Materials:

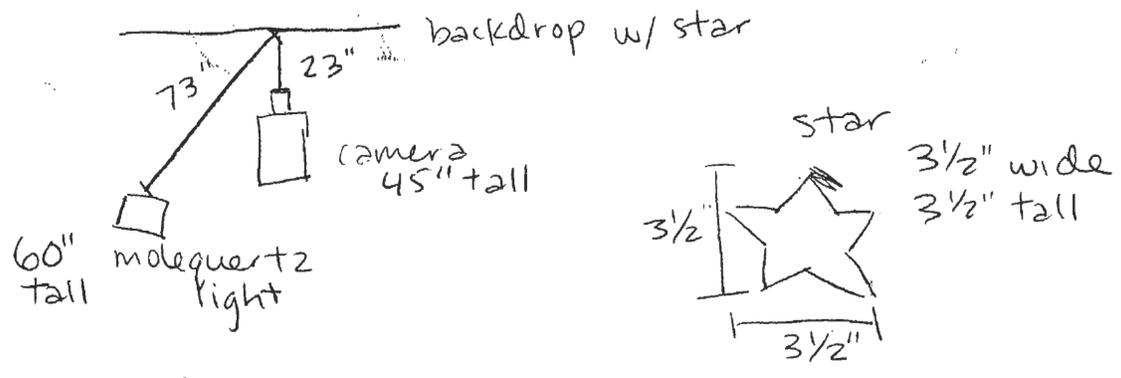
- HSV camera
- Dell Latitude
- Firewire cable
- gaffer's tape
- 200mm lens - Nikon Micro-NIKKOR 213372
- 90mm lens
- tape measure
- Teenie-weenie mole Molequartz Type 4031 serial 6899
- marble
- box (to catch marble)
- paper cup (w/ hole cut in bottom to serve as funnel)
- Bogen 3051 tripod
- pink backdrop

cardboard, paper, tape, scissors

- 1st try - marble not centered in field of view, blurry → just in wrong place? or moving too fast?
- note, tape melting b/c lights so hot

setup:

• marble - 1/2" diameter

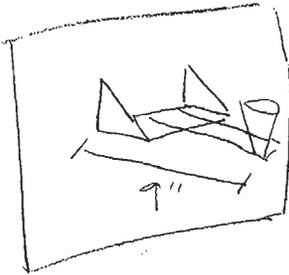


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EXP. NUMBER FP	EXPERIMENT/SUBJECT Water drop images	DATE 11/23/05	33
NAME Heather Coffin	LAB PARTNER Strobies	LOCKER/DESK NO.	COURSE & SECTION NO. 6.163 W2-5

• testing w/ marble:

marble dropping apparatus:



funnel to camera lens 14"

- face hung upside-down!
- face 9 1/2" tall, 8" wide
- dropping apparatus 1 1/2" above top of face drawing

Procedure

- hung marble on string through funnel to focus camera
- sample rate 3800 fps resolution 512x512 exposure 253
- dropped marble w/ post trigger 1 - 2 or 3 times; marble deflected on cup, couldn't get falling marble in frame
- switched to post trigger of 3057, + switched to tighter funnel, closer to picture (lower)
 - Amy held marble over funnel (1/2 way inside funnel) and counted "3, 2, 1"
 - dropped marble on 1, Heather pressed trigger ~~after it fell~~ on "1"
 - captured star in marble - saved nov23-star

Setup photos:

D100- ap. on f/22

SS 1/180

- also pushed marble through funnel instead of dropping

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- replaced star w/ face, 9 1/2" tall by 8" wide
- recorded face in marble! w/ same procedures - nov23-face1.cn
- moved light to 67" away, 32" high, to remove shadow of apparatus from image in marble
 - dropped marble w/ face in background again
 - shadow gone, glare more off to the side.
 - nov23-face2.cn
 - good result!
- * note - refocussed between every shot by holding marble in place below funnel.

in case
 drop and move the
 ... result of dropping

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EXP. NUMBER FPB	EXPERIMENT/SUBJECT Lens drop	DATE 11/30/05	35	
NAME Heather	LAB PARTNER Strobies	LOCKER/DESK NO.	COURSE & SECTION NO.	

Color HSV!

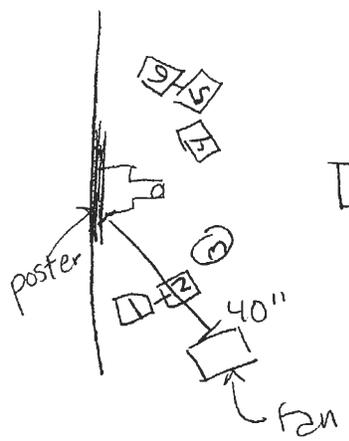
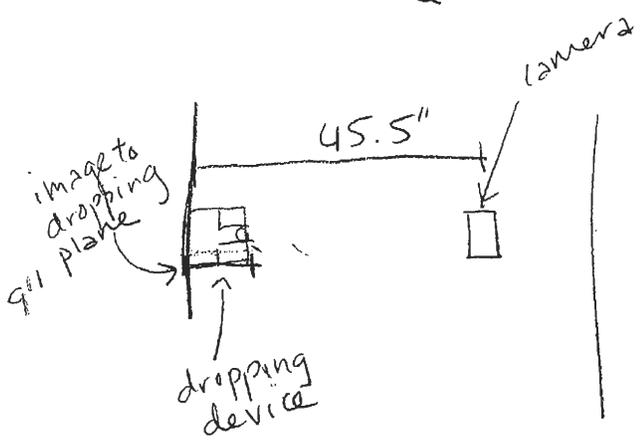
Equipment:

Things we borrowed:

- Color HSV w/ cap
- Lens adapter w/ cap
- Magma #12
- Magma power cord
- computer power cord
- Magma card
- grey cord cam-m
- black cord comp-m
- trigger connector

- * • DELL Inspiron 5150 SN
- Magma memory SN A3-232A-2315
- 512 PCI Fastcam 32KC SN 134302001 (Photron)
- Tripod - Manfrotto bogen SN 3021BPRO
- * • Lens adapter Nikon
- More stagelights:
 - Worklight 82AG TR/AR 2001/06 SN 69231232
 - Molecool Mole-Richardson Co. #2058
 - map of globe 31" x 19"
 - Fan - GE 49x491 SN U13057
 - extension cord

- image to camera: 45.5"
- camera 52" tall
- dropping apparatus 58" tall



- dist from poster
- 1 - 23.5"
 - 2 - 28"
 - 3 - ~~27~~ 17.25"
 - 4 - 11 1/2"
 - 5 - 27"
 - 6 - 24"

- 1st saved piece w/ 200mm - f/4
- switched to 105mm - f/2.8
 - much clearer! saved trial 2
- procedure same as last time
 - Trial 3 - glare + blurry - saved

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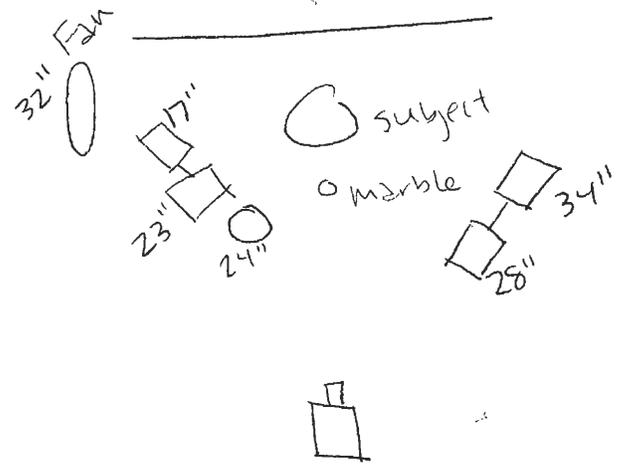
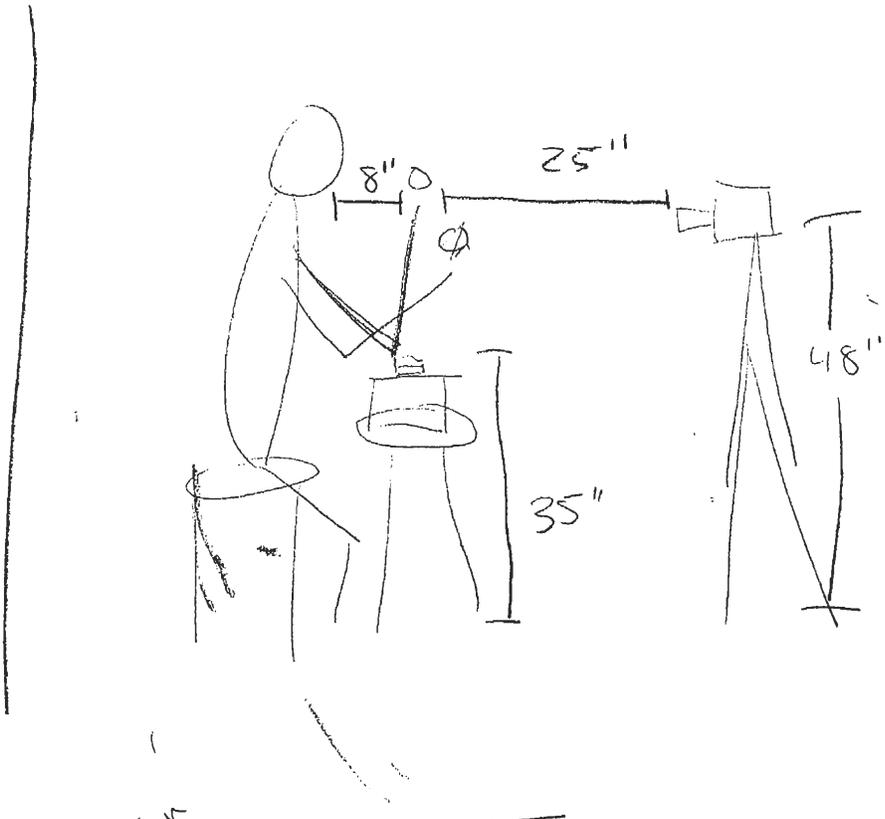
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- switched to 90 mm, f/2.5
 - a lot brighter and clearer!
 - ~~the~~ set focus perfectly - if blurry, because moving or not falling straight down
 - Trial 4 - clearer, still a little blurry & big glare, but better.

31 x 11"

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EXP. NUMBER 6.163FP	EXPERIMENT/SUBJECT	DATE	37	
NAME Heather Coffin	LAB PARTNER	LOCKER/DESK NO.	COURSE & SECTION NO.	



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NOTE: INSERT BACK COVER UNDER COPY SHEET BEFORE WRITING

