Tina's Camera Notes

by Bettina von Schweinitz

Introduction

Tina's notes for photo taking. These notes were composed for the use of Single Lens Reflex cameras. Time frame was 1998 to 2002

This compendium is in draft form, still needs heavy editting.

Aim to produce pictures
that are biologically truthful
and
that are at the same time
exciting images
that will communicate to others
my appreciation of the natural world.

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Glossary

Additive Primary Colors-Red, Green, and Blue light that produce white when mixed together. A color monitor or color scanner is an example of an additive color device.

BET-A UMAX patented technology that increases the dynamic range and decreases overall noise for improved image quality.

Bit Map Image -An image comprised of pixels, or binary digits, that can be bi-level (line art), continuous tone gray or continuous tone color.

Calibration-To check, adjust or standardize the graduations of a device.

CCD-Charged Coupled Device. An optically sensitive IC chip. This IC chip is the standard image-capturing tool for many scanners and digital cameras.

CIS (Contact Image Sensor)-A scanning sensor beginning to appear in low resolution, low cost scanners. Provides lesser quality scan then CCD due to limited depth of field and poor shading sensitivity.

CMYK-Represents the three subtractive primary colors Cyan (C), Magenta (M), Yellow (Y), and Black (K). An offset press is an example of a CMYK device.

Color Separation-The conversion of RGB or LAB image information into CMYK information prior to printing.

ColorSync-Built-in color management architecture specifically in the Macintosh OS.

Color Space-A two or three-dimensional geometric representation of colors that can be seen or generated. RG13 is an example of a
two dimensional color space. LAB is a three dimensional color space.

Continuous Tone-An image that has enough tonal range so that the human eye can't detect obvious "jumps" or "steps" between gray or
color levels. A photograph is an example of a contone image. A computerized contone image can only be represented as a bitmap image.

Descreen-The process of removing a moiré.

Dmin-The lightest area of an image that a device can reproduce and still have detail. A Dmin value of 0.0 would be considered perfect.

Dmax (-) Dmin=Dynamic range.

Dmax-The darkest area of an image that a device can reproduce and still have detail. A Dmax value of 4.0 would be considered perfect.

Dmax (-) Dmin=Dynamic range. DPI (Dots Per Inch)-A standard unit of measurement for scanners and printers. Scanners are given a DPI rating even though they create pixels not dots. DPI is also a scanner’s measure of it’s enlargement capabilities. DPI is not a good measure of a scanner’s overall image quality.

Dynamic Range-An instruments range, such as a scanner, of measurable values. The range is from the lowest value it can detect to the highest value. A perfect dynamic range for a scanner is considered to be 4.0 or Dmin=O and Dmax=4. The dynamic range of a scanner is most indicative of it's overall image quality with 3.0 being a minimum rating for prepress capable scanners.

Gamma-The range of colors and gray tones that can be interpreted by a color model, or is generated by a specific device.

Grayscale-The depiction or measurement of all values between white and black.

Halftone-A combination of spots and dots that create the illusion of tonality - both for color and continuous tone Black & White. A newspaper picture is a good example of an image that has been halftoned.

Highlight-The brightest part of an image that still has detail. Setting a highlight point in an image is arguably the most important step to achieving a good scan.

Histogram-A bar chart that represents the pixel count of an image. The bar chart has a scale from 0-255, which represents 2 to the 8th power or 256 levels of gray. All images, even a Polar bear in a snowstorm should have a histogram that extends from 0 (darkest area) to 255 (lightest area).

ICC-International Color Consortium

LAB-A color space that most closely resembles the color spectrum a human eye can perceive. [L] represents the lightness or luminosity of the image, [A] represents the Red/Green axis, [B] represents the Blue/Yellow axis. These values are plotted at right angles to each other in a three dimensional manner.

Linearization-The process of calibrating a scanner's white point, 50% gray point and black point. This is usually accomplished by scanning a grayscale target.

Line art-An image having only one level of contrast or (1) bit depth. A line art image can be either Bitmap or vector.

LPI-Lines Per Inch. Also referred to as line screen. The greater the LPI the more continuous looking the image will appear to the human eye. A newspaper is generally printed at 85-100 LPI while magazines are printed from 133-175 or higher.

OCR (Optical Character Recognition)-A process which assists an input device in converting pixels to ASCII information.

Pixel-An abbreviation for "Picture Element'. The basic building block of computer images.

PMT (Photo Multiplier Tube)-The method of light and image capture used by drum scanners. This method is considered to be superior to CCD technology

and usually has a higher Dynamic Range than CCD's. UMAX CCD technology is moving closer and closer to PMT technology every day.

Postscript-A device independent image file format. This is the file format most commonly used to output images or compound documents, pages with text and graphics, via the four-color process. Postscript color is currently limited to 24-bit pixel depth or 16.7 million colors. Grayscale PS images are limited to an 8-bit pixel depth.

PPI (Pixels Per Inch)-This measurement is the same as DPI or Dots Per Inch. PPI is more indicative of a monitor where DPI is usually associated with printers and scanners.

Reflective Object-An original image that doesn't allow light to pass through. A printed photograph is an example of a reflective image.

Resolution-Refers to how many pixels a device can create or how many dots a device will reproduce.

RGB-Red (R), Green (G) and Blue (B) or the additive primary colors.

RIP (Raster Image Processing)-The process of converting pixels to halftone spots or dots. A RIP can be part of the printer or a separate computer if speed is of the essence.

Screen-Refers to computerized and non-computerized methods of converting a continuous tone image into printable patterns. Screen frequencies are usually referred to as LPI.

SCSI (Small Computer Systems Interface)-Currently the fastest protocol for transferring information from a peripheral device, such as a scanner, to the computer.

Shadow-The darkest part of an image that still has detail. Setting the shadow point is also an important aspect to achieving a good scan.

Subtractive Primary Colors-Cyan (C), Magenta (M), and Yellow (Y). When these three colors are combined at values of 100% on a printing press black is produced.

Transmissive Object-image that allows light to pass through. A 35mm slide or negative is a good example of a transmissive object.

UMAX Technologies, Inc.-A company renowned for producing user-friendly scanners that provide superior image quality, a high degree of utility to the customer. You can contact UMAX technical support during regular business hours Monday-Friday at (510) 492- 5827, or by visiting the UMAX web site located at http://www.umax.com

White Light-A light that theoretically can create the entire visible spectrum of colors. Cold Cathode lamps are currently the closest White Light source used in CCD scanner.

Photo Tips (short list)

Don't document! Make a Statement!

Batteries: bring Spare and fresh batteries
Bracket
Normal: by ½ to ¾ of a f-stop both sides. For Prints err to overexposure
Snow: 1, 1½ and 2 stops overexposed (higher f number)
Composition: Get rid of sky, and disturbing objects. Get in close. Rule of thirds. Squint to "see" what is the picture
Gray Card If object is darker than gray card, reduce the amount of light by using higher number f stop or high number shutter speed (meter readings will try to make everything gray, therefore will wash out a dark object by overexposure). If object is lighter than gray card, increase the amount of light by using lower number f stop or lower number shutter speed (meter readings will try to make everything gray, therefore will darken the object by underexposure)
Exposure: Shutter Speed plus f-stop plus ASA setting
Exposure: Shutter Speeds longer than 1 seconds: If camera's shutter meter reads "to low light"
1) Adjust f stops or ASA settings until Camera's shutter meter reads a value.
Example ASA 800 + f5.6=1/2sec=t
2) Reset f stop and ASA to desired value for depth of field and film speed loaded.
Example ASA 200 + f16
3) To calculate Shutter speed multiply t by 2 for each stop group. Example
f5.6=1/2sec
f8 = 2 x 1/2 = 1 second
f11 = 2 x f8 = 2 x 1 = 2 seconds
f16 = 2 x f11 = 2 x 2 = 4 seconds
ASA 400 = 4 x 2 = 8 seconds
ASA 800 = 8 x 2 = 16 seconds
Exposure: Water Fuzzy:
First Method:1) Set f stop to highest number for greatest depth of field. 2) Use gray card to determine shutter speed
Second Method: 1) Set shutter speed to 1sec. 2) Adjust f stops until camera's meter agrees with shutter speed being 1sec.
Exposure: Fuzzy Background: use small number f stop.
Film: Bring lots and always a spare. Types: Negative Film are Prints. Transparency are slides

Focus: if cannot get all in focus - get center of subject, especially eyes
Focus: Center of focus should be 1/3rd into DOF
Homework - learn all you can about your destination. Read and bring camera/equipment instructions
Sunny 16 Law: at f16 the shutter speed is ~1/ASA (100ASA = shutter speed of 1/125). For cross light open (use smaller number) one f stop to increase exposure of object. For back light open (use smaller number) two f stops to really increase exposure of object (unless want silhouette)
TRIPOD!!-- even at shutter = 1/100 second

Flash: use to stop wind motion or object motion
Diffuser: use to soften bright areas (can be used to block wind)
Reflector: use to lighten shadows, doesn't effect bright areas

Photo Ideas

After Sunset shots - exposures of 30 seconds or longer
Animal tracks
Birds
Double Exposure
Ferns uncurling in spring
Fish feeding
Fog or mist
Flower: black or dark background color
Flower with leaf as background color
Flower: real close inside
Lake: have reflection in water
Leaf: ice
Leaf: on moss as background
Leaf: contrasting veins
Mud/cement: cracks
Pebbles/stones in sand
reflection of object in mirror
Sand sculptures
Sand: stump poking through
Scenic view: If supposed to be thought provoking then have somebody looking over scene
Sea Shore: Wave splashing against rocks
Shadows

Snow sculptures
Snow/Ice patterns
Snow: patterns that blown objects have made
Snow: with grass or flower poking through
Spider webs
Sun: through something
Sunset over lake with fishing boat
Tree: up the trunk
Twilight shots
twilight photo of town in valley with person in silhouette.
Water puddles: reflections
Water: Reflections
Water Droplets enhance the 3-D effect
Waterfall with bright flower in foreground
Waterfall: miniatures
Waterfall: miniature with water splashing on rock
Bird over clouds, sun in haze through tree
Birch tree is good subject because sheds/maults in spring
Backlight on a flower gives a glow/halo
Shadow (leaf) on smooth bark
Sunlit leaf against bark in shadow
Waterfall: fuzzy water
Wrought Iron: snow/ice patterns
Moon: Silhouette in front of full moon (weather vane)
Halo effect: Using slow exposure and zoom lens, change focal length (enlarge or higher mm) while taking picture

EQUIPMENT

Fixed and Zoom Lens
Aperture Ring: ring on lens near body. "f stop".
F/1.7 is large aperture and has shallow depth of field.
Lower number = open, stopping up, more light, shallower depth of field, fuzzy background, object lighter than gray card.
Higher number = close, stopping down, less light, deeper depth of field, object darker than gray card.
For zoom lens don't use higher than f/16 or will loose too much detail until focusing on infinity.

For basic pictures with fixed lens use table below if camera is on Auto (shutter set at 60)

ASA/ISO	Sunny	Hazy Sun	Heavy Overcast	Indoors
100/21º	f/11	f/5.6	f/4	f/1.4
200/24□	f/11	f/8	f/5.6	f/2
400/27□	f/16	f/11	f/8	f/2.8

Depth-of-field Scale: Fixed lens = middle ring in lens. Gives range of focus behind and in front of subject based on aperture setting. Aperture is indicated by solid white line. Depth is given by transferring both aperture settings from Depth-of-field ring to outer Distance Scale. Zoom Lens = Colored lines along center of lens body (white outer curves are for f/32)

Distance Scale: outer ring on lens

Focusing Ring:

Lens Macro
Distance and Magnification Scales: 1:2 is shown in yellow for normal photography. 1:1 in red for macro photography with the 1:1 Macro adapter.
Depth of Field Indicator Lines: f/22 is green lines, f/8 is blue/red lines
Infrared Index Line (red): Focus normally, read the subject's distance from the distance scale, and move the focusing ring slightly to align that distance with the Infrared Index Line
Distance Index Line
1:1 Macro Adapter: With it mounted it is impossible to focus at infinity
Minimum Distance: 0.43m

Lens Zoom
Zoom Scale: Focal Length: Zoom Lens = white numbers along center of lens body from 75mm to 200mm. Used to determine minimum shutter speed (meter on right side of viewfinder) which is 1/focal length or higher.

The white dot on Aperture Ring is f stop 5.6

R-Index: Size Scale: numbers along left side of lens. Used to determine amount of magnification. 1:5 means that object in lens is 5 times larger than real life object.

Camera Body

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Film Speed: ASA on ring on top of left of body. 400ASA for high speed and fireworks. 100ASA or 200ASA for high quality enlargements. See Misc for using ASA to adjust for an uncalibrated camera's light (shutter speed) meter. For what the dots between values mean see figure 5b.

Hot Shoe: for flash on top of body

Shutter Speed: Window on top of body on right and is 1/number in seconds for shutter speed.
A = Auto = aperture-priority auto mode, you set aperture (lens ring near body) and camera selects shutter speed as shown in shutter speed scale in viewfinder. Based on average of all area in view finder.
Manual settings: Steady light in camera's meter is speed recommended for normal picture. Blinking light is user set speed. If blinking is above steady then picture is darkened (good if object is darker than gray card), below for lightened (good if object is lighter than gray card). Can adjust be turning either aperture ring (lens ring near body) or shutter ring. High numbers used to freeze action. Normal and for flash the speed is 60. For slow action use 125. For fast action use 500. My normal is 125 for hand held photos because of my shaking.

AE Lock: Auto Exposure. Depress lever on front of camera for AE. Lift for use as self timer.

Self Timer: Lift lever on front of camera. 10 sec delay, must switch off after picture or will take another.

Viewfinder: Inside eye window. Shutter speed meter on Right. A + number = camera sets speed. M + number = user sets speed. B = Bulb user controls speed through release of shutter button. Viewfinder cover only needed if camera Shutter Speed is set on A for auto. If flash is connected to hot shoe, the #60 is used to indicate readiness of flash. Viewfinder shows LESS than what is on slide or print, only "sees" 95% of picture. This is per the camera's specification. So that is why I sometimes get more on photo than I wanted.

Focusing screen: Inside eye window.
1) Split-image spot = what I use to focus except when using Close-up lens. Split image (ring in center of view finder) offers two angled prisms divided into a circular pattern which appears as a circle split through the middle and provides focusing accomplished by the separation of a line. The line on the subject gradually merges into one line when proper focus is attained. This screen is

extremely beneficial in situations of critical focusing for still subjects. With Close-up lenses attached the Split-image will not represent true focus. Must use microprism band.
2) microprism band. Microprism spot center (grid ring in view finder) offers a central focusing aid which shows a pattern of dots (microprisms) that are highly visible when the camera is not in focus, and gradually disappear when the subject is calibrated into correct focus. This aid is particularly beneficial for moving subjects.
3) Acute Matte field

Flashes
General
Camera's Flash (ring and hot shoe): When correctly mounted and charged, camera shutter speed meter in viewfinder will have 60 lit, unless cable is used. With cable the flash will work but the meter will work same as with no flash.

Flash Booster
On chart in back find aperture setting (on camera determined by setting on main flash) and ASA rating of film. Top line will indicate distance to set booster from subject. Booster's sensor-dome on top must "see" the camera's flash, the camera's flash is used to trigger the booster.

Flash that is on hot shoe by Vivitar
Camera's Flash auto modes: A1and A2: automatic exposure will be determined by the flash unit sensor and an f/stop number will appear in the auto f/stop window. Set this f/stop on your camera lens. The corresponding auto range will appear in the auto exposure range window and indicates the distance range over which this setting will give good exposures. A1 is for 6-40ft with shallow depth of field and recharges faster. A2 is for 3-20ft with increased depth of field. Auto ok Indicator: aim the flash at subject and press the test button, the Ok will glow green if subject is within range. If no green light, then reduce distance to subject.

Camera's Flash Manual Mode (no auto exposure):

1) focus and determine distance
2) set f-stop to setting opposite of distance on chart on back of flash
3) turn flash on
4) if flash is on hot shoe, shutter meter is at 60 if flash correctly mounted and charged. If on cable, meter works as if no flash present

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5) take picture

Camera's Flash TTL Mode: Auto exposure determined by camera meter. Set f stop on camera to 16 for normal object, 22 for white/light object, 8 for dark object.

1) focus and determine distance
2) set f-stop to setting opposite of distance on chart on back of flash or back of book
3) turn flash on
4) if flash is on hot shoe, shutter meter is at 60 if flash correctly mounted and charged. If on cable, meter works as if no flash present
5) take picture

INDEX

ASA: See Exposure or Film
Bracket: See Exposure
f-stop: See Exposure
Film Speed: See Exposure
Gray Card: See Exposure
Reciprocal Law: See Exposure
Repair: See Cleaning
Shutter Speed: See Exposure
Storage: See Albums
Viewing: See Albums

ALBUMS - STORAGE - VIEWING

Albums

In album can cut photo into different shapes, use color mat around photo to offset
Don't use sticky "magnetic" sheets, will stick to photo after a while
can use double sided tape for photos, especially the odd shapes.

Cropping L's:

If you need them to make better photo should have done better job in field with viewfinder.
Make out of neutral color cardboard. Inside dimensions should be at least as big as your prints (3 ½ x 5 ½ for my size prints) and should be at least 1 ½ inch wide.

Laminates

can use clear plastic cold laminate but be careful of bubbles.

don’t use hot laminate, it will blister the photo.

- Loading into Carrousel, Slides

1) best: hold up like want to see, rotate left to right, rotate top to bottom, put into slot. I.e., my date is on face pointing to next slide and on bottom of carrousel.

2) another method: hold up like want to see, swan dive into slot.

- Negatives, Identification

Get index print always when available

Write on index print the month and year

Write on print the month and year that is on index print

- Negative, Storage

Keep negatives and index print in original Kodak folder

Store these Kodak folders in an acid-free box, an open shoe box may be ok also.

Acid free box from Container Store in Congressional Plaza

Store in dry part of house.

- Panoramic photos:

Take picture as normal, develop to larger size (8 ½ x 11) then trim photo to panoramic and through out rest.

Panoramic shots: definition is 1:3 ratio. take the normal picture, have photo enlarged, than cut away 2/3 of photo.

- Print, Writing on

Write using a photo-safe pen, let dry at least one hour before stacking.

Photo pens take at least 15 minutes to dry, better to wait 1 hour

- Viewing Slides

Have you ever wondered why YOUR pictures don't look as good as those in magazines??

Well, the answer was simple. My photographs WERE as good as the magazine pictures. I just didn't know it! I was usually taking negative film, the quality of which is dependent upon how well the lab prints the pictures. When I used positive films, I used a slide projector to view the slides. BUT viewing with a slide projector virtually destroys the sharpness. Pictures taken using a tripod with a high quality (translated --- slow) film and good optics will produce superb photographs. The trick is to view them with a loupe on a light table/box. A good loupe is essential. Any light table or box can be used, however, the color temperature should be consistent with daylight. Viewing slides with a loupe with a light box will show you all of the sharpness, contrast and color that you really have in a way that you could never see in an ordinary print.

CLEANING - REPAIR

Mixture of ½ water and ½ rubbing alcohol with a damp rag. Put in a spray bottle and spray on a slightly damp rag to wipe equipment.
Plastic drinking straws with the flexible head can be used to blow dust off areas in a camera body or lens
mirrors in camera: Can use compressed air if it is "dry" and instructions say ok to use on camera mirrors
Lens cloth: never use silicon lens cleaners. Never use the cloth on your own glasses (grease is transferred).
Dirt in my viewfinder is not on the mirror's, but in the actual viewfinder, so very expensive to fix and cannot be blown out with compressed air.
Zoom lens will not hold at 45º angle because that is its design, cannot be tightened.

COMPOSITION

Check List (order of importance)
Determine purpose and goal of photo

Purpose: is related to subject or intended use: Photo is to communicate what? Is it a portrait for a family album or should it be showing off the bun in the hair for a fashion magazine.

Goal:

1)Using the 80:20 rule, want to have 20% of the professional's skill and resulting photos will be 80% as good as a professionals.
2)Follow 90% of all the rules 90% of the time. The other 10%, break the rules but know which and why.
Keep simple
Get in close
Viewfinder shows LESS than what is on slide or print. Viewfinder only "sees" 95% of picture. This is per the camera's specification. So that is why I sometimes get more on photo than I wanted.
Get rid of disturbing objects (artifacts)

Take out light objects in background if object is dark. And opposite
Check corners for distractions
Get rid of sky
Make sure that front leg of tripod is not in picture

Can make distractions out -of-focus: Aperture openings (f): large opening f8 has small area in focus, small opening f32 has larger area in focus.
Pleasing arrangement

Lightest Colors Attract

Center of Interest

Eye will go to the highest contrast area or in focus area of picture first, so make sure that is the subject.

Perspective: To have object in correct perspective (dimensions) better to use zoom lens to get close-up rather than wide-angle lens.

Subject Placement

Rule of Thirds : The "rule of thirds" is a generally accepted guideline for composition. The subject should usually be placed at on of the intersecting lines when the viewfinder is split both vertically and horizontally in thirds. The idea is to keep the subject from being centered in the picture. Horizon lines (such as the sky or water) should generally be placed at either of the two horizontal lines. Again, the idea is to keep from centering the horizon lines. Also, when photographing a person or animal, the subject should usually be facing into the picture. So, if you photograph a person and their head is at the upper left circle in the above diagram, they should be facing toward the right (or center) of the photograph.

Lead eyes into pictures easily

Use leading lines

- Do not just document, make a statement

Look for impact

Go for interest value

Originality

Creativity

Emotional value

Informal Balance

- Enhancement:

Filters: Polarizing filter to enrich color

Flash: use as filler if

1)speckled light (through leaves) or

2) light is too contrasting on subject, such as sunlight face side versus shade side.

- Break the rules

Problems?

- Double Chins: To remove double chins, have person protrude their chin toward the camera while leaving the shoulders stationary.
- Flash shadows

When holding camera sideways remember that shadow will be highly visible to the other side of subject. To remove or reduce use slave flash (booster) or diffuse main flash. Put slave flash on other side of camera. (flash by my right should, slave in room on my left). Or could bounce main flash off ceiling or another object and put plastic flat diffuser to prevent flash from bounce of cameraman.
I am wearing glasses: Make sure to leave enough bottom under object
Incomplete?: Not all photos can stand alone without caption.

EQUIPMENT

Bag
Diaper bags are good for carrying all equipment. Insulated cloth lunch bag with strap is good for equipment on the go.
Keep foam packaging and keep handy for extra package protection. Blow off excess particles
Lens case from sock, keeps them from clacking about.
Camera: Panoramic cameras: buy one for special trips
Diffuser
Flash:
-Can make one for flash by cutting an translucent film canister length wise and place over flash.
-Can make one from a translucent bottle cut to fit over flash.
-With wide-angle lens need to put diffuser on flash so that light will get to outside edges of photo. Needed because angle of flash is not as wide as the angle of the wide-angle lens.
-Can make one to go behind flash and prevent flash from bouncing on cameraman when flash is pointing straight up. -Cut a flat piece of translucent plastic to fit behind flash. Secure with rubber band.
-Diffuser balloon over flash will soften hard shadows
-Broadens light source and softens light.
Light:
-For close-up: cut the bottom of a clear plastic gallon milk jug. Cut the mouth to the size off the barrel of your lens. A flash can be shot through the side and the jug will diffuse the light. The jug will prevent wind from moving the subject or the subject from escaping.
-Larger is better, 3ft diameter, off white, can just see hand, makes gray shadow. Too solid of material will make a black shadow
-Will cost one f-stop which is shown in camera meter
-Use to soften bright areas, soften and enhance color and can be used to block wind

Umbrella has spokes which will show in picture. But can use umbrella to bounce flash.

Filters

Black window screen in front of lens will give a slight softness

Polarizing, circular

Only works with sunlight or strong directional light source. Only allows light to come in at angle set therefor blocks some light from sky and knocks reflections off foliage, window, water. How much is blocked is controlled by twisting. Takes off 2 stops of light at max setting so will make 400ASA film become 100ASA.

Circular will work with both Auto and Manual focus SRL. also the most expensive $40.

Linear works only with manual focus SRL. Cheaper $20-60

Used to 1) to enhance color in fall leaves or 2) to see into water

Neutral Density Filter (ND): is gray, used to step down fast film for sunlight (2x using 800 ASA with 400ASA setting). Comes in 2x, 4x,8x

Blue filter: puts blue in picture. Don't need if using prints. But daylight balanced slide film needs blue filter if taking indoor pictures.

UV filter: can be used to control haze or use to protect lens at sea shore, rain, adverse weather or conditions.

Magenta Filter (FDL): counteracts florescent light. Really only need for slides because development of prints will do compensation.

Flash

Distance: flash is only good for certain distance (see specifications)

Generally, flash is good for 3-4 meters for 100ASA and 7 meters for 400ASA

Lens

The higher the mm number the closer you subject appear and the greater the magnification

Wide-angle lens: viewing angle around 60º

Middle angle lens: view angle about 47º (50mm), normal lens for SRL

Have to stand close and subjects are distorted

Zoom lens with foreshorten the foreground

Zoom lens have many glass elements that allow light to bounce around and these stray light (flare) fill s in areas of the picture that are supposed to be black, thus reducing contrast.

Zoom lens: switches from one angle to another, i.e., another mm (75mm ~40º to 200mm ~20º), and magnifies object.

Have to stand away and zoom but subjects are in proportion especially people

Angle amount is given in specifications

Aperture (f)

Lens Width is in mm which indicate largest diameter of opening in front side of lens.
Lens focal length (fl)is determined internal to lens.
The aperture (f) stops indicate

f1 = width/lens fl (example f4)
f2 = ½ width/lens fl (example f8)
f3 = ¼ width/lens fl (example f16)

Reflectors, Light
Backside of gray card is good reflector
Baffling: dark shadow caused by reflector or solid object
Slide Carousal: 80 or less slots is better
Straps: Shoelaces make great replacements

EXPOSURE

Basics Three things determine exposure

1) amount of exposure the film requires: ASA rating (see film-ASA)
2) Amount of light reflected toward the camera by the scene or subject (see gray card, or use light meter)
3) settings of the camera's exposure controls (see reciprocal law)

Aperture (f)
Lens Width is in mm which indicate largest diameter of opening in front side of lens.
Lens focal length (fl)is determined internal to lens.
The aperture (f) stops indicate
f1 = width/lens fl (example f4)
f2 = ½ width/lens fl (example f8)
f3 = ¼ width/lens fl (example f16)
F-stops: stopping up is lower number and allows more light. Stopping down is higher number and allows less light.

Bracket f stops: go up and down a complete group (groups are f5.6, f8, f11, f16, f22, f32) and not in-between clicks.
Close-up

F-stop: To calculate an Aperture Value (AV) for close-up photography when using flash light:

$$AV=G/M+1x1/D$$

G = Guide number for film ISO rating in meters

M = Magnification on the film relative to the life size of the photographed subject

D = Distance from film to subject

Need to get this formula corrected, the example is not right.

Density: the amount of exposure a film receives. More exposure results in less dense which makes a black negative and white on the print. Less exposure results in more dense which makes a white negative and black on the print. See figure 5a.

Make the middle tone of the scene match the middle density of the film, then exposure is correct.

Film

General: cannot expose for sunlight and shadow at same time, must decide

What looks like white light to our eyes can make photo too red, example: reading lamps

Print Film:

-expose for the shadow area where you want detail and develop for the highlight.

-better to over expose than under expose, so err having aperture (f) a lesser number or shutter speed a lesser number.

Slide Film

-expose for the highlight and fill in shadow area. Or take a meter reading of the shadow area and the highlight area, add them together and divide by two. If one area is more important, lean the exposure toward that area.

-any ASA100/ISO21 that is E-6 processing

Flash

Use to stop motion

For small objects never use direct single flash, use many flashes and flash diffusers

Put flash on mounts that point flash right on object in front of lens

Fuzzy Background: use small number f stop.

Gray Card, use largest card possible for stability

1) Put card in same light as object, angle so parallel to film plane, read camera's shutter meter, remove gray card.

2) Use shutter speed and f stop to adjust camera until camera's shutter meter matches value read from gray card

3) If object is darker than gray card, reduce the amount of light by using higher number f stop or high number shutter speed (meter readings will try to make everything gray, therefore will wash out a dark object by overexposure)

4) If object is lighter than gray card, increase the amount of light by using lower number f stop or lower number shutter speed (meter readings will try to make everything gray, therefore will darken the object by underexposure)

Latitude chart for Color print film

If stops are f aperture stops, + means lesser number (larger opening, more light, shallow DOF), - means greater number (smaller opening, less light, wide DOF).
If stops are shutter speeds, + means a lesser number (more time open, more light), - means greater number (less time open, more light)

+5 stops	approximate maximum that can be corrected by printing
+4 stops	featureless white
+3 stops	extremely light
+2 stops	very light
+1 stop	light
0	middle tone – what the camera tries to produce (18% gray reflectance)
-1 stop	dark
-2 stops	very dark
-2 stops	featureless black

Light, indoor:
Florescent light give photo green tone.
Incandescent light give photo yellow light.

Regular reading lamps give off red light and photo will be too red. Must still use flash.

Light meter readings
If lens or filter "takes x stops off", that amount is sensed by meter so I don't have to do any compensating
Calibrating Camera's Shutter Meter:
1) First find camera that already has a calibrated meter
2) Point calibrated camera at an object, set distance to infinity, f5.6, ASA100 and take reading from meter
3) Now set unknown camera to same distance, f, and ASA. Standing in same location point camera at same object and take reading from meter.
4) If reading is too low, adjust by increasing ASA setting on camera. Example: if calibrated reading was 8 and unknown camera's reading was 2 then ASA needs to be increased by two groups (groups are 1,2,4,8,15,30). 100ASA is reset to 100ASA +(2x100ASA) +2(2x100ASA)=400. 200 ASA is reset to 200ASA +(2x200ASA) +2(2x200ASA)=800. And also bracket by 1/3 f stops.

Reciprocity Law or Exposure: Shutter Speed plus Aperture (f-stop)

E=exposure=I x T

I=illumination: brightness of light which falls on the film: Aperture stop (f)

T=time: length of time the shutter is open. Shutter speed

When either illumination or time is changed, the camera controls will either double the value or cut it in half.

To maintain exposure, when you double the amount of light on the film, reduce the time to half.

Several pairs of IxT (or shutter speed and aperture stop) can produce the same amount of exposure

for action need fast shutter speed, but may have to sacrifices DOF by using lower aperture stop

Reflector, light

Use to lighten (soften) shadows, doesn't effect bright areas much, increase texture

If texture is important (tree bark) than harshness is good, so keep shadow and sunlight and don't soften. Can use reflector to enhance texture by removing deep shadows.

Exposure: Shutter Speeds longer than 1 seconds: If camera's shutter meter reads "to low light"

1) Adjust f stops or ASA settings until Camera's shutter meter reads a value. Example ASA 800 + f5.6=1/2sec=t

2) Reset f stop and ASA to desired value for depth of field and film speed loaded. Example ASA 200 + f16

3) To calculate Shutter speed multiply t by 2 for each stop group. Example

f5.6=1/2sec

f8 = 2 x 1/2 = 1 second

f11 = 2 x f8 = 2 x 1 = 2 seconds

f16 = 2 x f11 = 2 x 2 = 4 seconds

ASA 400 = 4 x 2 = 8 seconds

ASA 800 = 8 x 2 = 16 seconds

Shutter settings over 1 second

f-stop	**sec**	**sec**	**sec**	**sec**	**sec**	**sec**
2.8	1					
4	2	1				
5.6	4	2	1			
8	8	4	2	1		
11	16	8	4	2	1	
16	32	16	8	4	2	1
22			16	8	4	2

Steps: either double or half of the preceding exposure value. A step increase results in more white (less dense). A step decrease results in more black (more dense). See figure 5a.

Sunny 16 Law

Basic:

1)at f16 the shutter speed is ~1/ASA (100ASA = shutter speed of 1/125)
2)For cross light open (use smaller number) one f stop to increase exposure of object
3)For back light open (use smaller number) two f stops to really increase exposure of object (unless want silhouette)

Adjustment for ASA level

1) Law 800ASA at f/16
   Shutter setting is 1000 @ f16 or f11 (f11 is better for prints)
   or 500 @ f16 or f22 (f22 is better for prints)
2) Law 400ASA at f/16
   Shutter setting is 500 @ f16 or f11
   or 250 @ f16 or f22
   Adjustment for DOF
1) ASA100 use f=16
2) compose and focus
3) read camera meter or gray card, i.e., CM=60
4) adjust f to stop for DOF
   want f32 for DOF
   f16 cm=60
   f22 cm=30
   f32 cm=15
5) change shutter to 15
6) now picture is adjusted to same effect of Sunny 16 except new DOF

Tone: Gray scale of scene. Equates to gray densities of film/print. Need to make the middle tone of the scene match middle density of film, then exposure is correct.

HINTS

Close-up lens focusing: Do not use the Split-image screen in view finder. Use one of the other two screens.

Blurry Shots

Can only handhold camera at 1/30 sec or longer for a 50mm lens and 1/100 sec for a 100mm lens if object is stationary.

Shutter speed of 1/8 sec is good to avoid because makes camera shake - must use tripod

For slow shutter speeds use cable or self timer (fingers bounce)

Red-eye

Red eye flash prevention: pre flash causes eye pupil to restrict and creates smaller red eye. Have the 2 second delay because that is how long our eyes take to react. Better to have person look into a bright light (flash light) because people forget that first flash is not the picture. Red-eye happens more often at when person is a greater distance from lens. Is caused because light from flash reflects back from eye. Also to reduce increase the distance between the flash and the camera lens.

Sunlight

Sun light is best (warm light, textures)2 hours before sunset and 2 hours after sunrise. Have cross light so textures are better.

FILM

Accuracy, color

Daylight balanced color film is manufactured to accurately reproduce color from a mid-day sun. Since dawn and dusk offer radically different color (much more red) than the mid-day sun, film does NOT reproduce this exactly as you see it. Therefore, dawn and dusk pictures can show a bit more red than your eyes see. On the other hand, cloudy days will appear much bluer than your eyes see it. An 81A Color compensating filter can help this.

Ambient light

Speed and ambient light: when using 400ASA or higher with flash, some of the ambient light will also be present which prevents dark colors from matching black background.

ASA defined (see also exposure).

Is like filling a bucket with water using a hose

The bucket volume is the ASA rating

Water Hose provides the water (light) which is determined by

Pressure = amount of light available

Diameter = f opening of aperture (1/size)

Time = shutter speed (1/sec)

Doubling the film-speed number means it requires half as much exposure.

Contrast (figure 5a)

Contrast is another area that our eyes exhibit much better adaptability. Our eyes can accurately see a scene where there is a 2,000 to 1 contrast ratio (equivalent to 11 "F" stops). In contrast (no pun intended), color film has a brightness range of about 8 to 1 (about 3 "F" stops) - quite a difference! Some beautiful scenes that

you see are not capable of being recorded on film!! An easy way to get around this (to some degree) is to use a graduated neutral density filter.

Developing

can take film to Giant or almost anywhere because rarely is negative damaged. Only the prints can be developed incorrectly for the way it was taken that is why they all look alike even if exposure was different.

Exposure

General: cannot expose for sunlight and shadow at same time, must decide
What looks like white light to our eyes can make photo too red, example: reading lamps
Print Film:
-expose for the shadow area where you want detail and develop for the highlight.
-better to over expose than under expose, so err having aperture (f) a lesser number or shutter speed a lesser number.
Slide Film
-expose for the highlight and fill in shadow area. Or take a meter reading of the shadow area and the highlight area, add them together and divide by two. If one area is more important, lean the exposure toward that area.
-any ASA100/ISO21 that is E-6 processing

Negative

Negative: to identify use number that is closet to center of negative.
Negative is 1 x 1 ½ ratio
Don't let get hot
Freezer will STOP expiration date.
Fridge will retard: 1 year in fridge will = 1 month on expiration
When freezing or in fridge bring film completely to room temperature (4-12hrs for freezer, 1-2hrs for fridge) before opening.

Types

Negative Film are Prints
Transparency are slides. Name of film with contain "chrome"
T-max can only be developed by special processors (not Walmart but Fotoimage can)

Use

200ASA for slide and high color density prints
400ASA for prints general
800ASA for low light (forest) and motion
100ASA for B/W general
400ASA for B/W speed

X-rays

400 ASA can go twice through x-rays

800 ASA or higher should not go through.

Really don't want to take any EXPOSED film more than once through x-rays

If film is overexposed to x-rays, prints will get murky

FOCUSING

- Action Shots: Focus on the area where the action is and select an f/stop that will cover the area you want in focus.
- DOF: if cannot get all in focus (shallow DOF) get center of object in focus
- Hyperfocal focusing: For any lens and f/stop used it is half that distance when the lens is set on infinity. Example: If the hyperfocal distance is 10feet, focusing on 10 feet will give you sharp focus from 5 feet to infinity.
- Lens Aberrations

Chromatic aberration can change color/sharpness; coma aberration which affects images at the edge of a frame; Spherical aberration can distort an image, etc.

- Seimen's star
- View Finder

Microprism spot center (grid ring in view finder) offers a central focusing aid which shows a pattern of dots (microprisms) that are highly visible when the camera is not in focus, and gradually disappear when the subject is calibrated into correct focus. This aid is particularly beneficial for moving subjects.

View Finder: Split image (ring in center of view finder) offers two angled prisms divided into a circular pattern which appears as a circle split through the middle and provides focusing accomplished by the separation of a line. The line on the subject gradually merges into one line when proper focus is attained. This screen is extremely beneficial in situations of critical focusing for still subjects. Split image focusing cannot be used when Close-up filters are added to lens.

Lens and filter combinations

With same size image, f-stop and shutter speed; large lens (100mm) has less DOF than short lens (50mm)

Closest object distance to film plane (object size in inches)

Lens (ring size)	Plain	1:1 (49mm)	Plus 4 (49mm)	T4 (52mm)
Macro 100mm (49mm)	17" (2 ½ w x 2 h)	11" (1 ¼ w x 1 h)	12" (1 ¼ w x 1 h)	49-52ring 12" (1 ½ w x 1 h)
Zoom 75mm (52mm)	4 ft	52-49ring 15" (3 ¼ w x 2 ½ h)	52-49ring 15" (3 ¼ w 2 ¼ h)	17" (4 w x 2 ¾ h)
Zoom 200mm (52mm)	4 ft	52-49ring 15" (1 ¼ w x 1 h)	52-49ring fuzzy	17" (2 ½ w x 1 ¼ h)
Fixed 50mm (49mm)	17" (8 ½ w x 6h)	8" (3 ¾ w x 2 ½ h)	9" (3 ¾ w x 2 ½ h)	49-52ring 10" (4 ½ w x 3 h)
Point and Shot Camera	1.1ft			

Shutter settings over 1 second

f-stop	sec	sec	sec	sec	sec	sec
2.8	1					
4	2	1				
5.6	4	2	1			
8	8	4	2	1		
11	16	8	4	2	1	
16	32	16	8	4	2	1
22			16	8	4	2

SUBJECTS

- Action Shots: Focus on the area where the action is and select an f/stop that will cover the area you want in focus.
- Church, Stain glass windows: color is from external light coming in, so don't use flash.

Close up with no tripod: F16 and flash w/ diffuser and pre focus. Flash must be pointing at same area as focus. Can catch insect moving between flowers, can move within DOF

Fireworks. to get more color

Use a higher number f stop (f11 or f16) to prevent overexposure and get color

put shutter on bulb

press button when fireworks open, release when hear bang

Flowers

General: yellow is better than white or red

in sunshine: Background: shadow with diffuser or black cloth out of focus. Choose low f-stop and still have all of leaf in focus. Shutter speed in high enough to handle light breeze.

Small flowers

F-stop 16 is good DOF for small flowers

Yellow is better than red or white

With white, under expose

Get close

Foliage in sunlight: use circular polarizing filter

Foliage in speckled light (through leaves) use filler flash

Ice storm: back light for effect

Landscapes: Light is Everything!!

If you look at 10 great landscape photographs, I think you'll find one thing in common with all of them -- long shadows and warm colors. Long shadows come from a low angle of light. The warm color come from the sun's light penetrating more atmosphere when shining at a low angle. The light just after dawn and before dusk provide the best light for just about any kind of outdoor photography. It's a much warmer light. And the low angle provides more shadow areas thus emphasizing form and texture.

Moon: f-stop roughly f/11 and shutter speed 1/film-speed

Moving subject

1) select a higher shutter speed (1/1000 for real fast) and lower number aperture opening (f/4) for more light (larger opening) but will loose depth of field.

2) have motion going into photo

People

1) Portrait:

a)Use wide or lower number aperture opening (f/2.8 or f/4) to prevent distortion. Zoom in with telephoto lens is better to also prevent distortion caused by wide-angle lenses. Set shutter speed per meter (or based on skin color). For head and shoulder best to use 70mm setting on zoom lens. For head only use 90-100mm setting on zoom lens. For full body can use any setting on zoom lens.

b) put eyes on intersection of Rule of Thirds graph and looking into photo
2) Person in front of monument that is lit in evening: Read background for exposure and set camera. Then use flash to light person.
3) Use filler flash if light is too contrasting on subject, such as sunlight face side versus shade side.

Raining or Snowing: don't use flash because will bounce off nearest drops.
Snow
1) Use gray card or
2) camera light meter will show setting to turning snow to 18% gray so if light meter says set camera on
shutter is 500 @ aperture f16 than snow will be 18% gray
then should change open aperture one stop to f11 for whitish
two stops f8 for real white
three stops f5 for blank white
Sunlight: use circular polarizing filter.
Tree
-in sunlight: using circular polarizing filter and against sky.
-If texture is important (tree bark) than harshness is good, so keep shadow and sunlight and don't soften. Can use reflector to enhance texture by removing deep shadows.
-Put all of trunk in frame, not part
Twilight-
1) exposures of 30 seconds or longer
2) Sun light as still available ½ hour after sunset. For prints, trust the meter, but people will be silhouette. To make sure you have shot during traveling take photo every few minutes (~5 minutes for this area with 45 min twilight's).
Water
1) use circular polarizing filter to see into
2) reflections: don't have to use rule of thirds.
3) Fuzzy:
First Method:
a) Set f stop to highest number for greatest depth of field
b) Use gray card to determine shutter speed
Second Method:
a) Set shutter speed to 1sec
b) Adjust f stops until camera's meter agrees with shutter speed being 1sec.
Web, Spider: Spray with water
Window, through: use circular polarizing filter

Stores/Mail order

B&H in New York
420 Ninth Ave (between 33rd and 34th streets, NY NY 10001
www.bhphotovideo.com
1-800-947-6628

Penn Camera
Rockville Pike

Penn Camera - DC
Near FBI and Old Post Office Pavillion

Aztec? Behind Hechinger (new store now) in Rockville

LL Rue: on internet: about nature photography

Erie slide club: slide frames

Stores, Photo processing in area
Sharp shop (1hr), Moto shop (1hr), Eagle eye (1hr), Penn Camera, Ritz, Giant (some have 1hr), Giant premium, CVS (1hr), CVS premium, Rite Aid, Seattle Film Works (mail order), Kinko

Stores
Penn: For single negatives they send out to Kodak in local area, the same place that Giant uses.

P&S: Point and Shot cameras.
By 2002 the P&S cameras will have equal quality to SLRs
Nikon can afford it if every pro switches to Canon, but they need to win the war for shirt pocket space.
Best to use ASA 400

Instructions:

Tina Camera Notes

Parallax effect: when subject is close (within twice the minimum focus distance, which is 2 x 1.1ft for mine) the effect that the viewfinder is to the left and above the lens creates a Parallax effect. The view through the viewfinder is higher and more to the right than what the lens "sees". So compensate by moving the subject (center) down and to the left. The focus mark will not move, but the focal point is really based on the view the lens "sees", so may have to use Focus Lock before recomposing picture. Viewfinder has adjustment marks.
If you don't compensate the Parallax effect will
cause closeups portraits to have top of head cut off
cause focus to be set under and to the left of person
is in effect also when using zoom

Night mode: takes picture with ambient light at night. Does not use the flash.
Landscape mode: can be used as infinity lock and/or maximum depth of field.
Macro mode: will have a narrow aperture (f22 or higher) and narrow depth of field.

Through Windows
Need to use "infinity lock" or "focus lock" otherwise camera will focus on window. Mine does not have this lock, so must focus on something in back of bus, hold shutter button down half way, point camera out window and now take picture.

What to consider when buying a Point and Shot Camera
1) flash: built-in, red-eye, fill-in, zooming flash (for far objects)
2) exposure modes: night, macro/close-up, infinity/focus-lock, portrait, sports
3) imprinting: date, time
4) environmental: waterproof
5) viewfinder: oversized
6) body: easy-to-grip
7) zoom lens: want to have f/2.8 or f/4 setting but usually are f/8 or f/11. Zoom built with aspherics elements.
8) can survive the pocket environment: lint, sweat fogs viewfinder
9) remember that whole point of a P&S is that you are willing to carry it everywhere.

Recommendations
Minolta, Freedom Zoom Explorer 28-70mm shirt-pocket zoom camera, about $140 after rebate from B&H
Yashica T4 P&S with fixed 35/3.5 lens, shirt-pocket camera, about $150

Olympus Stylus Epic, fixed 35/2.8 lens lens, weatherproof, optional infrared remote control
Ricoh GR1

Digital Cameras
For clarity need large meg storage per picture and fast capture time.

Right now an affordable Digital camera's maximum storage per picture is 4meg for 800 pixels by 500 pixels.

To imitate the equivalent of 400ASA need picture file size of 30meg.

APS cameras
APS = Advanced Photo System
Uses small film, but camera is also small.
Negative is 60% smaller than 35mm negative
Negative is always in canister
Must save index print for reprints
Camera cost $200-300
Reprints cannot be as big as 35mm for same ASA
Camera can be SRL or P&S

Resources

Photo Camera by Cannon

Complete Book of Nature Photo by Kinne

Audubon Photo Class 1999 and 2000
Montgomery County Photo Class 2000
Instruction Pamphlets from Camera Equipment

Classes Taken

1998 December Audubon

December 2, 1998
Sponsor: Audubon
Leader: Bates Littlehales
Name: Nature Photography

Location: Audubon Center, Woodsend, MD

Bracket because even if correct exposure, the bracket shot may make more of a statement

Make sure camera is parallel for focus (to plane of subject)

Simple is better than complicated

Don't cut off object

Seed/Fruit cluster with leaf as background color for contrast

Object must make statement within itself

Tree-take aim up tree trunk

Special print development: Chrome in Georgetown in Q Street DC

Get rid of sky

Flowers: concentrate on flowers and don't have to have all of leaves

1998 October Audubon
October 24 1998
Sponsor: Audobon
Leader: Bates Littlehales
Name: Nature Photography

Location: Scott's Run, Rt 193, Fairfax VA

Tina Camera Notes

Clamps from Wisconsin

Clear umbrella to protect camera from rain and defuse light

Flashlight on top of flash can be used to know where flash will point.

F stop of flash is 16 for normal (gray) object, 22 for (white) light object, 8 for dark object

Shoulder stock for cameras with long lenses

Safaris use 400mm lens, f5.6

Extender can be used with zoom, best is 1.4x (2x looses 2 f stops)

Calibrate shutter meter: set distance to infinity, f stop to 5.6, ASA to 100, shutter speed in view finder should be same as displayed by a calibrated camera. Can fix variation by adjusting ASA setting.

To get background fuzzy, open f stops (use smaller number)

Small f stop number narrows depth of field
High f stop number deepens depth of field

Gray card: put in same light as subject, read shutter meter, use shutter speed and f stop to adjust manual to match what number was on meter for gray

Zoom lens: the white dot is f5.6

If object is darker gray than gray card change f stop to higher number or shutter to higher number to reduce amount of light

Zoom lens 1:5 mean real object is 1/5th size in lens

Sunny 16 Law: at f16 the shutter speed is 1/ASA closet (100ASA= Shutter 125). Open one f stop (smaller #) for cross light. Open two f stops for back light to get detail in object.

Tina Camera Notes

To make fuzzy water, set f stop to high #, use gray card to determine shutter speed OR set shutter speed at 1 and move f stop until meter agrees with shutter at 1.

Zoom white outer curve lines are depth of field for f32

Zoom: don't use higher # than f16, will loose to much detail unless focus on infinity

If meter reads too "low light", to get how many seconds to leave on bulb

1) Turn f stop to lower number until meter reads a value. Ex f5.6=1/8sec=t
2) reset f stop to desired for depth of field. Shutter speed using example
   For f8= f5.6{tx2}=1/4 second
   For f11=f5.6{tx2x2}=1/2 seconds
   For f16=f5.6{tx2x2x2}=1 second
   For f22=f5.6{tx2x2x2x2}=2 second (don't use on zoom unless focused at infinity)

Bracket f stop by going up and down one group. Bracket f11 means f8 and f16

October 21, 1998
Sponsor: Audobon
Subject: Preparation for 24 Oct 98 workshop
Leader: Bates Littlehales
Location: Woodend, Audobon

Still need to have for nature shots

1. Step down ring for 49mm macro lens onto 52mm camera lens
2. Lens shades about ½ to ¾ " deep for both lenses
3. Film 100ASA slide about 5
4. 18% gray card
5. reflector: can be made from aluminum, rubber cement, card board
6. diffuser: can be made from wooden sewing hoop, cheese cloth
7. Flash synch cord
8. Flash bracket (about $50 at Penn camera
9. Flash diffuser

Good store for camera stuff: B&H Photography Store in Manhatten on 9th Ave.

1999 April Audubon
1999 22/24 April
Sponsor: Audobon
Leader: Bates Littlehales
Name: Nature Photography

Location: Scott's Run, Rt 193, Fairfax VA

Flowers – take out light objects in background, too distracting from dark/medium subject

Viewfinder usually shows LESS than what is on slide

Shutter speed 1/8 sec is good one to avoid because it shakes the camera – must use tripod

Gray: Use bigger card, better and easier to control

Backside of gray card is good reflector

Diopter - close up lens that is better ground for focus all around

Film: any ASA100/ISO21º that is E-6 processing

Photo ideas: Bird over clouds, sun in haze through tree

Birch tree is good subject because sheds/maults in spring

Backlight on a flower gives a glow/halo

Scan: 240 or 300 dpi

Diffuser – larger is better, 3ft diameter, off white

7-11 has clear umbrella for rain

Diffuser material – white, can just see hand, makes gray shadow. A solid object makes a black shadow

Flash mount – flash on swivel head, joints in arm allow 3 axis adjust especially forward/backward from camera plan to get flash to shine right in front of lens

Flash/light source larger than subject will soften hard shadows, i.e., diffuser balloon over flash

For small object – never use direct single flash, use many flashes and flash diffusers (balloon)

Flash diffuser – broadens light source and softens light

f16 for flash?

Film: cannot expose for sunlight and shadow at same time, must decide

Diffuser hoop costs one f-stop (shown in meter)

Flash: use to stop wind motion (or insect motion)
Diffuser Hoop: use to soften bright areas (can be used to block wind)
Reflector Hoop: use to lighten shadows, doesn't effect bright areas much

Diffuser umbrella – spokes are a problem, but can bounce flash off umbrella to reduce dark shadows of spokes

Equipment: for rain buy camera plastic hood cover

Equipment: the Camellia: diffuser/reflector/black cloth. Collapsible ring from B&H 22"/36"/44" options

White – hot – reflection light

Example: May apple in sunshine.
Background: shadow with diffuser or black cloth out of focus
Choose low f-stop and still have all of leave in focus
Shutter speed is high enough to handle light breeze

Spray bottle of water – spray on object to bring out color or on web

Baffling: dark shadow caused by reflector or solid object

What that front leg of tripod is not in picture (large than viewfinder)

Don't document! Make a statement!

If texture is important (tree bark) than harshness is good, so keep shadow and sunlight and don't soften. Can use reflector to enhance texture by removing deep shadows

Photo Idea: leaf shadow on smooth bark

Diffuser: soften color and enhance color
Reflector: increase texture, soften shadows

Sunny 16 adjust for DOF

1) ASA100 use f=16
2) compose and focus
3) read CM or gray card, i.e., CM=60
4) adjust f to stop for DOF
   want f32 for DOF
   f16 CM=60
   f22 CM=30
   f32 CM=15
5) change shutter to 15
6) now picture is adjusted to same effect of Sunny 16 except new DOF

With same image size, fstop and shutter speed; large lens (100mm) has less DOF than short lens (50mm)

Equipment: Boogen, variable arm, clamp on tripod, clamp on hoop

Close up work with no tripod

1) f16 and flash with diffuser balloon and pre focus. Flash must be pointing as same area as focus
2) can catch insect moving between flowers
3) can move within DOF

Flash must be diffused, off of hot shoe and aimed at DOF range

Photo Idea: sunlit leave against bark in shadow

Support: make sure to support end of the lens also

F16 is good DOF for small flowers

Gray card – to read but at object but parallel to film plane

For slow shutter speeds use cable or self timer (finger causes bounce)

Ground Ivy: purple flower that looks like Purple Dead Nettle

When using flash better to use lens that gets same size image but at greater distance so flash has space, not at such an acute angle

Need measurement from front of lens to object

2000 April 1 Montgomery County

At: Montgomery County Recreation department, Bauer Community Center
Date: 1 April 2000
Teacher: Paul Frädig

Goal:
1)Using the 80:20 rule, want to have 20% of the professional's skill and resulting photos will be 80% as good as a professionals.
2)Follow 90% of all the rules 90% of the time. The other 10%, break the rules but know which and why.

Lenses
Wide-angle: just like the name says, the view is a wider viewing angle. 50mm lens has an angle of ~47º
Telephoto lens or Zoom lens: has a more narrow viewing angle. 200mm lens has angle of ~20º

Perspective
To have object in correct perspective (dimensions) better to use zoom lens to get close-up rather than wide-angle lens.

Composition:

Tina Camera Notes

Establish purpose which is related to subject or intended use: Photo is to communicate what? Is it a portrait for a family album or should it be showing off the bun in the hair for a fashion magazine.

Composition:
Eye is attracted to highest contrast area or area in focus so make sure that is the subject.

Artifacts: are items that accidentally got into picture from side, such as branch.

Exposure:
Blurry Shots: Can only handhold camera at 1/30 sec or longer for a 50mm lens and 1/100 sec for a 100mm lens if object is stationary.

Exposure:
For moving subject: select a higher shutter speed (1/1000 for real fast) and lower number aperture opening (f/4) for more light (larger opening) but will loose depth of field.

Exposure:
People: Use wide or lower number aperture opening (f/4) to prevent distortion. Zoom in with telephoto lens is better to also prevent distortion caused by wide-angle lenses. Set shutter speed to per meter (or based on skin color). For head and shoulder best to use 70mm setting on zoom lens. For head only use 90-100mm setting on zoom lens. For full body can use any setting on zoom lens.

Lens
Zoom with foreshorten the foreground
Wide-angle lens: viewing angle around 60º
Middle angle lens: view angle about 47º (50mm), normal lens for SRL
Zoom: switches from one angle to another, i.e., another mm (75mm to 200mm), and magnifies object

Exposure:
Church, Stain glass windows: color is from external light coming in, so don't use flash.

Exposure:

Person in front of monument that is lit in evening: Read background for exposure and set camera. Then use flash to light person.

Exposure:
Red eye flash prevention: pre flash causes eye pupil to restrict and creates smaller red eye. Have the 2 second delay because that is how long our eyes take to react. Better to have person look into a bright light (flash light) because people forget that first flash is not the picture. Red-eye happens more often at when person is a greater distance from lens. Is caused because light from flash reflects back from eye. Also to reduce increase the distance between the flash and the camera lens.

Diffuser:
Can make one for flash by cutting an translucent film canister length wise and place over flash.
Can make one from a translucent bottle cut to fit over flash.
With wide-angle lens need to put diffuser on flash so that light will get to outside edges of photo. Needed because angle of flash is not as wide as the angle of the wide-angle lens.

Costa Rica
400ASA for normal, 800ASA for under canopy. Buy from Kodak or Fuji

Flash
Shadow caused by flash. When holding camera sideways remember that shadow will be highly visible to the other side of subject. To remove or reduce use slave flash (booster) or diffuse main flash. Put slave flash on other side of camera. (flash by my right should, slave in room on my left). Or could bounce main flash off ceiling or another object and put plastic flat diffuser to prevent flash from bounce of cameraman.

Equipment:
Flash diffuser: Flat plastic sheet cut to go behind flash and prevent flash from bouncing on cameraman when flash is pointing straight up. Secure with rubber band.

Exposure:
Sun light is best (warm light, textures)2 hours before sunset and 2 hours after sunrise. Have cross light so textures are better.

Photo Idea:

Tina Camera Notes

twilight photo of town in valley with person in silhouette.

Film:
Negative: to identify use number is this most within or under negative.

Albums
Laminates: can use clear plastic cold laminate but be careful of bubbles.
Laminates: don't use hold laminate, it will blister the photo.

Albums
Panoramic shots: definition is 1:3 ratio. take the normal picture, have photo enlarged, than cut away 2/3 of photo.

Film
Negative is 1 x 1 ½ ratio

Equipment
Panoramic cameras: buy one for special trips

Costa Rica
Buy a Panoramic one time use camera

Stores, Photo processing in area
Sharp shop (1hr), Moto shop (1hr), Eagle eye (1hr), Penn Camera, Ritz, Giant (some have 1hr), Giant premium, CVS (1hr), CVS premium, Rite Aid, Seattle Film Works (mail order), Kinko

Stores
Penn: For single negative they send out to Kodak in local area, the same place that Giant uses.

Exposure:
Twilight: Sun light as still available ½ hour after sunset. For prints, trust the meter, but people will be silhouette. To make sure you have shot during traveling take photo every few minutes (~5 minutes for this area with 45 min twilight's).

Exposure:
Tree in sunlight: using circular polarizing filter and against sky.

Tina Camera Notes

Sunlight: use circular polarizing filter.
Water: use circular polarizing filter
Foliage in sunlight: use circular polarizing filter
Window, through: use circular polarizing filter
Water, reflections: don't have to use rule of thirds.
People, close up: put eyes on intersection of Rule of Thirds graph
Motion: have going into photo
People: have looking into photo

Filter
Polarizing filter, circular: Only works with sunlight or strong directional light source. Only allows light to come in at angle set therefor blocks some light from sky and knocks reflections off foliage, window, water. How much is blocked is controlled by twisting. Takes off 2 stops of light at max setting so will make 400ASA film become 100ASA.

Exposure:
Meter readings. If lens or filter "takes x stops off", that amount is sensed by meter so I don't have to do any compensating

Film
Don't let get hot
Freezer will STOP expiration date.
Fridge will retard: 1 year in fridge will = 1 month on expiration
When freezing or in fridge bring film completely to room temperature (4-12hrs for freezer, 1-2hrs for fridge) before opening.

Hint:
Not all photos can stand alone without caption.

Composition:
Enhancement:
- Polarizing filter to enrich color
- Leading lines to subject
- Rule of thirds (except if photographing reflections in water)

Film

Speed and ambient light: when using 400ASA or higher with flash, some of the ambient light will also be present which prevents dark colors from matching black background.

Exposure:
Exposure Latitude chart for Color print film
If stops are f aperture stops, + means lesser number (larger opening, more light, shallow DOF), - means greater number (smaller opening, less light, wide DOF).
If stops are shutter speeds, + means a lesser number (more time open, more light), - means greater number (less time open, more light)

+5 stops	approximate maximum that can be corrected by printing
+4 stops	featureless white
+3 stops	extremely light
+2 stops	very light
+1 stop	light
0	middle tone – what the camera tries to produce (18% gray reflectance)
-1 stop	dark
-2 stops	very dark
-2 stops	featureless black

Exposure:
Print film: better to over expose than under expose, so err having aperture (f) a lesser number or shutter speed a lesser number.

Filing and storing
Get index print always when available
Write on index print the month and year
Write on print the month and year that is on index print
Write using a photo-safe pen, let dry at least one hour before stacking.
Keep negatives and index print in original Kodak folder
Store these Kodak folders in an acid-free box, an open shoe box may be ok also.

Film:
200ASA for slide
400ASA for prints

Tina Camera Notes

Equipment:

Cropping "L's": make out of neutral color cardboard. Inside dimensions should be at least as big as your prints (3 ½ x 5 ½ for my size prints) and should be at least 1 ½ inch wide.

Film:

Airport x-rays

400 ASA can go twice through x-rays

800 ASA or higher should not go through.

Really don't want to take any EXPOSED film more than once through x-rays

If film is overexposed to x-rays, prints will get murky

Film Speed:

Is like filling a bucket with water using a hose

The bucket volume is the ASA rating

Water Hose provides the water (light) which is determined by

Pressure = amount of light available

Diameter = f opening of aperture (1/size)

Time = shutter speed (1/sec)

Lens:

Low mm (50mm) has wider angle of view, 50mm =~ 47º

Have to stand close and subjects are distorted

high mm (200mm) has narrow angle of view, 200mm =~20º

Have to stand away and zoom but subjects are in proportion especially people

Angle amount is given in specifications

Film

Negatives are always (except very rare errors) ok, the prints have been developed to all look alike.

Lens

Aperture openings (f): large opening f8 has small area in focus, small opening f32 has larger area in focus.

Aperature (f)

Tina Camera Notes

Lens Width is in mm which indicate largest diameter of opening in front side of lens.
Lens focal length (fl)is determined internal to lens.
The aperture (f) stops indicate

f1 = width/lens fl (example f4)
f2 = ½ width/lens fl (example f8)
f3 = ¼ width/lens fl (example f16)

Flash
use filler if 1)speckled light (through leaves) or 2) light is too contrasting on subject, such as sunlight face side versus shade side.

Flash
Distance: flash is only good for certain distance (see specifications)
Generally, flash is good for 3-4 meters for 100ASA and 7 meters for 400ASA

Composition
Cropping L's: if you need them to make better photo should have done better job in field with viewfinder.

Composition
Eye will go to the highest contrast area or in focus area of picture first, so make sure that is the subject.

Equipment:
Filter, Polarizing:
Circular will work with both Auto and Manual focus SRL. also the most expensive $40.
Linear works only with manual focus SRL. Cheaper $20-60
Use only with strong sun light or directional light, otherwise will do nothing
Will lower the f stop by 1 or 2

Equipment
Filter, UV: can be used to control haze or use to protect lens at sea shore, rain, adverse weather or conditions.

Equipment
Magenta Filter (FDL): counteracts florescent light. Really only need for slides because development of prints will do compensation.

Tina Camera Notes

Exposure
Florescent light give photo green tone.
Incandescent light give photo yellow light.

Film
Developing: can take film to Giant or almost anywhere because rarely is negative damaged. Only the prints can be developed incorrectly for the way it was taken.

Equipment
Blue filter: puts blue in picture. Don't need if using prints. But daylight balanced slide film needs blue filter if taking indoor pictures.

P&S: Point and Shot cameras.
My Olympus is one.

Instructions:
Parallax effect: when subject is close (within twice the minimum focus distance, which is 2 x 1.1ft for mine) the effect that the viewfinder is to the left and above the lens creates a Parallax effect. The view through the viewfinder is higher and more to the right than what the lens "sees". So compensate by moving the subject (center) down and to the left. The focus mark will not move, but the focal point is really based on the view the lens "sees", so may have to use Focus Lock before recomposing picture. Viewfinder has adjustment marks.
If you don't compensate the Parallax effect will
cause closeups portraits to have top of head cut off
cause focus to be set under and to the left of person
is in effect also when using zoom

Night mode: takes picture with ambient light at night. Does not use the flash.
Landscape mode: can be used as infinity lock and/or maximum depth of field.
Macro mode: will have a narrow aperture (f22 or higher) and narrow depth of field.

Through Windows

Tina Camera Notes

Need to use “infinity lock” or “focus lock” otherwise camera will focus on window. Mine does not have this lock, so must focus on something in back of bus, hold shutter button down half way, point camera out window and now take picture.

Digital Cameras
For clarity need large meg storage per picture and fast capture time.

Right now an affordable Digital camera’s maximum storage per picture is 4meg for 800 pixels by 500 pixels.

To imitate the equivalent of 400ASA need picture file size of 30meg.

APS cameras
APS = Advanced Photo System
Uses small film, but camera is also small.
Negative is 60% smaller than 35mm negative
Negative is always in canister
Must save index print for reprints
Camera cost $200-300
Reprints cannot be as big as 35mm for same ASA
Camera can be SRL or P&S

2000 April Lighting
It is therefore difficult to take a decent picture if you have not chosen the lighting carefully.

Sunlight

You can get plenty of light out of the sun, that's for sure. However, you might have to wait a bit if you want the light to have the quality that you need for your picture.

At high noon on a clear day, the sun is extremely strong. It generates a hard light with deep crisp shadows. It also is coming from directly overhead.

Tina Camera Notes

Portraits in Sunlight

The hardness of the light will generate dark shadows. The direction of the light will place those shadows in unattractive positions underneath the subject's eyes and nose. One solution is to move the subject into the shade where he will be lit by skylight rather than sunlight. Skylight comes from a large source and is therefore diffuse. Diffuse light does not cast strong shadows. Skylight is also rather blue and, if you are using color slide film, you might have to place a warming filter (e.g., 81D) over the lens to get natural skin tone.

If your goal is to record a subject in front of a sunlit object then you can't move him into the shade. There is too great a difference in illumination between shaded and sunlit objects. Photographic film and paper cannot handle the same range of contrast as your eyes. A picture that is correctly exposed for the sunlight object will render the shaded portrait subject as solid black. A picture that is correctly exposed for the shaded portrait subject will render the sunlit background object as solid white.

The best solution is to wait for the light to be coming from a different direction and/or for different weather. Near sunrise or sunset, you might be able to get flattering light on both the portrait subject and the background object. On an overcast day, light from the sun will be sufficiently diffused that the shadows become faint.

If they couldn't wait, professionals would most often deal with this situation by dragging out diffusers and reflectors. In the diffuser case, an assistant holds a huge plastic-framed white cloth between the sun and the subject. In the reflector case, an assistant holds a silver, gold, or white reflector underneath the subject to push sunlight back up into the subject's face, filling the shadows.

Finally, there is artificial light. If you stick a powerful flash on the camera, pointed at the subject, then the light from the flash will augment the light from the sun. Because the flash light is filling in the shadows, this is known as fill flash. Electronic flash is the same color as the sun around noontime. If you use electronic flash closer to sunset or sunrise, when sunlight is redder, objects illuminated by the flash will look unnaturally cold. Professionals deal with this by carting around assistants who cart around colored filters to paste over the flash tube.

It is difficult to see the shape of the landscape when the sun is directly overhead. Our eyes rely on shadows to recognize shapes. Nonetheless it is occasionally possible to get a good landscape photo at midday if the subject is reasonably compelling, especially if you are aiming at the kind of descriptive photos found in travel brochures.

Overcast Skylight

A high overcast is perfect for a lot of photography. A studio photographer would think of this as "the mother of all softboxes". If you want to capture architectural details, an overcast day lets you do it without shadows obscuring anything. Overcast and/or rainy days are also the times to go into the forest and take pictures of trees. The one bad thing that you can say about an overcast day is that a big white sky makes a very bad photographic subject. Try to make sure that your photos have hardly any sky in them.

Overcast skies are slightly more blue (7000 degrees Kelvin) than the color temperature for which daylight film is designed (5500 K; a mixture of direct sun and skylight). Officially, the Kodak Professional Photoguide will tell you to use an 81C warming filter. I wouldn't bother unless you are photographing clothing for a catalog. [For comparison, open shade from a clear blue sky is 11,000 or 12,000 degrees Kelvin and requires an 85C filter.]

Twilight

There is no reason to put the camera away after the sun goes down. In fact, you can usually get your best pictures then. You'll often need exposures of 30 seconds or longer, however.

Strictly after dark...

Fog/Mist

There isn't much to say here except make sure you have your tripod with you.

Street Lights

Tina Camera Notes

Street lights are not blackbody radiators so you can't even talk about their color temperature. They discharge in various narrow spectral bands and the color that this produces on film isn't very predictable or controllable. Usually you get an eerie green light, which I personally find kind of interesting.

The Kodak Professional Photoguide has a page devoted to filtration suggestions for street lights, but you have to know the brand of bulb in use!

Indoors -- Fluorescent Lights

Long-tube fluorescent fixtures are designed to offer diffuse unobtrusive light. As such, they make for reasonably good black and white photography. I find that in a typical office, I must use f/1.4 and 1/60th of a second with ISO 400 film.

For color photography, fluorescent lights have some of the same properties as street lights, i.e., they discharge in narrow spectral bands. You will get a rather green unappealing light if you don't filter with a "fluorescent -> daylight" filter (Tiffen calls this an "FL-D"). If you are using color negative film, photo labs can compensate to a large extent for this color cast in the printing, but I prefer to do it at exposure time with an FL-D filter.

Indoors -- Incandescent Lights

Standard light bulbs are much warmer than daylight, only about 2900 K for a 100-watt light bulb. If you are using daylight-balanced film, you'll get a very pronounced yellow cast unless you stick a blue filter over your lens (Kodak says 80A + 82B). An alternative is to use tungsten-balanced film. Tungsten film is really designed for 3200 K photo lamps but it is better than daylight.

Electronic Flash

Although I'm sort of proud that the strobe was an MIT invention (Doc Edgerton), there is no doubt in my mind that the electronic flash has done more to ruin the average photograph than any other new technology.

In the good old days, even amateur photographers were reasonably careful about light. You took your subject out on a high overcast day. You placed your subject next to a large window. You stuck your camera on a tripod.

What do we do now? Point and shoot without thinking. The camera will automatically blast the subject with light from the built-in strobe if there isn't enough ambient light. Thus, 90% of our subjects come out with that "deer in the headlights" look.

Remember what I said above: "Our eyes rely on shadows to recognize shapes." There are no useful shadow cues if all the light comes from the same angle as the lens. You can't establish a mood with on-camera flash. You can't emphasize a feature with on-camera flash. You can't narrow a fat face. You can't really do anything except capture a scene that never really existed (unless you are a coal miner and walk around with a headlamp all day).

Does that mean that you should throw out your electronic flash? No. A built-in flash that fires straight ahead is useful for filling harsh shadows in bright sunlight. An accessory flash (e.g., Vivitar 283, Nikon SB-24, Canon 540 EZ) designed to slide on top of the camera can be a great tool when used properly.

Accessory Flash Strategy 1: Get the flash off the camera. Minolta 35mm SLRs let you control an off-camera flash wirelessly. Their benighted competitors force you to buy a cord (if you have a fancy modern camera, you'll want a fancy cord that "preserves dedication" (control of the flash from the camera body)). Separating the light from the lens by just an arm's length makes a huge difference. If you can't afford to devote one hand to holding the flash and don't have an assistant, then you can get a flash bracket (Stroboframe makes a comprehensive line). These are what wedding photographers use.

Accessory
Flash
Strategy 2: Bounce the light off the ceiling. We expect light to come from above, either because that's where the sun is or because a lot of buildings and houses have overhead lights. If you are in a room with a reasonably low, reasonably white ceiling, then you need only tilt the flash head up and direct the light towards the ceiling. The problem with this approach is that it sometimes mimics noon sunlight too well. You get harsh shadows under the eyes and pronounced shadows. I believe that Metz makes a couple of handheld flashes that have two tubes, one that always fires straight ahead and one that can tilt up. This is probably the right technology, but most people are stuck with a one-tube flash. See Strategy 3 below.

Accessory Flash Strategy 3: Attach a Diffuser. There are a variety of diffusers that will send some of the light up to the ceiling and some straight out toward the

subject. My personal favorite is the Sto-Fen Omni-Bounce (800-538-0730). This is a translucent plastic cube that snaps on to the front of the flash in about 2 seconds. It costs less than $20 and is made in different sizes to fit many brands of flashes. Usually, I stick it over my Canon 540EZ flash and tilt the flash head up 45 degrees. This seems to send about one-quarter of the light forward, one-half up to the ceiling, and one-quarter off in various other directions. LumiQuest makes a bunch of similar products but I think they are a bit too cumbersome. Finally, you can get small softboxes (see the studio flash section) to cover your flash. The disadvantage of any diffuser is that it wastes a lot of light, thus reducing your flash range and increasing recycle time.

Accessory Flash Strategy 4: Get Another Flash. If you are willing to invest in a second flash and a rat's nest of custom cables (Canon and Nikon) or some air (Minolta with its brilliant wireless system), then you can light the background and the subject separately, fill shadows, and otherwise play most of the tricks available to studio photographers. The custom cables will ensure that your camera body shuts off the flashes when there is sufficient exposure, but it would probably be better to use manual flashes and a flashmeter if you are very concerned about lighting ratios. The cabling doesn't solve the problem of supporting the second or third flash. You might need light stands in which case it would have been almost as easy to drag along a couple of studio monolights.

For color photography, the electronic flash has one nice feature: it is designed to have roughly the same color temperature as daylight. So you don't need any filters to work with standard daylight-balanced film.

The End