



Southern Illinois Photographic Society

www.sipscameraclub.com

July 2010 Newsletter

June Meeting

We welcomed a number of new visitors to our June meeting, including Dustin Rasnik of Carterville, Bert Riedel of West Frankfort, and John Muller of Carbondale.

Our program this month was an expanded Show and Tell. We had several short presentations of various subjects:

- Jan Sundberg shared some hints on producing cards from photographs.
- Lori Mascial showed some images of the mining that is occurring in her front yard, encouraging her to move.
- Donale McDonald gave a collection of specific examples of photo techniques and tips he has learned from various club members.

- John Muller showed some terrific architecture and landscape photos from Egypt and Paris, having been there for anthropological studies during his time at SIU.

- Jim Oborn recently attended a NANPA workshop in the Smokey Mountains. He brought back several excellent images from the professionally-led excursions there.

- Joyce Hesketh shared a visit to Iris Farm in the form of a very nicely done video collage.

- Jillian Choate brought an album featuring Paducah and her twin sister. She also had some tintype images to show.

- Joanna Gray showed a thoughtful shot of Main St. in West Frankfort at sunset.

Our "Fifteen Minutes of Fame" member this month featured Linda Bundren. She shared a selection of images taken this year, featuring images from the club outings, wildlife images, and her grandson.

Our members have been busy with out-of-club photographic activities as well. Recently, we had some successes in the Herrin Festa Italiana photo contest. Linda Martin took both 2nd and 3rd place in the amateur division. Dave Brewer won 2nd place and Dave Hammond won 3rd place in the professional class. Dave Hammond also had a picture published as the cover of the fall/winter SIU Press catalog.

Congratulations to all of these!

Donald McDonald passed along the news that Ron Homberg, Production Manager at WSIL and volunteer at Crab Orchard Nat'l Wildlife Refuge, has requested volunteers to assist in a photography presentation at the refuge. Instructors would be given access to closed areas on the refuge to photograph, for use in the workshop they give. If you can help out, please call Ron at 285-2333.

Joan Levy announced that the Southern Illinois Artisan's Association needs funds to repair the roof of their building. They will be painting profiles of people or animals for \$100 to raise needed funds.

Jim Osborn suggested a visit to the annual Amish Auction of horses and farm

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Calendar of Events

July

Meeting: Jul. 6

Program: Making Cards,

Jan Sundberg

15 Minutes of Fame: Mike Hicks

Contest: Insect World (60 day)

Outing: Richard and Susan Day's,

Jul. 31

Planning Meeting: Jul. 20

August

Meeting: Aug. 3

Program: History of Photography,

Jillian Choate

15 Minutes of Fame: Linda Martin

Contest: Ravages of Time (1 year)

Outing: Centralia Balloon Festival,

Aug. 21

Planning Meeting: Aug. 17

September

Meeting: Sept. 7

Program: TBD

15 Minutes of Fame: TBD

Contest: Still Life (60 day)

Outing: Du Quoin State Fair, Sept. 4

Planning Meeting: Sept. 21

Inside...

Meeting news, Photo Op, and our annual picnic coverage.

Photo Op

by Jim Osborn

I hope everyone is out there practicing some of the techniques we've been discussing so you can participate in the 2010 Photographic Technical Excellence Contest. Remember, the SIPS board approved matching the entry contest fees...so the winners will receive double the amount that might otherwise be available. Let's double-back and cover the 4th item on the list—Low Light Outdoors (between sundown and sunrise). All I can say is "Tricky!" The pitfalls in executing this type of shot include (1) sharpness, (2) exposure control and (3) digital noise. Although I recommend using a tripod all the time, for taking a successful shot in low-light conditions you almost have to use a tripod. This is about getting the right amount of light to the sensor (or, for Jillian, to the film). If you crank up the ISO you might speed up your shutter so the image could be taken hand-held, but you run the risk of the photo showing blur or digital noise. So, put the camera on a tripod, crank DOWN the ISO and be prepared to take images with a SLOW shutter speed. One of the potential problems is certainly sharpness. The lower



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SIPS picnic group photo (photo: Mike Hicks)

Club Picnic

This month, our outing was our annual club picnic, which was held at Ferne Clyffe State Park. We had a strong turnout, with many people braving the heat. Fortunately, our site was well-shaded and quite pleasant. Jillian's friend Zach Hurt took charge of the grilling, and did an amazing job. We had a moment of doubt when it was discovered no one had remembered matches, but Ray came to the rescue with his magnesium fire-starter.

Next month, on July 31, our outing is to Richard and Susan Day's place in Alma, IL. Due to the personal supervision being offered, attendance is limited to prepaid reservations. There may still be openings; talk to Dana for details.

Photo Op

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the light the harder it is to use auto focus because your camera just can't see what you see. Identify the closest point that you want to have in focus and try autofocus. If the autofocus doesn't "catch" then turn the AF off and go to manual focus. If your main subject is moving then the slow shutter speed isn't going to work well and you need to consider what other qualities you are willing to sacrifice to use a faster shutter speed. If you are trying to shoot a sunset or sunrise make sure that the silhouetted trees in the foreground are in focus—so, depending on the lens you are using, make sure you have adequate depth-of-field.

Exposure!! At sunrise and sunset there may be a huge variance in the amount of light in your image, from the brightness

of the sky around the sun to the silhouetted trees in the foreground. If you use your in-camera meter to set the exposure you may encounter problems. Metering off the dark trees in the foreground will lighten the entire image (meaning the bright sky around the setting sun will be even lighter, as in "overexposed"). If you meter off the bright sky, the whole image will darken (as in "underexpose"). The trick is to meter off something more neutral such as a part of the sky farther away from the sun. To balance sharpness, depth-of-field and exposure you may want to give serious consideration to experimenting in manual mode. There are other "tricks" you can try to reduce the variance in light in your image. A split neutral density filter is half dark and half light. When the dark half is centered over the brightest part of your image (usually the sky), it reduces the variance in light which may make it possible to expose your image in autofocus. Another trick to avoid overexposing your image is to cranking down the exposure compensation dial on your camera. For example, dark clouds will appear appropriately dark, but the rest of the image will be darker as well. If that's acceptable, give it a try. Finally, if you want to try to shoot a starry sky, wait until there is no moon and then set your camera on a tripod. Using a medium to small aperture and a low ISO use the Bulb function (usually denoted "B"). Check your owner's manual for more information. Using the Bulb function will allow you to keep the shutter open as long as you want—seconds, minutes or even hours. Experiment and you might get star trails through the sky as the earth rotates. Get out there, experiment, and HAVE FUN!!



Ray demonstrates good firestarting technique (photos: Mike Hicks)

The Technical Side

by Jonathan Springer

This month I'm going to talk about digital camera sensors. These are the heart of a digital camera, the part that records the incoming light to form an image.

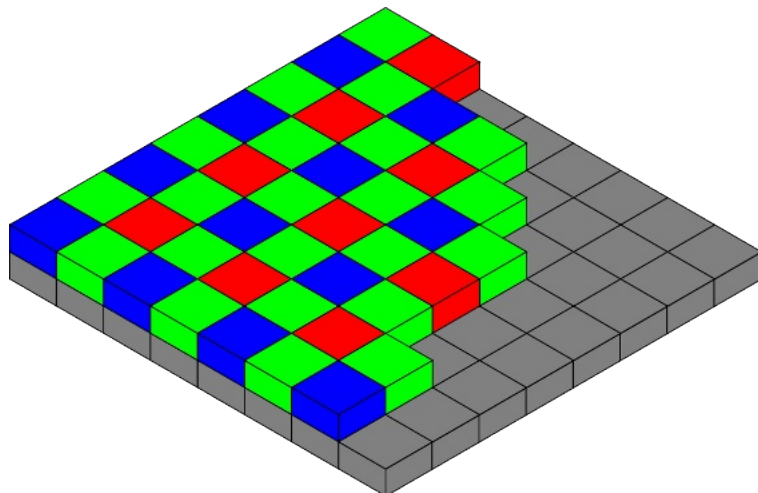
The principle that allows a camera sensor to work is the photovoltaic effect: when light falls on a specially-constructed substance, an electric current is induced in that substance. This is basically the same principle on which the solar cell is based. Furthermore, the more light, the more current, so the amount of light can be measured as an intensity value. Early camera sensors were primarily charge coupled devices (CCDs). A CCD is a dense grid of sensor elements, each connected by wires to current-measuring circuitry at the edges of the grid. CCDs are characterized by high power requirements, low noise, and slow operation.

More recently, sensors have been made using the same technology used to make computer chips. This technology, CMOS (complementary metal oxide semiconductor), uses much less power and is faster due to having current-reading circuitry built into each pixel. CMOS is also dramatically cheaper due to the vast infrastructure built up for fabricating integrated circuits for computers, and this probably more than any other factor has led to CMOS replacing CCD as the dominant technology. Today, virtually all cameras, even high end professional models, use CMOS. (One notable exception is the

Sigma line, which uses a different technology, but we'll leave that for another time.)

As noted above, the light-sensitive portion of a CMOS sensor is surrounded by circuitry to convert the raw current to a digital signal. Light that falls on this surrounding circuitry is lost, leading to a lower sensitivity of CMOS as compared to CCDs (with their signal-processing circuitry tucked away at the edges of the grid). To combat this problem, CMOS sensor designers developed the idea of placing a microlens above each pixel to focus the light onto the sensitive area. Sensors typically have a variety of additional layers or coatings to reduce glare, repel dust, and protect the sensor.

As described so far, the camera sensor would take a very nice black-and-white picture, but users these days expect color. To record color information in most cameras (again, excepting the Sigma), a grid of color filters is placed directly over the sensor pixel grid. Each filter allows only a particular color to pass and be seen by the underlying pixel. The filters are red, green, and blue, arranged in a special pattern called the Bayer pattern, after its inventor. Due to the interleaving of colors in the pattern, groups of adjacent single-color pixels can be used to determine a single full-range color value, a process called demosaicing. This is done in-camera when producing a JPEG, but RAW formats contain the original single-color pixel mosaics, so that a more powerful off-camera algorithm may be used.



Bayer filter pattern over a sensor grid (diagram: Colin M. L. Burnett, Wikimedia Commons)

June Meeting

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implements at Montgomery, IN. This is an excellent opportunity to photograph horses, horse drawn carts, and carriages.

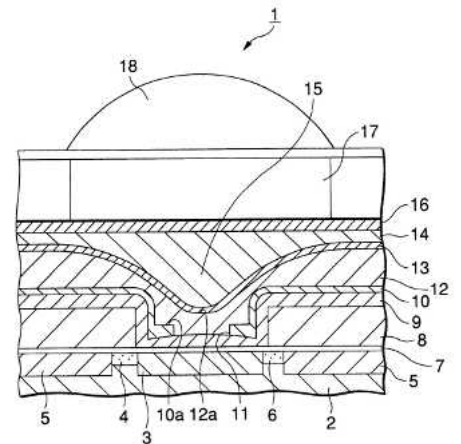
Our contest this month was "Bounty of Nature." We had six entries; the winners were:

1st place: Jim Osborn, "Smokey Sunrise"

2nd place: Mike Hicks, "Barrel Fruit"

3rd place: Joanna Gray, "My Harvest"

Next month our contest is "Insect World." This is a 60 day contest.



"Solid-state image pickup device in-layer lens with antireflection film..." (Diagram from U. S. Patent 6,614,479, T. Fukusho, A. Asai, Sony Corp., 2003.) This diagram shows a microlens (18) integrated onto the top of a sensor pixel.

"In providing for a dominance of luminance sampling, recognition is taken of the human visual system's relatively greater ability to discern luminance detail. By arranging the luminance elements of the color image sensing array to occur at every other array position, a dominance of luminance elements is achieved in a pattern which has the special advantage of uniformity in two orthogonal directions (e.g., horizontal and vertical)."

—U. S. Patent 3,971,065, B. Bayer, Eastman Kodak, 1975.

N.B.: green is used for luminance, while red and blue are for chrominance