

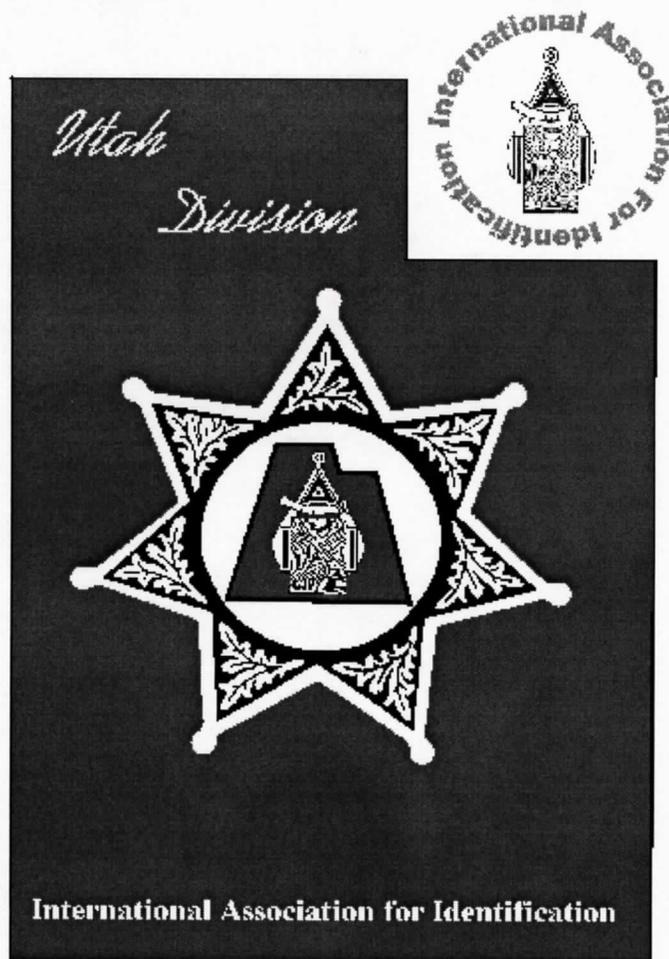
THE "PATENT PRINT"

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President's Message

You can ask anyone who has worked with me about my demeanor. I am probably one of the most "laid back" people you will ever know. I let nothing get me down, no matter how grave the situation may be.

My year as your President is coming quickly to a close. On October 14, 2004, I will turn over the reins to Mr. Paul Rimmasch. I know he will do his best to keep your – our professional organization on the right track to make it one of the best Divisions in the world.

To regress somewhat on my past. I spent 30 years of my life involved with the Army. When on active duty, all of my educational needs were met and paid for by the Army, while I still enjoyed receiving a paycheck. Having spent time in the private sector also, many of the educational opportunities were created by me at my own expense. That is a burden we take on when we want to improve our professionalism in the career field we chose. Not every organization has the funding to support your aspirations at being the "best you can be!" I personally know one individual who spent over a thousand dollars of her own money just to get the professional training she needed to obtain certification in her forensic field. Now, that is dedication beyond any reason. How many of you can honestly say that you have reached that far into your pockets to pay for what you really need to improve yourself in your profession? Karen Kido, I applaud you and encourage you not to stop there, but realign your professional goals and keep climbing – all the way to the top.

Now to get back to my opening paragraph. I am excited on the progress we have made in our membership and by the enthusiasm shared by the planning committee for the Fall Educational Conference. Heck, if I were any more excited, people would think I was awake!!! But, here is

my "dark side." I am very disappointed. Why? Because, as I read through the IAI membership directory, I find that we have very few members of the Utah Division listed as members of our parent organization. What excuse do you have? Surely you could have diverted \$60.00 of your earnings toward such a worthy organization, just to say in court you are a member of the professional organization. Is your excuse that your department won't pay for it? I do not know of any doctor or lawyer whose work place pays for their membership in the AMA or the ABA. Whatever your personal excuse is, it is pure "hogwash. The Division benefits from your membership and, in turn, those benefits can be passed on to you in the way of more extensive educational conferences and Division sponsored training for your educational needs, at a lower cost to you. It also gives you one more Professional Organization to list on your curriculum vitae, which will, if nothing else, give the perception that you are a professional. Remember, with the increase in Daubert challenges throughout the United States, you will need as much as you can muster in the way of professionalism to be accepted as an "expert witness" in court. And now my fellow Forensic Scientists, I shall step down from my "soap box."

Gary Johansen

89th International Educational Conference

**St. Louis, Missouri
August 22-27, 2004**

Commemorating 100 Years
of Fingerprint Identification
in the United States

Make plans to attend. See you there.

Photography: Science, Art, and Science Fiction

by Scott Scriven
SLCPD Crime Lab

It seems that with the advent of digital photography more and more people are getting interested in photography. The objective of this article is to give some background into photography and a few guidelines for gaining experience and insight in the field through knowledge and experimentation.

Recently I responded to a traffic accident where a vehicle entered into an apartment building causing a significant amount of damage and the evacuation of the building above the vehicle. The really interesting part to me was I counted at least six different digital cameras in the crowd of on lookers. That is a significant change in even just the four plus years I've been working for Salt Lake City, in the fact that even just four years ago there weren't that many film cameras at a similar scene.

So why the change? Well, that could open us up to a whole other discussion of world and science history, as well as a specific look at the history of photography, but that would take too long. Partly I believe it is a part of our nature as humans to want to record our way of life and society to give to future generations. So how does this apply to Forensics/Criminal Justice? Since we are involved in recording and preserving crime scenes, suspects, and evidence through photography, we need to understand how it works, its origins, and where we can take that knowledge and use it to our advantage.

SCIENCE: Photography has been a work in progress for several centuries. It has its roots in cave drawings, hieroglyphs, paintings and drawings, etc. Ancient Greeks used a pinhole type design to allow light into a room and would then trace the scene outside onto walls, canvas, etc. They had an understanding of light and its principles even then. Later others developed techniques for recording those same types of images on different chemical surfaces like Calotype, and Dagerreotype processes. Both were attempts at quicker and more permanent results. Photography has now evolved into silver halide, or film, and digital mediums, and will probably still continue to evolve.

At a photography class I attended at the FBI Academy the instructor, Mike Brooks, divided the requirements needed in photography for making images into four main elements; a camera, light, film or media, and knowledge. The last element is one that I feel gets overlooked and underappreciated by most photographers, both amateur and professional alike. We will cover it in greater detail later.

ART: It has been my experience that some "artistic" photographers learn of the science aspect of photography, so far as it applies to them, and then cast aside the rest of the science. The same applies to some "scientific" photographers, in that they become static in their treatment of their photographs. The two really should be complementary. Art photography deals with subjects like composition, perspective or point of view, and the conveyance of a message or idea. We as scene and evidence photographers should also be aware of what is in our picture, what message

it could convey, what the point of view of the suspects, and victims are, and what is the best perspective to use to record items of evidence and the scene.

SCIENCE FICTION: There are misconceptions in the world as to what can and can't be done with "traditional" photography vs. digital photography. Some will put traditional photography over digital and vice versa, as being the best form of photography to use. Arguments are frequent over the strengths and weaknesses of both. One fiction is that photo editing software like Photoshop is a cure all for bad photography and bad photographs. If the film or digital media didn't "record" the image, then it can't be saved. Or if the image is out of focus, it generally can't be refocused. Editing software can give us a greater range of tools to work with and enhance our images with less time and expense, but it can't make up for a lost opportunity or lost image.

A second fiction is that because digital photos are easy to manipulate they are unreliable as evidence. Granted images can easily be manipulated, but through safeguards, and standard procedures, digital images can be treated like any other piece of evidence and stored/saved in a way that shows they have not been altered.

Another fiction is that setting a camera in Program mode, letting the camera's light meter or algorithms (digital) select the exposure for a scene or photograph, will always yield the best results. How many of us have received our pictures back and found them to be out of focus, blasted out by the flash, blurred by camera motion, or over and under exposed?

The subject of science fiction brings us back to the fourth element of photography, that being knowledge. Many people who know me know I'm a big Star Wars fan, so I will quote from Star Wars to illustrate my point.

While on the Millennium Falcon and learning the ways of the Force from Obi-Wan Kenobi, Luke Skywalker complains about having a helmet on his head with a blast shield over his eyes, and obstructing his view. When asked how he was supposed to fight, Obi-Wan's answer is... "Your eyes can deceive you, don't trust them." We as photographers can sometimes get into a rut of trusting our cameras and light meters to give us the information we need to take a photograph. I have found that by knowing what requirements are necessary for taking an acceptable image most problems can have a reasonable possibility of being overcome.

Properly exposed photos are affected by shutter speed, film sensitivity, aperture, and light source. Shutter speeds are expressed in fractions of seconds, or in full second values i.e. 1/250 of a second or 2 seconds etc. They work in a mathematical way comparable to the numeric value for their speed. 1/60th of a second allows twice as much light to expose the image as does 1/125th and 1/250th is half as much as 1/125th and so on in either direction.

Film sensitivity is expressed in numeric "film speeds" i.e. 100, 200, 400, etc. The amount or intensity of light needed to expose the film is decreased by half as the number gets larger, and increased by half when it gets smaller. 200 speed film needs half as much light to be properly exposed as compared to 100 speed.

Aperture values work similarly, but in what can be at times a confusing way. Aperture values are also fractions, but they are based on the focal length of the lens and the opening of the iris or aperture in the lens. The confusing part is that the lower the numeric value is, the greater the amount of light there is reaching the film or sensor. Thus a value of 2.8 allows more light in than does a value of 5.6. The difference between these two values is comparable to the difference between 100 and 200 speed film in that 2.8 allows twice as much light in as 5.6, and 5.6 allows in half as much as 2.8.

The following guidelines are subject to the above parameters, but I have found repeatable success in using them. Most of the pictures I take are at night, or indoors. I have my digital (and film) camera set to Manual mode, and at an ISO/ASA film speed of 200. I then set my shutter speed to $1/60^{\text{th}}$ of a second, and leave it there. The reason being is that between $1/60^{\text{th}}$ of a second and $1/125^{\text{th}}$ of a second is the proven minimum shutter speed needed to stop motion. Depending on how steady my hand is, I now have a scientifically proven, repeatable process of eliminating the problem of camera motion.

Now all I have to do is evaluate what my needs are for the scene, or evidence. Intersections and locations, etc. (at night) will require the maximum amount of light possible to record the scene. I then set my flash to its maximum output (greatest amount of light over the greatest area possible), my f/stop or aperture to its maximum thus allowing in the most amount of light possible, and take the picture. When indoors or taking general views of items, I adjust the flash for the distance between the camera and the subject, and the aperture for depth of field.

For evidence I need a close-up view with maximum detail, so I keep the same shutter speed to avoid camera motion, adjust the flash to low intensity, and the aperture to maximum depth of field or least amount of light. This will dilute the flash point from the flash, as well as give a buffer on the focus range by giving the greatest possibility of the object in the frame being in focus (depth of field). In everyone of these situations my light meter and camera tell me that the photograph will be underexposed and in its opinion, no good.

I admit these guidelines are over simplified due to the limited nature of this article, and several other factors and considerations can affect taking photos as well. So be aware these aren't all the tricks and procedures that can be used to insure a good photograph, and will not always assure a good image, but they are a good place to start. You may have to take more than one picture, changing either flash intensity or aperture and shutter values, to get the image you need. So If you have access to a camera, whether it be digital or not, try setting up a few experiments using these guidelines and see what results you get.

The Salt Lake County Sheriff's Office Crime Lab Unit Proudly Presents:

BASIC FORENSIC RIDGEOLOGY COURSE

"An Introduction to the Holistic Approach to Friction Ridge Identification"

Instructor: David Ashbaugh (Internationally recognized author of Quantitative-Qualitative Friction Ridge Analysis)

Date: November 15-19, 2004

Cost: \$350.00

Location: SL County Sheriff's Office located at 3365 S 900 W, SLC, UT.

Please contact Deborah Parkin at (801) 743-5800 for additional information or to register.

UTAH Division IAI Spring Conference Recap

On April 22, 2004, the Utah Division of the International Association for Identification held its annual Spring Educational Conference at the Layton City Police Department. The program was entitled "Training to Certification" and included instruction by Certified Utah Division members in five forensic disciplines.

The first instructor was Kevin Patrick from the Utah State Crime Laboratory. He spoke about the recent recommendations of the various I.A.I. Certification Board at a conference that earlier this year. The conference was charged with discussions about bringing the certification programs into alignment with each other and makes them more standardized in their requirements. Kevin Patrick also discussed the certification programs for Footwear and Blood Spatter Analysis. He outlined the requirements for certification and provided insight on the tests and testing procedures.

Karen Elliot from the Utah State Crime Laboratory provided certification instruction in the area of Latent Print certification. She provided each attendee with a sample written examination and practical latent fingerprint identification exercise.

The afternoon session was headed off with a lecture from George Throckmorton from the Salt Lake City Police Crime Lab. He discussed not only the requirements of certification in Questioned Documents examination, but also informed the group about the various certifying agencies, their membership requirements, and approximate membership size.

The last class of the day was taught by a team consisting of Jeff Itami, a retired Sheriff's Deputy and Crime Scene Technician from the Salt Lake County Sheriff's Office, and Russ Dean from the Weber County Metro Crime Lab. They instructed the group on the ins and outs of Crime Scene certification, outlining all three levels of certification and the extensive list of reading materials required before taking the test.

In all, approximately 38 members of the Utah Division I.A.I attended the all day session, including students from Weber State University and members from across the State.

President, Gary Johansen, concluded the training session with a brief general membership meeting in which he outlined the upcoming three day Fall Educational Conference.



JUST FOR FUN

Inspired by an episode of the hit TV series "CSI" where the glamorous scientists trapped bullets in blocks of Knox gelatin, Mitch Pilkington, Jason Romney, and Paul Rimmasch of the Weber Metro CSI set out to answer the age old question: How many Caromel Ho-Hos does a BB penetrate?

Question: Can you determine the distance at which a BB was shot into a stack of Caromel Ho-Hos by how many Ho-Hos are penetrated?

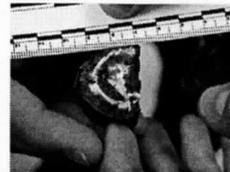
Inspiration: On an episode of TV's "CSI" a woman was shot in the chest and the bullet penetration was determined. In order to determine the distance from which the woman was shot, the "CSI" people set up an experiment. In the middle of the lab they shot a 9mm into blocks of gelatin at different distances. The gelatin blocks "trapped" the bullets at different depths and our heroes were able to determine where the shooter was and solve the case in under an hour.

Materials: Gun---Marksman M-1010C air pistol retail price \$16.88 at Wal-mart.
Projectile---.177 cal BB retail price \$.97 for around 100 BBs at Wal-mart
Medium---Hostess brand Caromel Ho-Hos retail price \$2.50 for a box of ten at Wal-mart. For a serving of two, you have 250 calories, 11 fat grams, 200 mg of cholesterol, and 35 grams of carbs for the Atkins folks.

Velocity: The M-1010C shoots a .177 cal BB at 200 fps.

Method: The Ho-Hos were stacked on their ends ten deep in a wooded tray specially designed and built for this experiment using wood discarded from Mrs. Rimmasch's basement remolding project. The BB was then fired into the stack at known distances.

Results:Contact: 3/4 inch penetration into the first Ho-Ho
from 1 inch: 3/4 inch penetration into the first Ho-Ho
from 2 inches: 1/2 inch penetration into the first Ho-Ho
from 3 inches: 1/2 inch penetration into the first Ho-Ho
from 4 inches: 1/4 inch penetration into the first Ho-Ho
from 8 inches: 1/8 inch penetration into the first Ho-Ho.



Conclusion: There was a slight reduction in the penetration as the distance was increased. The BBs never penetrated into the second Ho-Ho however.

Secondary Conclusion: If someone is shooting at you with an M-1010C BB Pistol, you would be safe hiding behind a stack of Caromel Ho-Hos.

Tertiary Conclusion: We now feel like TV "CSI" people and we hope this helps us more meet the public's expectations of us.

Special thanks to the Harrisville Wal-mart for providing low prices everyday and to Weber-Metro CSI supervisor Russ Dean for.....well.....not firing us.

The Bulletin Board

Please check your Division web-site www.utahiai.org

Utah Division IAI Fall Education & Training Conference

October 12-14, 2004

Red Lion Hotel

161 West 600 South

Salt Lake City, Utah

Contact: Gary Johansen 799-3133

Forensic Ridgeology Course

Instructor: David Ashbaugh

Presented by the Salt Lake County Sheriff's Office

November 15-19, 2004

Cost: \$350.00

Contact Deborah Parkin @743-5800 for registration details.

Utah Crime Scene Investigators Meeting

Held monthly at various sites

Fee - - - No Charge Time - - - 1000 to 1200

Check dates, sites, and topics on-line at www.utahcrimesceneinvestigators.com