Crime Scene

Winter 2000 Volume 26, Issue 1

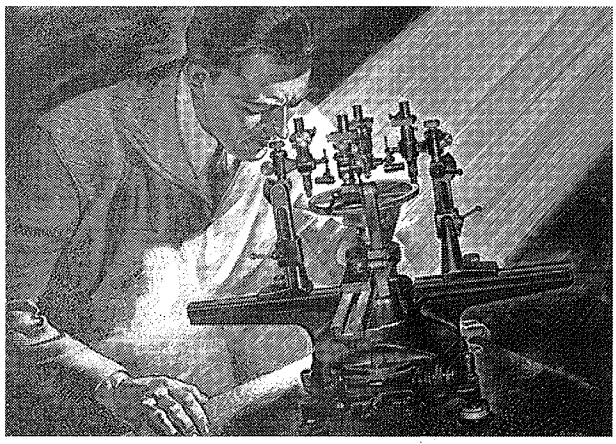
INSIDE

President's Message--Winter 2000

Looks like we made it through Y2K without too many problems and can look forward to a new century and millennium with great expectations. When I started as a water pollution chemist working heavy metal pollution with acid mine drainage in Colorado I could do (via wet chemistry) 6 to 8 lead samples a day. The results were reported in a percentage on either a volume or dry weight basis. Then Perkin Elmer came out with the Atomic absorption spectrophotometer (model 290) and I could do over 100 a day with detection capabilities in the low ppms. This was in a period when a true quantitative chemist would tell you if it could be done electronically there was a better way. Today instrumentation does multiple elements per sample with low ppb detection.

When I started in wildlife forensics I was happy to identify blood and meat samples to the species level and could only hope to see the day when we could do gender determinations. Today this is all available and samples can now be identified to the individual level.

As forensic science advances so does the subject of certification of laboratories and their personnel arises. If this was an easy question it would have been answered by now. It is fairly easy to argue both sides of this question and it will be interesting to see how the various agencies end up handling the issue. I personally prefer to see these issues handled within each agency.



I look forward to seeing you all May 15 thru 19, 2000, at the Sacramento meeting--"A NEW CENTURY...A NEW TYPE OF MEETING". They have an excellent variety of workshops that should be of interest and value to all of us.

William (Bill) Adrian

Editor's Message

Standing Corrected

My Uncle Roy used to have a warning posted on the fence of the swimming pool in his back yard that read "*We don't swim in your toilet, so don't you pee in our pool!*"

In the last editor's message I incorrectly identified ppm as a drop of substance in a swimming pool and many of you quickly corrected me. Robert Jones from OSP Portland summed it up best by offering:

"50 uL x 10^6 = 50 million microliters = 50 thousand milliliters, = 50 liters = 13 gallons...so your swimming pool should be about the size of a small aquarium maybe..."

Mr. Jones continued: "Now a part per billion...the analogy is reasonable:

50,000 L = (368 cm)^3 which would be a pool about 20 ft long by 12 feet wide by 6 feet deep, give or take a foot somewhere."

Short of swimming in the toilet--I stand corrected!

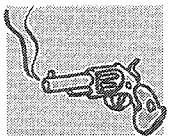
Thanks also to M. Strongman and J. Hutchison, who were equally astute.

On to other things-- I must assert my appreciation for all of the contributions I have received for this issue. It makes for a much better newsletter, and increases the value and professionalism of or organization. I'd like to offer special thanks to Larry Barksdale from the Lincoln Nebraska Police Department who, despite not being a member of our organization, has contributed his research paper on bloodstain pattern interpretation.

To all who contribute--
Thanks

-Matthew Noedel, ed.

mnoedel@wsp.wa.gov



THE WAY IT WAS

Gary Knowles--OSP Crime Lab

As I begin riding off into the ***SUNSET (Geez I hate that word when... it applies to ME!)***, I reflect on the last 27 years with OSP. I know, I know, I said last time I wasn't going to give a history of forensics. As I was going through my stuff, I came across a sheet of paper that I just had to share with y'all.

After working as a Trooper for three years I was transferred to the Portland Lab in April 1976. Got tired of picking up drunks. Although I did pick up my share of drunk drivers, I didn't like being around drunks when I wasn't drunk, too... and they wouldn't let me do that. Although, I've heard of it being done. Anyway, I was told the past Lab Director would testify on the uniqueness of hair comparisons using the following logic:

Shape of the Hair –3 possibilities
(Round, oval, flattened) 1/3
Curl -3 possibilities
(Straight, wavy, curly) 1/3
Color -6 colors –
(50% population w/ brown hair) 1/2
I'm guessing blonde, brown, black, red and gray (clear). What's the 6th?
Shade of Brown -12 shades.
(O-o-o-o-kay.) 1/12
Medulla -3 possibilities
(Medullated, unmedullated, semi-medullated) 1/3
Sub-Class Medulla - 3 possibilities
(Spotty, fragmented, full medulla) 1/3
Medulla Width - 3 possibilities
(Narrow, medium, wide) 1/3
Pigment Distribution -
-Cross Section
(Uniform, peripheral, central, medullary) 1/4
- Longitudinal
(Uniform, banded, clumped, scattered) 1/4
Scales -3 possibilities
(Flattened, crenate, ovate) 1/3
Sub-Scale -3 possibilities
(Oval, rectangular, irregular) 1/3

Probability... 1 / 839,808

PLUS Cut Hair -Assume the average man has a haircut estimated every two weeks *(This is in the 1960's folks!).*

We can tell if there was a haircut within one week.
1/2

THEREFORE:

PROBABILITY OF A HAIR COMING FROM A PARTICULAR INDIVIDUAL

1 / 1,679,616

Eat your hear out Gaudette! In the July 1974 JFS, B. D. Gaudette published An Attempt at Determining Probabilities in Human Scalp Hair Comparison. He identified 96 characteristics in hair that can be compared. By his calculations he came up with a probability of 1 in 4500.

As Lilly Tomlin's character Edith Ann says, "And that's the Truth k".

DNA? We don't need no stinkin DNA.

MICROSCOPY RULES!

A lot of things were different then. Jon Spilker provided a reminiscent journey through the valley of forensics of days gone by (Thank God!) at the spring 1998 meeting in Portland. One of those "Remember when?" topics. Remember when... we quantitated Blood Alcohol's by actually weighing the peaks cutout from the chart paper to ratio against the weight of the peaks of the internal standard? Later on we ratioed the peak heights measured with a ruler. Thanks, Jon. **NOTE:** You all may recall that Jon blew up a chicken to demonstrate what fireworks could do to a human hand.

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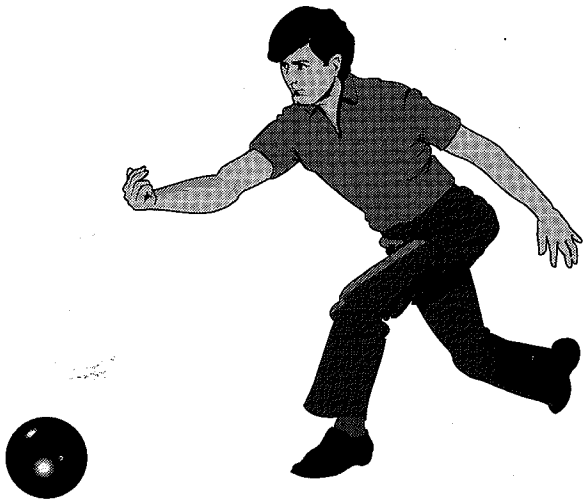
Apparently it was hard to get volunteers.

We used to eat in the lab and even smoke. I smoked for a short time in the lab (Road cop. What can I say? Stupid, I know.), until Mike Howard kept squirting me with alcohol from a squeeze bottle saying, "I saw you smoking and I thought you were on fire, so I was putting you out!" B@$#@&d. A bout with bronchitis helped me quit, too.

We'd have test tube wars... INCOMING! Tinkle, tinkle, tinkle. Janitor's appreciated that. And then there was **BOWLING FOR DOPE.** Sergeant Rich Brooke had accepted 500 crusty old round bottom flasks from a seized DEA clandestine lab. He thought they would be useful if we cleaned them up. When Rich was away, another unnamed Criminalist and I would stand them upside-down on the lab floor, ten at a time, and slide a 500 gram triple-beam balance weight into them like shuffle board. Again tinkle, tinkle, tinkle. Viola! No bottle washing! The other Criminalist? Let's just say we all didn't realize, till later, he was bowling for dope for real. Gave a new meaning to the term "Consumed in analysis."

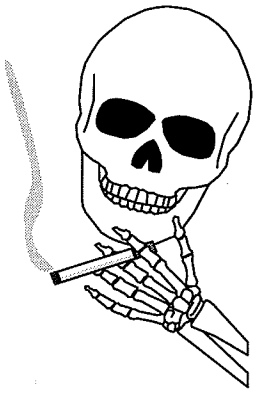


Oh yeah. Used to wash test tubes and microscope slides during budget crunches. What did that cost in time? Our time wasn't money.

Did mouth pipetting for blood alcohol testing... got in your mouth... spit it out. Thank goodness there were no biohazards then. Didn't need gloves or mask, either.

The Perkin-Elmer 3920, with the horizontal heater, was perfect for heating lunch or melting the cheese on your sandwiches. Only took a few minutes at 290 C. And you could keep working!

Used to process clan labs without protective gear. You'd go to work the next day, be sick for a few days, but that was all part of the job. Maybe that's how I got all this clear hair.



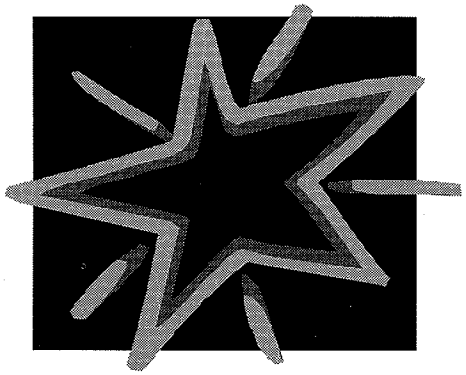
Well, as Walter Cronkite used to say ... "and that's the way it is". (Walter who?) We have... matured. Those things were wrong, so very very wrong. DON'T TRY THIS AT HOME, KIDDIES! We're smarter now and thank goodness we have rules.

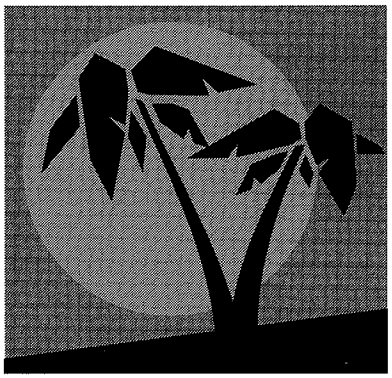
Sheesh, I'm lucky to have survived!

Gary Knowles
Test Tube Cop

Thanks Gary--We're all thankful that you survived also!!

-- *editor!*





ALOHA

Join us for

NWAFS Spring 2000

Sacramento, CA

May 15-19, 2000

Enjoy the warm sunny weather of California for the Spring 2000 Northwest Association of Forensic Scientists meeting, May 15th-19th. This meeting is sure to be one not to miss. We will be having plenty of workshops available for both the entry level employee to the lab director. A fine social event calendar is also being prepared for this meeting, including an outdoor luau for the banquet. Please bring your best Polynesian attire for this one....as we will be having awards for "best Hawaiian shirt", "most obnoxious shirt" etc.

Workshops currently planned:

- Back to Basics (4 hour courses designed for the entry level employee or anyone interested in the area)
  - Forensic alcohol
  - Serology
  - Toxicology
  - Drug chemistry
- Basic Pharmacology
- Computer Crime Scene Investigation
- Clandestine Laboratory Analysis (limited in size)
- Leadership for Management
- Effective Courtroom Presentations
- Wildlife workshops
- Beginning Crime Scene Investigation
- AND plenty more on the way!

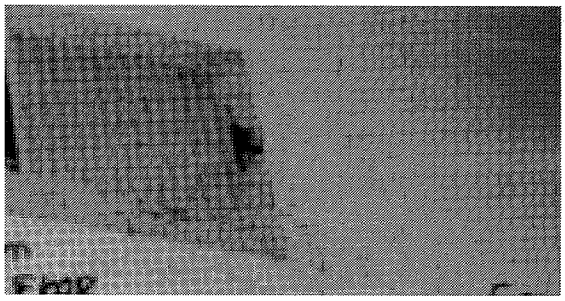
Agencies involved: Sacramento County Laboratory of Forensic Services
California Department of Fish and Wildlife
California Criminalistics Institute

Contact: Lisa Caughlin 916-874-9240 e-mail: lctox@aol.com

Wherefrom Came Those Spots?

Det. Sgt. Larry Barksdale, Lincoln (NE) PD

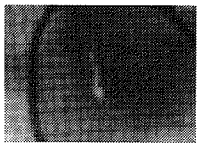
Investigators experienced with scenes involving decomposed bodies are familiar with the value of nature's busy clean-up crews. The most known of these crews (the flies, maggots, and pupae) can provide valuable information pertaining to the time of death. That information could prove crucial to the reconstruction and interpretation of a criminal event. On another page, flies might leave information that could produce confusion within the scene. The following photo illustrates a portion of a scene with numerous geometric patterns like small dots (1). The geometric patterns are not unlike those associated with medium to high velocity blood spatter. In fact, the stains are those produced from the action of flies.



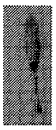
If the scene was one in which a human victim was murdered and sustained gunshot wounds and the body was found near the above-depicted stains, one would have a task at hand to explain the stains.

In scenes involving decomposed bodies, the investigator is challenged to discriminate between fly produced bloodstains (fly artifacts) and human blood spatter produced bloodstains (hereinafter called cast off patterns). Presumptive blood tests like Hemastix and Luminol do not differentiate between the stains (2). This leaves recognition of stain patterns and other physical information as the relevant criteria.
The following text illustrates stains produced by the activity of flies, and suggests methodology for evaluating stains in a decomposed body scene.

Fly artifacts can be left at a scene in the small round shapes as illustrated in the above photo. Additionally, fly artifacts can be in the "tear drop" shape commonly associated with cast off blood. Notice that the following photo is nearly indistinguishable from that of a human blood cast off pattern (3). If it were counted as a human bloodstain it would indicate downward directionality, at an impact angle of approximately less than thirty degrees. The stain, in fact, was produced by fly activity, as was the following stain (4). It is readily apparent that the two stains, although in the teardrop configuration, are different geometric structures. The stain's tail, right photo, points in an upward direction (towards the ceiling). It also has an irregular, uneven, form, and has a tail that is much longer than the body. Initial research by Barksdale and Sundermeier suggests that fly artifact teardrop stains could be identified by a ratio derived from the length of the tail divided by the length of the body. If this ratio was greater than one, there was a high probability that the stain was a fly artifact (5). Dr. Mark Benecke has done additional research and shown that this conclusion does not hold true (6). Of all stains with a distinguishable tail and body about half have ratio's less than one, and about half have ratio's grater than one (7).



Research with liquids dropped or cast off, exclusive of fly artifacts, suggest that a high percentage of resulting stains exhibit a stain with a tail/body length ratio less than one (8). Blood, food coloring, and water from a vehicle tire typically leave a geometric stain pattern similar to the known human bloodstain shown to the right



Additional characteristics to take into account in identifying fly artifacts relate to the general structure of the stain. The following photographs show three

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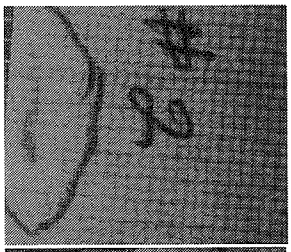
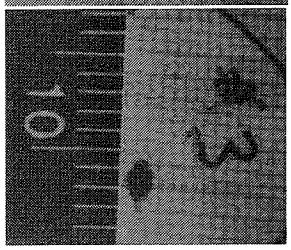
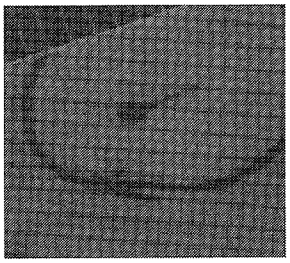
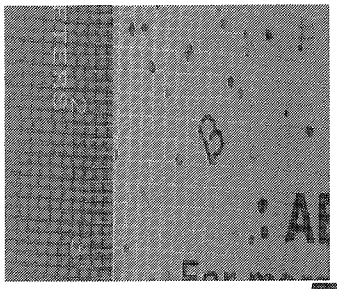


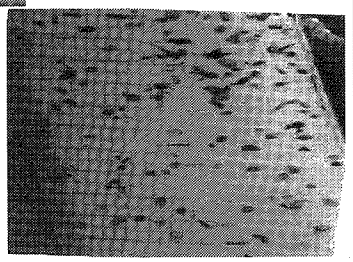


different fly artifacts (9). The pattern at top left is wavy without a distinct head or tail. The center stain is like that of a tadpole, and the third pattern is similar to a sperm cell. It is clear that these fly artifacts are different from the human bloodstain in the previous picture.

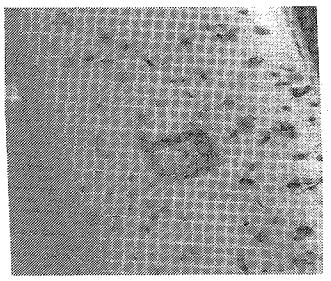


The differentiation of fly artifacts of a round or spot structure does not appear to offer any distinguishing characteristics. As the following pictures illustrate, there does not appear to be any cratering or irregularities associated with round, fly artifacts that are not associated too with human bloodstain patterns (10). One can also notice the mix of various shapes to include straight line patterns, intersecting patterns, and tear drop type patterns. There does not appear to

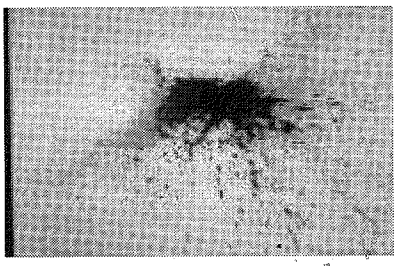




be any uniform distribution, density, or direction associated with the fly artifacts. A comparison with the following known high velocity blood



spatter photo accentuates this lack of cohesiveness of the overall area of the stains (11). Observe how the known human bloodstain pattern shows the misting,



directionality, centrality, and overall compliance with laws of physics of high velocity blood projection. Although not depicted, the conformity and predictable patterns of low and medium velocity stains remain within parameters of expected relationships.

The mechanics of production of fly artifacts are not determinable to the crime scene reconstructionist. A stain may be due to liquid dropped from the body of a fly. Hence, the mechanics and stain are not different from that of a human blood cast off stain. Fly artifacts may come from regurgitation or defecation from a fly. They may come from impressions left by body parts of a fly. What the crime scene reconstructionist can do is carefully evaluate all stains and include only those which can be justified as produced by mechanics of human behavior.

The following suggestions and techniques are offered for use in differentiating between fly artifacts and human bloodstain patterns:

1. Document fly activity at a scene. Flies will be at a scene if access to the scene is available to them. They will stay at the scene as long as a food source is available to them. If evidence of flies is present at the scene, assume that fly artifacts will be at the scene.

2. Document the range of stains. Fly activity will often concentrate near light sources, on light colored walls, windows, and mirrors. They will often be present in rooms away from the body. Compare stains away from the body with stains near the body.

3. Compare stains with known fly artifact patterns from archives, references, and experienced investigators.

4. Identify suspected human bloodstain patterns that are of the "spot" or "tear" drop pattern that offer a potential for use in reconstruction, and eliminate the following:

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a. Any stains that have a tail/body (Ltl/Lb) ratio greater than one.
b. Any stains with a tadpole type structure.
c. Any stains with a sperm cell type structure
d. Any stains without a distinguishable tail and body.
e. Any stains with a wavy and irregular linear structure.
f. Any stains that do not participate in directionality consistent with other stains that suggest a point of convergence at a point of origin. Fly artifacts, within a group, will point in all directions. Cast off human blood will produce stains, within a group, that indicates a common general convergence point.

5. Note the absence of known human bloodstain pattern characteristics. The absence of misting around a concentrated mass would suggest the stains might not be from human cast off blood origin. Within a group, human cast off patterns often leave secondary wave cast off patterns, and run off patterns.

The crime scene reconstructionist can make an informed decision at a scene. Perhaps the best point to start is to consider the preponderance of the evidence. One or two stains, that is, do not make a case. Suspect stains should be eliminated, and an evaluation based upon stains that can be explained in terms of origin and relevance to the reconstruction. If one cannot conclusively explain "wherefrom they came", one best refrain from playing the court jester.

References

(1) Lincoln, Nebraska Police Department. Case files, #97-063436. The photo is from a double homicide in which both victims received gunshot wounds to the head and torso. Both victims were lying below the wall depicted in the photo.

(2) Larry Barksdale and Jon Sundermeier. "Bloodstain patterns or Fly Artifacts: The "X" Factor." News and Clues. Nebraska I.A.I., March 1999.

(3) Lincoln, Nebraska Police Department. Case files, #97-063436. The stain was located among identifiable fly artifacts. It was not in area with similar stains. Hence, it can only be counted as a fly artifact.

(4) Ibid. The stain was on a window in a room not near the victims.

(5) Idem. "Bloodstain Patterns or Fly Artifacts..." The formula used for the determination of the ratio was X = Ltl/Lbd. Ltl is the length of the tail of the stain. Lbd is the length of the body of the stain. X is the ratio from the division of the "length of the tail" by the "length of the body". Although the ratio does not conclusively identify a stain as a fly artifact, it provides a tool to eliminate suspect stains.

(6) Dr. Mark Benecke and Larry Barksdale. "Distinction of bloodstain spatter from fly artifacts." Forensic Science International. In preparation, 1999. Dr. Benecke is a Forensic Biologist at the University of Cologne. He has done in depth research on fly artifacts. He can be reached at Dipl.-Biol. Dr. Mark Benecke
Institut fur ZoologieUniversitat zu Koln
50923 Koln Germany

(7) Larry Barksdale. Unpublished research. Cast off blood from a knife assault produced twelve "tear drop" stains. The stains were such that convergence calculations were at a point identified by a witness as the location of the assault. Of the twelve stains, eleven had a tail/body ration less than one. Information is from Lincoln, Nebraska Police Department, case file, 99-022190. Stains from street slush were noticed on a homicide suspect vehicle. Ten stains were identified of a "tear drop" structure. All ten stains had a body/tail ratio less than one. Lincoln, Nebraska Police Department, case file, 99-080414.

(8) Idem. Bloodstain Patterns or Fly Artifacts..."

(9) Lincoln, Nebraska Police Department. Case files, 99-080414. The photo's are from a death investigation in which the deceased had been dead for over thirty days. He was in an enclosed trailer, no air conditioning, in an ambient temperature environment of over ninety degrees. The only flies present were dead flies. The photo's are from personal papers of the deceased. The papers were located in the kitchen.

(10) Ibid. The deceased was located in the bedroom. The photo's are of the window shades in the bedroom.

(11) Larry Barksdale. Unpublished research. The photo is the stain produced by shooting a human blood soaked sponge with a .22 cal, rifle.

The Evaluation of ABAcard ® p30 Test for the Identification of Semen

Theresa F. Spear and Neda Khoskebari
California Criminalistics Institute, 4949 Broadway, A-104, Sacramento, CA 95820

Introduction

The ABA card p30 test was evaluated as a tool to characterize suspected semen stains. Our study focussed on the specificity and sensitivity of this test. As described by the manufacturer, Abacus Diagnostics, the ABAcard p30 test is "designed to qualitatively detect prostate-specific antigen (p30) for the forensic identification of semen. PSA or p30 is an accepted marker for detecting semen in criminal cases including vasectomized or azoospermic individuals." The test has been characterized by the Manufacturer as: "Highly sensitive & specific to PSA. . . Validated for use in the forensic identification of semen."

The ABA card p30 test is simple to perform. The test is comprised of a plastic card with two "windows". One of these windows allows the sample (typically 200ul) to be applied to the test membrane and the other window permits the analyst to view the antigen-antibody reactions. The sample can be extracted in distilled water or a variety of buffer solutions (HEPES buffered saline or "buffers suitable for further DNA extractions"). The stain extract is centrifuged and allowed to come to room temperature before application to the card. The test requires 200ul of this stain extract to be added to the sample ("S") well of the test device. Thus, the minimal amount of buffer solution to extract the stain should be at least 200ul. After this solution is added to the sample well, it reacts with a mobile monoclonal PSA antibody (with an attached dye) forming an antibody-antigen complex. This PSA- PSA antibody complex then migrates across the test device membrane to the test area where an immobilized (polyclonal) antihuman PSA antibody captures the first antigen-PSA antibody (presumably formed in or near the "S" well). This reaction (an antibody-antigen-antibody sandwich) is visualized as a purple-colored band formed by a dye attached to the mobile antibody. Above the test area (marked "T" on the device) is a control area (marked "C" on the device) which captures unbound mobile antibody by the use of an immobilized anti-immunoglobulin antibody. The control band (which controls for proper sample migration) needs to be visible in order to interpret a test result. A positive test is a purple band in the control and test areas. A negative test result is a purple band in just the control area. An invalid test result is a result without a band in the control region.

Literature Review

In a paper entitled: "Evaluation of Prostate-Specific Antigen Membrane Tests for the Forensic Identification of Semen" (J. For. Sci. 44, 1057-1060, 1999), Hochmeister and his collaborators described the results of their evaluation of this product. The samples they used were semen stains stored at room temperature for up to 30 years, post-coital vaginal swabs, "male and female body fluids" and previously analyzed casework semen samples (spermic and aspermic). They did not obtain positive reactions from any body fluid samples obtained from women. Semen stains stored up to 30 years still produced a positive test for p30 with this test. They also determined that a semen sample which had been diluted 1:1,000,000 could elicit a positive result for p30. With the exception of a liquid urine sample from male volunteers (applied directly to the test device), the only positive reaction that they observed was from semen samples. They did obtain false negative reactions from very concentrated semen samples and attributed this to the "high dose effect". These samples tested positive when they were diluted 1:100 or 1:1000.

The Northern Illinois Police Crime Laboratory also undertook a validation of the ABA card p30 test. This study was entitled: "The Validation of the OneStep ABA Card PSA (p30) Test for the Forensic Identification of Semen" and was presented at the 9th International Symposium on Human Identification. They determined that a spermic semen sample diluted 1:1000 could produce a positive reaction and a 1:100,000 dilution of an aspermic semen sample could produce a positive reaction. They found that although the ABA card p30 test was more sensitive than a p30

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test by the crossover method, it was less sensitive (for a spermic sample) than a microscopic examination for sperm. They noted that their acid phosphatase (AP) results frequently correlated with the results they obtained with the ABA card p30 test.

Finally, an evaluation performed by the Texas Department of Public Safety, entitled: "Analysis of the ABA card OneStep PSA Test For Use in the Forensic Laboratory" details its findings on this test using diluted semen, body fluids other than semen, washed semen stains and semen stains extracted with a variety of buffers (from pH 4 to pH 10) and with glycerol. They were able to detect the presence of semen diluted more than 1:800,000 using the ABA card p30 Test. Vaginal swabs, blood and urine all produced negative reactions for p30. However, saliva samples produced an "invalid" test result on some occasions and a false-positive reaction on another occasion. A washed semen stain tested negative. A diluted (1:10,000) semen sample still produce a positive test result in a pH 4, pH 7 and pH 10 solution. Mixtures of saliva and semen appropriately produced positive reactions with the ABA card P30 test.

Experimental Findings

In the present study, we evaluated both the sensitivity and specificity of the ABA card p30 test using human semen samples, human bloods and human body fluids other than semen (urine, saliva and semen-free vaginal swabs). Most of the samples were prepared by saturating a cotton swab with the sample and allowing it to dry. The samples were stored frozen until they were extracted with 100 ul of deionized water, placed into a spin basket and centrifuged to recover a fairly concentrated body fluid stain extract. For most of the samples in this study, 10ul of this water extract was then added to 290ul of deionized water. The final step was to add 200 ul of this diluted sample to the test device. The test results were recorded at 2 minutes, 5 minutes and 10 minutes after sample addition. A control line was obtained with all of the tests run during this study and all of the test results were interpreted.

Sensitivity

Positive test results were obtained on a liquid semen sample diluted 1:10,000. At the 1:100,000 dilution, a negative test result was obtained. This indicates that the test is relatively sensitive.

Tom Keener at the DOJ - Chico laboratory determine that the SERI semen standard could be diluted 1:100,000 and still produce a strong positive result using the ABA card p30 test. When this sample was diluted 1:1,000,000 a relatively weak positive result was obtained.

Specificity

All unmixed, semen stains tested in this study produced positive reactions. Semen samples from 5 different subjects all showed a positive "T" and "C" band. A weak "T" band was noted with some of these concentrated samples. Dilution of one of these samples produced a stronger "T" band.

Post-coital swabs (all containing semen) showed mixed results. Positive test results were obtained on swabs with the following indicated post-coital intervals: 30 minutes, 2 hours and 24 hours. Negative test results were obtained on post-coital swabs (with semen) showing the following indicated post-coital intervals: 24 hours, 48 hours (2 swabs), 72 hours and 105 hours.

All 11 saliva samples (from 4 males and 6 females) tested produced negative results with this p30 test.

Bloodstains from six different people (1 female, 5 males) produced only the "C" band indicating a valid, negative test for p30.

Tom Keener at the DOJ-Chico laboratory determined that 3 plasma samples (from males) which had been diluted 1:100 and one, undiluted plasma sample produced negative results for p30 with the ABA card p30 test.

None of the 11 urine stains (from 4 males and 6 females) that were tested produced a positive reaction with the ABA card p30 test. This included one "post-ejaculatory" urine stain. However, when Tom Keener

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tested 4 liquid urine samples (2 males, 2 females), the two male samples produced a positive test reaction while the two female samples produced a negative test reaction.

None of the 6 semen-free, vaginal swabs (from 6 females) that were tested produced a positive reaction for p30.

Of the 6 blank samples (consisting only of deionized water) that were tested, one "blank" sample showed a weak positive test result. This sample was re-tested with another p30 test and a negative reaction was obtained. This could mean that there are card-to-card differences in the same lot. This false-positive phenomenon was seen again when deionized water extracts from 3 fabric "unstained" controls (newly purchased/washed fabric) were applied to p30 test cards and were found to elicit a very weak positive band at the "T" area. A new set of fabric "unstained" controls were prepared with deionized water and again produced a set of weak (false) positive reactions. When a portion of this fabric was sent to Tom Keener at DOJ-Chico for testing, negative results were obtained. **The need for running appropriate negative controls with this test is apparent.**

Discussion

The ABA card p30 test is easy to perform and requires a minimal amount of equipment (centrifuge, timer and pipettes). This test is also easy to interpret: a purple line at the control test area and at the test area is a positive result. A valid, negative result is a single purple line at the control area. The instructions that are included with the kit warn of a "High Dose Hook Effect" which may result in a false- negative result if the semen sample is too concentrated. As in any test relying upon an immunological reaction, if the antigen concentration in the sample is too concentrated, the antigen will saturate the antibody and prevent the "antibody-antigen-antibody" sandwich from forming. This will result in a false- negative reaction. We observed two concentrated semen samples that produced a weak positive result. When one of these samples was diluted, the positive result ("T" band) was stronger. If it appears likely that a stain may be a concentrated semen stain (e.g. produces a strong AP test), it would be a good idea to test the sample using the standard stain extraction protocol and a 1:100 dilution of this stain extract.

The only **body fluid (other than semen) which produced a positive test result** with the ABA card p30 test **was liquid urine samples** (applied directly to the test device) from males. None of the urine stains (including a "post-ejaculatory" urine stain) tested in this study produced a positive test result. Saliva stains, vaginal swabs, and bloodstains all produced negative results. Although none of the bloodstains tested in this study produced a positive test response, it could be anticipated that a blood sample from a male with prostate cancer could elicit a positive response with this test device.

Positive results were obtained on post-coital swabs (containing semen) with a post-coital interval of up to 24 hours. Although one swab with a 24-hour post-coital interval tested positive for p30 using this test, all of the swabs with post-coital intervals **more than** 24 hours were negative. **This would not be the test of choice to use to identify semen from a sample that was likely to reflect a long post-coital interval (more than 16 hours).** This finding is probably not surprising in light of information in the literature (An Evaluation of Gamma-Glutamyl Transpeptidase [GGT] and p30 Determinations for the Identification of Semen on Postcoital Vaginal Swabs, JFSCA, Vol. 30, No. 3, pp. 604-614) which indicates that p30 is not usually found on post-coital swabs taken 16 (or more) hours post-coitus. Spermatozoa are a more stable marker for the identification of semen (with sperm) from a swab with a post-coital interval of more than 16 hours.

The most problematic results obtained with the ABA card p30 test were the weak positive results obtained with one "blank" and several "unstained controls". These samples produced a relatively strong "C" band and a relatively weak "T" band. These "blank/unstained" samples were simultaneously tested with other body fluid tests with negative results. There

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was no indication of contamination of these samples with any human body fluids. Although pH, temperature and "viscosity" can impact test results, all of the samples tested were extracted in deionized water and run at room temperature. It is not known what caused these particular results. It is important that negative controls (blanks / "unstained" controls) be run at the time suspected semen stains are being tested for p30 with the ABA card p30 test.

Unfortunately the intensity of the bands can not be considered in test interpretation. The Manufacturer indicates that the intensity of the test band "T" and the control "C" band "should not be compared to each other for OneStep ABAcard p30 Test and no quantitative interpretation should be based upon differences in the intensity. The appearance of both lines merely proves the presence of p30." It appears that based upon these instructions, an analyst would need to call any test result showing both a "C" and "T" band positive for p30. However the Manufacturer of this test also states (in the product insert): "Even if the test result is positive, careful forensic judgement should be made in conjunction with other information available from other testing and diagnostic procedures." Due to reports of positive results from saliva samples (Texas DPS), possible reactions from concentrated male urine samples and weak false-positive reactions from sample that do not contain human body fluids, this test can not be considered a "stand-alone" test for the identification of human semen. The analyst must have other supporting information from chemical **or** immunological **or** microscopic tests to make a conclusive determination of the presence of semen.

The cost of each test device is approximately $4.00/ test. This test can be obtained from Abacus Diagnostics, 6520 Platt Ave. #220, West Hills, CA 91307 Phone (818) 716-4735.

Acknowledgement: The staffs of the BFS-Chico, BFS-Fresno Laboratory and the BFS-Riverside Laboratory supplied validation test results and many of the samples needed to perform this evaluation.

BITS OF TID

--compiled by Matt Noedel

Pet store owner Rodney Carrington told Miami customs officials that he had nothing to declare when he arrived from Barbados - but was shouted down by his pants. Carrington was arrested after officers became suspicious about what were described as "some ominous bulges ... in unusual places." Upon closer examination over 50 4-inch-long tortoises were found in his underwear.

Two unnamed 19 year olds recovered from being fed hash cookies in Melbourne Australia - while the baker has been convicted and given a two month suspended sentence. Alexander McLean served the apparently very yummy cookies to the American Mormons who'd accepted his offer to come in for a chat. After they left the two began to feel "most peculiar", with symptoms including distorted vision and hearing. Suspecting themselves to be victims of a gas leak, they both checked into hospital . . . where tests were positive for cannabis.

Jackson, Mississippi - Bachelor Trenton Wilgins has gone public with some startling news. He says that he has finally lost his virginity at the tender age of eighty-two! He waited this long because he wanted to save himself for marriage but couldn't wait any longer. Trenton said, "I didn't want to die without having sex just once." Readers might want to know what the octogenarian thought of his roll in the hay?

"The sex was okay, but it's not as good as a mess of barbecued ribs."

Product Review
Sample Bottles for Clandestine Laboratory Liquid Evidence

Aaron Brudenell, Senior Criminalist

I have recently been asked to assist the Idaho State Police (formerly the Idaho Department of Law Enforcement) to help select a container or system of containers with which to sample, store, and transport liquid samples from clandestine methamphetamine laboratories. The overall goal of this search is to obtain a uniform system for evidence packaging of a variety of mixed component samples that will be safe to transport and store while giving us adequate sample quantity and maximizing the space efficiency of the final package. At present, the samples from clandestine laboratories come in all sizes and types of containers and as a consequence, some containers are overly large to be easily handled and stored. On occasion, some containers are made from materials that do not adequately contain the materials and/or vapors. We requested a variety of sample containers from a vendor and are particularly pleased with one example they sent; this is what I will be describing here.

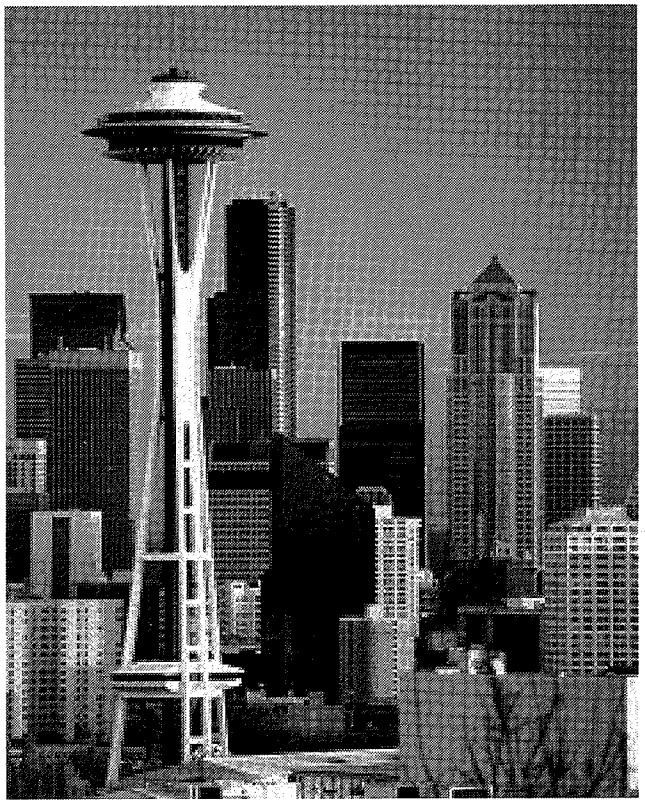
This particularly noteworthy sample container is the "Qorpak Bottle Beaker" with a "Teflon TFE fluorocarbon resin liner" in the lid. This container offers a number of features that are desirable and/or essential to the task. One of these key features is a clear heavy glass bottle with graduations that are very useful in identifying specific exhibits with respect to color, consistency, and quantity. The amount of sample becomes especially critical when assigning charges to suspects that depend on the quantity of material containing drugs or precursors. For example, Idaho drug trafficking offenses that carry mandatory sentences depend directly on the quantity of material seized and up to 450ml of material is often required in order to secure the maximal charge. The shape of the containers are totally cylindrical which makes it simple to use a similar outer container for double packaging–a glass inner container nested in a similar sealed plastic container gives the best combination of containment and resistance to chemical attack for reactive samples. The openings are wide mouth which makes addition and retrieval of samples easier, especially when their consistency is less than entirely fluid. The teflon liner is one of the better seals when it comes to resisting attack from a variety of samples and experiments in our lab showed no problems in this area.

Two samples of these bottles containing mixtures of toluene/6 molar hydrochloric acid and toluene/2 molar sodium hydroxide respectively (to simulate clandestine laboratory mixtures) were subjected to 48 hours of constant agitation on a rocker. These bottles and mixtures were then left partially inverted for a period of 2 weeks to test for long term leak potential. At no point did either of the bottles give any indication of leak or failure of any kind. Furthermore, the tamper evident tape seals applied to the containers did not loose any adhesive properties on any of the surfaces of the bottle lid or body. In conclusion, this particular bottle or another similarly constructed is an ideal container for liquid clandestine laboratory samples, especially where double packaging and specific quantities of material are significant issues. The disadvantages of these containers are probably limited to their additional cost (due to the teflon liner) and the fact that their glass construction could break if subjected to a substantial impact. We have had very good success, however, in using glass inner containers within outer polymer vessels to sample and transport liquid evidence from clandestine laboratories and breakage of the inner container is quite rare.

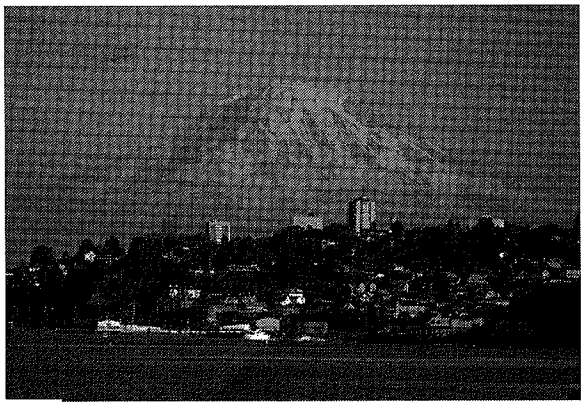
NWAFS Fall 2000 Meeting: Seattle, Wa. Oct. 9-13, 2000

PLAN EARLY TO ATTEND AND ***DON'T*** MISS THIS MEETING!!!!

SEE--the fabulous city of Seattle
STAY--Right Down town at the Seattle Hilton
RIDE-- the Seattle monorail to the Banquet--
At the Space Needle

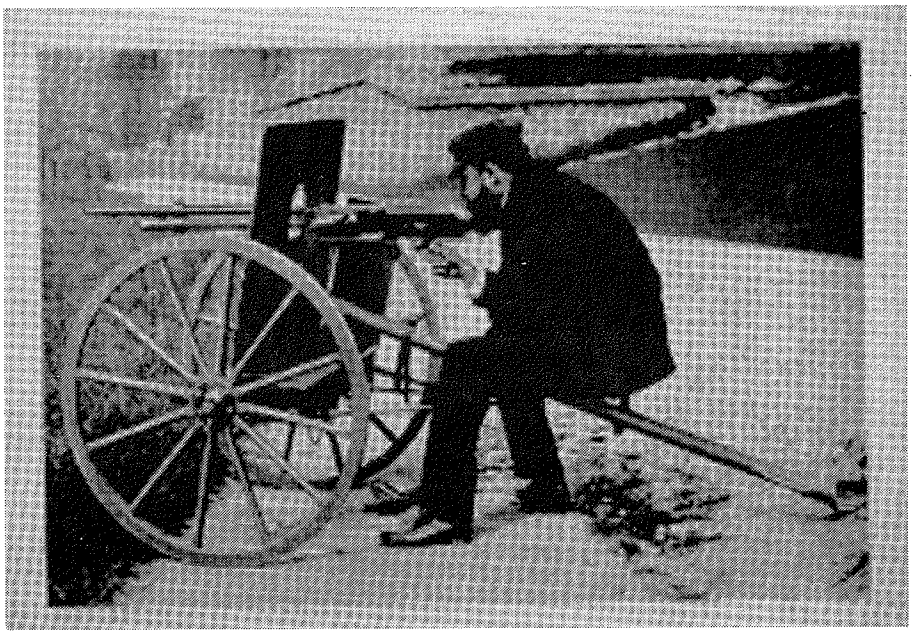


Attend hands on work-shops in all forensic areas!!



TAKE ADVANTAGE of the generous rates to arrive early or stay late and visit beautiful Seattle, Washington.

CAPTION THIS !



"Sure hope this works...it's the first time I've test fired a gun in Seattle with the bullet recovery tank in Tacoma!"

WE HAVE A WINNER!

Thanks **Jan Beck,** (who is currently wintering in California), for the winning caption.

Your Starbucks coffee is on its way!

About the Newsletter...

The Newsletter is the official publication of the Northwest Association of Forensic Scientists. It is published 4 times a year in the months of February, May, August, and November. The Newsletter welcomes submissions from its membership such as technical tips, case studies, literature compilations, workshop or training notifications, reference citations, commentary, historical accounts, and other topics of interest to the membership. While not currently required, please submit material for publication in Microsoft Word for Windows format as an e-mail attachment or on a 3.5" floppy disk. For more information regarding the Newsletter contact

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NORTHWEST NOTES

HOST A MEETING-- WIN A CAR

NWAFS is looking for host locations for upcoming meetings. As a meeting sponsor, you could arrange a door prize of an automobile, randomly draw your own number and..WIN A CAR!! Put your lab on the map and earn yourself honor, respect and maybe even that new car.

Just show up at the business meeting or submit in writing your interest to host a meeting to any board member and help the NWAFS.

Upcoming Meetings:

* * * *

Sacramento, California—
May 15th - 19th, 2000.

Workshop oriented meeting with an appealing array of "Hawaiian" social events.
Look for the Golf tourney too!

PLAN AHEAD—

The Fall 2000 meeting is currently being planned for Seattle WA— October, 2000

NWAFS Homepage-Check out links to other members, abstracts, and exciting meeting information—

http://users.aol.com/lctox/nwafshome.htm

The Newsletter needs your contribution!

Got an interesting technical note, new procedure, or research project? Send an article in and you could win ***FREE REGISTRATION*** to an upcoming NWAFS meeting. (That can save you $200-$250 or more!!!

The officers vote for the best independent Newsletter submission once a year and award a **FREE REGISTRATION** to the winner. Help keep the Newsletter interesting and informative by sending technical notes, research, or interesting cases to:

Matt Noedel (editor) mnoedel@wsp.wa.gov
2502 112th Street East
Crime Laboratory—2nd Floor
Tacoma Wa. 98445-5104
(253)-536-4296

Expert Witnesses in the Courtroom

Hosted by: Oregon State Police Forensic Division
April 19 and 20th, 2000
Greenwood Inn, Beaverton

Nationally renowned Speakers:

Carol Henderson and Roger J. Dodd

Guest Speakers: Michael Schrunk, Multnomah County District Attorney
Dale Penn, Marion County District Attorney
Bob Hermann, Washington County District Attorney
& Barry Scheldahl, Assistant United States Attorney

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Forensic Scientists, Criminalists, Medical Examiners, Forensic Anthropologists, Forensic Odontologists, Forensic Nurses, Physicians, Child abuse experts, Forensic Toxicologists, Latent Print Examiners, Evidence Technician, Polygraph examiners, Question Document Examiners, DRE officers, Accident Re-constructionists, etc.

No matter how important your scientific findings may be, they are not as powerful unless you can convey the significance of your results in a competent, professional and understandable manner.

This seminar will teach the experts how to....

- Effectively discuss your qualifications as an expert witness.
- Project your expertise to the jury.
- Withstand the rigors of cross-examination

Registration by March 1, 2000: $175/person Registration after March 1: $225/person

Accomodations at: Greenwood Inn 1-800-289-1300
10700 S. W. Allen Boulevard at Hwy 217
Beaverton, OR 97005
$69.00/$79/00

Contact Susan Hormann or Brian Ostrom at 503-229-5017 for details

FORENSIC FILLER

The following list of phrases and their definitions will help you to understand that mysterious language of science and medicine,
(Thanks Roger Ely via BBC)

"IT HAS LONG BEEN KNOWN"... I didn't look up the original reference.

"IN MY EXPERIENCE"... Once

"IN CASE AFTER CASE"... Twice

"IN A SERIES OF CASES"... Thrice

"IT IS CLEAR THAT MUCH ADDITIONAL WORK WILL BE REQUIRED BEFORE A COMPLETE UNDERSTANDING OF THIS PHENOMENA OCCURS"
... I don't understand it.

"AFTER ADDITIONAL STUDY BY MY COLLEAGUES"
... They don't understand it either.

TRAINING/SEMINAR OPPORTUNITIES:

SAFS meeting announcement: April 25-28, 2000
-Gatlinburg, TN

Workshops to include--GHB Discussion, Methamphetamine workshop, Microtomy for Trace Evidence, Application of FTIR/Ramen Spectroscopy to Drug Analysis--contact William Darby TBI Crime Lab 3021 Lebanon Rd. Nashville, TN 37214

Frenzy Forensic Science and Technology Conference May 9-12, 2000
Washington D.C. Convention Center

www.FRENZYexpo.com

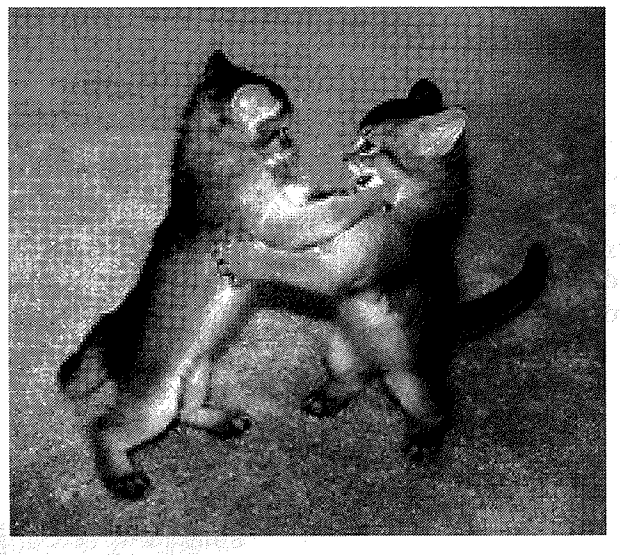
Tech Note: Firearms Information

The following was submitted by ***Ken Fujii, Contra Costa Co.:***

Fired, aluminum, "CCI N R 9mm Luger" cartridge cases and fired 115 grain, 9mm Luger caliber full metal jacketed bullets with concave exposed lead bases were found at a recent crime scene. The tally of fired bullets and cartridge cases was even and no total metal jacket bullets were found.

Technical representative Guy Neill at CCI/Speer (1-800-627-3640) was consulted. He indicated that since Federal was purchased, non-total metal jacketed bullets have been loaded in CCI ammunition. The bullets were Federal bullets and were used when needed as supply and demand dictated. Non-total metal jacketed bullets have not been used in the Gold Dot line of ammunition.

Thanks to Ken for participating---Got a Tech Note, Interesting Observation or other useful info? Pass it along and I'll get it in the newsletter!!



CAPTION THIS!

O.K. kiddies—Here's the next installment of the ever popular captioning game that's sweeping the nation.

Remember, the best caption submitted for the photo to the left will win a pound of Starbuck's coffee.

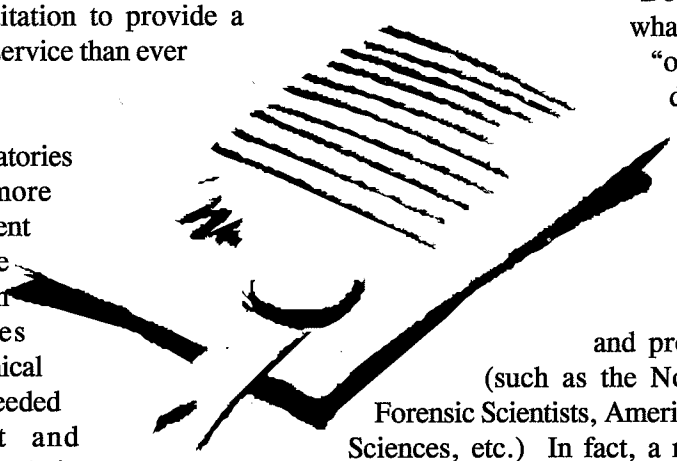
Decision of the editor is final.

E-mail to:
mnoedel@wsp.wa.gov

ASCLD/LAB Accreditation – The Rest of the Story

William C. Smith, Cal DOJ Laboratory, Fresno

I read with interest the article, "The Downside of ASCLD/LAB Certification," by Arnold Melnikoff, which was published in the Fall 1999 issue of Crime Scene. In the article, the author suggests ASCLD/LAB accreditation requirements have caused the demise of scientific discovery and curiosity in the field of forensics. I would challenge this. While I cannot speak for the all of the 200 ASCLD/LAB accredited laboratories, this has certainly not been borne out in my observations after having served three years on the ASCLD/LAB Board of Directors (with one year as Chairperson). In fact, I have been privileged to see just the opposite effect, laboratories positioning themselves through accreditation to provide a better forensic product and service than ever before.



I have seen forensic laboratories being able to achieve a more equitable share of their parent agency's administrative budget. I have seen understaffed laboratories increase the number of technical staff. I have seen badly needed replacement equipment and additional instrumentation being provided. I have even seen upgrades in laboratory facilities. I have seen laboratories install for the first time real quality assurance systems. I have seen an increase in the awareness that scientific methodology includes the important elements of good documentation and method validation. I have heard scores of laboratory administrators and forensic scientists tell me how much better off they felt their laboratories were just through their preparation for accreditation. These observations have convinced me that accreditation is not only important but also necessary for the advancement of the forensic science profession.

I will be the first to admit accreditation comes with a price. Technical procedures need to be written, new methods need to be validated, casework observations and testing need to be documented, evidence tracking and chain of possession need to be recorded, proficiency and competency testing of analysts needs to be completed, quality assurance measures need to be instituted. Accreditation takes work and a real time commitment on the part of the entire laboratory staff. I don't think there is a good alternative. If we want to offer a good forensic science service, these elements are needed. Not only will our judicial system demand it of us but good scientific practice dictates we embrace these concepts whether our laboratory is accredited or not.

Does this mean we have lost what Melnikoff describes as "our enthusiasm of scientific discovery and curiosity"? I would certainly hope not. The ASCLD/LAB accreditation program has always supported and encouraged active participation in scientific and professional organizations (such as the Northwest Association of Forensic Scientists, American Academy of Forensic Sciences, etc.) In fact, a major section within the ASCLD/LAB accreditation manual deals with training and professional development of employees.

Scanning the forensic literature and professional society seminar presentations does not appear to support the conclusion that accreditation has created a paucity of scientific research and development. One only needs to look at one of our newest disciplines, DNA. By far it has become the most regulated of all forensic disciplines, with SWGDAM and DAB requirements being imposed in addition to ASCLD/LAB criteria. And yet new techniques and new marker systems have been developed and validated at a phenomenal pace. Somehow research and developmental work hasn't been hampered by an accreditation regimen in this discipline.

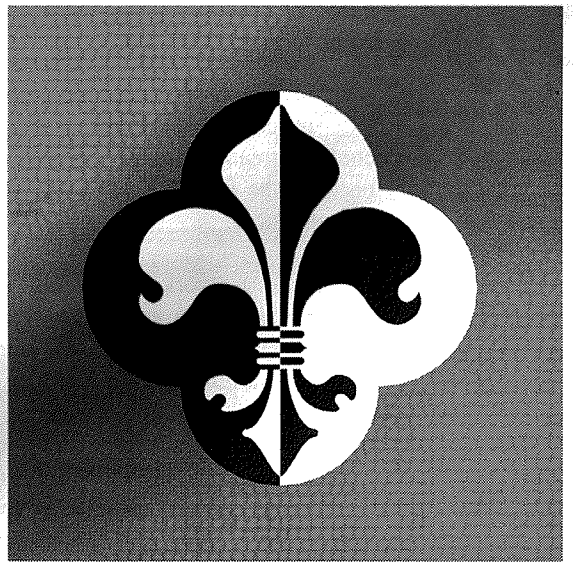
If, on the other hand, Melnikoff was lamenting the

Continued on page 21

fact that "scientific discovery" was being thwarted because new, unvalidated and undocumented techniques were not allowed by ASCLD/LAB on casework samples, then he and I would strongly part company. Any analytical technique used on case material needs to be documented and validated. To ignore this step has the potential of causing a serious miscarriage of justice. Unfortunately, we have seen within the past several years (as reported on national news) instances of forensic scientists taking shortcuts and using unvalidated and unsubstantiated techniques. This is not the type of work or practice I want associated with the field of forensic science. Accreditation criteria provide a strong ethical framework from which forensic scientists can practice good science.

I am thankful that within the United States our crime laboratory accreditation program has been undertaken by those within the profession. If we hadn't stepped up to the plate and imposed our own accreditation requirements, then I am certain outside agencies would have taken over. We already have mandatory accreditation within one state. I am certain more will follow.

My vote is for ASCLD/LAB accreditation!



WASHINGTON STATE PATROL WANTS YOU!!

Washington State Patrol

Forensic Laboratory Services Bureau

Job Openings

Forensic Scientist 1

Recruitment Announcement: #I-1-0-016-OC LP
Salary Range: $2477 - $3161 monthly
Seattle Lab – DNA
Seattle Lab – Trace Evidence (microanalysis)

Forensic Scientist 2
Salary Range: $2725 - $3489 monthly
*No openings at this level, for salary information only

Forensic Scientist 3
Recruitment Announcement: #I-1-9-011-OC GF
and #I-1-9-012-OC GF
Salary Range: $3322 - $4250 monthly
Seattle Lab – Chemistry
Seattle Lab – DNA (2 openings)
Seattle Lab – Trace Evidence (2 openings)
Seattle Lab – Toxicology
Marysville Lab – Questioned Documents

Contact **George Johnston**:

Gjohnst@wsp.wa.gov
(360) 438-5868

Or visit our website:
http://www.wa.gov/wsp/hrd/forensic.htm

Or the WA State Department of Personnel website:
http://www.wa.gov/dop/bulletins/jobcat.htm#Laboratory

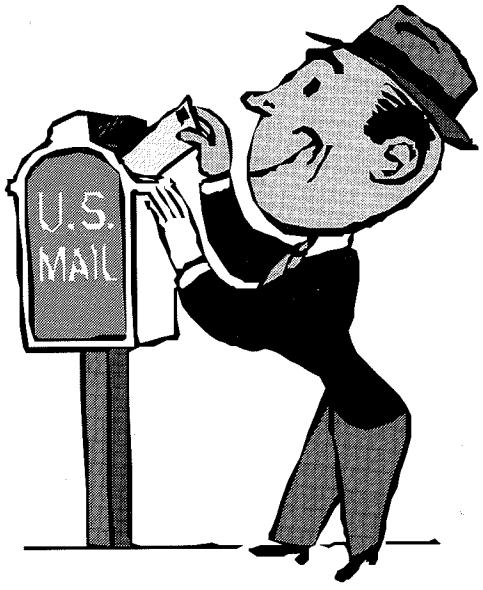
ANOTHER ASCLD ACCREDITATION REBUTTLE

Larry Pederson, Director/Criminalist Greeley/Weld County Forensic Lab--Greely, Colorado

Thanks to Arnie Melnikoff's letter regarding his view of the down side of ASCLD/LAB (American Society of Crime Laboratory Directors / Laboratory Accreditation Board) accreditation, I'm writing the newsletter for the first time ... ever.

I think that there is a terminology issue that needs to be clarified so there is no confusion between two different processes. Laboratories are "accredited" (by ASCLD/LAB) and criminalists/forensic scientists are "certified," (by organizations such as ABC). The topic of this letter is lab accreditation.

Based on my experience as the director of the World's Smallest Accredited Crime Lab, I'd like to offer a "historical perspective" that could be useful for NWAFS members. I've seen lab directors' opinions regarding accreditation go from a majority seeing little or no need for accreditation 10 years ago, to the vast majority achieving or pursuing accreditation. I think we need to acknowledge the two primary forces that have made lab managers view accreditation as an essential process.



First, there is every lab manager's nightmare, Fred Zain. This guy represents forensic science at its worst ... someone who often falsified results to meet caseload demands or law enforcement officers' and prosecutors' suspicions and expectations. Arnie points out an extremely valid point in his argument that many lab administrators and managers are not scientists by profession, or have little scientific education or training. Even someone who has risen through the ranks in a particular discipline, however, wouldn't be qualified to critically examine the work in all disciplines in that lab. How does a manager who cares about quality and integrity deal in a systematic way with the potential for a Zain in his/her lab? ASCLD/LAB accreditation offers a lab manager a way to MINIMIZE the possibility that a Zain is in your midst. Accreditation standards offer someone who is not an expert in every discipline in a lab and is responsible for the quality of work done in the lab, a way to assure themselves and others that there MOST LIKELY isn't a Zain in the lab.

The second force that changed lab managers' minds about accreditation was DNA. The power of individualizing biological evidence, often the result of violent acts, got the attention of police and prosecutors for sure, but also got the attention of defense attorneys, national scientific bodies and

even Congress. There was concern by many powerful people not associated with the forensic science community that if DNA was being used to convict and exonerate people, it had better be done right. About the time that the DNA Advisory Board (DAB) was formed to set analytical and qualification standards for DNA analysis, ASCLD/LAB members had a decision to make. As the only accrediting body for forensic labs, they could offer an accreditation process to crime labs in the U.S. that met DAB standards, but would they accredit just the DNA unit in a lab? The decision made by the ASCLD/LAB board, with input from its members, was that every discipline in a lab must continue to pass accreditation standards, not just the DNA unit, for a lab to be accredited. With the public demand for DNA analysis to be provided in labs, lab managers, who had previously been reluctant to pursue accreditation, are now at least actively planning for the process. I believe that crime labs on the whole have benefited greatly from the accreditation process, primarily because the ENTIRE lab must meet objective performance standards.

The issue of non-routine casework is difficult. The argument that I heard for many years against analytical standard methods was that no two cases were the same. That's just not true. I would argue that the majority of work coming into a lab, regardless of the discipline, is routine to that discipline. There are accepted analytical methods to develop meaningful, scientifically accurate results. The analytical methods and instrumentation need not be exactly the same, but, let's face it, certain instrumentation and methods make great sense given the

Continued on page 23

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state of scientific knowledge today.

However, the term "non-routine" case or evidence exam is too vague a description. For me, "non-routine" means having to quantitate methamphetamine or cocaine for federal court.

I think that a better description would be "research casework." Laboratories have to have scientists with the education, training and instrumentation to work on these cases that are, in fact, research. I'm certain that there are many forensic scientists with the interest and ability to carry out this research. I don't think that accreditation precludes scientists doing research. It does require that research meet peer scrutiny in every aspect of the research. I don't think any crime lab wants to be published in "The Journal of Irreproducible Results."

Something to keep in mind is that accreditation standards do change. If you, as analysts, have issues with accreditation standards, bring them up with your lab manager, with an accreditation inspector, the ASCLD/LAB executive secretary or an ASCLD/LAB board member. However, the time to challenge an accreditation standard is not in the middle of an accreditation inspection.

Another issue that all analysts need to be concerned with are the "standard methods" being developed by the various Technical Working Groups in different areas of specialization. There is a push for standardization, and right now the TWGs are doing important work that will impact all crime lab analysts. Actively review and provide feedback to TWG members when their proposed standards are published. Remember, too, that this TWG process is far better than having standards imposed by N.I.S.T. or some other such scientific body outside our profession.

There's no doubt that accreditation requires documentation. That means time spent away from casework. I would argue that your lab personnel may have a degree of credibility with certain judges or defense attorneys because of your lab's accredited status. That may lead to fewer challenges of analytical results or less time in court.

So, all together now, let's hear it for FRED ZAIN, DNA and the ASCLD/LAB!!! And thanks to Arnie for providing the inspiration for me to put down some thoughts ... and splitting the room cost with Lionel and me at the NWAFS meeting in Cheyenne. The term "rodeo" will never be the same to me .....

Later,
Larry Pederson
Director/Criminalist
Greeley/Weld County Forensic Lab

The following NWAFS members have been recognized by the association as *LIFE MEMBERS:*

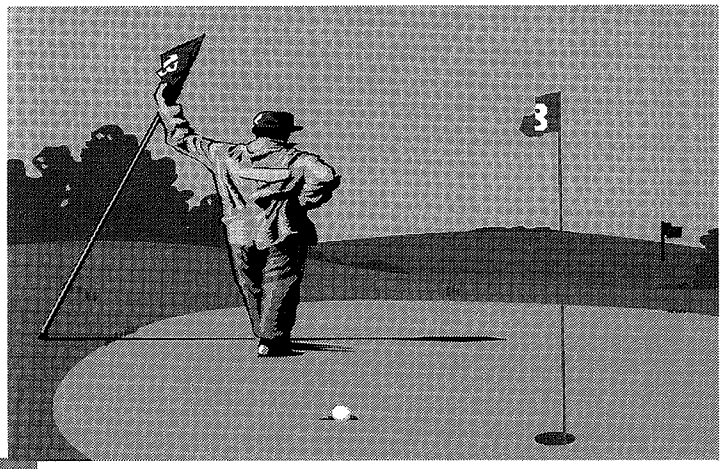
LIFE MEMBERS

George Ishii
Pam Marcum
George Matsuda
Robert Phillips
Bob Sager
John Spilker
Kay Sweeney
Lionel Tucker, Jr.
Floyd Whiting

LIFE MEMBERS

Look for them and say hello and thanks for their dedicated service to the NWAFS at the next meeting.

NWAFS Golf Tournament



1:00PM

SUNDAY MAY 14, 2000

Join us for the 1st NWAFS golf tourney. It will be a shotgun start best ball 4 man scramble. We need to get a head count to see how many people are interested, so give me a call and let me know. This will precede the Spring meeting in Sacto, May 2000.

CALL FOR MORE INFO:

LISA CAUGHLIN, SACRAMENTO COUNTY LABORATORY OF FORENSIC SERVICES
4800 BROADWAY SUITE 200, SCRAMENTO, CA 95820, 916-874-9240