The CAC News

News of the California Association of Criminalists • 1st Quarter 2005

The President's Desk

The A. Reed & Virginia McLaughlin Endowment Fund

At the last CAC seminar in Ventura our historical committee of one, Jon Babicka, put together a wonderful poster presentation chronicling historical cases of the LAPD Scientific Investigation Unit. One of the posters was on A. Reed McLaughlin who was an examiner at the lab. According to Jerry Chisum, Reed who was a member of the CAC, loved to attend the meetings. Reed developed cancer which was attributed to benzidine exposure and received a large settlement in a lawsuit against the manufacturer of the chemical. Reed, and his wife Virginia, left the CAC significant monetary endowments when they passed away. The fund is commonly referred to as the "Endowment" Fund. The endowment fund can only be used to fund research, training and educational scholarships.

The endowment fund has increased over the past several years due to management by our financial advisors. It has grown to approximately one million dollars. The past and present CAC Board of Directors have strived to increase the value of the Endowment as well as distribute funds for training and research.

Although many CCI courses have been funded by the Endowment over the past several years, it has primarily been used by our membership as a means for funding research.

In this time of lean budgets I would like to remind you that the Endowment is another avenue of funding for training. Any CAC member can request money to put on a training class. The funding covers the costs associated with putting on a class e.g., supplies, transportation, lodging and honorarium for the instructor, etc. Our membership has a wealth of knowledge and experience in a variety of criminalistics disciplines. If you are willing to put in the time and effort to organize and put on a class, the benefit to the criminalistics community would be invaluable. Please consider what you can contribute to further our goal of supporting training in criminalistics.

Endowment funding applications will be published in this edition of the *CACNews*. I'm sure the endowment committee would look forward to reviewing applications to fund training courses.

I'll get down off of my soapbox now.

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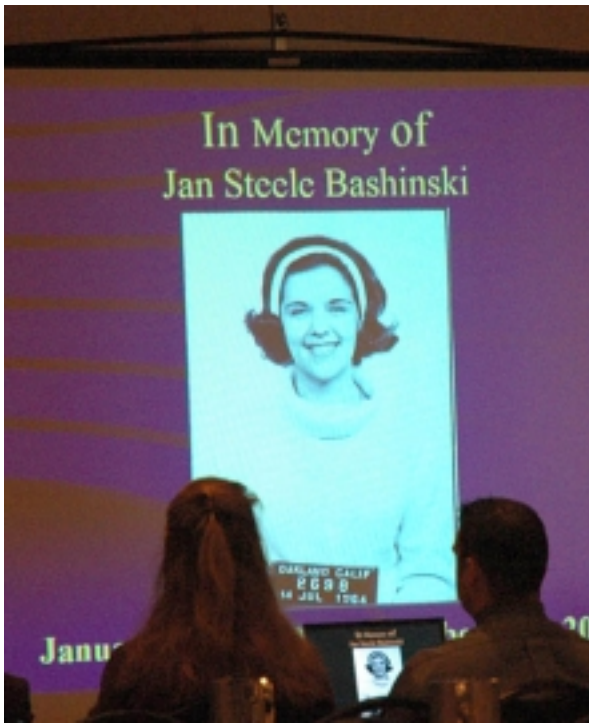
Pennie Laferty
CAC President

First Quarter 2005

The CACNews
www.cacnews.org



On the cover...
A montage of Jan Bashinski, photographed as she enjoyed the fellowship of a recent CAC seminar. Above:*Jan Bashinski's career presented by Michelle Uithoven at the 2004 Fall seminar. Her obituary appears in this issue.* *Above photo courtesy Joe Gonzalez.*

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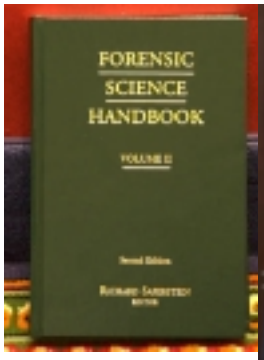
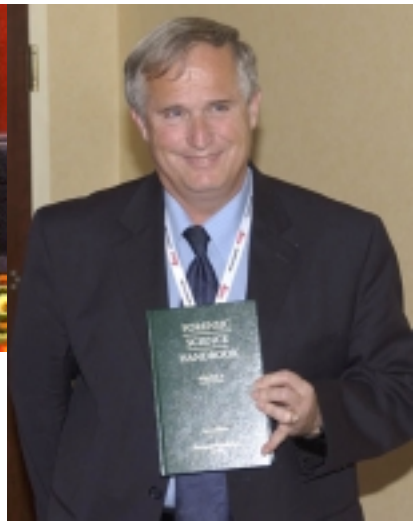
Notice to Contributors: We publish material of interest to our readers and are pleased to receive manuscripts from potential authors. Meetings and course announcements, employment opportunities, etc. are also solicited. Advertisements are also accepted, although a fee is charged for their inclusion in *The CACNews*. Please contact the advertising editor for further information. Because of the computerized typesetting employed in *The CACNews*, submissions should be made in the form of MS-DOS compatible files on 3.5 inch floppy disks or by e-mail (ronald.nichols@atf.gov). Text files from word processors should be saved as ASCII files without formatting codes, e.g. bold, italic, etc. An accompanying hardcopy of the file should be submitted along with the disk. Graphics, sketches, photographs, etc. may also be placed into articles. Please contact the editorial secretary for details. The deadlines for submissions are: December 1, March 1, June 1 and September 1.

Joint Award Presented

Emma Titterton visited the CAC Fall Seminar from England and was presented with the CAC/FSS Joint President's Award by CAC Pres. Pennie Laferty. Part of her award was a signed copy of CRIME LAB: by John Houde complete with a custom designed bookplate symbolizing the cooperation between our respective associations.





Labor of Love

The recently published 2nd Ed. of Richard Saferstein's Forensic Science Handbook features a chapter on body fluid identification authored by CAC member Ed Jones. 528 pages, Prentice Hall, ***ISBN:*** *013112434X.*

Awards Committee Announces Winners for 2004

Alfred A. Biasotti Most Outstanding Presentation

Spring Seminar—Dr. John DeHaan "Exploding Gas Cans and Other Fire Myths." Fall Seminar—Greg Laskowski "Firing a Beretta Model 950B .25 Cal handgun underwater at a glass target."

Anthony Longhetti Distinguished Member Award
John Houde

John has been the Art Director of the *CACNews* for the past 10 years, expanding the publication to include color photographs, unique artwork, and a visually appealing presentation using modern graphic arts techniques. Many of the photos are taken by John himself, after attending CAC functions at his own expense.

John wrote and published Crime Lab: A Guide for Non-Scientists. This award winning book contains color photographs, details of the workings of the criminalist and crime lab from "crime scene to trial, describing in simple, understandable terms and concepts, the science 'behind the yellow tape' and affording the reader a rare peak into the oft unexplained world of crime scene analysis." This work has been honored with the Publishers Marketing Association Benjamin Franklin Award (Science / Environment category), Independent Publishers Award (science category), and is on the New York Library's "Books for the Teen Age 2000 List."

All this was done after John retired from his career as a criminalist at the Ventura Sheriff Department crime lab. While there, he contributed to the CAC Trace Evidence study group and published a paper in the *Journal of Forensic Sciences* (Image Enhancement for Document Examination Using the Personal Computer).

Edward F. Rhodes Memorial Award
Eric Halsing

Eric used this award to attend the 15th International Symposium on Human Identification (sponsored by Promega). He has been working at the Jan Bashinski DNA Laboratory since 2001, where he has served as the Robot Group Coordinator and Data Analysis Coordinator. Eric validated a new robotic buccal cell extraction method that will allow the state to automatically process DNA oral swab samples for the convicted offender database. He presented a poster of this work while at the Promega meeting, and a presentation at the DNA workshop of the Fall 2004 CAC Seminar.

Fine Ballclub

Your CACNews *is given the professional treatment at Ojai Printing & Publishing. This family-owned business has been printing the* News *since about 1997. Two key members of the staff who have helped make the publication look so good are Susan and Alfred.*

Paul Kirk and Presidents Award
Adam Dutra

Adam began his career at the Bureau of Forensic Services DNA laboratory in 1998, and has been working at the San Diego Police Department crime lab since 2001. In that time he has become very involved in the CAC, serving as co-chair of the Training & Resources Committee, as Membership Secretary, and coordinating news distribution by e-mail. He is also a member of the American Academy of Forensic Science, the Northwest Association of Forensic Scientists, and a Diplomate of the American Board of Criminalistics. This award will give Adam the opportunity to travel to the UK to attend a meeting of the Forensic Science Society.

Roger Sherman Greene III Memorial Award
Dr. John Thornton Nominated

This award was instituted in 1963 and is designed to honor individuals who have made truly outstanding contributions to the profession of criminalistics. The award will only be given to criminalists or specialists in a scientific discipline within the field of criminalistics. Any qualifying persons are eligible, not just members of the CAC. The principal reason for making the award would be an outstanding contribution to the field of criminalistics. Contributions which have aided or promoted the work and development of the CAC should be considered to be of importance, but qualified persons outside of this organization are eligible. Contributions will include any one or combination of the following:

• Outstanding and unusual professional work on specific investigations. • Outstanding research and publication of the results or presentation as a formal paper before a meeting of the CAC. • A series of papers, presented at different times covering a wide range of subject matter which shows skillful work. • Unusual contributions to the education of criminalists. • High level direction or development of criminalistics laboratories. • Some other unusual and significant contributions to the improvement of the profession of criminalistics.

Under normal circumstances, the award will not be given for a specific paper presented or for some other routine activity. Rather, the award is for unusual and outstanding work. In most instances, the receiver should be what most members would class as a skilled and experienced worker of high ability and integrity within the professional field of criminalistics. While no monetary or other benefit will be given in connection with the award, it should be considered by the recipient as a sign of respect and admiration for the work in the professional field of criminalistics. Awards may be presented for contributions meeting the basic requirements which have occurred at any time.

Previous recipients of this award are: 2002 Anthony Longhetti, 1997 Lucien Haag, 1991 Dr. Walter C. McCrone, 1977 Lowell Bradford, 1976 John Davis, 1971 Bryan Culliford, 1970 Jack Cadman, 1966 Paul Kirk, and 1965 Ray Pinker.

Dr. John Thornton has been nominated, and that nomination has been approved by the Board of Directors. However, this award is not granted until it is approved by three-quarters of the Members present at a regular Business Meeting. This vote is scheduled for the Spring 2005 Seminar. A complete list of Dr. Thornton's qualifications is too extensive to list here, but a sample includes: 18 years work at a crime laboratory, 24 years as Professor of Forensic Science at UC Berkeley, over 180 articles in the forensic science literature, AAFS Fellow, ABC Fellow, Vice President of ABC, President of CAC, AAFS Criminalistics Section Award (Paul Kirk Award), and CAC Distinguished Member. For further information, contact the Awards Committee.

Service Awards

Patricia Lough and Kenton Wong - for work on Senate Bill 1623; John Houde - for art direction of the *CACNews*; Dr. Peter R. DeForest - for presenting a workshop at the Fall Seminar, Jerry Chisum - for presenting a workshop at the Fall Seminar, Alex Karagianes and Mona Ten - Spring Seminar co-Chairs, Michael Parigian - Fall Seminar Chair, Brooke Barloewen and Elissa Mayo-Thompson - outgoing board members.

ABC Examination Award

The American Board of Criminalistics each year gives one member from each regional organization the opportunity to take an ABC exam without a sitting fee. The Awards Committee will begin accepting applications January 2005. The CAC has finalized the criteria for choosing our recipient: 1) No nomination is required; the applicant applies directly to the Awards committee. 2) Any member of the CAC (Affiliate, Provisional, Full, Corresponding, or Life) is eligible. 3) The application may be for any ABC exam (Technical Specialist, GKE, or Specialty). 4) The applicant must meet the minimum qualifications for taking an ABC exam. 5) The first criteria is financial need (e.g. students, new employees, or employees without a tuition reimbursement program). 6) The second criteria is employer's educational requirements (e.g. employees are required to take an ABC exam, or get credit towards promotion if they are certified). 7) If more than one applicant meets qualifications 2 through 6 then the winner will be selected by random drawing. Applicants who do not meet the criteria for financial need or educational requirements will still be eligible if no other applicants did meet those criteria (and the winner would also be selected by random drawing).

W. Jack Cadman Award

The Board of Directors created a new award this year. It is designed to recognize Full Members who have recently contributed a substantial amount of time and effort to the association. Rather than requiring self-applications or sponsors, the Immediate Past President tracks the activities of members and issues the award when appropriate. Eligibility for the Cadman Award began at the Spring 2004 Seminar. The requirements are:

1) All requirements must be completed after being elevated to Full Member, 2) Within the 5 consecutive years prior to receiving the award attend 4 Seminars (at least one day registration in the General Session) and present at least one paper at the General Session of a Seminar and publish the paper or a facsimile of it in the *CACNews* and actively serve on a committee, as a Study Group Chair, or on the Board of Directors for at least one year. 3) A Member on the Board of Directors is not eligible during their term. Since Board Members approve recipients, this prevents a conflict of interest. BOD members will be eligible once board term is over. 4) An individual may only receive the award once, however there is no limit on the number of Members who can receive the award each year.

Sowing & Reaping

Part I: Understanding and Meeting Needs

California is one of the largest agricultural states in the nation. Of course, unless you get out of the major metropolitan areas and into the Central Valley, you may never see that. But, I am certain that at one time or another, all of us have passed by fields of corn, orchards of fruit trees, or some other crop that a dedicated farmer is growing for the nourishment of our nation.

Have you ever had any doubts about what was planted when you passed by these places, or even now as you reflect on those past images? I don't think anyone of us has ever wondered if the farmer planted seeds of wheat and a corn crop popped up. Likewise, I don't think anyone would expect anything but oranges from orange seeds or anything but almond trees from planted almonds. After all, you reap what you sow.

So, the question I ask now is what are you sowing in your leadership? It is important to understand the sowing and reaping is a principle that stands apart from and is valid regardless of what is actually sown. For example, if you sow a seed of corn you are going to get corn! If you sow a seed from a weed, you are going to get a weed. So again I ask, what are you sowing in your leadership?

Often, it does not take much more than observing the fruits of your leadership. What is the environment of your laboratory like? What is the disposition of your team like? What do others have to say about the laboratory, your team, and the general operation? What does your team say about the laboratory and your leadership?

If you are eager to get these questions answered, then I am really excited for you, because you are truly interested in making a difference. If you are hesitant to ask these questions, especially the last, it may be because you are thinking that you might not like the answers. But, you also need to know that a fresh season can start right now. The ground can still be tilled and nurtured. Good fruit is still possible!

Thus begins a series of leadership discussions centered on sowing and reaping. This first part has to do with understanding and meeting the needs of your team.

As with all things it is important to understand the perspective from which I come. It is a servant leader perspective. It is one in which the goal of the leader is to help those for whom he or she is responsible succeed and provide all the necessary tools and training to help in that task.

Let's look at the concept of sowing. The first part is easy. To get a crop of corn, sow corn seed. To get wheat, then make sure wheat seeds are planted. However, that is not enough. Where is it being planted? What are the soil conditions? I remember a house that I used to own. There were plants on the front lawn that grew differently based on where they were located on that lawn, even though they were only 6 to 10 feet apart. Just because the areas of the lawn appear the same does not mean they are the same nor does it mean they will respond in the same manner.

One part may be exposed to the sun a bit differently. On my front lawn, one area was more shaded than the other which caused a difference in sun exposure. One part may also have a different history than the other. I remember when I first moved into the house. There was a junked car with leaking oil and fluids on that part of the lawn. (Well, in actuality, it wasn't much of a lawn then at all!) It is quite possible that the history could have a vital effect on what was going to grow later on.

Based on current conditions and past history, it is important to understand that the same seed sown in one area may not respond as it does in the other area. Furthermore, depending on the area in which the seed is sown, it may be necessary to fertilize it differently. It may require different watering conditions. It may require more pre-treatment than the other area.

Leadership 101

by Ron Nichols

So, what's the point? I am certain you know what's coming. It is essential to know your team. You have to know each member well enough to understand what it is going to take to help him or her grow. This means you also need to know and be able to be in a position to meet their needs. Dare I say it? It is important to genuinely care.

Remember the junked car on my lawn? It is important to understand that there may be individuals on your team who may need to be treated differently simply based on their past history. It is pointless to imply that their history is not your fault and therefore, you should not have to be concerned about it. After all, *I* did not junk that car on my lawn, but I still had to deal with the effects. Often times a leader may think, "It's their responsibility to change and I cannot change them!"

That is true. You cannot change them. But, remember the definition of a servant leader? A servant leader is one who provides whatever is necessary and possible to help individuals grow into the best that they can be. While a leader cannot change them, a leader can help facilitate change by actions and attitudes. A servant leader is a facilitator.

Let me ask a simple question. Is it more productive to praise someone periodically that has a need of praise, or to simply refuse until they "learn not to need it"? (This is an example of what I will be speaking about in Part 2 of this series—words and attitudes of life or destruction, the choice is yours.)

No two individuals are the same. Therefore, trying to treat them the same will eventually lead to fruitlessness. For example, pretend there is someone who is highly self-motivated on your

team. This person is exceptionally bright and has a good aptitude for the work. Little guidance is necessary because this person simply "has it."

But, then someone comes in who needs more guidance. Mind you, there is nothing wrong with that in of itself. Maybe this new person simply does not have as much knowledge, aptitude or ability as the other individual. But, rather than reaching out and offering that additional guidance and finding out what the needs are, how many of us spend most of that time complaining and begrudging the fact that the new person isn't as "self-motivated" as the other?

That type of attitude will lead to fruitlessness. That is the same type of attitude that says, "You do a good job, but…" Want to know what kind of fruit will be reaped from that sown attitude? Frustration, discontent, lack of direction, and inconsistent performance. Do you see any of this present in your laboratory? Remember, we all reap what we sow.

There is a common theme I hear among management personnel that if someone is a supervisor then he or she cannot be a friend of those supervised. Unfortunately, this type of attitude run amuck will lead to a distancing and detachment from the team. I am not suggesting that leaders have to invite the individual members of the team over for dinner once a week, or invite them to family reunions. But, I am saying that the leader has to make an effort to get to know each and every member on that team. Otherwise, how can we expect to coach them to greatness? Isn't that precisely our job as leaders?

Let me give an example of this process involving a typical leadership responsibility—delegation. This example is drawn from an excellent series focused on Relational Leadership, taught by Dr. David Ferguson out of Great Commandment Ministries in Austin, TX.

It is assumed ahead of time that the leader wants whatever is being delegated to be successful, that is to say, fruitful. Just like a crop, to achieve this success, it is critical to know what nutrients are lacking and be prepared to provide them. Here are some ways in which the leader may need to fertilize and prepare the soil for a bountiful harvest.

No two individuals are the same. Therefore, trying to treat them the same will eventually lead to fruitlessness. For example, pretend there is someone who is highly self-motivated on your team. This person is exceptionally bright and has a good aptitude for the work. Little guidance is necessary because this person simply "has it."

Some people have a need for appreciation. Note that I said *need*. Simply because an individual has a need does not mean he or she is weak. We all have needs because we were made to be interdependent. Does the person delegated the task have this need for appreciation? Then give it! Let him or her know how much their help is appreciated. If a good job is done, then by all means let them know you appreciate it and praise them for their faithfulness. "Well Ron, that's just not my style." Well, make it your style then. Remember, every time you point a finger at someone telling them to change, there's three pointing right back in your direction.

Others may have more of a need for respect. This is where it is important for me to tread carefully but boldly. If you are so concerned about the minutiae with which every little detail is handled, then abandon your role as leader and do it yourself. To delegate a task and then micromanage every detail shows no respect to the individual. If the team was prepared well (the leader's responsibility) then take confidence that the task will be performed well. Allow the individual to employ their innate skills, abilities and creativity. Perish the thought, but maybe they even have some that you do not possess! Let them know that you have confidence in them and then let them flourish!

Finally, some people may have a need for security. They are the ones who may not ask (but are definitely thinking) whether or not the leader will help them be adequate to the task. Will the leader provide the tools and the training? Will the leader provide the encouragement? Will the leader be there if needed? Will the leader understand if troubles crop up? If yes, then I suspect there will be much fruitfulness. If not, then I suspect the plant will wilt rather quickly.

A successful farmer or gardener understands this study aspect of sowing and reaping. To be successful and grow a bountiful crop, it is necessary to understand the soil in which the seed is being sown. Similarly, to experience success as a team, the leader must know the needs of each and every member of that team. This is not a "should" or "could", but an essential aspect of leadership.

Until next time, my best to you and your families.

Staying Connected

Time to ponder the great scientific questions of the modern era…

Recently found on a website and being a firearms examiner, well you can probably guess the appeal. If you shoot at a button on a remote control with a gun, will the action initiated by the button take place before the remote is destroyed by the fired bullet?

On a side note…

Where is that cheat sheet of mine from physics class? Wait, I remember, I never took physics!

Thinking to a logical conclusion…

Why is it that a profession so heavily reliant on an individual's ability to think creatively, write well, and speak persuasively places so much emphasis on undergraduate coursework that either de-emphasizes creative thinking or has very little to do with writing and speaking abilities?

Out of nowhere…

Why do they even make universal remotes? Unless we are willing to update our all our cable, stereo, television and home theatre systems they never have all the necessary codes. "Other" qualifies most of the time in my house!

The ever so necessary Giants update…

So how much is a championship ring worth to Barry Bonds? Currently, the Giants rank tenth in payroll. If we factor in the hefty ballpark mortgage, the Giants would be third, in excess of $100 million. Here's a thought. If a championship ring is that important take a pay cut and allow the money to be spent on another player or two.

Advancement through the years…

Two words – relational leadership. Continue reading the *CACNews* to learn more throughout the year.

On a more serious note…

In preparation for future ministry, my wife and I were taking part in what can be best termed a Marriage Intensive. The group of five couples was facilitated by a well-trained couple specialized in the area of marriage ministry. The goal and purpose is to promote care within the marital relationship. However, the concept of relational care has application outside that relationship as well.

That application was brought to mind when one of the individuals within that group talked about a recent tragedy. While the tragedy was described I could visualize it quite well because of the experiences I have had through this profession. It actually brought tears to my eyes and I felt a tremendous amount of compassion for this individual. It would not have been that way several years ago because I had been told that in order to succeed and do well, detachment was necessary.

In fact I suspect many would suggest that such a display of compassion would be inappropriate in a setting such as ours. Such a view would say that such feelings would have a negative impact on one's ability to be objective. So, in addition to detaching I suspect that in order to be successful we are to be a bit less caring than the average citizen.

However, this detachment and lack of care is not isolated to the workplace. Inevitably, it is going to filter into one's personal life. To remain "professional" we are often called upon to stifle what we feel. This leads to emotional distance that will impact life outside of work. As this coping mechanism becomes more automatic, it becomes less of a behavior choice and more of a lifestyle pattern. It is unavoidable.

Of course, when it does become a lifestyle pattern and leads to problems outside of work, we are told to separate our personal lives from the professional and leave our problems at home. Let's see—more detachment and emotional distancing. This attitude soon begins to feed upon itself and develop into an endless, destructive cycle.

The key to this issue is not saying that it should not happen because it does. It is unavoidable. So, rather than hiding our heads in the sand, rather than saying just detach, rather than saying just deal with it, maybe we should look into a way in which we can make a positive impact. There are many ways in which this can be done and I am going to focus the rest of this editorial on one way. It just happens that this may be one of the biggest for crime lab personnel.

How much care is offered to those in your laboratory who are responsible for crime scenes? How much care is offered to those regularly attending autopsies? How much of an impact are these tragedies having on the individuals exposed to them? In this issue you will see an article in which I discuss a person's history and how that might impact their future performance. Imagine an abuse victim who kept the secret quiet. Then this same person gets assigned a child-abuse homicide. How do you think they might respond in this situation?

I can hear two different responses resonating through my head right now. The first is, "How was I supposed to know? After all, they kept it a secret." That's true. There was no way for anyone else to know. However, the impact

Ron Nichols
CAC Editorial Secretary

of that past event is still going to be felt in the present. One cannot be held responsible for knowing everything there is to know about someone's past. However, one should have an appreciation that in crime scenes such as this there are only but a few people who would NOT be negatively impacted in some way. Therefore, there is a responsibility to do something.

The second response is, "They have a job to do. They have to learn how to handle it." I am not suggesting anything contrary to this. However, I am suggesting that such statements fall short. How about, "They have a job to do. They have to learn how to handle it. AND I am going to do what I can to help provide the necessary tools."

Let me provide an example. I was responsible for assigning a scene to laboratory staff in which the body of an individual who had been reported missing for weeks was found wrapped in tarp. As you might expect it was not pretty. When they made their return, I pulled each aside and performed a debriefing. Basically the questions that I asked were to explore how they were feeling about what they saw and how they were handling it.

Debriefing sessions like this help to get the feelings out. That way they do not have to be suppressed. They can be suppressed and it is even healthy and necessary to do so in short bursts in order to get the job done. But, detachment and suppression IS NOT a healthy long-term coping mechanism. It just builds and builds until eventually it spills over. When that is allowed to happen, generally it is going to take much more effort than if some healthy treatment was offered along the way.

To remain "professional" we are often called upon to stifle what we feel. This leads to emotional distance that will impact life outside of work. As this coping mechanism becomes more automatic, it becomes less of a behavior choice and more of a lifestyle pattern. It is unavoidable.

An excellent, almost immediate resource for this is a chaplain. Many if not most departments have a chaplain who will serve across denominations and faiths. Typically they are well trained in the issue of Critical Incident Stress (CIS). CIS is not restricted to plane crashes or scenes in which hundreds of people have been involved. CIS is also applicable to the forensic scientist who has to respond to the scene of a singular homicide victim.

Another resource is employee counseling. They are also trained in this area and can often work in conjunction with the department chaplain. The only negative issue may be cost and timeliness. I have found through discussions that department chaplains are quite capable of handling the issues on levels we are most experienced to witnessing and are much more readily available.

I would recommend asking the chaplain or representative of employee counseling to speak to the staff. Familiarity will help put people at ease in case it is needed later. Regular exposure to these individuals is helpful. Do not make it a one-time event. Have them come bi-annually. It could be there are members of the lab who have regular access to such counsel outside the lab. However, I think it is important to regularly show what the department has available and to know that each member of the lab has someone he or she can talk with.

I would also recommend regular, mandated debriefing of individuals over the first several scenes attended. It could be that the individual is handling things quite well. Great. However, there would be no harm in doing it anyway. The reason is that when it is needed, then it will be a much more comfortable process.

Does it have to be forever mandated? Not necessarily. However, remember all those courses that we admired someone getting A's in when the graduated college? You know that 4.0 in molecular biology? Those grades might make them a good bench scientist, but I doubt it will do much to help them cope with a scene in which the head of a 13-year old boy has been blown apart by two bullets. I do think it is absolutely necessary for the first set of scenes. After that, it can be made available on an as need basis.

We have respirator training. We have training in how to use gloves and clean up spills. We have training in how to use other safety equipment. Over and over, yearly we have this stuff. The reason is that there is a daily danger to our physical health and safety in our profession.

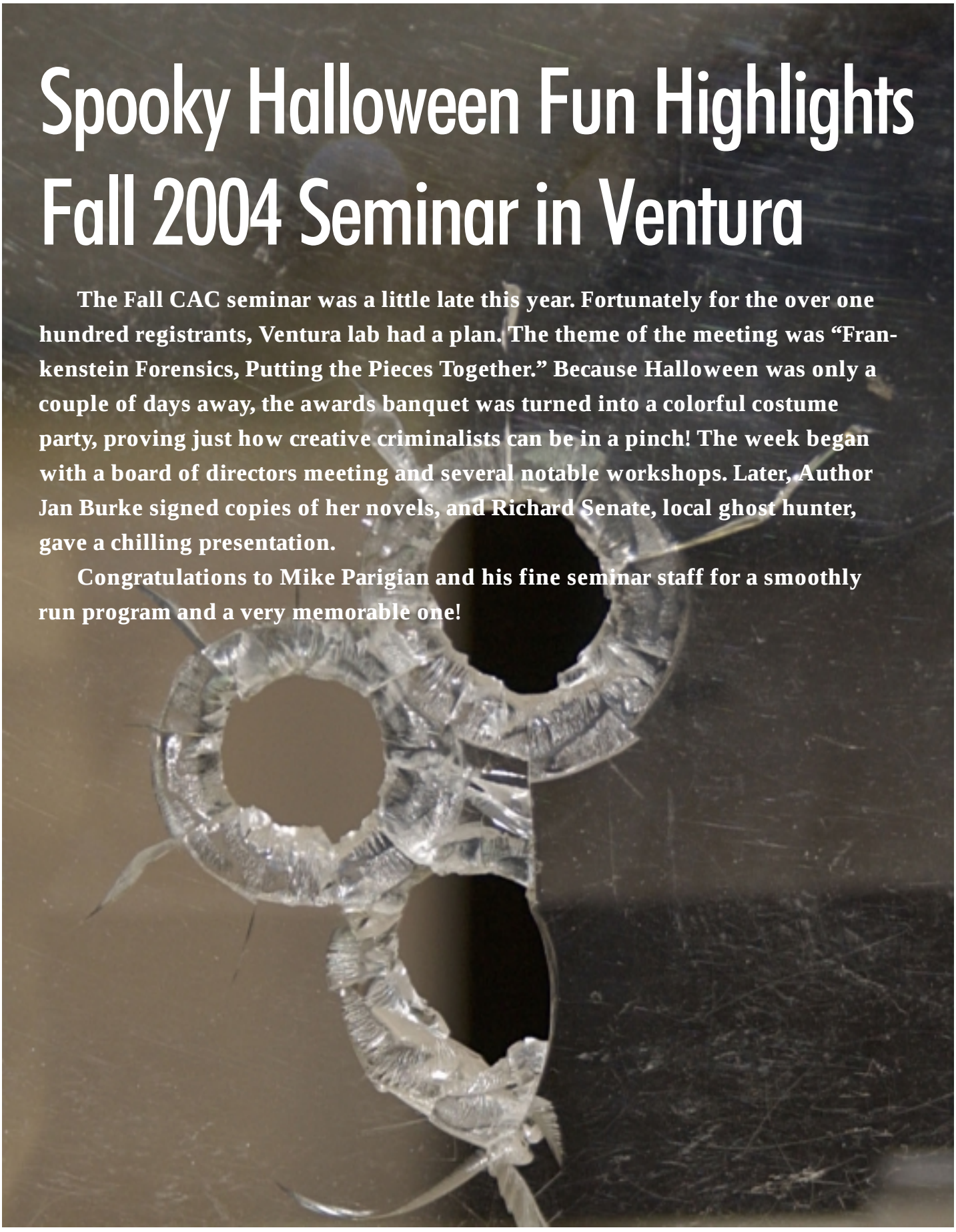
I find it ironic that we mention at orientation there is counseling available and it is never mentioned again. Nothing trains us for some of the stuff we witness. Yet, potentially we could witness it any day. I think it's time to step up to the plate and make as much effort if not more in helping to protect our mental health as well as our physical health.

Until next time…

I would love to hear from you on how you are helping to foster care among the individuals in your laboratory. You do not have to be a supervisor or any level of management. Until then, my best to you and your families.

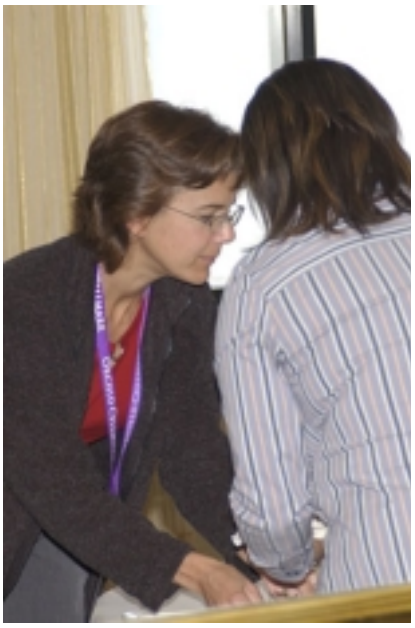
Ron

Spooky Halloween Fun Highlights Fall 2004 Seminar in Ventura



The Fall CAC seminar was a little late this year. Fortunately for the over one hundred registrants, Ventura lab had a plan. The theme of the meeting was "Frankenstein Forensics, Putting the Pieces Together." Because Halloween was only a couple of days away, the awards banquet was turned into a colorful costume party, proving just how creative criminalists can be in a pinch! The week began with a board of directors meeting and several notable workshops. Later, Author Jan Burke signed copies of her novels, and Richard Senate, local ghost hunter, gave a chilling presentation.

Congratulations to Mike Parigian and his fine seminar staff for a smoothly run program and a very memorable one!

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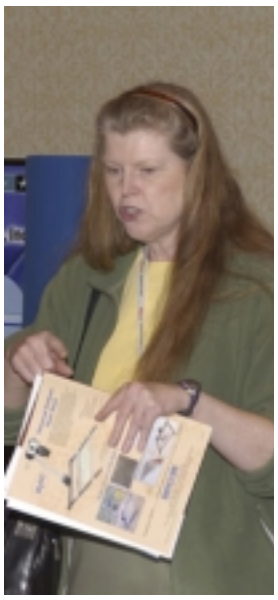


The photographs on this page were kindly contributed by Joe Gonzalez.


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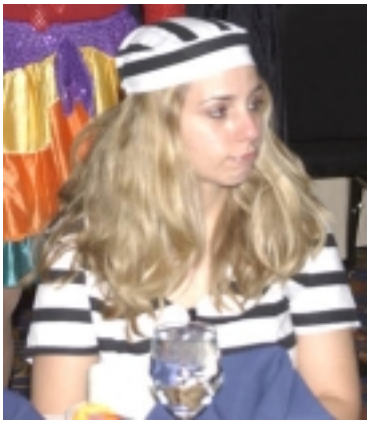

Ray Davis *in the Big Piney North*

Ray moved out of the neighborhood (of California) last June relocating to beautiful Boise, closer to family members. Lance Gima and Diane Burns organized a quick send-off held just two days before Ray and wife Birgitta had their goods shipped north. Characteristically, he did not plan on anyone making a fuss over his leaving. Yet for one who has given so much, about forty close friends came out to honor Ray with a mild roast. We sent him off with love, a "Mister Potato Head", and a bottle of vintage elixir of moderate expense and dubious origin. I now ask the CAC to log another entry about Ray to help us remember this remarkable man. So I now share my impressions in three glimpses as follows: the person, the professional, and lasting gifts he left.

For Ray the person, his "open mind, open heart" mantra sets the tone for this gifted doer. This attitude runs through everything he does. His life experience is about being a whole person first: High School Track and Field Champion • Community Work: • Big Brothers of America • Volunteer Track & Field Coach • US Army Captain • Leukemia Society of America • Married to Birgitta Scott Davis • "Marathon Man" • Involved in personal and spiritual development.

Ray's relaxed easy-going style even extended to court testimony with spontaneous humor on occasion. He once was writing on the display while intoning ". . . two times three is five . . .". A juror interrupted him with "Mr. Davis, I think it's still six." At that point, he turned around and quipped "Well, so much for being an expert!"

His positive, profound persona is further revealed in some of his sayings: I am open to any possibility. • If you want to be loved, be more lovable • I'd be delighted • I will be there, God willing. • Honor the relationship • The test is every day.

So as a person we see a man of great passion, conviction, and vision, always willing to share and continue to learn and grow.

We look now to my second point – his professional life. After earning his chemistry degree in 1972 from Sacramento State, here is a partial list of his activities / contributions: 1972 – 1979, Criminalist – CA DOJ – San Rafael (co-founder of lab with Bill Corazza), Sacramento, and Santa Rosa. 1979 – 1992, Independent Forensic Scientist – Quantum Analytical Lab, Seattle. 1992 – 1994, Criminalist – San Mateo SO Crime Lab. 1994 – 1996, Supv. Criminalist – Santa Clara DA Crime Lab. 1999 – 2004, Professional Development Trainer – Jan Bashinski DNA Lab and CCI Criminalist. Forensic Scientist, 1972 - Present.

Over 40 papers, publications and workshops, Notable papers on footwear evidence (with J. DeHaan) published in *Journal of Forensic Science Society,* First complete cigarette collection (1975 and 1976), Testimony: CA (21 counties), 5 other states and U.S. Military Courts – 1,600 court trials, Member: CAC, Northwest Microscope Assoc., International Assoc. of Arson Invest., CA. Association of Toxicologists.

Offices Held: President CAC, Editor, The *CACNews,* CA DOJ *TIELINE* Editor.

In the mid to late '80s, Raymond began writing on and giving lectures about court testimony. In 1988, he organized a "Courtroom Confidence" class with Richard Konieczka. In 1991, he was the only outside trainer to formally respond to the DOJ bid request for a CCI course on court testimony. Since that time, he has given this class to ~1,500 students. Participants have included various scientists, CSI staff, sexual assault treatment nurses, and ER professionals. Sponsoring agencies have included CCI, FBI, GA Bureau of Ident., and LA State / County labs, among others.

This class has now grown into one of the most sought after offerings in the forensic arena. There are more than 100 applicants on a wait list for this basic class. Never satisfied with the status quo, Ray found a way to bring the class into local courtrooms for authenticity. He continuously updated it to include DUI and DNA advanced versions (latter conforming to SWGDAM requirements). His firearms version is in the planning stage. His students leave the class with skills for effective verbal and visual testimony that are immediately applicable.

Let me now address my third view: the gifts Ray left us. As germane as his training for the courtroom is to that forum, Ray always segued communication principles into our everyday life. Revelations about engaging the people around us extend to personal interactions with family, the public, business associates, and even job interview panels. Here are examples of specific gifts to individuals:

Congratulatory copy of CRIME LAB: by John Houde to the student who most exemplified the principles of his training.

Advice to me – "We'll make it work. Don't sweat the small stuff. We'll present the class accordion-style, expanding / compressing where we need to."

For every student . . . "the secret to public speaking is that everyone in the audience is pulling for you!".

Results of private consultations with special students: a) one having advanced degree, but working in routine low-level job – "You are right! I can achieve much more"; b) an officer whose prior trainer said to keep his 12+ years of military training off his resume and Ray urging him to include it – "You gave me my life back!"; and c) Supervisor of lab worker who was very soft spoken and timid calls to say "Wow! What have you done to ___? What an improvement!."

To every student – the Mind Map, a one-page spontaneous method to display one's resume or case in four minutes.

These and many other gifts were shared with hundreds of people Ray encountered in his personal life and professional career.

We've looked at my three impressions of our association with Raymond Davis – Ray the person, his professional contributions, and the gifts he gave to so many. I'll end with a personal insight I have of Ray. It was embodied on a bumper sticker I saw several years ago. It said, "For the truly educated, there is never a graduation". For me it portrays Ray's vision, contributions, and continuing quest for a better life and a better world. So to Ray and his charming wife Birgitta, we say Thanks and Salute! Ein Prost! Mazel Tov!

– Lou Maucieri

ABSTRACTS

FROM THE

FALL 2004 CAC SEMINAR
VENTURA

Jan Bashinski Eulogy

Michelle Uithoven, Criminalist, Jan Bashinski DNA Laboratory, California Department of Justice, 1001 West Cutting Blvd., Suite 110, Richmond, CA 94804, michelle.uithoven@doj.ca.gov , (510) 620-3377

The Passing of a Dear Friend and a Forensic Science Pioneer.

On September 15th 2004, our good friend and colleague, former Chief of the Bureau of Forensic Services, Jan Bashinski, passed away. As most of you know, Jan was a nationally recognized expert in forensic science, and a pioneer in establishing national standards in quality assurance, which ultimately led to today's Forensic Laboratory Accreditation process. Jan was a visionary, and through her leadership, established the Bureau's DNA program. Diagnosed with cancer in 2001, Jan retired in early 2002. While battling her illness, Jan continued to contribute to the forensic science profession she loved. Jan reviewed grant applications for the National Institute of Justice and completed the California Attorney General's Task Force Report on Forensic Services - "Under the Microscope." She also attended California Association of Criminalists seminars and California Association of Crime Laboratory Directors meetings and was in the middle of writing a report on the "COLD HIT" DNA program.

Jan's entire professional life was devoted to the field of forensic sciences. After receiving her undergraduate degree from UC Berkeley in 1964, Jan began working for the Oakland Police Department as a Criminalist and later the Director of the Laboratory. While working at the Laboratory, Jan continued her education and earned her Master's Degree in Criminalistics from UC Berkeley. During her time at Oakland, the OPD Laboratory was the first public forensic laboratory to seek and obtain accreditation by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board. After 25 years with Oakland PD, Jan left in 1989 to become the first Director of the DOJ BFS DNA Laboratory. Jan was instrumental in establishing the Department's DNA program along with the statewide DNA Offender Database. After becoming Bureau Chief in 1995, she not only sought out funding for the Department's laboratories, but also for all the forensic laboratories in the State operated by local law enforcement agencies. She was successful in obtaining and administering multi-million dollar grant funding from both the federal and state level. Among her notable endeavors; a National Institute of Justice grant-funded project that allowed both DOJ and other California public agency crime laboratories to enhance and improve their DNA typing capabilities and a $50 million grant awarded by California's Office of Criminal Justice of Planning creating the "Cold Hit Project" a three-year program aimed at eliminating the backlog of unsolved sexual assault cases in California. In recognition of her accomplishments, our legislators passed a bill, formally naming the Richmond Laboratory, the Jan Bashinski DNA Laboratory.

In addition to her accomplishments listed above, Chief Bashinski held a number of offices in both national and international forensic organizations, served as a technical grant reviewer for the National Institute of Justice, authored nine articles that were published in leading scientific journals, and made over 50 formal presentations before technical conferences and conventions in the area of forensic science. Her legacy will forever live on, not only within the field of forensic science but also in our hearts.

The Success of the California DNA Data Bank and the Unusual Offender Profiles Seen

Michelle Uithoven, Criminalist, Jan Bashinski DNA Laboratory, California Department of Justice, 1001 West Cutting Blvd., Suite 110, Richmond, CA 94804, michelle.uithoven@doj.ca.gov , (510) 620-3377

This presentation will begin by presenting a brief history of the California Department of Justice Convicted Offender DNA Data Bank. From its inception in 1994, when 40,000 RFLP profiles took four years to complete, to its current 5,000 STR profiles per month and hit frequency currently at just under 2 per day, the Data Bank has seen many innovations and their resulting successes. The days when hits were so rare that the laboratory would throw a party to celebrate a single hit have been replaced by 10-20 hits per week and a celebration being organized to commemorate the 1000th hit. Additionally, if the all felons measure (Proposition 69) passes in November, the Data Bank will be receiving an estimated 240,000 samples per year as opposed to its current 36,000 per year.

It is clear that, with the Data Bank uploading thousands of profiles each month and confirming hundreds of hits per year, the possibility of hitting someone with a unique and unusual profile increases. Given the fact that an analyst working in the CAL-DNA Data Bank could analyze more than 1,000 profiles in one day, it is surprisingly common for an analyst to see a variety of genetic anomalies such as tri-alleles, microvariants, partial null alleles, and even complete null alleles. These types of profiles may be rare to a casework DNA analyst because they do not typically see the large number of profiles a Data Bank analyst does on a daily basis. The Data Bank has also observed that there are some males within the population that show up as females (X, X) when their DNA sample is analyzed. This could be pertinent information for a DNA caseworker. For example, a DNA casework analyst working on a rape case may think they do not have a mixed sample because the sex-determining locus Amelogenin only shows an X allele. This presentation will show the frequency of tri-al-

lelic variants within the California State Data Bank, at which loci they are most commonly found, and what these tri-alleles look like in Profiler Plus, COfiler, and Identifiler amplifications. Querying the CAL-DNA Data Bank has shown that there are a total of 372 offender profiles that have a tri-allelic variant at one or more locus and that the four most common tri-allelic loci are TPOX, D18S51, D21S11 and D13S317. Finally, the presentation will also include what partial null and complete null alleles look like and how the Data Bank enters these profiles into the CODIS system. Examples of other unusual STR profiles will also be shown, such as microvariants and alleles, which fall beyond the allelic ladder.

In closing, it is important not only for the CAL-DNA Data Bank to showcase the success the lab has had and continues to have, but also to show the forensic community examples of the interesting and unique profiles seen within the database that they may come across or hit against when analyzing on an STR profile.

A Case Study: Reconstruction of a Murder and Identification of the Perpetrator Through: Crime Scene Investigation, Trace Evidence Analysis, Handwriting Comparison, Ink Pen Analysis, and DNA

Lela Henke-Dobroth, Chief Deputy District Attorney Ventura County, retired, ldobroth@adelphia.net or henkedobrothlaw@yahoo.com, (805) 649-4305

How the crime scene investigation led to recovery of the vehicle used in the abduction and murder of a 35 year old mother of two. Trace evidence taken from the vehicle helped to identify the murderer. Evidence seized from the suspect's home, bank account and telephone records, helped investigators determine how and where she committed the murder. Handwriting analysis connected the suspect to rental of the abduction vehicle and as author of checks written to purchase implements used in the kidnapping and murder. DNA analysis on blood from the rental car proved that the victim was abducted and murdered in the vehicle rented by the suspect. The Medical Examiner's autopsy and crime lab examinations provided a description of how and why the victim met her death.

BORESCOPES - A Useful and Affordable Tool For Forensic Scientists

Ken Harrington, Gradient Lens Corporation, 207 Tremont Street, Rochester, New York 14608, (800) 536-0790 or (585) 235-2620; http://www.gradientlens.com/, harring@gradientlens.com

The outline of this presentation will include:

* Borescope technology
* Industrial applications
* Forensic applications
* Tool marks, fire-cracking, erosion, defects, etc
* Examination for sabotage
* Recovery of evidence
* Preservation of evidence
* Identification of evidence
* Enhanced capabilities

Toolmarks in Bone

Steven Dowell, B.S., Debra Kowal, M.S., Los Angeles County Department of Coroner, 1104 N. Mission Rd., Los Angeles, CA 90033, sdowell@lacoroner.org, (323) 343-0503*

Coroner's cases offer numerous examples of sharp force and blunt force trauma to soft tissue and bone. Examinations of trauma to soft tissue and bone for the presence of "toolmarks" are made on a routine basis. This presentation will cover some of the properties of the above materials and challenges of "Putting the Pieces Together."

Bone is classified as a visco-elastic material, with elastic and plastic properties, and is sensitive to the amount of energy it can handle and the duration the energy that is applied. Soft tissue, skin in particular, has elastic properties and a surface pattern that can interfere with small feature comparison. Both materials are subject to decomposition and therefore information may change through time. In skin this may result in both a gain and loss of information.

A "tool" is the vehicle for the application of energy to the recipient material. If the transfer of force by a "tool" results in a visible "feature" then we may call what we see a "toolmark". In some cases within the resultant pattern a corresponding pattern, sub-pattern, or feature of the "tool" is identified. This is the discipline of feature and/or striae comparison.

In addition to the identification of patterned marks that lend themselves to direct feature comparison, we also study a group of "toolmarks" that are of a more virtual nature. There are a group of toolmarks that leave behind a medically recognized pattern of trauma, but no visible toolmark. In such cases not only is an understanding of the physical properties of skin and bone necessary, but a knowledge base consisting of experience and material. In reviewing a hundred cases of hammer blows to the skull you can see that a single tool can have a variety of results in what might be thought of as a similar material (hair, scalp, and skull). Through the past twenty-five years we have studied and collected hundreds of examples of trauma in soft tissue and bone that is used for both the direct study of trauma, and as a reference collection. In the absence of being able to conduct or produce test marks in similar material, a reference collection is invaluable in providing examples of known and unknown toomark trauma. Despite all of what we might understand, toolmark analysis in biological material remains a complex and challenging endeavor.

Examples of the above challenges will be presented using case material.

Contributions of Dr. McCrone to Criminalistics

Wayne Moorehead, MS, F-ABC, Forensic Consultant, 7 Boxthorn, Rancho Santa Margarita, CA 92688, waynekip@yahoo.com, (714) 272-4628

The contributions of Dr. Walter McCrone to the profession of Criminalistics will be discussed. His first publication was related to the identification of high explosives using the polarizing light microscope and fusion methods. He wrote many papers, chapters, books, and atlases relating to the microscopic analysis of particles, most relating to potential trace evidence materials. He provided financial assistance and participatory support that significantly improved the concepts of particle/trace evidence analysis in the field of criminalistics.

Dr. McCrone provided the California Association of Criminalist a Founder's Lecture and earned its highest award, the Roger Green award. He also received several awards from the American Academy of Forensic Science.

Bitemark Recognition

Mike Bowers, DDS, Forensic Odontologist, 2284 S. Victoria Ave., Ventura, CA 93003, (805) 642-0381

The good, the bad, and the unconscionable regarding judicial use of bitemark identification.

Glass Cuts in Clothing

Helen Griffin, Ventura County Sheriff's Department Forensic Sciences Laboratory, 800 S. Victoria Avenue, Ventura, CA, 93009, Helen.griffin@mail.co.ventura.ca.us

Slash cuts made by glass appear to have some unique characteristics. Ideally, these characteristics would allow a specific cut in an article of clothing to be individualized to glass as the causing agent. This paper documents the properties of slash cuts made by glass in a variety of fabric types.

During criminal investigations clothing damage can answer crucial questions. Specifically, when forced entry has been gained through a broken glass window or door, the presence of cuts made by glass on the suspect's clothing can assist in negating the hypothesis that glass fragments on the clothing are from some other innocent occurrence.

Ideally we would like to identify clothing damage to a specific cause. The literature on clothing damage discusses distinguishing cuts from tears, knife cuts from scissors cuts, and even arrow damage. Extensive work has been done to determine if a specific knife can be related to a stab-cut. Monahan and Harding noted that stab cuts made by glass are similar to stab cuts made by a knife (Journal of Forensic Sciences, Vol. 35, No. 4, July 1990, pp. 901-912). However, there is a lack of printed material on the characteristics of slash cuts made by glass.

Early in 1995 Michelle Smith was found dead in her home after being raped and strangled. Just prior to her death, Lloyd Monroe had been released after being booked on an earlier assault charge. The couple had a long history of domestic abuse. This case involved analysis of multiple evidence types. Because the bedroom window had been broken to gain entry, glass analysis was one of the requested services. During the course of examining Monroe's jacket for glass fragments, it was noted that the lower portion of the right sleeve had multiple small cuts. These cuts were examined stereo microscopically at approximately 40X magnification. The jacket was a tight-weave cloth fabric and the cuts did not appear typical of knife or scissors cuts. Where cutting occurred, the fibers were cleanly cut. However, cutting occurred only on the surface yarns of the weave. Also, some yarns were skipped over and did not show any cutting. Intermixed with the cut fibers were pulled fibers. Further, two of the cuts were parallel and spaced approximately 4 millimeters apart. A number of these characteristics had been observed in cuts on clothing submitted from burglaries involving broken windows. The available literature did not document the properties characteristic of slash cuts made by glass. However, test cuts were made in an undamaged portion of the jacket. A sharp knife blade, a dull knife blade, and freshly broken glass were used to make the test cuts. The glass made cuts similar to those observed in the damaged area of the jacket's right sleeve. The sharp knife cut cleanly through the entire weave even with light pressure. The dull knife resulted in more tearing than observed in the damage to the right sleeve when light pressure was used. With heavy pressure the dull knife cut through all layers of the weave. This data was combined with the presence of glass particles on the jacket having a similar refractive index to the broken window. The evidence supported the hypothesis that Monroe broke the bedroom window and reached through to unlock it, thus gaining entry to the bedroom.

The clothing that has commonly been submitted in criminal cases includes leather jackets, nylon tight-weave ski jackets, windbreakers, blue-jean jackets, cotton shirts, and cotton / polyester knit shirts. Clothing of this type was purchased second hand. This clothing was worn over protective clothing and forced through a freshly broken window. The resulting damage was examined stereo microscopically to approximately 100X magnification. The clothing damage was examined for the presence of glass. Damage characteristics were documented both in writing and by photographing the damage stereo microscopically.

SWGDRUG 2004 Report

Gary P. Chasteen, L.A. County Sheriff's Department, Scientific Services Bureau, 7717 E. Golondrinas St., Downey, CA 90242, gpchaste@lasd.org, (562) 940-0358

A report of the Fall 2003 and Summer 2004 SWGDRUG Conferences will be presented. The presentation will outline the purposes of SWGDRUG, report on the proposals approved by the Core Committee, and solicit comments from members of the CAC. Also highlighted will be the future direction of the SWGDRUG sub-committees.

Development of Laser Microdissection to Separate Histologically Stained Mixed Cells For DNA Analysis

Christine T. Sanders (1,3), BA, Nick Sanchez (2), BS, Jack Ballantyne (3), PhD, and Daniel A. Peterson (1), PhD, (1)Department of Neuroscience, Rosalind Franklin University of Medicine and Science, North Chicago, IL (2) Los Angeles Police Department, Scientific Investigation Division, Los Angeles, CA (3) Department of Chemistry, University of Central Florida, Orlando, FL*

The goal of this presentation is to present to the forensic community a method for the selective separation of stained and unstained sperm and epithelial cell mixtures in sexual assault evidence using Laser Microdissection (LMD) such that the retrieved cells can be typed for Short Tandem Repeat (STR) analysis.

PCR and STR analysis has become a valuable tool in identifying the source of biological stains particularly in the investigation of sexual assault crimes. Difficulties in analysis arise primarily in the interpretation of mixed genotypes when cell separation of multiple donors is incomplete or when only a small number of target cells are available in a mixed sample. The objective is to use LMD technology to separate and recover pure sperm cell populations from a sperm / epithelial cell mixture by

physically dissecting target cells from a microscope slide smear.

Male sperm cell and female epithelial cell mixtures were prepared and stained on polyethylene naphthalate coated glass microscope slides and placed under a microscope integrated with a UV laser for dissection. Using LMD, sperm cell populations are visually identified, excised, and automatically collected into a PCR tube with the aid of computer software. In addition, five commonly used histological stains were investigated to determine their effects on STR analysis when LMD is utilized. Single source sperm and epithelial cell smears were stained with Hematoxylin/Eosin (H&E), Nuclear fast red/Picroindigocarmine (CTS), Methyl green (MG), Azure blue/Eosin (WRT), or Acridine orange (AO) after which 300 sperm or 150 epithelial cells were collected by LMD. DNA was isolated from the recovered cells by Qiagen QIAamp(purification and amplified using the AmpFlSTR (Profiler Plus kit followed by capillary electrophoresis.)

LMD recovered sperm cells from the mixed specimens provided genotypes at all nine loci and amelogenin of the male donor from 80-320 dissected cells using 28 and 34 PCR cycles with no female donor contamination detected. H&E and CTS stained cells were readily identifiable and higher overall relative fluorescence units (RFU) were observed from the allele peaks of H&E treated cells than CTS samples. AO and unstained samples were identifiable by fluorescence and phase contrast microscopy respectively but they provided less distinction between cell types, and AO was also detrimental to downstream analysis. Genotypes were obtained from cells stained with MG and WRT, though the identification and discrimination of cells was highly challenging.

The Laser Microdissection method described physically dissects stained or unstained target cells without the contamination of adjacent foreign cells in a mixture then collects the cells for direct nucleic acid analysis. This approach has the potential application of recovering cells from sexual assault evidence providing complete separation of minute traces of male sexual assailant DNA from victim DNA.

The Unfortunate Generalist/Specialist Dichotomy and the Challenges of Modern Criminalistics

Dr. Peter De Forest, Professor of Criminalistics, Director, MS and PhD Programs in Forensic Science, John Jay College of Criminal Justice/CUNY

The knowledge and skills of the scientific generalist are absolutely essential in optimized criminalistics. Unfortunately, the concept of the generalist is widely misunderstood. Much of the pervasive misunderstanding of this concept is rooted in a false dichotomy—that of the generalist versus the specialist. What is commonly overlooked is that a scientist can be both a specialist and a generalist. Clearly, no one person can have in-depth knowledge in all of the scientific specialties that are important in criminalistics casework. However, this is not what is required. A scientist can possess very detailed knowledge in a specialty area combined with a great deal of, much less detailed, knowledge over a broad spectrum of scientific disciplines. It is this combination that is highly desirable in criminalistics casework. To recognize and fully understand the physical evidence in any but the simplest cases there is a clear need for the ability to appreciate the wide range of disciplines encompassed by criminalistics. Further, it is desirable for at least one scientifically trained and experienced mind to have oversight over the entire physical evidence situation from beginning to end. It is even better if more than one scientist has this overview so that a sharing of ideas can take place, as the approach to the case is being designed and executed. There is no realistic effective alternative to the presence of scientists at the scene. Who better can define the problem on the front end and assign, oversee and coordinate the laboratory work? Who is most qualified to interpret the totality of the physical evidence and put the case together on the back end? Certainly, the scientifically naïve investigator or prosecuting attorney cannot and should not assume this role. Unfortunately, too often this happens by default on the part of the laboratory system. The proactive stance of the laboratory, vis-à-vis the agencies it is serving, is absent or atrophied.

A few simple case examples will be used in this presentation. These examples are useful for demonstrating the need for scientific oversight and integration. Most will describe situations where the unifying oversight and integration was absent initially, but where, fortuitously, sufficient evidence and information survived. This allowed a belated application of the integration approach and the case was solved. In effect, with these case examples, there is a built-in negative control. Initially, the wrong conclusion or no conclusion was reached. It was only after a generalist-criminalist considered the totality of the physical evidence that the case was solved days, months, or even years later. More commonly, where scientific oversight is not present from the outset, there is no "second bite at the apple" and the opportunity to understand the information latent in the physical evidence is lost. There is no substitute for doing it right the first time.

Firing a Beretta Model 950b .25 Cal. Handgun Underwater at a Glass Target

Gregory E. Laskowski, Supervising Criminalist, Kern County District Attorney Forensic Science Division, 1300 18th Street 4th Floor, Bakersfield, CA 93301, glaskows@co.kern.ca.us, (661) 868-5659

Very little published information exists on the behavior of firearms and ammunition components when they are fired completely submerged under water. Because of the variety of handguns and ammunition types available, this type of study would have limited applications. Although there are specific instances when this type of information may be needed, the best way of assessing its value is through practical experimentation. This paper will look at the effects of firing a Beretta model 950B .25 caliber semiautomatic handgun underwater loaded with Remington Peters 28 grain jacketed hollow point .25 auto ammunition. Additionally, the effects of firing the weapon and ammunition at a glass target while completely submerged will also be studied.

Morphological Identification of Sperm Heads: Two Death Penalties, A Civil Suit and a Chapter

Edwin L. Jones, Jr., Ventura County Sheriff's Laboratory of Forensic Sciences, 800 South Victoria Ave., Ventura, CA 93003. ed.jones@mail.co.ventura.ca.us

This talk will take the audience through experiences that defend the use of sperm heads to identify semen.

In 1997, Orange County required verification of some sperm heads in a homicide. This homicide involved a body that was kept in a freezer by the suspect for three years. The case against the suspect was very strong. He was caught with the victim's body and many of her personal possessions. The victim's blood was located at the suspect's place of business. The Orange County Sheriff's Crime Lab had identified sperm heads in the anal samples from the victim. Only the victim's DNA was found in this sample. The defendant admitted the homicide but denied having sex with the victim. The defense brought in the retired director of an out of state crime lab and an Ivy League fertility doctor who testified that an intact sperm (head attached to tail) is needed for identification. I testified that the sperm heads were identifiable without an attached tail. This case stands as having the longest post mortem interval for the identification of sperm. The jury did find the defendant guilty of anal sodomy and he was given the death penalty.

In 2001, another Orange County homicide required verification of sperm heads. This homicide involved a 12-year-old boy who was dismembered and his body parts encased in concrete cylinders. The pelvic portion of the victim was recovered after one year exposed to Orange County inland temperatures. The Orange County Sheriff's Crime Lab identified sperm heads in the anal samples from the victim. No nuclear DNA was detected in this sample (not even the victim). The case against the suspect was very strong. The defendant admitted the homicide and denied having sex with the victim. The defense called a board certified forensic pathologist to testify that a sperm must be intact (head attached to tail) for identification. When the sperm heads in a photograph were pointed out to him, he said that they were cellular debris. I testified that sperm heads were identifiable and that it was my opinion that the objects identified by the Orange County Sheriff's Crime Lab as sperm were sperm. A jury found the defendant guilty of anal sodomy and he was sentenced to death. This case stands as the longest post mortem interval for the identification of a sperm that was not frozen.

In 2002, the Kentucky State Patrol was being sued because a forensic scientist had identified a single sperm head in a child molestation case. The criminal case against the accused was dropped when DNA results from the vaginal sample did not produce any male DNA. The accused child molester sued the forensic scientist and the Kentucky State Patrol in Federal court with a Section 1983 civil rights (malicious prosecution) action. The basis for this law suit was: "It is the consensus of the forensic science community, the positive identification of a sperm cell cannot be made without an intact sperm cell that includes the head and tail." A private criminalist who had worked for a regional crime lab in Ohio made this statement. A rebuttal to the above statement was written and a 2 to 3 hour videotaped deposition given in Ventura regarding this issue. The case was dismissed by a federal judge and never tried before a jury.

In 2002, Dr. Richard Saferstein asked for an update of Dr. F. Samuel Baechtel's 1988 chapter for the Forensic Science Handbook Volume II 2nd edition. The title of the chapter was changed from "Identification and Individualization of Semen Stains" to "Identification of Semen and Other Body Fluids". The chapter lays out the historical and scientific foundations for the identification of sperm heads. The book is scheduled for release in October or November of 2004.

Reference Ballistic Imaging Database Performance

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Ballistic imaging databases allow law enforcement to link recovered cartridge cases to other crime scenes and to firearms. The success of these databases has led many to propose that all firearms in circulation be entered into a reference ballistic image database (RBID). To assess the performance of an RBID, we fired 4200 cartridge cases from six hundred 9 mm Para Sig Sauer model P226 series pistols. Each pistol fired two Remington cartridges, one of which was imaged in the RBID, and five additional cartridges, consisting of Federal, Speer, Winchester, Wolf, and CCI brands. Randomly selected samples from the second series of Remington cartridge cases and from the five additional brands were then correlated against the RBID. Of the 32 cartridges of the same make correlated against the RBID, 72% ranked in the top 10 positions. Likewise, of the 10 cartridges of the five different brands correlated against the database, 21% ranked in the top 10 positions. Generally, the ranking position increased as the size of the RBID increased. We obtained similar results when we expanded the RBID to include firearms with the same class characteristics for breech face marks, firing pin impressions, and extractor marks. The results of our six queries against the RBID indicate that a reference ballistics image database of new guns is currently fraught with too many difficulties to be an effective and efficient law enforcement tool.

Sewing Up Your Effectiveness as a Witness

Judge McGee and Judge O'Neill, Ventura County Superior Court, Ventura, CA

The importance of expert testimony will be covered with specific reference to juror expectations, truth finding function, and appellate review.

The foundations for expert testimony will be discussed with respect to Evidence Code sections 801 et seq., opinion basis, what material experts can rely upon, and what material experts cannot rely upon.

The principles of effective expert testimony include honesty, clarity, brevity, and impartiality. The use of visual aids to assist testimony will be discussed. Handling cross-examination and communicating with the trier are also basic to effective testimony.

Examples of effective expert testimony will be presented.

Know Your Stuff! Reinventing the California State Data Bank I: From Blood to Buccal

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A bill in the California State Assembly and a voter initiative on the November ballot, if passed, would expand the California DNA Data Bank to include samples from all convicted felons. The higher number of submissions coupled with California's financial difficulties require the DNA Data Bank to increase sample throughput while simultaneously reducing cost and analysis time per sample. The DNA Data Bank currently extracts DNA from liquid blood samples in a semi-automated robotic system with significant analyst involvement in sample tracking and blood aliquotting. Significant savings would be achieved by switching from liquid blood to buccal samples and increasing system automation. Through NIJ grants and collaborative efforts with private vendors, a system has been developed to process buccal samples in an automated, high-throughput system that extracts DNA sufficiently free of microbial contamination for balanced STR amplification. This presentation will discuss the sample collection, processing, and DNA extraction methods developed for this transition. Special emphasis will be given to an automated high-throughput sample partitioning and tracking system for pre-extraction processing. The system simplifies the archiving process by minimizing storage space while allowing easy retrieval for hit confirmations. This transition also affords reduced biohazard exposure and ease of collection as ancillary benefits.

Reinventing the California State Data Bank II: Identifiler/ 3100/Genemapper (Validation of an Expert system)

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With the possible inclusion of all felony offenders and other expansions to the Data Bank statutes on the horizon, the California DNA Data Bank expects a dramatic increase in the number of offender submissions. The sample handling and extraction methods presented earlier will not be sufficient by themselves to meet increased demand. The California Data Bank presently amplifies extracted DNA for the 13 core CODIS STR loci in two amplifications followed by electrophoresis on ABI 377 instruments and Genescan / Genotyper software analysis. This presentation describes the redesign and validation of the entire process of STR amplification, electrophoresis and data analysis for the DNA Data Bank. PCR amplification of all 13 core CODIS STR loci is accomplished in one reaction using ABI Identifiler kits, followed by electrophoresis on ABI 3100 Genetic Analyzers. Data is analyzed by a single software program, GeneMapper ID. In May 2004, NDIS released guidelines for the approval of Expert Systems for data analysis. An Expert System allows for software analysis of DNA samples without human interpretation, effectively taking the place of one or both manual review processes. The California DNA Data Bank is working to fulfill the requirements to bring GeneMapper ID online as an Expert System. The single amplification and electrophoresis coupled with Expert System analysis using GeneMapper ID will significantly increase the efficiency of sample processing by the DNA Data Bank.

Smoke Over Athens – A Disappearing Act

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Lessons From the Early History of the Ventura County Sheriff's Crime Lab and Criminalistics in California

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The Ventura County Sheriff's Crime Laboratory was established in 1957 with Elliott B. Hensel as its first director. In terms that are now outmoded, it was a "one man operation". The lab proper was housed in a single small room on the third floor of the Ventura County Courthouse Annex. The room had ceramic tiled walls and floor. The drains in the floor gave a clue to its prior history. It had served as a shower room for resident deputies in the past. The adjoining anteroom, which was big enough for a desk, a small bookcase, and two small benches served as the office. It also housed the only laboratory instrumentation we possessed: a Beckman DU single-beam UV / VIS spectrophotometer, a Klett colorimeter, an old Greenough-type stereomicroscope, a mahogany framed analytical balance, and a black cast iron and brass vertical monocular biological microscope. Other than the DU, this instrumentation was old then. It pre-existed the laboratory. The balance and the microscope would look nice today on display in a wood paneled study or library. The fume hood and lab benches were homemade. The whole lab, the size of the two rooms taken together, was half the size of my wife Carol's kitchen. There was a medical lab technician who worked the graveyard shift and whose main function was to draw blood from individuals arrested overnight for DWI. This was the state of affairs when I joined the laboratory staff in the summer of 1960, effectively doubling its daytime staff. At this time President Eisenhower was struggling with the political fallout stemming from the shooting down of Francis Gary Powers' U-2 spy plane over the Soviet Union. The Nixon-Kennedy presidential campaign was just beginning to heat up. Vastly less significant in the larger scheme of things, but certainly important to me, I discovered criminalistics and my life's work.

Elliott Hensel was a wonderful mentor. He was self-effacing, but knowledgeable and willing to teach. I learned a great deal. It was from him that I learned about the CAC (the first scientific society I joined) and Dr. Paul L. Kirk's programs in criminalistics at the University of California at Berkeley. On seeing the intellectual challenges and non-routine nature of the scientific problems encountered in criminalistics, I made up my mind early on to transfer to UC Berkeley. In 1961 Elliott Hensel signed up with the United States Agency for International Development (USAID) and spent the next two decades setting up crime laboratories in various parts of the world. We remained in touch through letters. Thomas Wieland, a Kirk student, who had gained experience in the Los Angeles Sheriff's Laboratory, was hired to become the new director in late 1961. Tom Wieland's mentoring style was very different, but I learned a great deal from him before resigning to continue my education with Dr. Kirk at Berkeley in the fall of 1962. Well before I left for parts north, a recent masters graduate in chemistry from,

what was then known as LA State, was hired. With the inclusion of the technician who worked nights, this raised the size of the staff to four. Parenthetically and coincidentally, each of the major ABO phenotypes was represented among the four of us. This was useful when we needed fresh red cells for use as test cells and controls in our blood typing work. The now outmoded isoenzyme typing of dried bloodstains was nearly a decade in the future. We also had a part-time secretary at that point.

This presentation will be more than a trip down memory lane. There are important lessons for the future of criminalistics to be drawn from its past.

By today's standards, the tools available in 1960 were crude. There were problems that were insoluble or difficultly soluble then, for which today's tools would yield ready solutions. We certainly have advanced technologically. The changes are absolutely astounding and welcome. However, there are questions that we need to ask ourselves. Have we become too enamored with our modern tools? Do we reach for the latest tool before reflecting on the problem and designing the most appropriate scientific approach to its solution? In my view, too often the answer to these rhetorical questions is yes. Technology is not a substitute for good science.

A New Rapid and Easy-To-Use Differential Extraction Method

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One of the main reasons for the large backlog of sexual assault samples is the difficultly in working with the evidentiary material. Typical vaginal swabs contain a mixture of victim epithelial cells in large excess over sperm cells. Unprocessed, these samples can only be analyzed using male specific markers that provide important evidence but are of limited use in searching national databases due to the inheritance and non-recombinatorial nature of the Y chromosome.

In 1985, Gill et al. developed a method to enrich for sperm cells in the presence of an excess of epithelial cells. After a controlled proteolysis in the absence of a reducing agent, the sample is centrifuged in a spin basket to remove from the solid matrix intact sperm and solution containing the DNA from lysed epithelial cells. Because the resulting sperm pellet contains loose cell debris a considerable amount of contaminating solution is left and must be diluted out with serial washings and centrifugations. This process is time consuming and results in loss of sperm and variability between examiners.

We have developed a new differential extraction method that takes advantage of the nearly two decades of experience using the standard differential extraction. After a standard Proteinase K digestion of the sample, the solid support and DNA-containing solution are centrifuged through a special material that effectively separates the sperm from soluble DNA and cell debris. The samples are washed once without centrifugation to remove any remaining soluble DNA in the sperm fraction. DNA IQ™ Lysis Buffer containing DTT is then added to the epithelial and sperm fractions. This buffer effectively lyses the sperm without need for further Proteinase K digestion. The total time for separating the sperm from epithelial cells following addition of the sample to the Proteinase K Digestion Solution is approximately 1 hour 20 minutes which includes the 1-hour Proteinase K digestion. The purification of the DNA requires 40 minutes so the total separation and purification can be accomplished in 2 hours.

Because the same standard Proteinase K digestion and initial centrifugation is used to help remove the sperm from the solid support and to lyse the epithelial cells, the efficiency of these steps will be identical to what is currently available. However, only one centrifugation is required for efficient separation so the sperm recovery is better. In addition, the hands on time, as well as the overall time needed to do the separation, has been greatly reduced from the current method. Data will be presented on the sensitivity and successful processing of old samples.

Implementation of SB1623 - Alcohol: Licensing and Accreditation

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Senator Ross Johnson introduced Senate Bill 1623 in January 2004. It was signed into law by Governor Schwarzenegger in August 2004, and goes into effect January 1, 2005.

Senate Bill 1623 removes the oversight of forensic alcohol programs by the State Department of Health Services.

This presentation will briefly discuss the history behind the bill, define who is or is not affected by the bill, and describe what the significant changes are as a result of the bill.

Laboratories will no longer be licensed by the State. Only labs performing alcohol analysis for law enforcement are mandated to meet the new requirements. Title 17 regulations remain in affect. Proficiency testing must follow ASCLD/LAB guidelines. A Review Committee will be established to update Title 17.

Every lab performing forensic alcohol analysis for law enforcement must make preparations for the changes during the transition period between now and January 1st.

Confessions of a Crime Lab Groupie

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How did the former president of the Los Alamitos High School Science Club end up being a history major who writes crime novels? Can one novelist fit history, forensic science, and fiction into a thirty-minute format and still allow time for questions? Will her speech delay lunch? And what the heck is the Crime Lab Project?

Zavala/Puebla – Adobe Photoshop Court Demonstration of Shoe Impression Evidence

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On January 1 of 2003, Valerie Zavala was found dead in a drainage ditch. A key piece of physical evidence was a partial shoe impression in dirt located close by her body.

Shoe impression evidence has previously been presented in court using natural sized photographs, enlarged photographs, overhead projectors, and Elmo projectors. More recently, PowerPoint has been utilized.

For the court demonstration of the Zavala / Puebla shoe impression evidence, it was decided to project an Adobe Photoshop presentation using layers. The layers utilized for this presentation consisted of a composite digital photograph of the partial shoe impression and a scanned image of the shoe outsole.

The primary layer was the partial shoe impression from the scene. Due to the use of incident lighting, the design elements that were best defined in one photograph were the same design elements that were poorly defined in another photograph. In order to show the jury all of the design elements present in the partial shoe impression, a blending mode was used to form a composite photograph. For the photographs in this case, the darken mode with two photographs gave the best representation.

Rather than show the jury a comparison between a test impression and the scene impression, Adobe Photoshop allowed us to use the shoe outsole as a transparent overlay. The shoe outsole was scanned at 600 dpi. The image of the shoe outsole and scale was reversed, sized to the scene impression, and aligned with the scene impression. Alignment utilized guides and free rotation transform. The opacity of the shoe outsole was then varied between 100% and 0%. Another advantage of using Adobe Photoshop was that it allowed us to zoom in to the area under discussion.

The jury was instructed that they could request a viewing of the Adobe Photoshop presentation during deliberation. However, the evidence was also presented to the jury as a photo display.

Adobe Premier can be used to animate the presentation and allows for a more controlled fade from 100% to 0% opacity. However, neither Adobe Premier nor PowerPoint allows the expert to go to a specific area of a specific image in order to answer unexpected questions.

When multiple impressions are present in one lift or photograph, color can be used to track the impression being discussed.

Reconstruction of the Barroso Homicide: Firearms Evidence and Shooting Scene Reconstruction

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This paper will look at the firearms analysis and reconstruction of the shooting scene in the homicide of Megan Barroso. It will present a short overview of the crime and crime scene. It will focus mostly on the trajectory analysis and the interpretation of the pattern of shots into the front of the Barroso vehicle. It will present the animation developed by the District Attorney's Office to convey and illustrate the laboratory findings. It will then touch on other firearms analysis conducted. An additional presentation by Edwin Jones will follow, providing additional analytic work on the case; this presentation will provide some background for that paper.

Trace Evidence and Bloodstain Interpretation From the Sanchez/Barroso Case

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This talk will cover the trace evidence of this case which included red hexagonal glitter, paint transfer, bumper rub strip plastic transfer, analysis of car wax, identification of almond bits and comparison of road dirt. The techniques used in the analysis and comparison of these varied substances will be discussed. Photos used to make courtroom displays will be shown. Analysis of the blood stains on the victim's jacket recovered from the suspect's residence and the bloodstains in the victim's vehicle led to the opinion that the victim had a replenishing wound on her hand.

The victim was celebrating a 4th of July party with friends and was sprinkled with red hexagonal glitter that was approximately 250 microns in diameter. The empty bottle used to sprinkle the victim was recovered. The victim's vehicle (engine running and lights on) was recovered stuck on a medial strip in the early morning hours of July 5th with bullet holes, accident damage and a small amount of blood. The decomposed body of the victim was recovered with a bullet wound in the abdomen a month later. Glitter was recovered from the tape lifts of the suspect's vehicle, the victim's jacket (with bullet damage) recovered from the suspect's residence and the victim's scalp. Comparison was done with microscopy and Fourier Transform Infrared Spectroscopy (FTIR).

The victim's vehicle had fresh accident damage (side swipe) running almost the entire length of the vehicle. Examination of the damage and foreign material abraded onto the victim's vehicle showed that the victim's vehicle was going faster than the object or vehicle that caused the damage. One piece of gray plastic recovered from the leading edge of the driver's door had three molded edges with lots of road dirt. The morphology of this piece of plastic was eventually matched to the inside tabs of a bumper rub strip that was missing from the suspect's vehicle. The height of recovery of this plastic matched the height of the missing bumper rub strip. The road dirt on the piece of plastic was compared against the road dirt on the underside of the suspect vehicle's front bumper. A small amount of paint was missing from the suspect's vehicle at the same height where matching paint was recovered from the victim's vehicle. Comparisons were done with microscopy and FTIR. Witnesses saw the suspect cleaning and waxing his vehicle on July 5th. Recovery of wax from the chrome lettering corroborated the witnesses. Wax was identified with FTIR.

The suspect's defense wanted to know what the small off white chunks of material in the victim's purse were. They were unhappy with a report saying that no controlled substance was detected. The off white chunks were identified as pieces of almond with FTIR and microscopy.

The suspect was found guilty of murdering Megan Barroso and sentenced to death.

Condom Database

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The investigation of condom traces and their subsequent characterization serve as valuable evidence in sexual assault cases and will help characterize the specific brand of condom. Through the creation of a database of the various brands of condoms available on the market and with the help of investigators, victims of sexual assault will be able to put their attacker behind bars. It is important that victims come forth immediately because there is valuable evidence to the investigator. Some examples of this evidence are the actual condom and packaging found at the scene and any evidence yielded from a dead victim. When an attacker uses a condom they usually think that they are protecting their identity, but this is not so because condom brands have a particular signature. Exchangeable traces from a condom may include particulates, lubricants, and spermicides, which vary between brands and can be identified. Using the catalogue or CD the investigator will be able to obtain information from the victim as well as utilize condom trace evidence found at the scene to identify the brand of condom used. In doing so it is possible to draw a correlation between the brand and suspect, and then further investigation can lead to an arrest and hopefully a conviction.

Beyond Laci: California's Missing Persons DNA Program

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This presentation will describe the development and implementation of the California Missing Persons DNA Program (MPDP). The MPDP was created by SB 1818, and became effective on January 1, 2001 (as Penal Code Sections 14250-14251). The law mandated the DOJ to create a database of DNA profiles from unidentified human remains for comparison to DNA profiles from "high risk" missing persons or their families. "High risk" is defined as someone missing as a result of a stranger abduction, missing under suspicious circumstances or missing and presumed in danger or deceased at the discretion of the law enforcement agency. Before case analysis could begin, numerous administrative issues needed to be addressed: Kits were developed for the submission of skeletal remains and for buccal swabs from family members, a training video was developed with POST to train officers to collect reference samples, databases were created to track both remains and references, and several publications were developed (a pamphlet for public distribution and information bulletins for law enforcement agencies). Technical advances include the use of a freezer mill to prepare samples for extraction, the validation and implementation of mitochondrial DNA sequencing and the development, along with the FBI and the Texas and New York missing persons DNA programs, of CODISmp, a new application developed specifically for missing and unidentified persons. Finally, both STR and mitochondrial DNA case examples will be discussed.

Observations on Endogenous Levels of GHB in Urine Over Time

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Gamma-hydroxy butyric acid (GHB) is a central nervous system depressant with hallucinogenic and euphoric effects. In a criminal context, it can be used along with alcohol for its incapacitating effects in drug facilitated sexual assaults. Forensic toxicologists commonly receive requests to analyze urine for the presence of GHB in sexual assault cases. The interpretation of the quantitative results in these cases can be ambiguous. This is due to the fact that GHB is an endogenous compound in human urine. It has also been demonstrated that the concentration of endogenous GHB varies between subjects. Therefore, it is essential to verify the amount of GHB found in urine as endogenous or exogenous in origin. To date, there is no widely accepted concentration threshold that distinguishes endogenous levels from ingested levels of GHB in urine.

Inter- and intra-individual variations of endogenous urine GHB levels were evaluated. The first goal of the study was to compare urine GHB concentrations between subjects. The second goal was to determine if an individual's endogenous GHB concentration is consistent over time. The establishment of a fixed endogenous GHB concentration level per individual would be valuable for forensic casework. The ability to compare the GHB concentration of a background sample obtained from a victim with the forensic sample, obtained from the same victim at the time of assault, would simplify the interpretation of the results.

This study was divided into two parts. One hundred forty seven urine samples from five individuals (non GHB users) were collected over a 30 day period and subsequently analyzed. During the first 48 hours of the study, an aliquot of every urine void from each subject was collected and analyzed. The second part of the study involved analysis of samples collected from the remaining 28 days, at which time only an aliquot of the daily morning first void from each individual was collected and analyzed. Fluctuations of endogenous urine GHB concentrations in both the two-day study as well as the month long period appear random in all participating individuals. No clear concentration pattern was observed. This implies that it is not feasible to try to establish a fixed background endogenous GHB level for any one individual.

The average GHB concentration among all individuals in the study was 3.2µg/mL. The highest concentration found among all samples was 9.8µg/mL. Several specimens in this study approached 10µg/mL, which some analysts consider a threshold level indicative of GHB ingestion. Findings of endogenous urine GHB concentration at such levels suggest necessary reassessment of 10µg/mL as the threshold level of endogenous urine GHB.

The Criteria for the Identification of Firearms in the United States 1870 to 1935

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The earliest reported case of firearms identification, which would be comparable to what is done today, occurred in Mariposa County, California, in late 1877. This was a case where a "shell" (cartridge case) was identified as coming from a particular rifle, resulting in a first degree murder conviction.

The publication of a paper by Dr. A. L. Hall in 1900 set forth some basic principles of identification and made an identification based on "rifling marks".

In August 1906, the "Affray at Brownsville", TX, occurred when the town was "shot up" and one civilian was killed by soldiers from the 25th Infantry. An effort was made to determine which rifles fired the recovered shells. This task fell to First Lt. Wilford J. Hawkins, Ord. Dept. and Mr. G. A. Spooner, Inspector of Gauges at Springfield Armory, MA. The resulting report with illustrations indicates what was relied upon for an identification of a particular rifle.

In 1925, the publication in the Saturday Evening Post of an article by Wesley W. Stout, "Fingerprinting Bullets", was the first public discussion of firearms identification as practiced today. This article was very specific on the lack of an identification in the Stielow case. The following week a second article was published which went into greater detail on the identification process, and Charles Waite's research up to 1925.

Additional published and unpublished materials will be reviewed from 1925 to 1935, which outline the criteria in a fragmentary form. Studies by Goddard will be given in order to give a picture of the thinking during this period. Goddard's background and education will be discussed showing what a remarkable person he was in firearms identification.

Identification of Human Blood:An Immunoassay Utilizing Anti-Human Hemoglobin

Susannah Jarvis, MS and Paul Colman, Ph.D.*

The conclusive identification of human blood has been an often contested issue among forensic scientists. Current analysis usually consists of presumptive testing such as Kastle-Meyer (phenolphthalein) or o-tolidine and a human protein immunoassay. Due to lack of specificity in these procedures, a positive result from these tests does not make conclusive identification of human blood possible. A new crossover immunoelectrophoretic assay was developed involving an anti-human hemoglobin antibody. Specificity testing established the antibody to be specific only to primates. Cross reactivity was not seen with other body fluids nor was inhibition seen in body fluid mixtures with blood. Sensitivity testing demonstrated that the antibody detected hemoglobin at very low concentrations. False negative issues arising from high concentrations of hemoglobin were resolved by running the assay in parallel with an anti-human serum antibody. By detecting the presence of human hemoglobin, which is specific to human blood, the conclusive identification of human blood is now possible.

Did This Case Show Flaws in Blood Evidence Handling? Case Review of *People v. Bergamo*

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A typical DUI arrest that turned bad when the arrestee claimed that the lab results were wrong and then notified the media that the lab must have mixed up his sample. The talk goes into the investigation of the arrestee's claim by the department, the interaction between the lab and the city attorney's office, and the final outcome of the case. The objective of the talk is to stress the importance of good communication between the lab and the prosecuting attorney, and also to stress the importance of following your department's protocols.

PDQ (Paint Data Query) –What it is and What it Can do for You

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PDQ is an automotive paint database that is used to provide investigative information on makes, models and years of vehicles that could have left paint at a crime scene. This paper discusses the history and contents of the database, special materials that are required, two basic search methods, limitations, training, and a case example.

At hit-and-runs, homicides or other crime scenes, investigators may find paint chips from an unknown perpetrator's vehicle. Prior to PDQ, the criminalist could only provide limited automotive information to investigators, such as color and layer structure of the paint. With the introduction of PDQ to United States crime laboratories in 1997, the make, model and year information can now be provided to investigators if the paint left at the crime scene is original ('OEM') automotive paint.

PDQ was developed by the Royal Canadian Mounted Police (RCMP) and contains data from the 1970s to the present. In 1996, the Federal Bureau of Investigation (FBI) in conjunction with funding from the National Institute of Standards and Technology (NIST) entered into an agreement with the RCMP to provide PDQ to laboratories in the U.S. There are currently several U.S. laboratories that are participating in the PDQ program, as well as laboratories in the European Union, Japan, New Zealand and Australia.

The basic contents of the database includes layer colors and structures, layer chemistries, as well as infrared spectra of each layer in a particular sample. In order to run the PDQ, current computer technology is required, as well as an infrared spectral search program such as Bio-Rad's IR SearchMaster, color refinish books from the major automotive paint suppliers (e.g. PPG, BASF, and Dupont), and Munsell color books.

When an unknown paint sample is received in a laboratory, the analyst must determine the layer structure and colors of each layer as well as the chemistry of each layer using infrared spectroscopy. The data is then entered into the PDQ for searching. There are two basic search methods. One involves a search using the analyst's chemical interpretation for each layer; the other is to search the actual infrared spectra of each layer in the PDQ database via the infrared spectral search program. Best search results are obtained when the primer layer is present on the unknown sample because the primer chemistries tend to be more specific to the automotive manufacturer.

PDQ requires that each participating laboratory have a trained representative and that each laboratory collects sixty 'street samples' of automotive paint per year. These samples are sent to the FBI and the RCMP for analysis and entry into

the database. In addition to these 'street samples', the RCMP receives and analyzes paint samples directly from automotive companies. The analytical results are also entered into PDQ. Currently, PDQ contains information on approximately 13,400 samples.

Method Validation for Forensic Casework: A Comparison of Laser Ablation and Solution Nebulization for the Forensic Analysis of Glass by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

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A brief overview of the methods used to validate Sacramento County's inductively coupled plasma mass spectrometer (ICP-MS) and laser ablation (LA) system for glass analysis will be presented in the context of forensic casework applicability. The benefits and shortcomings of forensic glass analysis by LA-ICP-MS will be compared to that obtainable by solution nebulization, a more common sample introduction technique. Finally, general recommendations for sample preparation and data handling will be provided.

Observations on the Identification and Individualization of Human Urine as Applicable to Forensic Casework

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Urine is routinely submitted to forensic laboratories as evidence. Tests for positive urine identification have not been evaluated and explored for use in forensic laboratories. Additionally, DNA testing of urine specimens has not been thoroughly investigated.

In this study, a crossover immunoelectrophoresis technique was developed that examined the sensitivity and specificity of an antibody for THG. Additionally, the following components of urinary sediment were examined for their potential use in the identification of urine: renal tubule epithelial cells, transitional epithelial cells, oval fat bodies, casts, and crystals.

Urine was evaluated for any variations in DNA content during the process of urination. An entire first morning void was collected from six males and four female subjects in approximately 50 ml sequential aliquots. The DNA from each aliquot was measured. A greater number of males were chosen given the reported difficulty of DNA typing of urine from males.

The protein assay for THG proved to be a useful test for urine identification. Precipitant bands were observed with urine. Weak urine specimens resulted in incomplete bands. Weak precipitation was observed when the following substances were tested with antiserum to THG: sweat, semen and vaginal specimens. However, the activity observed with these specimens is distinct from the precipitant band observed with urine samples. The author recommends caution in interpretation of THG results, particularly with weak precipitant bands. The components of urinary sediment provided limited use in identification of urine. The cells observed in the microscopic preparations of urine resemble cells present in other body fluids. Likewise, oval fat bodies and urinary casts, lack identifying characteristics. Moreover, a combination of tests is recommended to provide positive identification of urine.

Urine collected during different stages of urination varied in DNA content. Seventy percent of the subjects had most of their DNA in the first portion of their void. These findings suggest that the method of sample collection can have an impact on the success of DNA typing. Additionally, knowledge of the heterogeneous nature of urinary DNA content can have an impact on how urine stains are sampled.

Evaluation of a New Solvent System for Use in HPLC/MS^n Textile Dye Analysis

Lauren M. Petrick[1], Trevor Wilson[2], and W. Ronald Fawcett[1]

Introduction

A high-performance liquid chromatograph, ultraviolet / visible (UV / Vis) diode array detector (DAD) interfaced with an ion trap mass spectrometer (HPLC / MS), combines a separation technique with the ability to detect the mass of a compound or fragments and simultaneously collect UV / Vis spectral data. The HPLC / MS can be used to characterize any sample that can be dissolved in an ionizable and volatile solvent system, and is particularly useful for analytes of low concentration. These attributes make the instrument a potentially powerful tool, particularly for the analysis of textile dyes in a forensic context.

Methods for fiber analysis with HPLC / MS include extracting the dye from a fiber, running the extract solution and collecting spectral information, and uniquely characterizing the separated dye components by the spectral data. This process can then be repeated for other fibers, and similarities in dye components compared.

Established forensic protocol for the extraction of basic dyes from acrylic fibers uses a formic acid:water solvent system which is compatible with the MS, whereas the extraction techniques for disperse dyes from polyester fibers and acid dyes from nylon are not. Therefore, a new system that can be used for both acid and disperse dye extraction needs to be developed which can be used for textile dye analysis on the HPLC / MS.

HPLC/MS Instrumentation

The HPLC / MS system was an 1100 series Agilent HPLC / MS with an atmospheric pressure electrospray interface. The column was a narrow-bore Agilent Zorbax SB-C18 column (2.1 X 150 mm) with an Eclipse XDBC8 narrow bore guard column (2.1 X 2.5 mm), interfaced with an ion trap MS (Bruker Esquire 3000 plus, Fremont, CA, USA).

HPLC Optimization

In order to evaluate the efficiency of a new extraction system, the HPLC / MS was optimized for disperse dye analysis. First, dye standards were run on an unoptimized gradient to obtain MS and UV / Vis spectral information for dye identification. Next, the gradient and MS were optimized for maximum separation and abundance of each dye ion. A mixture of 13 disperse dyes was successfully separated using optimized HPLC / MS parameters. The separated dyes in the mixture (See Figure 1.) were identified by comparing MS and UV / Vis data collected from the standards.

In order to be a useful method, the HPLC / MS must be applicable for the analysis of textile dye extracted from single fibers. Therefore, the extracting solution must be compatible with the instrument and must contain an adequate amount of dye for analysis. Unfortunately the extraction systems for acid dyes from nylon and disperse dyes from polyester use an incompatible solvent system, pyridine:water, thus a new extraction solvent system was investigated.

Dye Extraction and Evaluation

A 4:3 (v:v) pyridine:water is currently used in forensic science for acid dye extraction from nylon, and can be used for disperse dye extraction from polyester. This system is incompatible with the HPLC / MS, due to low ionizability of the solvent. In addition, pyridine has a pungent odor not recommended for use in routine analysis. Therefore, a new system was investigated that could be used as a substitute for the pyridine:water extraction solution.

First, the pyridine extraction of disperse dye from polyester was optimized through temperature and time studies. Then, a substitute was explored. Low molecular weight amines were selected from the list of compatible solvents provided by Agilent. These included acetonitrile and triethylamine. Second, any pH dependencies were investigated by measuring the pH of the pyridine:water system, and making solutions of ammonium hydroxide, acetonitrile, and triethylamine with water at a similar pH. Swatches of dyed polyester fabrics were then extracted with these solvent systems, and the best extraction was evaluated visually.

It was visually concluded that the acetonitrile system had the most colored extract. Therefore, this system was then selected for further analysis of disperse dyes as well as acid dye extraction. See Figure 2. Swatches of polyester fabric dyed with disperse dye and nylon fabric dyed with acid, were extracted with both the pyridine:water system to the acetonitrile:water system. The extraction efficiency of both systems was then compared. An evaluation of the extraction efficiency was determined using either a bench spectrophotometer or the HPLC / UV / Vis. It was found that there was variability in initial dye concentrations in the fabric swatches, thus the calculated dye extraction concentrations ranged. Therefore, the calculations could not be averaged, and each extraction was considered individually. The ratio of dye concentration in acetonitrile versus pyridine was determined for each dye, and a range of values indicated. See Table 1.

The resulting HPLC / MS method for polyester fiber dye analysis was tested using 0.5 cm single fibers. For all of the available dyes, a polyester fabric swatch was dyed, single fibers extracted with the acetonitrile system, and the extract run on the optimized parameters. An example of the effectiveness of this method is the chromatograph and MS spectrum of C.I. Disperse Orange 25 (DO25) seen in Figure 3. Note the *m/z* 323.9, which is the expected ion of the dye when operated in the positive mode. See Figure 4.

Conclusion

In this study, a new solvent system was developed that

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was used for the extraction of disperse dyes from polyester and acid dyes from nylon with HPLC/MS. In addition, HPLC/MS parameters were optimized for the characterization of disperse dyes. The culmination of extraction and analysis allowed for the characterization of disperse dyes extracted from "forensic size" samples. These results demonstrate the viability of HPLC/MS for the analysis of polyester and acrylic fibers. The continuing development of HPLC/MS analysis for these and other dye classes will enhance fiber comparison for use in a forensic setting.

Acknowledgements

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Note to Reader: Please address any questions to Trevor Wilson at The Sacramento County District Attorney's Laboratory of Forensic Services, 4800 Broadway St., Suite 200, Sacramento, CA 95820, (916)-874-9240, wilsont@saccounty.net. Watch for a more detailed description of this work in future publications.

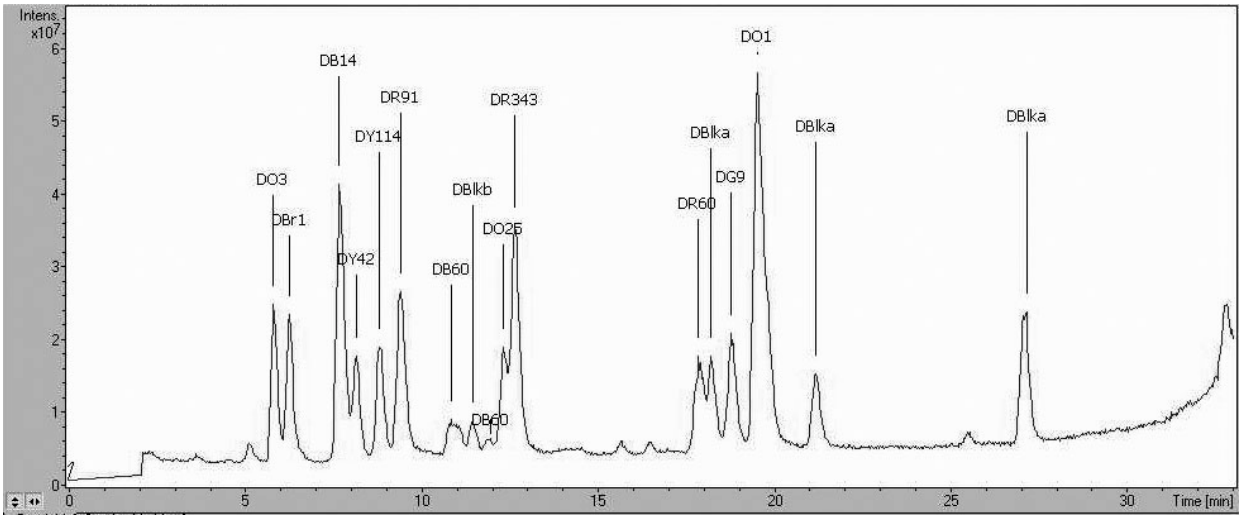

Figure 1. Chromatograph of 13 disperse dyes on optimized gradient

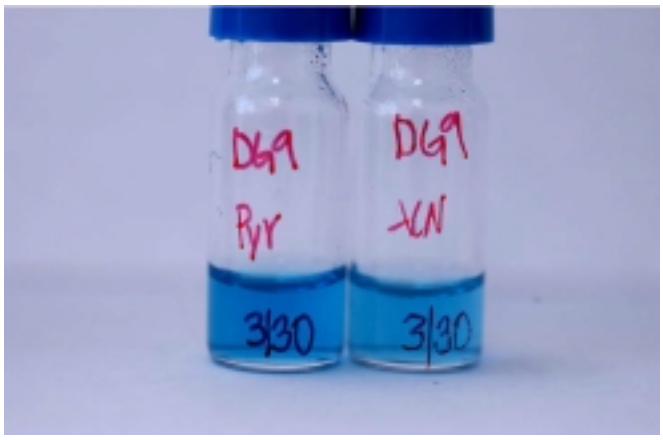

Figure 2a. Disperse Green 9 extract

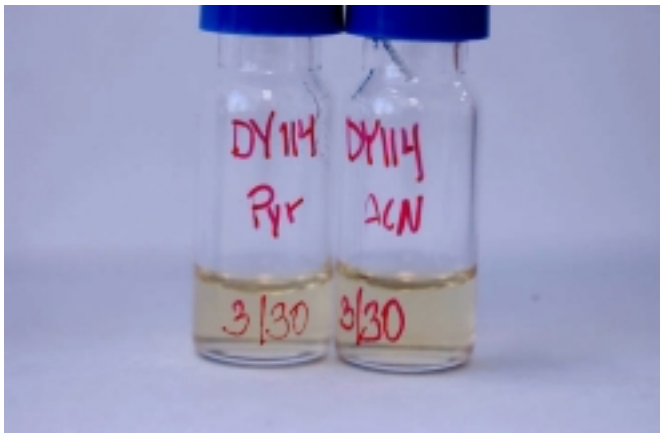

Figure 2b. Disperse Yellow 114 extract

Figure 2c. Disperse Red 91 extract

Table 1a. Extraction Efficiency Calculated for the Bench Spectrophotometer

ACN/Pyr* efficiency	Range
Disperse Yellow 42	0.90—1.18
Disperse Blue 60	0.77—1.03
Disperse Orange 25	1.05—1.12
Acid Blue 113	0.25—0.30
Acid Yellow151	0.59—0.85
Acid Green 25 small peak	0.57—0.94
Acid Green 25 major peak	0.57—0.93

**acn=acetonitrile, pyr=pyridine*

Table 1b. Extraction Efficiency Calculated for the DAD

ACN/Pyr efficiency	Range
Disperse Red 60	0.55—0.67
Disperse Brown 1	0.56—0.74
Acid Orange 156	0.52—0.57
Acid Yellow 151	0.66—0.81

**acn=acetonitrile, pyr=pyridine*

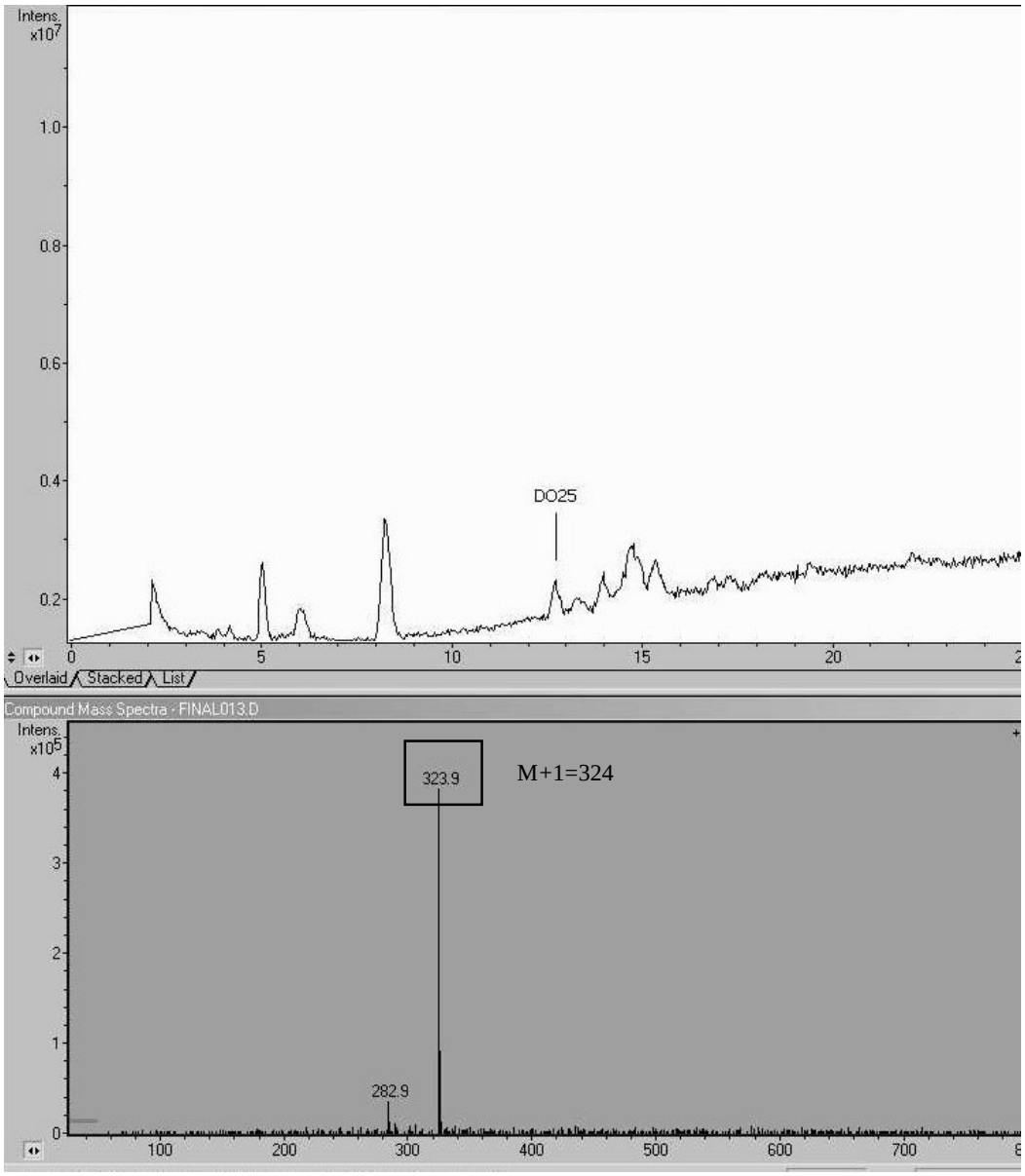

Figure 3. Chromatograph and MS spectrum of DO25 extract

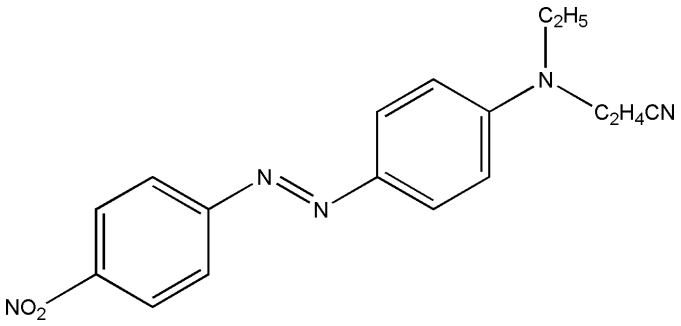

Figure 4. Structure of DO 25 Dye

John DeHaan Announced as Instructor for Fire Death Investigation Class

Fires can be accidental or intentional, and fatalities may occur as a direct result, as a trigger event, or even in a manner unrelated to a fire. A successful and accurate investigation depends on cooperation among fire investigators, medicolegal specialists, criminalists and, often, homicide investigators. The Life Sciences Department of UC Davis Extension has announced a course that looks at what kills people in fires, as well as the attending medicolegal issues of investigations of death-related fire scenes.

Unlike a gunshot or blunt force wound, the effects of fire and its by-products on people can vary and take place over an extended period of time. This course describes the dynamics of various kinds of fires, the nature of their by-products, and the effects on those exposed to them. Issues of scene management, investigation, documentation and reconstruction will be discussed in detail and highlighted with case studies. The course is intended for police, fire, forensic, medical or legal professionals and will prepare students to correctly identify, document, correlate and interpret evidence from fire scenes at which fatalities occur.

The instructor will be John DeHaan, Ph.D., a criminalist involved with fire and explosion investigations for more than 30 years. He has worked at county, state and federal forensic labs and is a member of NFPA and IAAI, where he serves on their Forensic Science Committee. He is a Fellow of the American Board of Criminalistics and a member of the Institution of Fire Engineers. He retired from the California Department of Justice in 1998 and is now president of his own consulting firm, Fire-Ex Forensics, Inc., based in Vallejo, California, consulting in fire and explosion investigations throughout the U.S., Canada and overseas.

The course is scheduled for Wednesday. February 9, 2005, 8 a.m.-5 p.m. at the Da Vinci Building, 1632 Da Vinci Ct., Davis. A fee of $329 ($369 if postmarked after January 26, 2005) is asked. Enroll in section 043FRP602. For more information please call (800) 752-0881 or visit www.extension.ucdavis.edu. When calling, please refer to the following key code: 043 185-ZZ.

An Open Letter From ASCLD/LAB to Forensic Science Organizations

Nearly all are aware of the Madrid train bombing from March and the resultant initial misidentification of attorney Brandon Mayfield, as a suspect in that case. As many of you may also know, ASCLD/LAB received a letter suggesting that the FBI Laboratory's accreditation be suspended as a result of this case.

For a number of years, ASCLD/LAB has had a policy and practice for dealing with QA problems and concerns that may arise in accredited laboratories. This procedure has also been used to address issues raised in non-accredited laboratories, when the courts or interested third parties requested our help. (A synopsis of the policy can be found within the Chair's Message located on the ASCLD/LAB website.) An essential requirement of the accreditation program mandates a laboratory have written procedures that will be used to initiate review and take corrective action any time there are indications of a significant technical problem or concerns about the work of an analyst. Accreditation inspections routinely check for the existence of such a policy and that a laboratory follows these procedures.

In this case, outside review was initiated by the FBI and after conversations with FBI management, ASCLD/LAB began its review process in late May. Since that time, we have had open communications with FBI management and access to all documentation in this case (including all reports generated by the seven independent panelists). We continue to evaluate and monitor the QA program and the laboratory's process to ensure that appropriate corrective action is taken. If at any time it is determined that the FBI Laboratory has not responded appropriately and in the best interest of the public, ASCLD/LAB has the prerogative to suspend or revoke its accreditation.

Unfortunately, the actions exhibited by the analysts involved with this case appear similar to the groupthink model. This is undoubtedly a wake up call for anyone using database information to initiate analysis, and substantiates the principle that good laboratory documentation addressing comparison and association are a must. Accreditation cannot eliminate human errors nor can it prevent occurrences like this from happening. However, our program does require laboratories to have in place an operational quality system that should minimize these errors and provide for early detection and correction of such, as they arise.

The suspension of a laboratory's accreditation, without complete review of facts, does little to support a laboratory that must immediately deal with QA issues and, in fact, shows that ASCLD/LAB really does not abide with its stated objective of trying to improve the quality of service to the criminal justice system. Had ASCLD/LAB's first response been to suspend accreditation, the right to due process would have been violated.

Once a problem is discovered, cooperation between organizations is paramount in assisting the laboratory through the cause analysis investigation, implementation of corrective action, and follow-up. These were the steps followed in this case and will continue to be ASCLD/LAB's model for any future event.

Because the ASCLD/LAB accreditation program is voluntary and our goal is to encourage every forensic laboratory to subject its operation to the scrutiny of accreditation, the process discussed above is routinely carried out in a confidential manner. While this is a very high profile case, ASCLD/LAB responded to this situation in the same manner to which it responds to those which may not grab the public's attention. I believe that ASCLD/LAB and its Board of Directors have operated freely and in accordance with stated objectives in handling this case. I also believe that the manner in which the FBI is handling this may prove to be a model for any laboratory to follow whenever a similar situation occurs.

Don Wyckoff
ASCLD/LAB Chair

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Just in: CAC 14 oz. stainless steel mugs ($10), CAC Acrylsteel Mugs in Candied Apple Red and Sapphire Blue ($12), CAC 8 oz. wine glasses ($5). Please note: Polo shirts and denim shirts will be available if ordered PRIOR to the seminar. We also have a new shipment of navy blue T-shirts "When your day ends. . . Ours begins" with chalk outline.

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Spring: **Oakland PD**
Fall: **Los Angeles PD**
2006
Spring: **Contra Costa Sheriff**
Fall: **DOJ Riverside**
2007
Spring: **Orange Co. Sheriff**
Fall: **DOJ Richmond DNA**
2008
Spring: **Sacramento DA**
Fall: **San Diego PD**
2009
Spring: **Santa Clara Co.**

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California Association of Criminalists

In Memoriam
Jan Bashinski

My Mentor: Jan Bashinski

When I was growing up, I received good personal qualities from my parents, like saying please and thank you and learning the golden rule: don't run with scissors. As I received my college education in criminalistics, I received good academic qualities from my professors, most notably George Sensabaugh and John Thornton; qualities like keeping my sense of wonder, learning good laboratory practices, and learning the golden rule: if you break it, you pay for it. But in order for me to succeed in my chosen profession, I would need a strong mentor if I was to gain respect from my peers. The stars were aligned for me because my mentor was Jan Bashinski. Jan taught me to ask the right questions, maintain my integrity, and follow Jan's golden rule: "Just Do It" (this was before Nike owned these words). Since I have always been a champion of equal opportunity for women I was especially pleased that my mentor was a woman.

When I was a criminalist trainee, Jan gave me the personal attention, the resources, and the critical evaluation necessary to succeed as a criminalist. If Jan thought I was ready to do independent work, I had to believe I was ready.

I was a criminalist at the OPD lab for 13 years and witnessed many turbulent times for forensic science, especially in forensic serology. I was always proud to be associated with Jan and other local peers who had their fingers on the pulse of the issues and contributed greatly to advancing the science.

I was a criminalist at the OPD lab for 13 years and witnessed many turbulent times for forensic science, especially in forensic serology. I was always proud to be associated with Jan and other local peers who had their fingers on the pulse of the issues . . .

Marty Blake

After about 7 years as a criminalist at Oakland, I became restless and wanted to do more trace evidence cases and questioned document training. I applied for positions at the DOJ Crime Labs and was offered two different positions. After weighing the pros and cons of moving and working for a much larger lab system, I decided to stay in Oakland. Jan gave me a lovely stained glass daffodil with a note attached that read "Bloom where you are planted." I did and the daffodil is still in my office 20 years later.

But Jan was more than my mentor; she was also a good friend and she and her family often welcomed my family and me into their home. She was foremost an exceptional scientist but she held strong interests in music, books, theatre, and art.

One thing I observed about Jan: when she entered a room of people, the atmosphere became more charged. Her company was sought and she was a great conversationalist. If you managed to get her attention you would have a great time and she had way of making you feel like she hung on your every word. I will always treasure those times.

All criminalists are fortunate to be the beneficiaries of Jan's knowledge, integrity and wisdom. She was kind, but firm; confident, but humble; and most of all she was passionate and fearless about the responsibility that all criminalists have for the continued health of forensic science.

There's a line in the movie As Good as it Gets where Jack Nicholson's character says to Helen Hunt's character "You make me want to be a better man." I say to Jan "You make me want to be a better woman." And she still does.

—Marty Blake
San Francisco

Jan Bashinski—Dedicated Researcher, Conscientious Forensic Scientist, Visionary Leader

All these are the Jan who graced our profession, our meetings and our lives. The young, intelligent girl with the long, black hair gave way to the elegant woman who helped shape forensic science as we know it.

Jan's zeal for living manifested itself in her work, spanning the early research in serology to the establishment of the California State System's DNA Laboratory. Her enthusiasm was not limited to the laboratory. Every organization of which she was a part - AAFS, ASCLD, CAC, CACLD - benefited from her tireless work and her leadership.

But as serious as she was about her work, Jan was as fun loving in her social life. Whether she was moving on the dance floor, or laughing with friends, Jan was the center of attention. Her lovely soprano graced many a songfest at many receptions.

Ms. Bashinski retired in April 2002, as the Chief of the California Bureau of Forensic Sciences, ending a stellar career. Her importance in forensic science can be best summed up in the words of then AAFS Criminalistics Section Chair Larry Presley, "Jan Bashinski is the pillar of criminalistics."

[A]s serious as she was about her work, Jan was as fun loving in her social life. Whether she was moving on the dance floor, or laughing with friends, Jan was the center of attention. Her lovely soprano graced many a songfest at many receptions.
Carla Noziglia

Jan showed competence and achievement in her early years, evidenced by her outstanding research and publications in serology. Later, her leadership qualities took her to committees, boards of directors, national committees and presidencies as well as the leadership of the California State Crime Laboratory system. All thirteen state forensic laboratories were in her scope of command, necessitating keen budgeting, lobbying and managerial skills. Jan is the first woman to be recognized with the American Society of Crime Laboratory Directors Briggs J. White Award.

Jan was instrumental in the complete refurbishing of the state sexual assault protocol, bringing the collection of evidence to the level of the forensic science that analyzes it. To bring this about and keep it functioning well meant interacting with law enforcement, medicine and the judiciary. It is to Ms. Bashinski's credit that this protocol is held as a model for others.

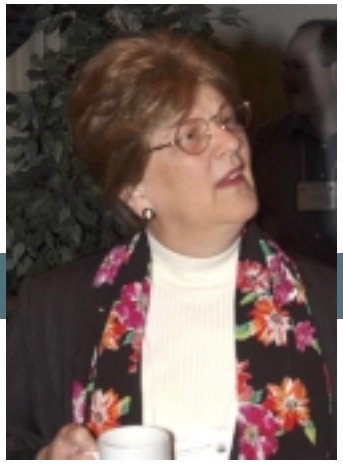
Jan has always been focused on the ultimate goal of quality in analysis, first by her own laboratory integrity and then through her involvement in the accreditation process. She worked for the ASCLD/LAB in its infant stages, served as Chair, which, by her dedication and work with others, has become not only accepted in the forensic world but also imitated.

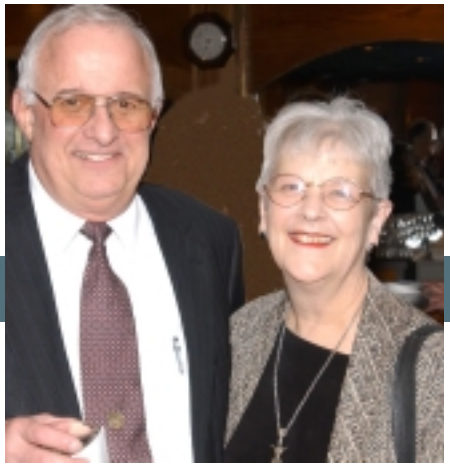
But Jan was not all work centered. Her civic involvements are many, bringing the understanding of forensic science to nonscientists, especially students.

Jan is a woman whom I am honored to call "friend". Excelling in her career, she has excelled in her life as well. Her friends are legion because of her friendly and open personality. Enhancing her professional and personal life is her warmth, her laughter and her elegance. ASCLD meeting attendees were educated by Jan's many paper presentations during the day, and charmed by her laughter and lovely voice raised in song in the evening.

Jan has my friendship, my respect and my love. We miss you, Jan; your quiet wisdom, your quick conversational skills, your ready smile. We miss you, lovely friend.

—Carla Noziglia
Tanzania





The Oakland Game Whodunit

Design: Vince Deitchman

CAC Spring Seminar May 9-13, 2005