

The CACNews

News of the California Association of Criminalists • First Quarter 2010



SANTA CLARA C S O
CRIME SCENE UNIT

A yellow evidence marker is shown, attached to a blue string. The marker is a bright yellow, rectangular piece of paper with a slightly torn edge. It is positioned diagonally. The text on the marker is printed in black, bold, sans-serif capital letters. The background is a blurred outdoor scene with green foliage and a dark, possibly paved, ground.

The President's Desk

Honors & Recognitions

The success of any professional association is dependent on its members as they work together to further the interests of the profession. The recent seminar, hosted by the Santa Clara County DA's Crime Lab, highlighted the hard work and dedication of many CAC members. First of all, the members of the hosting laboratory, led by Seminar Chair John Bourke, obtained a great seminar site, developed the program which included technical papers and workshops addressing several criminalistics disciplines, and secured vendors who financially supported the seminar. The flashlight tour of the Winchester House, including transportation in a jail bus complete with cages, was truly unique. However, no reports of ghost sightings! Thank you to the Santa Clara staff for a great seminar.

This Seminar also included the Founders Lecture, which is given at a seminar approximately every eighteen months. The Founders Lecture series was established by the Board of Directors in 1985 as a memorial lecture in honor of the Founder's of the CAC. The first Lecture was delivered by one of the CAC founders, Jack Cadman. This year's lecture was given by Dr. Jay Siegel, who is a professor in Forensic Science at Indiana University Purdue University in Indianapolis. Dr. Siegel has served on numerous editorial boards, and most recently was a member of the NAS Committee that studied the needs and future of forensic science and issued the report: Strengthening Forensic Science in the United States: A Path Forward. Dr. Siegel was able to provide some insight on to the creation of the NAS Report and offer remarks regarding where the future will lead. His lecture is published in this issue for those who were not able to attend the seminar. The Founders Lecture Committee has been chaired by John DeHaan since the early 1990's. He has been responsible for selecting speakers, coordination with the seminar hosts regarding travel and accommodations, and ensuring the lectures are published in the *CACNews* and *Science and Justice*. Some of the Founders lectures have been preserved on video, and plans are underway to convert these to DVD. Manuscripts of the lectures and the DVD's will available through the Historical Committee. A list of the lectures will be published in a future issue of the *CACNews*.

Another group whose work was evident at this seminar is the Awards Committee, chaired by Vincent Villena and Jamie Daughetee. Awards are one way the CAC recognizes and encourages contributions to the Association. This committee is responsible for the solicitation of nominations of the various awards and presentation of the nominations to the Board of Directors. The committee also contacts the nominators and awardees once the award is determined, prepares the certificates and plaques, and coordinates with the treasurer and president for presentation of the award. One of the honors of serving as president is giving out these awards. At the seminar banquet, I had the opportunity to present the Anthony

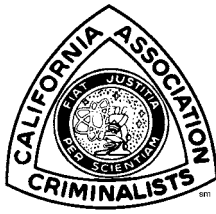
Longhetti Distinguished Member award for 2009. The Distinguished Member award has been given annually since 1983, and recognizes members who have contributed significantly to the association. This year's Anthony Longhetti Distinguished Member Award was presented to Keith E. Peterson Inman. Keith's service to the association and the profession certainly fits the definition of this award. His influence has been wide spread, as he has practiced criminalistics in both the public and private sectors for over thirty years. He has written or co-authored numerous scientific papers and has co-authored two books, *An Introduction to Forensic DNA Analysis* and *The Principles and Practice of Criminalistics*. He was the chair of the CAC DNA committee and spoke before the NRC Committee on DNA in Forensic Science in 1994. He was the author of an *amicus curiae* brief to the California Supreme Court on behalf of the CAC regarding the reliability of DNA evidence. The nomination, which was submitted by Norah Rudin and Dan Gregonis, states: "Keith has obviously been a significant and continuous asset to the CAC and the criminalistics profession in general, he has mentored and taught numerous practicing criminalists and his comments and presentations are always worth considering. He is one of those individuals that continue to be passionate about our profession and truly makes you think about what you are doing and why." During his acceptance remarks, Keith recognized those individuals, several of whom are CAC Distinguished Members, who have influenced his career.

The Seminar Committee has proposed that the CAC discontinue the semi-annual seminars and change to a single seminar once per year, alternating years between the north and the south.



Mary Hong
CAC President

Please turn to page 7



The CACNews

www.cacnews.org

Editorial Secretary Greg Matheson
(323) 415-8112
B8927@lapd.lacity.org

Art Director John Houde/Calico Press, LLC
(206) 855-1903
john@calicopress.com

Technical Jennifer Shen
(619) 531-2655
jshen@pd.sandiego.gov

Webmasters Mark Traughber, Eric Halsing
(951) 361-5000
mark.traughber@doj.ca.gov

Advertising Contact the Editor

The *CACNews*, ISSN 1525-3090, is published quarterly (January, April, July, and October) by the California Association of Criminalists (CAC).

The CAC is a private foundation dedicated to the furtherance of forensic science in both the public and private sectors.

Please direct editorial correspondence and requests for reprints to the editorial secretary.

Copyright © 2010 The California Association of Criminalists. All Rights Reserved.

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.

Submissions should be made in the form of Windows compatible files on CD or by e-mail. MS Word files should be saved as version 2000 compatible. Alternatively, text files may be saved as plain ASCII files without formatting codes, e.g. bold, italic, etc. 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 August 15.



On the cover...

An evidence-marking flag from the clandestine grave workshop hosted by the Santa Clara DA's lab and the sheriff's crime scene unit. More photos inside.

INSIDE

"The President's Desk" <i>President Mary Hong</i>	2
CACBits / Announcements / Classes.....	4
Ed. Secretary, "Procrastination, Garage Doors & Gratitude" <i>Greg Matheson</i>	5
"Feedback" <i>Letters to the Editor</i>	6
NAS Report: The CAC Response	8
CAC Founders Lecture	
<i>Dr. Jay Siegel</i>	10
Section Reports	13
Fall 2009 in Santa Clara	
<i>Seminar Scenes</i>	14
Abstracts from the CAC Seminar.....	20
Preparing for Court Testimony	
<i>Robert Blackledge</i>	23
Most Outstanding Paper, "The Harper Murders"	
<i>Greg Laskowski</i>	27
Essay: "Judge for a Day"	
<i>John Houde</i>	30
Proceedings of Lunch: "Dining with a Founder"	
<i>Norah Rudin and Keith Inman</i>	32
Distinguished Member Award	
<i>Keith Inman</i>	34

CACBits



Firearm evidence recovered in a double homicide is explained by CAC member Laurie Crutchfield in an episode of truTV's "Murder by the Book." The episode, which aired in January 2008, follows mystery author Elizabeth George's interest in writing about the killing of Kenneth and Carolyn Stahl.

Comments Invited from Forensic Community

The National Association of Criminal Defense Lawyers (NACDL) are looking for input and feedback from scientists as they prepare a report to be submitted to the NACDL Board of Directors in February, 2010.

The report, "NACDL Preliminary Position Statements and Recommendations on Strengthening Forensic Science," is a work in progress and will be submitted to scientists around the country for comment and review. On November 7, 2009, NACDL's Board of Directors voted to adopt the report as the Association's preliminary statement of positions and recommendations on the future of forensic science. NACDL is making the report available to the public in its current form to facilitate the reforms suggested by the National Academies' National Research Council in their own report published earlier this year, Strengthening Forensic Science in the United States: A Path Forward (National Academies Press 2009).

According to NACDL Second Vice President Steven D. Benjamin, a Richmond, Virginia lawyer who presented the

cont'd on page 7

The FSS is Fifty

The Forensic Science Society celebrated their 50th Jubilee at their Autumn Conference, held at the Majestic Hotel in Harrogate, October 30th-November 1st. President-Elect Adam Dutra attended the conference as the representative of the CAC. Her Royal Highness, The Princess Royal opened the conference and Adam had the opportunity to meet the Princess. As is tradition, the CAC and the Forensic Science Society exchanged gifts. Adam presented FSSoc President Brian Rankin with an academic stole embroidered with symbols representing the members of both organizations: The English rose, the Irish (Northern and Republic) shamrock, the Welsh daffodil, Scottish thistle, and the California poppy. President Rankin presented Adam with a handmade pen set. The conference was informative and enjoyable and the hospitality Adam received was outstanding. Adam wants to remind CAC members that the CAC and the FSSoc have a long standing relationship. CAC members are encouraged to attend FSSoc meetings whenever possible. For a list of upcoming conferences, visit: www.forensic-science-society.org.uk/Education+Conferences+CPD/Society_Conferences_2010.htm



Top: CAC President-Elect Adam Dutra (l) and FSS President Brian Rankin. At right, a hand-made card from the CAC congratulating the FSS on their Golden Jubilee.

The Editor's Desk

Procrastination, Garage Doors & Gratitude

You would think writing an editorial for a quarterly newsletter would be relatively easy. Four times a year isn't very often to come up with a decent idea, put it to paper and e-mail it off. But it has yet to be easy. I can't image writing for a daily publication, or blog. I have still yet to figure out how so many people post regularly to Facebook and/or constantly tweeting. Though it is tougher than I thought it would be, I have identified the reason it is tough for me and it's described by a word I was taught by my 4th grade teacher. I had waited until the weekend before a report was due to whip out a miserable report on radiation. When my paper was returned it had a big note on the top saying I would not receive my grade until I defined a word. The word, written in big red block letters across my title page was—PROCRASTINATION.

It's been way too many years since I was formally introduced to the word describing one of my character flaws and I would like to say I have learned to overcome it, but sadly it is not true. Here I am, less than a week before the newsletter deadline, of which I was fully aware two months ago, sitting at my computer on my furlough day hoping I can get it done.

So, this is my Public Service Announcement for this issue—don't procrastinate. You rarely do your best work, it creates stress and tension for you and your co-workers and is usually unnecessary. All that said, by procrastinating this quarter, I ran across something to write about which is more important than other ideas I was considering.

The Real Editorial – Customer Service

As an analyst, it always seemed strange to me when the terms customer and customer service were used in relation to forensic laboratories. After all, we were scientists performing analytical experiments on evidence collected at crime scenes. We didn't work for Sears or McDonalds. We didn't interact with the public. We didn't sell anything. So who are our customers?

As time went on, experience was acquired and my viewpoint expanded beyond my previously more myopic existence. I learned that everyone has a customer and providing good customer service is important to being successful, for both the individual and their employer. Our customers are the people making the requests, the entirety of the criminal justice system and ultimately the general public, who rely on our knowledge, skills, and abilities to make life a little safer. By keeping the end user in mind and providing good customer service we all benefit. Before I go any further I must make something clear. I am not saying the old adage "the customer is always right" applies to forensic science. Providing good forensic science customer service is not giving the customer what he or she wants, but rather providing complete, unbiased, honest and open scientific evaluations of the evidence in a case.

Everyone knows how important it is to do the very best she can on the task that has been placed before her, but providing good customer service goes way beyond that. Recently, I had an experience as a customer which pointed out the im-

portance of looking at the big picture, not just doing your job, and providing good customer service. Last September started the saga of a new garage door, which didn't end until mid November.

In September my wife and I decided it was time to replace our old garage door with a new roll up model. We went to the showroom, were shown what was available by a very friendly and competent sales person. We picked out a door and an opener. The following week, a representative arrived at our home to take measurements. He was efficient and accurate, recording the dimensions and moving on. When the door was installed, it looked great from the outside. But when raised, the garage felt claustrophobic because the open door was less than a foot over my head. When I called to complain about the low height, the supervisor of installations said it was low because we had a beam which precluded a higher installation. But, she said cheerfully, they had a side mount drive unit which would give me the clearance I wanted and put the open garage door near the ceiling, for an additional cost of course. I knew what I wanted and ok'd the new install. As the installers were completing the work on the revised door, it was obvious the new arrangement only added about six inches in additional clearance. Still not what I wanted. After telling the installer of my dissatisfaction, he quickly commented there was room for their high clearance rails, but that isn't what was ordered.

Every person in the sequence of events did their job. The salesperson helped us get the door we felt was visually appealing, the measurer took the measurements accurately, the installers did their job properly, and the installation supervisor provided a response to a customer's dissatisfaction. But in the end, the customer (me) didn't get what I had in mind and

cont'd on next page

Everyone knows how important it is to do the very best she can on the task that has been placed before her, but providing good customer service goes way beyond that.



Greg Matheson
CAC Editorial Secretary

wanted for my residence. None of the people in the chain of events thought about the big picture and failed to offer options and alternatives. They just did their job, then moved on to the next one. The more I thought about this experience, the more I was reminded of cases in our laboratory that “go sideways.”

As a supervisor and a manager in a crime lab, I have had many opportunities to deal with less than satisfied customers. Usually detectives or DA's who thought the laboratory should have helped them look at the big picture. In most instances when a case “goes sideways,” when evidence is missed, when additional tests need to be performed at the last minute, when testing isn't performed in the appropriate order, and when our customer is not satisfied it is because communication between the laboratory and the requestor is incomplete, the laboratory staff failed to work together and we failed to provide good customer service. Everyone did their own job well, but more is needed.

Many times I have heard criminalists complain that they are just given requests for specific types of analysis and are not consulted or allowed to assist with making sure the correct questions are being asked. Unfortunately, in the interest of meeting management productivity goals or requirements, or not wanting to be assertive with detectives or DA's, we have helped create the situation where we just do what we are asked to do. You need to remember that you are not just technicians completing analytical tests requested by our customers. As criminalists/forensic scientists, you should be working with the customers to help guide them with the questions which need to be asked and what information needs to be acquired.

Gratitude

This year's recipient of the Anthony Longhetti Distinguished Member Award was Keith Inman. The award was well deserved due to his long dedication to forensic science and his many contributions to the CAC. Re-enforcing the reason Keith was the proper recipient were the thoughts he shared with those in attendance at the Fall banquet following the presentation of the award by President Mary Hong. For those unable to attend the banquet, Keith prepared a written version of his talk for inclusion in this newsletter.

In his talk, Keith challenged the audience to recognize the people in our lives who helped us become better forensic scientists. Those people who influenced us, challenged us and

generally made a difference in our careers. Toward this end, I want to publicly express my gratitude.

Ed Rhodes had a profound effect on my interest in the profession and involvement in professional organizations. Though I never had the opportunity to work with him in a laboratory, I had the great privilege to work with him on many committees and other professional activities. As a “Baby Crim,” as Keith described our early years, Ed brought me into the CAC simply by stopping and talking with me at a CAC dinner meeting where I knew very few people. Through his dedication and passion for the profession he inspired me to give back and become involved. Unfortunately, Ed is no longer with us, but I had the opportunity to express my gratitude to him in a short letter I sent to him several years before his passing. It was a simple thing to do, but I understand it meant a lot to him. I have always been grateful that I shared with him how much he meant to me both personally and professionally.

The other group of people for which I want to express gratitude are the forensic scientists who were working in the private sector while I was a criminalist doing serology work at the bench. As Keith so ably expressed about imagining the reviewers of our work looking over our shoulders, there were many times when I was considering whether or not to go that extra step, or repeat an experiment that wasn't as clean as it should be. I would then imagine the disapproval of my work if I fell short and it was reviewed by one of the private sector criminalists I respected. Those individuals who helped me do a better job were Keith Inman, Carol Moon, Jennifer Mihalovich, Ed Blake, and Peter Barnett.

If you haven't done so already, read Keith's “missive” and think about the questions he poses. Let those to who your grateful know the impact they have had on your career.

I know that times are hard and many of the agencies for which we work are facing difficult economic times. Luckily we are in a profession experiencing exceptional popularity and hopefully this will provide a bit of a buffer through these difficult times. We are invaluable to the proper administration of justice in the United States and need to remember the power of providing strong, defensible, and unbiased scientific information.

The best to all of you in 2010. Despite the financial difficulties, it is going to be an exciting year for our profession. It's important you stay involved and informed.



Jerome Brunet



Unforgettable

I would like to take this opportunity to thank John Bourke, seminar chair and the staff at the Santa Clara County crime lab for hosting the Fall 2009 seminar. You performed magnificently. I felt a sense of déjà vu since the last time the Santa Clara lab hosted the seminar in 1996, I was the seminar chair. And a special thanks to Brooke Barloewen for contacting me to reserve the last week in October to present my “Courtroom Presentation of Evidence” class. It was the first time where I had the privilege to present the class at a seminar and it was an honor to be asked.

—Raymond Davis

Raymond Davis (standing), presents his workshop at the CAC seminar.

The Ad Hoc National Code of Ethics Model Committee, led by Peter Barnett, presented the latest draft of their work product during the seminar. The intent of this committee is to obtain input from as broad a forensic community as possible, conduct in-depth discussions at the committee level to carefully examine each concept, and create a document that was both comprehensive and succinct. The committee members have invested a large amount of time and energy into the current draft. It has been available on the CAC website for input, and has been presented for discussion and input to the American Society of Crime Lab Directors (September 2009), and the Association of Forensic Quality Assurance Managers (September, 2009). The chairs of the Training and Ethics Working Group of the NSTC Subcommittee on Forensic Science have been contacted to make them aware of this model that is available for consideration in creation of a national code of ethics and enforcement procedure.

The semi-annual seminars could be considered the cornerstone of our association. The seminars have always been held twice per year, once in the north and once in the south. This has allowed for timely presentation of current research, and the opportunity for more members to attend with less travel expenses. However, due to the current economic situation, and because of the increased resources expended by each laboratory as they work toward achieving and maintaining accreditation under the ASCLD-LAB International standards, it has become more difficult for laboratories to dedicate the resources needed to host the seminars. The Seminar Planning Committee, chaired by Jeanne Redeman and Pennie Laferty, have a goal of securing host labs for the next 5 years, and currently have hosts for both Spring and Fall until 2012

and for the Spring meetings of 2013 and 2014. The committee members report that they are finding it increasingly difficult to get commitments. Due to competition from other groups holding seminars close in time to the CAC, it has been a struggle to obtain enough vendors who are so important for the financial support of the seminar. The Seminar Committee has proposed that the CAC discontinue the semi-annual seminars and change to a single seminar once per year, alternating years between the north and the south. The positive benefits of only one seminar per year include the need of a laboratory to host a seminar less frequently, smaller labs could more easily co-host making it more of a regional event, and there would be less conflict with other professional meetings. The negatives of this proposal include less opportunity to interact with colleagues from other regions, a longer time span for a local seminar, one less training opportunity, and a major change in the traditions of the CAC. Adoption of this proposal would require a by-laws change. So that all members have the opportunity to respond to this important issue, a blog will be set up on the website. This should allow members to voice their opinions, to offer suggestions, and to see what others have posted. This may lead to a survey at some time to determine the membership's views on how to proceed.

I have highlighted only a few of the many individuals who contribute to the association, benefiting the membership and enhancing their own professional career. My hope is that this is a way to recognize those contributions and accomplishments, and to encourage others to increase their participation in the CAC.



interim report on behalf of the task force at the fall meeting of the board of directors in Portland, Ore., the report raises seven critical issues for discussion: (1) the establishment of a central, science-based federal agency; (2) the need to instill a "culture of science" within the forensic science community (3) the need for research to determine the validity and limits of forensic science evidence ; (4) scientific education of the legal community ; (5) transparency in the forensic science community; (6) discovery in criminal cases; and (7) defense resources, particularly for public defender offices and court-appointed counsel representing indigent defendants.

"Nobody owns the truth," Benjamin said. "NACDL supports equal access to forensic science services. Equal access means that the experts do not work for one side or the other. They should be free of any pressure other than good scientific methodology. That's why NACDL supports the establishment of an independent science-based agency."

"Cases are often made or broken on scientific evidence," said NACDL President Cynthia Hujar Orr in a statement today. "Independent audits and investigations conducted in 'crime labs' all over the country have uncovered hundreds of cases in which mistakes, bad science and even outright forensic fraud have resulted in defendants being convicted and sentenced to death or prison."

"The search for truth cannot favor one side or the other, and neither can publicly-funded forensic science labs," Orr said, agreeing with Benjamin and the task force. "NACDL supports the National Academies' recommendation to establish a wholly-independent federal agency to address current deficiencies and create a culture of science in the community that seeks truth rather than convictions."

NACDL notes that the scientific validity of many currently accepted forensic techniques has never been established. According to the NRC, with the exception of nuclear DNA analysis, "no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." The NACDL report recommends that forensic science conclusions always include information concerning the measurement of uncertainty associated with results and the limitations of the opinion offered.

"Good science acknowledges the existence of uncertainty." Benjamin explained. "There's no magic test in any field that can point to a defendant and say, for sure, 'He did it,' or 'She didn't do it.' Science can only speak in terms of probabilities."

The report also recommends education, training and certification of forensic science experts and lab technicians,

cont'd on page 9

NAS REPORT: THE CAC RESPONSE

August 15, 2009

The Honorable Patrick J. Leahy
Chairman, Senate Committee on the Judiciary
433 Russell Senate Office building
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Thank you for this opportunity to respond to the findings of the National Academy of Sciences report entitled "Strengthening Forensic Science in the United States: A Path Forward". The California Association of Criminalists (CAC), established in 1953, was the first regional Forensic Science Organization in the United States. The CAC was founded to foster an exchange of ideas and information, to establish friendship and cooperation, and to encourage a high level of competence and ethics. The CAC membership is composed of government and privately employed criminalists who are involved in the scientific analysis of physical evidence, including the disciplines of crime scene investigations, biological evidence, DNA, controlled substances, alcohol analysis, toxicology, firearms, and trace evidence. The ideology expressed by the sixteen founding members continues today as the CAC, now with over 700 members, has been looked to for guidance at the national level in areas of certification, ethics, and development of standards.

The National Academy of Sciences report made several recommendations for improvements to the delivery of Forensic Science services in the United States. The recommendations included topics in which the CAC has extensive history and involvement. The certification of Forensic Scientists, the requirement for a strong code of ethics, established standards of practice, and the maintenance of close ties with the academic community have been cornerstones of the CAC philosophy since its creation.

The CAC and Certification

The CAC began exploring certification for Criminalists in 1975 with the establishment of the Certification Committee. In 1976 this initial certification proposal from the CAC was taken to the broader national criminalistics community through the efforts of the Criminalistics Certification Study Committee, formed by the American Academy of Forensic Sciences. The national program for certification did not develop. Therefore, the CAC renewed the pursuit of certification in 1986. Specific and extensive knowledge, skills, and abilities for the Certification Examination were developed and the first pilot examination was administered in 1989. The national certification effort resumed and the work product of the CAC formed the basis for the American Board of Criminalistics (ABC). The ABC, a national certification program, was incorporated in 1989 with the CAC as one of the five charter members. The first ABC General Knowledge Examination was offered in 1993. The ABC certification program continues today with five discipline-specific certification exams. The ABC

Board of Directors is composed of representatives from the member organizations. Three CAC members currently serve on the ABC Board of Directors and Examination Committee and additional CAC members are involved in maintaining and administering the examinations. This continued involvement demonstrates the dedication of CAC members to ensuring that practicing criminalists meet and maintain the knowledge, skills, and abilities necessary to perform their duties.

The ABC certification maintenance procedure includes a requirement for documented continued training and professional participation and, for the classification of Fellow, annual proficiency tests. This system encourages the certificate holder to actively pursue training opportunities and to contribute to the profession by publication and presentation of research. There are several forensic science certification programs now in existence (i.e. American Board of Forensic Document Examiners and the American Board of Forensic Toxicology). These certifying bodies cover the disciplines routinely found in a crime laboratory. Additionally, each of these certifying bodies requires the certificants to abide by a Code of Ethics. The many forensic science disciplines have different educational and practical requirements and the certification programs must reflect those differences. Endorsement of each individual certification program can be strengthened through accreditation of the certification program itself. This accreditation can be obtained from the Forensic Specialties Accreditation Board (FSAB). Several certification programs including those mentioned above, have achieved accreditation through the FSAB's rigorous evaluation process. The criminalistics certification process demonstrates a commitment of the practicing professionals to meet high ethical and analytical standards. Therefore, it is imperative that the certification programs be administered by the practitioners within each major discipline.

The CAC and Ethics

The CAC Code of Ethics was first adopted by the membership on May 17, 1957 with the most recent revision on May 17, 1985. The strength of the CAC Code of Ethics is demonstrated by its longevity; forty two years with only minor revisions. A detailed enforcement procedure of this Code was established and has been tested several times. This Code has been used as a model for other forensic science organizations, including the ABC and the American Society of Crime Laboratory Directors. It is our professional responsibility to continue this deep seated tradition. The CAC is proactive in the formulation of the national code of ethics as identified in Recommendation 9 of the NAS report. The CAC National Ethics Code Committee was formed to prepare a National Criminalistics Code of Ethics. The draft document has been presented to the CAC membership and will be presented nationally for review. We respectfully request that you welcome the input of practicing forensic scientists when developing a national code.

The CAC and the Development of Standards

The CAC has recognized that standards are necessary for the quality analysis of physical evidence. A pertinent example is the formation of the DNA Advisory Committee (1989) which authored Guidelines for a Quality Assurance Program for Forensic DNA Analysis Using the Polymerase Chain Reaction (1990). These have evolved into the DNA Advisory Board Quality Assurance Standards (2000) and most recently the FBI Quality Assurance Standards for Forensic DNA Testing Labo-

ratories (2009). These standards are utilized today during the auditing processes for laboratories participating in the CODIS DNA Database and accreditation by ASCLD LAB and FQS. The Scientific Working Groups (SWG) for several disciplines, including controlled substances, firearms and toolmarks, and bloodstain pattern analysis, have issued guidelines for standardized testing and terminology. The SWGs are composed of practitioners, including CAC members, within each discipline and are the best source for the development of standards to be utilized at a national level.

The CAC and Forensic Science Education and Research

The CAC has maintained ties with several academic institutions within the State of California. One of the founding members of the CAC, Dr. Paul L. Kirk, created the major in Technical Criminology at the University of California, Berkeley. Following Dr. Kirk's example, several academic programs have been developed by CAC members, including the Masters of Forensic Science programs at California State University, Los Angeles and University of California, Davis. The CAC offers student membership and provides funding in the form of scholarships and research project funding. Recipients of the scholarships and research funding are encouraged to present their data at the professional conferences and to publish in the organization's newsletter, *The CACNews*. We offer membership to the forensic science program educators, and they benefit by receiving feedback regarding education requirements for the profession, coursework content, and research topics. Additional funding for scholarships and research, paired with the expertise offered by our membership, would result in furthering the enhancement of the academic research and the development of future forensic scientists.

Other disciplines, such as the medical field, legal community, and the accounting profession have demonstrated that the practitioners within the field are best equipped to develop and enforce certification/licensure, standards and ethics. We request that you look to this history and allow the forensic science practitioners to continue the projects of certification, standards, and ethics procedures. We request that you recognize those individuals who, on their own initiative, have successfully completed the certification process. Finally, we request that you identify funding sources for accessible ongoing training for practicing forensic science professionals and for the universities who are supporting the forensic science profession through research and the education of new forensic scientists.

The NAS Report identifies certification, ethics, standard practices, education, and research as areas requiring improvement. The CAC has been a leader in these areas and encourages you to consider this expertise as a resource to aid the pursuit of improving the criminal justice system.

Respectfully Yours,

*Mary Murphy Hong, F-ABC
CAC President*

*Jennifer S. Mihalovich, F-ABC
CAC Immediate Past President*

with regular proficiency testing. Forensic science practitioners need to develop and adhere to a national professional code of ethics with disciplinary procedures for poor conduct and biased testimony.

"Where life and liberty are at stake," Orr said. "it is not too much to ask of an expert to adhere strictly to the demands and methods of good science."

The National Association of Criminal Defense Lawyers is the preeminent organization advancing the mission of the criminal defense bar to ensure justice and due process for persons accused of crime or wrongdoing. A professional bar association founded in 1958, NACDL's 12,000-plus direct members in 28 countries and 90 state, provincial and local affiliate organizations totaling more than 40,000 attorneys include private criminal defense lawyers, public defenders, military defense counsel, law professors and judges committed to preserving fairness and promoting a rational and humane criminal justice system.

For more information:

Jack King, (202) 872-8600 x228
jack@nacdl.org

CAC Spring 2011 Afloat

The Spring 2011 CAC seminar will be hosted by the Los Angeles Sheriff's Crime Laboratory aboard the Queen Mary.



THE QUEEN MARY

Quality Assurance Meeting In New Orleans

The Association of Forensic Quality Assurance Managers (AFQAM) Annual Meeting has announced their next annual meeting will be held at the Riverside Hilton in New Orleans from September 7-10, 2010. For more information, please contact Zoë M. Smith, E-mail: z6849s@yahoo.com, www.afqam.org



Yosemite Workshops Planned

The upcoming Spring 2010 CAC Seminar will feature workshops on trajectory, DUI Correlation, DNA and uncertainty of measurement. Additionally, a "Smores by the Fire" event is planned. Being so close to Yosemite there are a wide range of activities available to attendees, including horseback riding, hiking, tours of the park. Keep informed about this fun seminar at www.cacnews.org.



THE 2009 FOUNDERS LECTURE

Dr. Jay A. Siegel

Good morning. I want to thank the California Association of Criminalists for inviting me to speak today. It is an honor for me to have this opportunity to address you – the members of the largest and most prestigious regional forensic science organization in the U.S. I especially want to thank my friend, John DeHaan, for inviting me, although I would note that he is not here today. That alone should give you pause.

When I look back at my 35 years in forensic science and think about the people that have influenced me the most, several members of this organization come to mind. They include the aforementioned John DeHaan, as well as Barry Fisher, John Thornton, Joe Peterson and George Sensabaugh. George and I are serving on a National Academy of Sciences Committee on the National Institute of Justice. Barry and I have a regular schtick at the American Academy of Forensic Sciences meetings each year. Joe Peterson was instrumental in convincing the administration of Michigan State University to permit me to establish a master's degree in forensic science back in the early 1990s. I also have a significant number of graduates from my days at Michigan State University (mind you, I still bleed green) who work in criminalistics laboratories in California.

I have thought long and hard about what I would talk to you about today. I have decided to not succumb to the temptation to take the obligatory trip down memory lane and regale you with the history of my life in forensic science; telling you how I walked 5 miles each day barefoot to the lab.

Or how I had to use an old mass spectrometer the size of a box car that took 3 days to pump down just to confirm the presence of cocaine in a white powder.

Or how or laboratory gas chromatographs used columns made from the very same plumber's copper tubing that brings water service to my house.

Instead, and I am being very serious here, I want to take some time and talk about how forensic science finds itself at another cross roads. Which path we will take will determine the future of our field and how we conduct business.

I believe that the last time we faced a crossroad was when the U.S. Supreme Court decided *Daubert v. Merrill Dow* and then the other two legs of the trilogy; *Kumho Tire* and *GE v. Joiner*. After *Daubert*, the forensic science community has had to respond and react to new requirements for admitting scientific and technical evidence and I would argue that we are still reacting.

The voyage to our present crossroads began in the 1990s with the work of the Innocence Project and with the explosive growth of DNA testing and has continued with the amazing popularity of forensic science as it has been portrayed on TV and the rest of the media. The spotlight has been thrown onto forensic science even more by recent exposés of some failures of forensic science. The Innocence Project, through its work on exonerating wrongful convictions of people convicted of serious crimes, has added to the publicity that forensic science has enjoyed and suffered through at the same time. Spokespersons for the Innocence Project have recently claimed that, out of the more than 260 people that have been exonerated through their efforts to date, that more than half were wrongly convicted due to errors, lies and shoddy lab work by forensic scientists. These figures have been hotly disputed by some members of the forensic science community but the fact remains that bad forensic science and bad testimony have led to some wrongful convictions. With all of the blame that forensic science has been getting for these problems, it is ironic that forensic science itself, through DNA typing has been the principle means of exoneration of the vast majority of wrongfully convicted people.

There is no question that DNA typing has become the new darling of law enforcement, prosecutors, the media and the public. It has been referred to as the "gold standard" of fo-



The clarion call now is for the interpretation of all scientific evidence to be done using the same types of statistics and probabilities that have been used with so much success in DNA. Never mind that much of the other evidence is not, will not and can not be amenable to such mathematical treatments.

Dr. Jay Siegel (bottom right) poses with a few of his former students.

rensic science. It has become the yardstick for determining the successes and failure of the rest of forensic science. The clarion call now is for the interpretation of all scientific evidence to be done using the same types of statistics and probabilities that have been used with so much success in DNA. Never mind that much of the other evidence is not, will not and can not be amenable to such mathematical treatments.

Then there is the issue of backlogs of cases in crime labs. Forensic science is being loved to death. Surveys by Joe Peterson show alarming and growing backlogs in many areas of forensic science from fingerprints, to drugs to firearms to DNA. Of course, it is the DNA backlogs that get all the attention but the reality is that they represent less than half of the problem. DNA is the only area of forensic science to receive appreciable federal funding. In fact, that all federal money for forensic science amounts to less than is spent on holistic medicine. A cursory glance at a recent issue of the Crime Lab Project shows story after story of underfunding, understaffing, under training, outmoded facilities all over the country among crime labs leading to backlogs, long waits for results, personnel issues and problems.

On top of this there have been a few, highly visible cases where forensic science has been put on trial and found guilty. The Madrid Bombing case showed how bias and insufficient laboratory safeguards can cause wrongful identifications of fingerprints. A judge in the Rose case in Baltimore refused to admit fingerprint evidence of identification, citing a lack of a scientific basis and an assertion by a federal government fingerprint examiner from an agency that shall remain nameless, that fingerprint examination, if done properly, should have zero error rate. Most recently, the Willingham case in Texas has revealed that shoddy fire scene investigation may have led to the execution of an innocent man. Strictly speaking, crime scene investigation is not part of forensic science, but fire scene investigations, done properly, very often involve a good deal of scientific knowledge.

This brings us up to the present. In 2005, the Consortium of Forensic Science Organizations, made up of such forensic science groups as the American Academy of Forensic Sciences, the American Society of Crime Lab Directors and the International Association for Identification, went to the Congress and asked for a comprehensive study of the needs and future of forensic science. Senator Barbara Mikulski (D-MD) provided funding for the National Academy of Sciences to create a committee to do such a study. A 16 member committee made up of forensic scientists, attorneys, policy experts, medical examiners and other assorted academics, and chaired by Judge Harry Edwards of the U.S. Court of Appeals for the District of Columbia, received 8 charges from the Congress and then spent more than 2 years meeting and hearing testimony from professionals in law enforcement, law and forensic science. On February 18, 2009 the committee released a report entitled: *Strengthening Forensic Science in the United States: A Path Forward*.

The report contained a set of 13 recommendations designed to improve forensic science. A brief statement describing each recommendation is shown on the next two slides. The 5000 word executive summary of the report is available for free from several outlets and a hard copy version of the complete report is available from the NAS website for a nominal fee.

In places the Report strongly criticized the state and practice of forensic science, using language such as "badly fragmented", "great disparities", "faulty" and other pejora-

tive terms. In general, the members of the committee who are not forensic scientists, including the Chair, who is a federal judge, were shocked at the status of the field and the tone of the report reflected that. Those of us on the Committee who are in forensic science have heard most or all of this before and were not surprised at the findings. Because of the tone of the report and its criticism of forensic science as a whole and particular fingerprint analysis and other types of pattern evidence, the committee felt compelled to tell the report's readers that nothing in it should be construed to imply that it could or should be as an instrument for examining previously adjudicated cases nor does it imply that previously admissible types of scientific evidence are now somehow not suitable for court anymore.

The recommendations ranged from the very general to quite specific, reflecting the nature of the original Congressional charges to the committee. Because time prevents me from discussing all 13 recommendations, I would like to briefly cover a few of what I consider to be the most important to an audience of forensic scientists. These are highlighted in red on the slides. The opinions expressed here are my own and do not represent the official view of the committee, although I generally support the findings and recommendations of the report in total. I note and have read the response statement written by the CAC to Senator Leahy. This statement addressed the issues of accreditation, certification, education and ethics. I appreciate the support for the NAS Committee's positions on these issues.

At the end of our last meeting the NAS Committee was told by the NAS staff that one of the hallmarks of the impact of an academy study is the degree to which audiences find something to hate. In that regard, this one has been a smashing success. Although relatively few of the recommendations generated a lot of heat, those that did are still being hotly debated and discussed. At this time, I would like to spend a few minutes discussing those of the recommendations that I feel will have the greatest impact on forensic science and which have generated the most discussion.

Right off the bat, one of the more controversial recommendations is to establish an INDEPENDENT oversight agency for forensic science; the NATIONAL INSTITUTE OF FORENSIC SCIENCES or NIFS. This agency would not reinvent the wheel. It would take the current best practices in forensic science and help build upon them by funneling federal funds to forensic science, by bringing together the best ideas and help to implement and disseminate them. For example, it would oversee accreditation of laboratories using the present ASCLD process. It would foster universal certification by building upon the ABC, NAME, and other certifying bodies. The recommendation is controversial because it calls for a new, independent agency; not one in an existing agency such as NIJ or NIST. Given the federal experience with creating the Department of Homeland Security, there is little sentiment in Congress at this time to create a NIFS. Instead, at least for the short term, the committees in Congress that are working on legislation based on the report are most likely going to create an office high up in the Department of Justice that will oversee the implementation of the rest of the recommendations. Later, after things have gotten going and the impact of the recommendations can be gauged, a NIFS may be formed.

Another important recommendation calls for developing agreed upon, standard definitions for terminology used by forensic scientists. This is especially important with descriptive

terms used in the association and interpretation of evidence; such as “match”, “consistent with”, “could not eliminate as the source of”, etc. What became clear to the committee is that the meanings of these terms are not clear. This recommendation also calls for the development and mandatory use of minimum standards for scientific laboratory reports. Some lab reports that emerge from crime labs are so sparse in their information that they would be unacceptable in a freshman chemistry lab class. These are scientific reports and must contain information about what was done to the evidence, how it was done, what conclusions were reached and how they were reached and some estimation of the certainty of the conclusions. Yes we must consider the audience for forensic science lab reports but they must also meet the requirements of good science. I have heard some people complain that laboratory reports that revealed a lot of analytical information just provide defense attorneys with bait to go on fishing expeditions in the court room. However attorneys use the information in a laboratory report, it is incumbent upon forensic scientists to be thorough and descriptive in writing up the results of their analyses.

Probably the most controversial of all of the recommendations is the one that recommends that crime laboratories be removed from the administrative control of law enforcement and prosecutors. This controversy has arisen partly because many people have misunderstood or misinterpreted the recommendation. The committee did not recommend that public crime labs be physically removed from law enforcement agencies. The recommendation is that they be removed from administrative control of the agency and that they be given their own budget, rather than a line item in a police department or prosecutor’s office budget. Crime laboratories are first and foremost, science labs and they should be directed by scientists who have the freedom to decide the policies and procedures of the lab so that they serve the interests of scientists. Many well meaning law enforcement managers don’t see the need for continuing scientific education, for staying on top of one’s field, for certification for being able to conduct research and attend professional meetings – all hallmarks of good scientific laboratory procedures. Crime labs should not have to compete directly with police agencies for budget – the choice shouldn’t be between guns, bullets and vests versus chemicals, instruments and journals. Perhaps most important is the public perception that a crime laboratory located within a law enforcement agency is a tool of the police or prosecutor in convicting the bad guys. The mission of the crime lab should be to practice good science whatever the outcome. Ask yourself: If we were designing a forensic science lab system today, would we put the labs in police departments or prosecutors’ offices and have them run by police or prosecutors? Some people complain that, if we separate the labs from the police administratively, then they won’t talk to each other anymore. What rubbish. Who else are they going to talk to? We should study models such as the Virginia system where the crime labs are under the management of the Department of Public Safety.

Some recent high profile cases, and some recent articles in scientific journals that report research into the effects of bias in forensic science have begun to focus attention on the issue of bias. The Madrid bombing case illustrates the pernicious effects that bias can have on forensic scientists. In this case 3 FBI fingerprint examiners misidentified a photograph of a partial print from the bombing scene in the subway in Madrid, Spain. Each examiner was aware of the conclusions

of the previous examiner. The result was an expensive law suit by the falsely accused suspect. Professor Itel Dror has published a number of scientific studies that indicate that bias is a serious problem in science and that it is largely being ignored by forensic scientists. Consider the great lengths that pharmaceutical companies go to in order to minimize bias: double blind testing, blind verifications, redundant testing. By contrast consider what many examiners in crime laboratories are faced with when they analyze evidence: they receive an unknown such as a latent fingerprint, a shoeprint or a bullet removed from the victim or suspect of the crime. They also receive a single set of known fingerprints or a shoe or a weapon that were in the possession of the suspect. Because of this, the analyst has no choice but to focus on the suspect; there is no other evidence. The examiner is usually also furnished with the circumstances surrounding the crime. These also focus on the suspect. In such cases, subconscious or conscious bias is inevitable. Even eyewitness identifications are done using lineups where other people besides the suspect are paraded before the witness. Even then, eyewitness identification is notoriously unreliable. Much more research must be done to assess the effects of bias on forensic scientists and strong measures must be taken to minimize it. These could include evidence lineups (give the examiner 10 bullets instead of just the one from the suspect), case agents to manage information, sequential unmasking to gradually reveal necessary information, etc. But first, we must get our heads out of the sand and recognize that bias is a problem that cannot be ignored or willed away.

You cannot go to a barber or beautician who isn’t licensed to practice their vocation. You cannot get blood drawn in a hospital from a phlebotomist who isn’t certified. But you can get evidence analyzed at a crime laboratory that isn’t accredited by an examiner who isn’t certified. This is a travesty that must be corrected. We have very sound programs of laboratory accreditation and examiner certification in the U.S. that are widely recognized and used. More than 80% of public crime labs in the U.S. today are accredited through ASCLD. But this isn’t enough. Accreditation must be universal and mandatory for any laboratory that analyzes evidence that has the potential to end up in court. This should ideally include private laboratories. Likewise, anyone who analyzes evidence and offers testimony in court must be certified. Operationally this will be difficult to achieve but is a worthy goal to work towards.

Most forensic science organizations of any size have developed a code of ethics for their members. These codes vary in length, depth, breadth and language but they all have the

You cannot go to a barber or beautician who isn’t licensed to practice their vocation. You cannot get blood drawn in a hospital from a phlebotomist who isn’t certified. But you can get evidence analyzed at a crime laboratory that isn’t accredited by an examiner who isn’t certified. This is a travesty that must be corrected.

goal of encouraging and demanding ethical behaviors on the part of forensic scientists. I would argue that the code of ethics of the California Association of Criminalists is the most comprehensive, useful one in the field. But there are two problems with this system: first, there are so many different codes of ethics in forensic science. There is little consistency and a wide variety of coverage. The second and most important problem is that there are few teeth in forensic science ethics codes. The only sanction that one can receive for violating a code of ethics in forensic science is to be drummed out of the organization whose ethics they have violated. These miscreants can still practice forensic science. If you are an attorney or physician and you violate the national code of ethics for your practice, you can have your ticket to practice lifted. Forensic science needs a single, comprehensive, consensus ethical code that is tied to certification or even licensure. A serious violator would be prohibited from practicing forensic science. There is no other way to rid the field of the Fred Zains and the like.

By omitting discussion of the other recommendations of the National Academy of Sciences Committee, I do not mean to imply that they are not worthy of consideration. They are all important but the ones I have discussed today, if implemented, will have the most profound effects on the forensic science system in the U.S. They will strengthen forensic science, make it more scientific, increase its funding base and move it down the path towards a place where it is considered as true science like health sciences, natural sciences and physical sciences. Even more important, it will be more reliable and have proven its validity so that it can be counted on by the public to deliver accurate, scientifically defensible results and interpretations in all cases.

Since the NAS report came out, many agencies including the American Academy of Forensic Sciences, the International Association for Identification, the American Society of Crime Lab Directors, the National District Attorneys Association, The International Association of Chiefs of Police and many others, have expressed generally positive support for the recommendations, although most have also criticized various parts. Some of what is happening is the old fashioned, business as usual, turf battles. Some of it is genuinely constructive.

There have also been 4 hearings in Congress, 3 of which have been in the Senate. The ball is in the court of the House and Senate Judiciary Committees for the most part. They are considering legislation that would fund and/or implement virtually all of the recommendations except for the 1st one – the establishment of the NIFS. In addition to this activity, the national office of the Innocence Project is preparing legislation that would create a NIFS in the National Institute of Standards and Technology (NIST). As forensic scientists, we must be very vigilant about these and other legislative proposals. Once passed they will undoubtedly have a profound effect upon most or all aspects of the practice of forensic science and thus upon the criminal and civil justice systems. I urge you to become familiar with the report and the legislative proposals that spring from it. Your future is at stake.

I would like to close this talk with a few personal observations about my 35 years in forensic science – not a full trip down memory lane, but a short jaunt to the corner store for some milk. I consider myself to be one of the luckiest people on earth to have found a career doing the things that I love the best: working with chemistry in the public arena, in a field where one can have a true impact on crime while, at the same time, being privileged to have taught at some really great universities. All of this good fortune doesn't come without help. I want to acknowledge first my wife of 33+ years, Margaret: my best friend, my biggest supporter and my biggest critic – in addition to her own career in information technology, she has had a career just keeping me in line. Thank you for everything you have done for me.

I also want to thank my friends and colleagues for collaborating and cooperating and teaching me part of what I know.

Finally, I want to thank the many students I have had over the years. You have kept me young, challenged me to be better, your success has been my success. As you have learned from me, I have learned from you. I hope you are able to share my passion for forensic science.

Again, I want to thank you, the members of the CAC for bestowing upon me the opportunity to address you today. It is an honor and a privilege to be here.

SECTION REPORTS



SOUTHERN SECTION

The Los Angeles Police Department Crime Laboratory hosted a study group meeting on July 22, 2009. Ms. Sandra Bishop graciously served as the contact person at LAPD and left immediately after the meeting to accept a position out of state. The study groups that met were fire debris analysis, trace, blood alcohol, toxicology (jointly with blood alcohol), controlled substances, CSI and DNA. The next study group meeting is scheduled for December 16, 2009 at the Long Beach Police Department's training academy. Elana Quinones is assisting with the meeting and has a commitment from a lunch speaker. The lunch will be Togo's sandwiches, salad, cookies, etc. The study groups that have responded are controlled substances, forensic alcohol and CSI. I am waiting to hear from the remaining study groups so the logistics can be finalized.

—Janet L. Anderson-Seaquist

NORTHERN SECTION

The San Francisco Police Department Crime Laboratory hosted a luncheon with study group meetings on September 3rd, 2009 at the SFPD Academy. The guest speaker was Gloria Nusse, a local forensic artist. She presented "Unidentified Remains," in which she shared several cases she has been involved in assisting with identifications from human remains. To learn more about her work, go to www.clayandbones.com. There were 51 attendees.

On this same day, the QA, Drug, DNA, and Arson study groups met. The QA study group discussed ISO audits, focusing in on the recent ISO audit at the DOJ Jan Bashinski DNA Laboratory in Richmond with a presentation by Julie Renfroe. There were 17 people in attendance.

Jim Mudge, the director of the SFPD Crime Laboratory, presented a microcrystalline *Daubert* issue to the drug study group. Jerry Massetti of DOJ Sacramento/CCI also presented the latest revisions on the SWGDRUG recommendations.

cont'd on page 22




Fall 2009 in Santa Clara: A Memorable Seminar

Workshops galore was the fare for the Fall 2009 Seminar, hosted by the Santa Clara District Attorney's crime laboratory. Courtroom Presentation of Evidence, Hair Microscopy for the DNA Analyst, Machine Gun Design and Modification, Current Trends in Drug Usage, Clandestine Grave Processing and DNA were offered.

Workshop Presenter Raymond Davis of *Court Skills* shares his experiences . . .

"I have attended many seminars in my career and the one recently hosted by the Santa Clara County Crime Laboratory will hold a special memory for me. This is the first seminar that gave me the opportunity to present my Courtroom Presentation of Evidence class. Thanks to Supervising Criminalist Brooke Barloewen, who contacted me fifteen months ago to reserve the last week in October to conduct my class. All of the logistics for the class were competently managed prior to my arrival. On the first day of class, Seminar Chair John Bourke assured me that everything was in readiness and I only had to ask should I need anything. They even arranged a private luncheon for us.

"On the third day of the course, held in a courtroom, I generally use the services of a senior member of the crime lab's staff where I'm teaching to assist me as the 'prosecutor'. On this occasion, I enlisted the help of Dianne Burns, senior criminalist for DOJ Santa Barbara. Her contribution was invaluable and on several occasions sat in awe of her insights to the students. Thanks Dianne, you were terrific. For the role of 'judge', I often use a member



of the CourtSkills staff to assist me. On this occasion I asked John Houde, the *CACNews* art director and former criminalist with Ventura County Crime Lab to play that role. He accepted immediately and purchased a black robe for the event. He looked like a jurist and ran a tight ship. He made sure the 'attorneys' kept on track making timely rulings on objections from Dianne and myself. His feedback was spot on and complemented our feedback to the benefit of the students.

"We were fortunate that Brooke was able to secure an older courtroom in San Jose, parenthetically, one I had testified in years ago and it provided a sense of realism making the experience more memorable. At the close of the course I often present John Houde's book, *Crime Lab: A Guide for Nonscientists* as a reward to the person who best employs the skills learned in the previous two days. At this workshop, I had John present his book to Nichole Aronsen from the Contra Costa Crime Lab.

"Also making this meeting memorable were discussions on a new code of ethics for forensic scientists, presented by Peter Barnett and an update on legal rulings affecting expert's testimony presented by Deputy

Attorney General, Michael Chamberlain. Very important and timely information in both presentations. Although I don't testify any longer, I can appreciate the challenges facing current practitioners. You have my respect and condolences.

"One interesting presentation was given by Pam Hofsass, from the San Francisco PD crime scene unit. She spoke on the role the crime lab plays during time critical investigations. Pam is a cop and a forensic scientist who knows first hand the need to communicate technical information to the people in the field. If you've never heard Pam give a presentation in her New Jersey/New York accent delivered at a frenetic pace, you're missing something. You were great, Pam.

"And finally, seeing my old friend and colleague, Keith Inman receive the Anthony Longhetti Award at the banquet. Well deserved, Keith and thanks for a great short acceptance speech. After dessert, we departed for the Winchester Mystery House in Santa Clara Co. Sheriff's prisoner buses. We had a terrific night time guided tour with flash lights. A fun time was had by all.

"My thanks again to the staff at the Santa Clara Lab for hosting a successful seminar. "



This page and facing: Participants in the clandestine grave workshop had the task of unearthing "victims" hastily buried many months ago in a wooded area. Under the watchful guidance of Dr. Lorna Pierce (above right, in hat), suspected gravesites were carefully excavated, an inch-at-a-time, until the bodies (pigs) were visible.

More scenes from the clandestine grave workshop.



Jerome Brunet photo

Seminar workshop photos on this page are courtesy of Jerome Brunet.



Your 2009 CAC Board



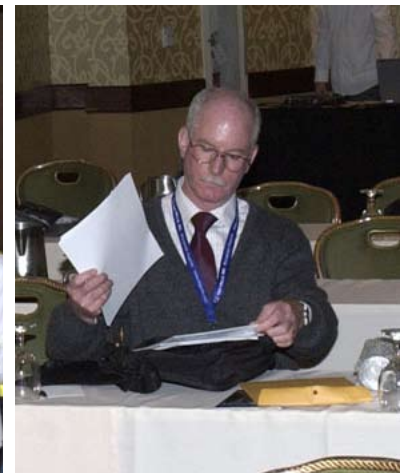
Jerome Brunet photo



The producers!



Jerome Brunet photo





ABSTRACTS FROM THE 114TH CAC SEMINAR FALL 2009, SAN JOSE

Thermal Desorption using Tenax™: An Alternative to the Activated Charcoal Strip for Removal and Concentration of Ignitable Liquid Residues from Samples of Fire Debris

Eamonn McGee, Centre of Forensic Sciences

The forensic identification of ignitable liquid residues in samples of fire debris is typically achieved by analysis of headspace vapors from the sample container, using a Gas Chromatograph coupled to a suitable detector such as a Mass Spectrometer (GC-MS). The headspace vapors are adsorbed onto a suitable substrate and then introduced onto a capillary GC column where the analytes of interest can be separated and identified. The most common technique uses an activated charcoal strip as adsorbent with subsequent solvent elution of the trapped compounds. 90% of the labs that participated in a recent forensic flammables proficiency test used the activated charcoal strip method. The other participants used Tenax (6.3%) or Solid Phase Micro Extraction (SPME) fibres (3.7%) as the adsorbent, with subsequent elution using thermal desorption. Tenax is a hydrophobic porous polymer resin that preferentially adsorbs organic vapors. Sampling tubes containing Tenax are thermally desorbed in a dedicated instrument whereas SPME fibres such as polydimethylsiloxane are desorbed in the injection port of a gas chromatograph. Thermal desorption is widely used to monitor and identify volatile compounds in both the environmental and occupational health and safety fields. The technique tends to be overlooked by forensic laboratories in the United States even though it is successfully applied to the identification and classification of ignitable liquid residues in Canada, Australia and Europe. This presentation will describe the analysis of headspace vapors from fire debris samples using automated two-stage thermal desorption coupled with gas chromatography-mass spectrometry (ATD-GC-MS). This analysis scheme, using Tenax TA as adsorbent, has been in use at the Centre of Forensic Sciences (CFS) for two decades. The advantages of thermal desorption, including fast sampling times, no solvent interference and automated analysis will be discussed as well as limitations such as preferential adsorption. The results of a recent in-house study at CFS demonstrating the usefulness of ATD-GC-MS for screening debris samples for oxygenated solvents such as acetone and isopropyl alcohol will also be presented.

Development of the PowerPlex® 16 HS System

Yasser Daoudi, Promega

Short tandem repeat (STR) analysis remains the primary method for human identification. Forensic typing, criminal

databasing and relationship testing laboratories in the US and many other regions of the world use a standard set of 13 STR markers selected by the US Federal Bureau of Investigation for the Combined DNA Indexing System (CODIS). The PowerPlex® 16 HS System co-amplifies these 13 loci (D18S51, D21S11, TH01, D3S1358, FGA, TPOX, D8S1179, vWA, CSF1PO, D16S539, D7S820, D13S317 and D5S818) plus the low-stutter Penta E and Penta D markers and the gender-determining Amelogenin locus. One primer for each of these loci are labeled with fluorescein, carboxy-tetramethylrhoamine (TMR) or 6-carboxy-4,5'-dichloro-2',7'-dimethoxy-fluorescein (JOE). Amplicon size is determined by comparison with the Internal Lane Standard 600 (ILS 600) labeled with carboxy-X-rhodamine (CXR). This four-color chemistry can be analyzed on the ABI PRISM® 310, 3100 and 3100-Avant Genetic Analyzers and Applied Biosystems 3130 and 3130xl Genetic Analyzers using existing dye matrix standards. The PowerPlex® 16 HS System provides a hot-start Taq DNA polymerase in a modified master mix to provide increased ease-of-use and performance over previous PowerPlex® systems. This assay has increased tolerance to common forensic sample inhibitors known to reduce genotyping success rates. The presentation will share results from sensitivity and inhibitor studies along with developmental validation results.

O Brother Where Art Thou? A Case of Familial Identity

Pamela, Hofsass, San Francisco Police Department

In November 2005, a prostitution deal went very wrong when 2 suspects blindfolded and kidnapped 2 victims in San Francisco and took them to a motel in a different city to rape and rob them. A third suspect was picked up on the way to the motel and also joined in on the assaults. The case was cracked through stolen cell phone records and assistance from outside agencies for two of the three assailants. Several items of evidence collected from the SAEKs linked suspect #1 and suspect #2 to each victim. A third unknown male profile was detected and reported by the crime lab but no further leads were established at the time of the initial investigation. A preliminary hearing for defendants #1 and #2 provided more information on the third assailant. A request was made to investigate the possible connection between the third unknown male and suspect #2. A familial match was discovered through careful consideration of the DNA results. A search warrant was granted for the reference DNA of suspect #2's younger brother, who coincidentally joined the Armed Forces when his older brother was arrested. Upon the match of all 13 markers from the evidence to victim #1, an Arrest Warrant was issued and with the assist of NCIS, an arrest and extradition of the younger brother of defendant #2 occurred. Eventually, all three defendants were held to answer. This presentation will describe the investigation from start to finish and provide some insight into the trials and tribulations of a sex crimes detective.

A National Ethics Code for Forensic Scientists

Peter Barnett, Forensic Science Associates

The National Academy of Sciences' (NAS) report, Strengthening Forensic Science in the United States: A Path Forward, calls for the development of a national code of ethics for forensic sciences. A draft of such an ethics code has been developed by an ad hoc committee of the California Associa-

tion of Criminalists based on review of large number of ethics codes of various forensic science organizations. The initial version of this document was presented at the CAC Seminar in May. Since then the committee has refined the code, simplified it, and published it at the ASCLD meeting in August and on the CAC web site. The current draft of the ethics code will be presented for review and discussion. Meeting attendees are encouraged to share the document with members of their laboratories and encourage them to send comments to the committee at pbarnett@fsalab.com. Further review of this document is anticipated at a workshop at the February, 2010, AAFS meeting. The final result of this process will be a consensus code of ethics which can serve as the national code of ethics called for in the NAS report.

Mr. Barnett would like to recognize his co-authors on this project: Carolyn Gannett, John Murdock, Hiram Evans, Jeff Thompson, James White, Peter DeForest, and Jasmine Jefferson

Relational Evidence – Special Collection and “Reassembly” of Shoeprints from a Crime Scene

Cordelia Willis, Santa Clara County DA's Crime Laboratory

Relational evidence requires special consideration when processing crime scenes -- when this evidence cannot be collected in such a way as to directly demonstrate its relational nature, the collection techniques used must allow for the relationships between items to be reassembled later. This presentation will discuss a crime scene where shoeprint evidence was collected in this manner. The layout of dusty shoeprints in a foyer (leading from the front door to the homicide victim) could not be collected via photography, so the overall relationships between shoeprints could not be assessed directly. Instead, the evidence was collected with numerous overlapping electrostatic dust lifts; these lifts were preserved via photography and then “reassembled” back at the lab (using crime scene photographs and tile lines) to produce a nearly complete map of shoeprint evidence in the foyer.

Firearms Identification - Under the Gun - Review and Response to Recent Criticisms

Andy Smith, San Francisco Police Department Crime Laboratory

Within the last few years firearm and toolmark identification has come under increased scrutiny and criticism from academics, legal challenges, and government funded studies. This presentation will briefly outline these criticisms as well as look at the response from the firearm and toolmark examiner community. It is incumbent for all firearm and toolmark examiners as well as forensic scientists in general to be aware of any criticism or debate that swirls around their discipline. Although the presentation is geared more directly at firearm and toolmark examination, it is hoped that the basic tenets laid out will be applicable to many other disciplines within forensic science, especially the comparative sciences.

A Discussion of the United States Supreme Court *Melendez-Diaz* Decision

Michael Chamberlain, Deputy Attorney General, California Department of Justice

In June 2009, the United States Supreme Court decided

Melendez-Diaz v. Massachusetts (2009) 129 S.Ct. 2527. This case held that affidavit-style laboratory reports are not admissible as evidence without “the analyst” being subject to cross-examination in court. Deputy Attorney General Michael Chamberlain will discuss what this holding means for California criminalists and crime lab managers. Does it mean that the actual analyst(s) who did the bench work must go to court? Does it mean that analyst can offer expert opinions based on another (absent) analyst’s report? How have the California courts interpreted *Melendez-Diaz*, and what can we expect from the courts in the near future? DAG Chamberlain will answer questions about this important subject.

A Discussion of Objectivity, Subjectivity and Bias in Firearm and Toolmark Identification

Ronald Nichols, Bur. of Alcohol, Tobacco, Firearms, and Explosives

Firearm and toolmark identification as a discipline relies on experienced scientists and examiners to make determinations of common source which are primarily subjective in nature. In addition, because of the affiliation of most examiners, there have been claims that they can suffer from potential areas of bias which would in turn impact their primarily subjective conclusion with regard to common source. This presentation will discuss how objectivity, subjectivity and bias can influence conclusions that trained firearm and toolmark examiners offer. Despite published comments to the contrary, the comparative process has some objective elements associated with it and simply because such elements are not discreetly measured does not necessarily make them less objective. Even without the generation of numbers, the comparative process is an excellent technique by which objective observations with regard to pattern similarity and dissimilarity can be made and documented. Subjectivity enters the equation primarily when the examiner is ready to render a conclusion as to potential common source. In typical pattern matching, this is based generally on an individual examiner’s baseline of what constitutes the best known non-match and whether or not the correspondence being observed exceeds that. Consecutive matching striations (CMS) is a means of describing agreement between two striated tool marks and then making an assessment of potential common source based on the amount of agreement one is seeing and comparing that to other published results. This issue of subjectivity is especially challenging because there is concern of bias entering the thought process of an examiner due to outside influences or because of his or her association with a law enforcement or prosecuting agency. Various concepts of bias will be discussed and explored. This will include a review of the available literature and a critical review of the studies that have been performed. This presentation will show how objectivity, subjectivity and bias are involved in firearm and toolmark identification. It will demonstrate that there is a large amount of objectivity in the comparative process. Furthermore, despite the subjectivity and potential bias, there are ways in which both can be minimized so as to help the examiner in providing the most accurate conclusions possible. These manners in which subjectivity and potential bias can be minimized will be discussed. Despite objections to the use of firearm and toolmark identification in the courts as a reliable scientific discipline because of a lack of objectivity along with too much subjectivity and bias, it can be used because the objections to its use in these areas are not well supported by either prac-

Seminar Abstracts, cont'd

tice or the available literature. Indeed, the literature and good practice demonstrate that the discipline is based in scientific foundations and that the results of trained examiners can be considered reliable.

Homemade Explosives and Devices

John Jermain, Bureau of Alcohol, Tobacco, Firearms and Explosives

Each year, the Bureau of Alcohol, Tobacco, Firearms and Explosives Forensic Science Laboratory in Walnut Creek receive hundreds of explosive exhibits submitted from throughout the Western United States. These exhibits range from commercial explosives and military ordnance to homemade explosive mixtures and improvised devices. Recipes to create explosives out of common household items are easily accessible online and people can post videos of their exploits on websites like YouTube. This presentation will focus on the manufacturing of homemade explosives and devices as well as demonstrating the explosive power these substances can produce.

Talking Forensics with the Thin Man

Don Herron, The Dashiell Hammett Tour, author

Although author Dashiell Hammett, who wrote *The Maltese Falcon*, is known as the father of the hard-boiled American detective story, spotlighting tough guys, deadly dames and lots of gunplay, his earlier career as a Pinkerton's detective also gave him knowledge of forensic techniques which he drew upon in his fiction. From the scientific analysis used to wrap up the mystery of *The Thin Man*, to early methods of faking fingerprints and the effects of a .44 caliber gun at point blank range, Hammett dropped forensic science into his stories from the beginning. Don Herron has led the Dashiell Hammett Tour in San Francisco since 1977, and will discuss the intriguing role forensics played in Hammett's detective fiction. The thirtieth anniversary edition of his Dashiell Hammett Tour Book recently saw print, and among other titles he has written the biography Willeford on the life of cult crime writer Charles Willeford, author of *Miami Blues*.

Next Generation Solutions for Capillary Electrophoresis & STR Assays

April Orbison

This presentation will focus upon two next-generation solutions: The new 3500 Genetic Analyzer and the Identifier Plus STR kit for challenged forensic samples. The gold standard for STR fragment analysis continues to be capillary electrophoresis (CE) genetic analysis platforms. The next generation 3500 (8 capillary) and the 3500xL (24 capillary) genetic analysis systems have improved upon the industry standard for CE by providing greater throughput, flexibility and ease-of-use. We will discuss several advancements to this new CE system including: An improved polymer delivery pump design, ready-to-use consumables and containers, radio frequency identification (RFID) consumable tracking, improved user interface, quality control systems for rapid identification and re-injection of failed samples, increased throughput, improved power efficiency, peak height normalization, intuitive user software and integrated primary analysis software. Combining the improvements in next generation genetic analysis systems with STR assay improvements will enhance efficiency and performance across the human identification workflow.

The presentation will also highlight the development of next generation STR assays which through the inclusion of new loci and improvements in amplification chemistry, deliver enhanced performance on the challenged and compromised samples most commonly encountered during casework investigations while still providing robust and reliable DNA profiles free of artifact peaks which may complicate interpretation. These developments further expand the range of samples from casework and missing persons investigations which can yield probative DNA results and are designed to meet the stringent requirements of the global forensic DNA community. Data demonstrating the effectiveness of the multiplexes will be presented including sensitivity, mixtures and models of inhibition and DNA degradation.

Section Reports, cont'd



There were 15 attendees, 10 of which are CAC members.

There were 3 topics presented to the DNA study group: Steven Myers (DOJ Richmond) presented "Hold the Fries: Appellate Decisions Involving DNA Analyses," Dr. William Green (U.C. Davis Medical Center) presented "The Sexual Assault Forensic Examination and the Crime Lab," and David Stockwell (Contra Costa Co. Crime Lab.) presented and stimulated a discussion on the publication "Authentication of Forensic DNA Samples." There were 50 people in attendance, of which 34 are CAC members.

The arson study group took a tour of the Chevron Refinery, located in the city of Richmond. They were chauffeured by bus to the various areas where the refining is done, from the massive dock where they pump in crude oil and pump out product to the catalytic crackers and the other reactors. The tour also included entry into a live control room where operators

were carefully controlling the flow rates and pressures of all the various portions of the refinery. The group was also shown the company recreation area and the restored marshlands just outside of the refinery. They are hoping to be able to return at some point to tour the research and development branch. There were 16 tour attendees, 9 of which are CAC members.

The firearms study group met separately on July 27, 2009 at San Jose State U.. A summary of their day-long meeting has been included in the 4th quarter issue of the *CACNews*. The trace study group did not meet during this period of time.

The Northern CA study groups will be independently meeting during the month of December. The forensic alcohol study group and new toxicology group will both be meeting on December 3rd. Dr. Nikolas Lemos of the San Francisco OCME is the new chair of both groups (nikolas.lemos@sfgov.org).

Further information regarding December study group meetings will be posted to the website during November. I am seeking a co-chair for the trace study group and any member interested in chairing a CSI study group.

—Jeanette Wallin

Preparing for Court Testimony: Anticipate the Opposing Side's Questions and Tactics

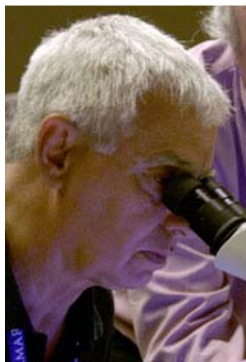
Robert D. Blackledge

You've been subpoenaed to testify in a trial (criminal or civil). You know you will be queried as to your education, training and experience (*voir dire*). This is nothing new; you should be able to handle these questions without any problems. Have you testified before? With the Internet and various search engines it's possible to track down your previous testimony. Is there anything in your past testimony or your previous publications that in this case might work against you? Not only do you not want to be caught unprepared to answer such questions, neither do the attorneys for the side that called you to testify. In all fairness, you should advise them of any potential problems beforehand and together devise a way of handling such questions if they arise.

Now for the meat of your testimony: the actual physical evidence you examined, the analyses you performed, and your findings. First, the chain of custody for any items you examined. Chain of custody is the easiest thing for the opposing side to attack and it's easily understood by the judge and the jury. If the chain of custody doesn't stand up to scrutiny, it is unlikely the item will be introduced into evidence, and without it there is no reason for you to testify. Game over.

So let's assume you've carefully looked over the chain of custody documentation and are confident that hurdle may be passed successfully. The examinations you carried out and your findings are stated in your report. Also, everything you did is documented in your case notes. How might the opposing side attack the examinations you selected to carry out, the manner in which you carried out these examinations, and your interpretation of the data from these examinations (your findings)? When you were in school were you ever a member of a debate team? Debate teams must be able to either attack or defend an issue. For example: "The Electoral College (should/should not) be abolished." To be a successful debater you must be able to convincingly argue either side of the question.

If you were a member of a debate team how might you attack 1) the examinations you elected to carry out on the physical evidence (were there other choices?, if so, what advantages/disadvantages might they have over the examination methods you selected?); 2) the reliability of your data?; 3) your findings?



Bob Blackledge is a forensic chemist consultant. From 1989 through May of 2006 he was the senior chemist at the Naval Criminal Investigative Service (NCIS) Regional Forensic Laboratory in San Diego, California. He is the editor of "Forensic Analysis on the Cutting Edge: New Methods for Trace Evidence Analysis," Wiley-Interscience, 2007. He may be reached by e-mail: bigpurple@cox.net

To illustrate this approach I'll use as an example an article from a recent issue of *Evidence Technology Magazine*. The article is "Matching Video to its Source" (July-Aug. 2009, pages 10-13) by Scott Kuntz, Deputy Sheriff with the Dane County Sheriff's Office, Madison, Wisconsin. This was an outstanding article. It's well organized; it clearly describes a somewhat complex subject; and best of all, it shows the method's practical application using an actual case.

So, let's look at the actual case. If Deputy Sheriff Kuntz were preparing to testify in this case how might he anticipate the possible tactics and questions the defense might employ against him? As you may recall, the case involved a "home video" and the question was "Was this video recording made using the questioned video camera?" Out of a rectangular array of 300,000 sensors (pixels) the pickup device (charged coupled device or CCD) of the camcorder that made this video had four "hot pixels." These hot pixels were always in the same location on the array and therefore showed up at these same locations on any video recordings captured with this camera. Deputy Sheriff Kuntz reasons that if there were an equal chance that any of the 300,000 pixels might be a hot pixel then the odds that these four specific locations and no others would be hot would be "1 to 300,000⁴—or, 1 in 8,100,000,000,000,000,000,000,000 (in that same class) would have the exact same defects." These are very impressive odds! Many cases involving DNA evidence don't even reach such astronomical numbers. How in the world could the defense successfully attack this?

How could they indeed. For criminal cases in the U.S. judicial system the situation is much like that in health care, that is, the defendant is entitled to the best defense *he can afford*. Certainly one likely possibility might be that the defense would reason: "This guy will kill us. We don't even want the jury to see him. Let's just stipulate to the findings in his report." In my forensic science career spanning about 35 years, this has happened to me more times than I can recall. You have mixed feelings—relief and disappointment. However, don't think that all the time you spent in preparation for your testimony was a total loss. Either you have a reputation and/or you are in the process of building one. Stipulations to your report are far more likely to occur if you have established a reputation of always being meticulously prepared and come across to the jury as professional, impartial, unflappable, and modestly confident. All it takes to destroy this reputation is one instance of poor preparation. If you are poorly prepared then when you get on the witness stand you will be nervous and apprehensive. This will make you seem unprofessional, unsure of yourself, defensive, and even possibly biased. Like the Boy Scout motto says: "*Be Prepared.*"

So, how should we prepare for a "worst case scenario" - i.e., the opposing side pulls out all the stops in attacking you, your examinations, your data, and your findings? Using the case example from the Evidence Technology article, let's ask ourselves what tactics the defense might employ?

Anticipate. General George Patton from World War II is one of my historical heroes. In the movie with George C. Scott in the leading role, Patton's forces in North Africa finally win a decisive battle against Rommel, "the desert fox." In drawing up his battle plan Patton had heavily relied on the previous writings of Rommel. When Patton discovers that Rommel was in Europe at the time of the battle he is crushed. But his aide replies, "Remember, you defeated his plan!" Sometimes you can anticipate in advance the tactics that may be used against

Blackledge, cont'd

you. When you are on the stand and subject to cross examination you may justifiably feel quite helpless. Sometimes you are far better off dealing with these likely issues in direct. The prosecutor plays the Devil's advocate and asks you the hard questions. In this atmosphere you are allowed to fully and completely answer the questions rather than being restricted to "Yes" or "No" answers. When the defense gets a crack at you in cross, you've completely taken the wind out of their sails.

Many years ago in Florida I was testifying as the chemist in a case involving several kilograms of cocaine. The defense attorney was from Miami and routinely handled criminal cases for organized crime. I knew that a University Professor who specialized in testifying for the defense in cocaine trials had been flown in. I also knew that his shtick was to claim that the analysis failed to show whether it was the *d*- or *l*- cocaine isomer, and that only the *l*-cocaine isomer was controlled. I had identified the cocaine by its infrared spectrum, but I had also used a mixed crystal test (mixing a small amount of my *l*-cocaine standard with an equal amount of the unknown (virtually pure) powder before adding my reagent drops. The prosecutor asked me what methods might be used to determine whether a powder identified as cocaine was the *d*- or *l*- isomer or even a racemic mixture of the two? In a relaxed atmosphere I was able to explain the possible methods that could be used, why I chose the mixed crystal test method, how I carried it out, and what were the results. The "Grand Poo-bah" did testify for the defense, but the jury was only out 12 minutes before coming back with a guilty verdict.

Obfuscation. If the defense can make something appear to be hopelessly complicated, the jurors might just tune out. Defense may pull a "Columbo" (purposely act as though the entire subject has them thoroughly confused). They could ask in minute detail for the witness to explain the manufacturing process of sensor arrays. They could ask about quality control at the various plants that manufacture these arrays. For example, "A sensor array wouldn't work at all if all 300,000 pixels were hot, so what is the maximum number of hot pixels that such as sensor array may have and still pass quality control at the factory?"

Just trying to further make the subject seem complicated and (hopefully) to get "I don't know" responses from the witness, counsel could ask questions regarding: "What is the percentage of these sensor arrays having 300,000 pixels that come from the factory with no hot pixels? With just one hot pixel? With two? With three? With four? [The answers don't really matter, but counsel would absolutely love to have the witness caught in a series of "I don't know" answers!]

When hit with this type of tactic it's best if you've done your homework and can succinctly and correctly answer the questions. If not, simply say, "I don't know." Don't be argumentative. In a sexual assault/homicide case I had found in vaginal swabs from the victim traces of a silicone oil condom lubricant that were indistinguishable from the lubricant recovered from a condom found near the body (DNA from seminal fluid inside the condom matched the suspect). On cross, the defense would name a commercial product and ask, "Isn't it true that this product also contains this silicone oil?" Through several iterations I would turn my head and look at the jury and reply, "That is true." None of these commercial products were intended for vaginal insertion and I was sure the jurors could figure this out on their own. Finally, after the counselor had mentioned yet another product, I decided I needed to break up his rhythm. I replied, "Yes, that is true.

In fact, it's also found in commercial products that are taken to control flatulence" (true). The defense attorney just looked confused and asked me no more questions! Remember, there is always redirect. A competent prosecutor will allow you to summarize your findings in redirect.

Mistakes. We are all imperfect. Well after your analysis and the writing and submitting of your report, as you are looking over your notes have you ever discovered you've made a mistake? I'm not talking about big mistakes. I'm not talking about anything that would swing the pendulum from "guilt" to "innocence." I'm talking about minor errors that the defense might be able to blow all out of proportion to make it look as though you are lazy, incompetent, unprofessional, biased, etc. If you discover you've made a mistake it is in your best interest to admit your errors as soon as you can. Far better to offer your mea culpas in direct than to during cross have the defense make it look like you were trying to hide something.

As an example, in the case discussed in the *Evidence Technology* article the author has made an error in his calculations. First, the odds are not 1 in 300,000⁴ that some other sensor array of 300,000 pixels would have those exact same 4 pixels be hot (and no others). After each hot pixel, there is one less out of the original 300,000 that may be hot. So it's 1 in 300,000 x 299,999 x 299,998 x 299,997. But this calculation is still wrong. Let's say that we identify the 4 hot pixels by letter, A, B, C, and D. If the sequence had to be A, B, C, and D and no other combination of these four letters (pixel locations) then the above equation would be correct. But it doesn't matter; the sequence doesn't matter. The possible number of combinations of A, B, C, and D is 24:

ABCD	BACD	CABD	DABC
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA
ADBC	BDAC	CDAB	DCAB
ADCB	BDCA	CDBA	DCBA

So the product above should be divided by 24. But even this calculation might be wrong. Quality control at the sensor factory may accept a total of 4 *isolated* hot pixels since an isolated hot pixel is so hard to detect. But two or more *adjacent* pixels would be far more noticeable. If quality control would reject any combination of two or more adjacent pixels then this must also be taken into consideration when calculating the odds.

A Bayesian Approach. Using Bayesian statistics might actually be an advantage in this case. In other than the very broadest terms, I'm not qualified to discuss the application of Bayes Theorem. What follows is no doubt a gross over-simplification and is merely intended to hopefully stimulate readers to seek out more detailed explanations. Let's say we have two hypotheses (guilt/innocence). One is that "given the evidence, the accused committed the crime" (guilt). The other is that "given the evidence, it must have been someone else who committed the crime" (innocence). [For a really simple example see the question about the ratio of trousers to skirts at a co-ed school: http://en.wikipedia.org/wiki/Bayes'_theorem

To express how the testimony of Dep. Sheriff Kuntz would change the probability of guilt we could use the equation:

$$\text{Posterior (guilt)} = \text{LR} \times \text{Prior (guilt)}$$

That is, the testimony (evidence introduced by Kuntz and its significance) should have some effect, LR (Likelihood Ratio), on the prior probability of the guilt hypothesis. A likelihood ratio, LR, is the probability of the same evidence under two competing hypotheses, or in this case a video tape showing 4 hot pixels in the same locations as a camcorder that has 4 hot pixels at these locations in its pickup device (CCD) under the prosecution's assertion that the defendant used that camcorder to make the video tape in question, versus the defense's claim that the video tape was made by some other person using a different camcorder. Although we may not be able to always express it in numbers, every bit of new evidence (whether introduced by the prosecution or the defense) should have an effect on the total probability. If it didn't, then it was a total waste of the court's time and should never have been introduced. Up to the point of Deputy Kuntz's testimony there is (at least in theory) some prior probability. If his testimony has any relevance at all it should (in fact or in theory) be able to be expressed in terms of LR. The LR from this testimony would then be multiplied by the probability up to that point to produce a new probability. In his analysis of the data, only one aspect of an LR is considered. Not only are his calculations in error, but even the correct calculation might well be over-estimated if certain combinations of adjacent pixels are excluded. However, as a result of his testimony there well might be new additional LRs and their total effect might be to actually improve the likelihood of guilt rather than reduce it. For example, the accused has been shown to not only have possession or access to a camcorder, but to one that has a sensor array that has a total of 300,000 pixels. Of camcorders available today what fraction has a sensor array with 300,000 pixels? - this could be expressed as say, LR1. Consulting manufacturers of sensor arrays, of those that have sensor arrays with 300,000 pixels and passed quality control inspection, what percentage had no hot pixels? - One hot pixel? Two hot pixels? Three hot pixels? Four hot pixels? Out of all these combinations of camcorders having 300,000 pixels, the accused has one with 4 hot pixels (no more, no less). This could be expressed as LR2. Lastly you have the statistics considered (albeit incorrectly) by Deputy Sheriff Kuntz in his article. The total number of permissible combinations of four hot pixels in a 300,000 pixel array (1 in $(300,000 \times 299,999 \times 299,998 \times 299,997)/24$ - the total number of combinations of 2 adjacent pixels not permitted by Quality Control (any combinations of 3 or 4 adjacent pixels would just be specialized examples of two adjacent pixels) could be used to produce an LR3. So after his testimony the new probability could be expressed as:

$$\text{Posterior (guilt)} = \text{LR1} \times \text{LR2} \times \text{LR3} \times \text{Prior (guilt)}$$

Although LR3 would be less than if all possible combinations of four pixels had been allowed, the product of the three might still be an even larger LR. So, what is the take home message? Deputy Sheriff Kuntz did make a mistake in his calculations, but that mistake does not any significant way alter the likelihood that the defendant is guilty. If you've discovered you've made a mistake it's always best to admit it and correct it as soon as possible.

Kitchen sink. Is there anything else that counsel might throw at Deputy Kuntz? If "the Bible is the last refuge of scoundrels", then *Daubert* must be the last refuge of defense attor-

neys! Quoting directly from Wikipedia http://en.wikipedia.org/wiki/Daubert_standard

Factors relevant: The Court defined "scientific methodology" as the process of formulating hypotheses and then conducting experiments to prove or falsify the hypothesis, and provided a nondispositive, nonexclusive, "flexible" test for establishing its "validity":

1. Empirical testing: the theory or technique must be falsifiable, refutable, and testable.
2. Subjected to peer review and publication.
3. Known or potential error rate and the existence
4. The existence and maintenance of standards and controls concerning its operation.
5. Degree to which the theory and technique is generally accepted by a relevant scientific community.

In 2000, Rule 702 was amended in an attempt to codify and structure the "Daubert trilogy." Rule 702 now includes the additional provisions which state that a witness may only testify if

- 1) The testimony is based upon sufficient facts or data
- 2) The testimony is the product of reliable principles and methods, and
- 3) The witness has applied the principles and methods reliably to the facts of the case."

If your testimony in even the slightest way involves new technology, your answers to these questions must be a vital part of your preparation. Don't just think the questions and your answers in your mind, *write them out!* Coming up with solid answers may require a considerable Google search. Surely in your lab there must be some eager, breathless intern who will gladly take on this task. Don't just thank her for her efforts; have her write everything up and submit it for publication to the *CACNews*. Not only will this help the forensic science community in terms of future *Daubert* questions, but becoming a published author should give her forensic science career a boost and also increase her self-confidence and job satisfaction.

Okay. Please realize that the above is fiction; I only used it to dramatically make a point. Near the end of his article Deputy Sheriff Kuntz admonishes: "It is important to keep in mind that any examination of this technical nature should be peer reviewed by a person competent in this area..." I certainly agree, but sadly, there have been far too many past instances where even this was not sufficient. Put yourself in the shoes of the reviewer. It's not your case and every minute you spend in review is less time you have to spend on your own cases. Is the person who asked you for your review the person who trained, mentored, and/or supervises you? For many reasons the dynamics of the situation may be such that you are loathe to offer any criticism. In fact, Kuntz's article helps make my point. No doubt before writing his report on the investigation and also before submitting his article Kuntz had colleagues review it. Although only human nature, this tends to put people in review positions who have backgrounds similar to the submitter.

So, is there any alternative? I very strongly feel there is. There is a method that by its very nature forces you and others to ask and honestly consider all of the questions that will properly prepare you to defend your case. This method should be a routine part of case review. It should be employed when closing any major case; it should be employed to prepare for court testimony and to anticipate the questions and

Blackledge, cont'd

tactics used by the opposing side; and it should be used when reopening the investigation of a cold case.

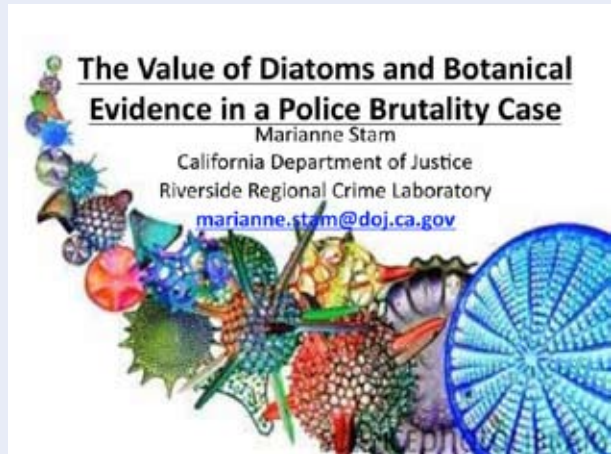
The approach I recommend for *case review* is based on the thinking methods taught by Dr. Edward de Bono [www.edwdebono.com]. Dr. de Bono has published prolifically and has introduced a number of variations to his thinking methods [*Lateral Thinking*, *Direct Attention Thinking Tools (DATT)*, etc.] However, my personal favorite is *The Six Thinking Hats*. I like it because of its simplicity and I like it because it virtually forces the participants to play by the rules even when to do so may be against one's basic nature (don't want to be perceived by your colleagues as a bad sport or not a "team player").

The six hats are: 1) the White Hat (data, facts, information known or needed); 2) the Black Hat (difficulties, potential problems. Why something may not work); 3) the Red Hat (feelings, hunches, gut instinct, and intuition); 4) the Green Hat (creativity: possibilities, alternatives, solutions, new ideas); 5) the Yellow Hat (values and benefits: why something may work); 6) the Blue Hat (manage the thinking process, focus, next steps, action plans). Although it would be possible for one person to use their imagination and try to perform case review (or just one aspect of a case) wearing, in turn the various hats, it really works better as a group exercise. One person is designated as wearing the blue hat and thus directs the process. The person wearing the blue hat doesn't necessarily have to be the most senior person present nor even the case agent. In fact, it might lead to less inhibition and more spontaneity if some other person was chosen to wear the blue hat. A high percentage of people just by their nature tend to be black hat types. Ever offer an innovative suggestion at a meeting? Most people by nature start thinking what is wrong with the idea and what might go wrong rather than what positive values it might have and its possible benefits. I love it when the person with the Blue Hat asks such a colleague, "John, what is your Yellow Hat thinking on ... ?" You can see the mental struggle ... "I must come up with something positive or they'll think "doesn't play well with others!" Want to come up with an alternative theory of the case or an alternate explanation for certain evidential findings? —The Green Hat does wonders. And once you've gone through the entire process you know and can clearly articulate why that "off the wall" theory just doesn't make sense. Should the opposing side raise that theory when you testify, you can nail your response (and possibly show there's no need to search the world's golf courses for the *real* culprit).

Acknowledgement: Any errors are the author's, but for help with Bayes Theorem I thank Nicolaas (Klaas) M. Faber, Chemometry Consultancy, Goudenregenstraat 6, 6573 XN Beek-Ubbergen, The Netherlands.

Reference: To find the article from *Evidence Technology* referenced in the above article go to: <http://evidencemagazine.com/v7n4.htm> (accessed September 29, 2009).

Trace Evidence Symposium 2009 Presentations Available on the Web at NFSTC.org



Visit <http://projects.nfstc.org/trace/>

You will be given a choice of either the Trace Evidence Symposium held in 2007 or the one held in 2009.

If you click on the 2009 symposium, then click on "Presentations & Videos." That page lists all the topics and presenters. Across the top of that page you can click on the various days of the symposium (Mon. through Fri.).

The PowerPoint presentations available at the 2009 symposium site are very well done (*example above courtesy Marianne Stam*) and they alone are well worth the effort in going there. Two are by Vaughn M. Bryant, Director of Palynology Laboratory, Department of Anthropology, Texas A&M University, College Station, TX. Even high school or college undergraduate botany teachers would be able to use these two PowerPoint presentations and hold their classes spellbound!

Submitted by Bob Blackledge

The Harper Family Murders: *The People vs. Vincent Brothers*

In July of 2003, the criminalist of the Kern County Regional Criminalistics Laboratory responded to the scene of a multiple homicide in Bakersfield, CA. That homicide response turned into one of Kern County's most notorious murder cases. This was Kern County's first quintuple homicide. This case drew national attention in that five family members were found murdered. They ranged in age from six weeks to seventy-five years of age. The suspect was the estranged husband of the wife and the children murdered along with his mother-in-law. He was an educator, a vice-principal and a respected member of the community. Racial tensions in the community were high as the deceased mother-in-law was a community activist for Bakersfield's African-American community. Suspicions were directed towards the Bakersfield Police Department because of the immediate attention directed toward Vincent Brothers, whose race was black.

The scene was relegated to a single-family residence in mixed socio-economic class neighborhood. The five victims included Ernestine Harper, age 70, the mother-in-law found shot to death with two small caliber gunshot wounds to her face. She was found in a separate area of the residence apart from the remaining four victims. The remaining victims were all found on the bed in the master bedroom. They were identified as Joanie Harper, age 39 years, Lindsey Harper, age 2 years, Marcus Harper, age 4 years, and Marshall Harper, age six weeks. In the initial stages of the investigation of the residence, the whereabouts of Marshall Harper was not known. It was thought that he may have been kidnapped or was in the custody of his father Vincent Brothers, who was across the country attending a family gathering. All five victims sustained gunshot wounds. Joanie Harper received three to four gunshot wounds to her head in addition to the back of her right upper arm while sleeping on the bed. Joanie Harper was the only individual in the residence to be stabbed in addition to being shot. She received non-lethal stab wounds to her upper back that appeared to be either peri-mortem or post-mortem. Blood stain pattern interpretations and blood flow patterns established this. Of special interest was the possibility that the assailant inflicted the knife wounds using his left hand. This was determined by the positions and locations of all four victims on the bed, the fact that the top sheet was pulled up over two of the victims after the blood shedding events, and the configuration and locations of the stab wounds. During the course of the preliminary hearing, the defendant Vincent Brothers attempted to practice writing with his right hand as

his defense counsel attempt to exclude the testimony of the criminalist at trial. Lindsey Harper received a single perforating gunshot wound through her back with the bullet exiting her chest and remaining lodged between her chest and the jumper she was wearing. Blood stain flow patterns established that she was asleep on the bed when shot. Marcus Harper received a single close range gunshot wound to the right temple. Stippling as well as bloodstain patterns established that he was sitting upright in the bed with the sheet covering is legs when shot. It appears that he witnessed the shooting of his mother and sister as he had a severe bite wound to his hand. After he was shot, the top sheet was pulled over him. Pillows and couch cushions had been placed on top of the heads of Joanie and Marcus Harper covering them in addition to the fifth victim, Marshall Harper. He was only discovered after much of the scene had been process. By peeling away the bedding items, young Marshall was observed lying on his stom-

Because Vincent Brothers had access to the house, this case did not hinge on DNA or fingerprint evidence. Forensic entomology was critical in disproving Vincent Brother's supposedly airtight alibi.

ach between his mother and his brother. Marshall received a perforating gunshot wound to his back that exited his abdomen. The recovered bullet was discovered in a quilted baby blanket upon which the infant was laying.

Sexual assault evidence kits were collected from the female decedents while at the scene. A number of spent .22 caliber cartridge casings were recovered from the master bedroom at the southeast end of the residence where the majority of family members were located and in the hallway of the northwest end of the residence where the mother-in-law was located. Later in the investigation, an additional spent .22 caliber cartridge casing was recovered from the bedding seized from the master bedroom by the FBI Laboratory, which later became involved in the case because of its high profile nature. An additional spent .22 caliber cartridge casing was recovered from the living room area by a crime scene cleaning crew. This supported the contention that three shots had been fired at Ernestine Harper in the hallway. Two rounds struck her in the face and a third round struck and penetrated into the edge of the hallway wall separating the living room from the hallway. This was established using probes to determine the bullet paths. All the spent cartridge casings were determined to have been fired from the same firearm. A NIBIN search of the national database failed to locate a firearm or related case. Of interest was the discovery of an antique Iver Johnson .38 caliber S&W revolver. This revolver was located



Gregory E. Laskowski is supervising criminalist at the Kern County District Attorney's laboratory in Bakersfield, CA.

This paper was Presented at the spring seminar of the California Association of Criminalists at Lake Arrowhead, CA

on the hallway floor immediately south of the location of the mother-in-law. While the firearm was deemed loaded, there was no evidence that the revolver had been fired. The primers showed no markings from the firing pin. This revolver had a shrouded hammer so it could only be fired double action. Testing of the revolver revealed that the trigger pull was extremely heavy. It was surmised that it was much too heavy for the elderly Ernestine Harper to fire the weapon.

As Joanie Harper was the only victim stabbed in this crime, a search for a knife was conducted. On the kitchen counter was a Cutco brand knife block with each slot being filled save for one. It was surmised that the knife that stabbed Joanie Harper came from this set.

An examination of the scene revealed that a big screen plasma TV had been removed from its pedestal and placed on the floor. The plug style wires had been removed from the back of the TV. Cash was visible on small table in the master bedroom. A computer had been disconnected in addition to the plug for the cordless phone. In fact, the handset to the cordless phone was missing.

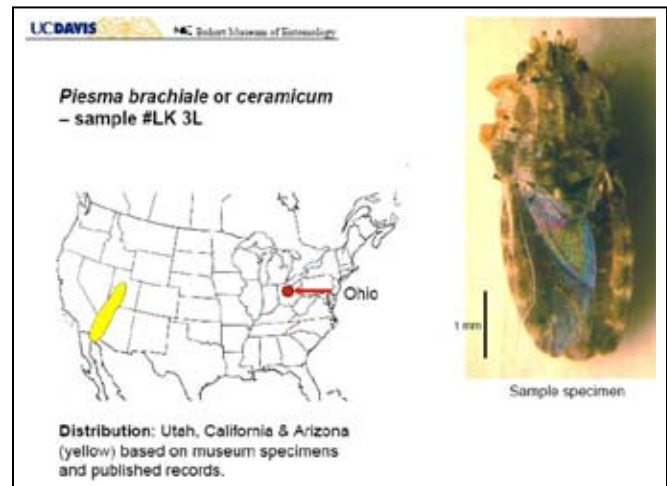
Two portions of latex glove fingertips were recovered from separate locations at the scene; one from the backyard had begun to shrivel from the summer heat. DNA as well as fingerprints could not be recovered from this item. The other latex glove fingertip was recovered from the floor of the utility room that separated the master bedroom from the garage. It along with the overturned contents of Joanie Harper's purse was seized. It should be noted that the contents of the purse included ID, cash, and credit cards. None of these was determined to be missing. The results of the DNA testing of the latex glove fingertip revealed a mixed profile of the suspect Vincent Brothers and family members in addition to unknown sources. It must be pointed out that Vincent Brothers had lived in the house. He had been involved with painting and remodeling the residence and a box of rubber gloves was located in the kitchen area, so it could never be established when the fingertip was left at the scene.

Other physical evidence that had been recovered from the master bedroom included what was described as a blonde hair. This item of evidence had been recovered from the clothing of Joanie Harper. It was an item of contention in that a DNA analyst had recovered the item and described it as a hair. Being that the entire family was African-American, it raised an issue that someone of the Caucasian race committed the murders. Analysis of the so-called "hair" by an experienced microscopist determined that the "hair" was not hair but rather a light colored trilobal fiber usually associated with carpeting. Additional blonde hairs were also recovered from the bedding. An examination of these hairs revealed the to be in the telogen phase and subject to considerable insect damage along the shaft suggesting that they had been present at the scene for a considerable time.

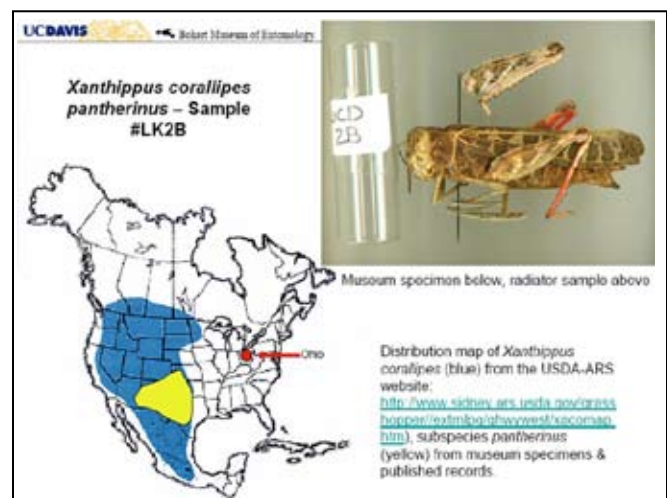
As discussed earlier during the initial stages of the investigation, the whereabouts of the infant Marshall Harper and the father/husband Vincent Brothers was of primary concern to detectives. It was subsequently learned that Vincent Brothers was out of state visiting his family in Columbus, Ohio. Then it was learned that he had traveled with his brother from Columbus, Ohio to visit his mother in Elizabeth City, North Carolina. He was at that location when detectives flew from Bakersfield, California to interview him. Detectives became suspicious and developed Vincent Brother's as a person of interest when they discovered that the rental car that Vin-

cent Brothers rented was turned into the rental agency with over 5400 miles on it. The car was new and had been rented by three previous renters who put very little mileage on it. Based upon this information, the FBI was requested to seized the radiator grill and air filter from the car in the hopes of establishing if there would be any evidence that the car had been driven to Bakersfield, California and back. The investigation further revealed that Vincent Brothers had given his brother living in Columbus, Ohio his credit card. He left specific instructions for his brother to purchase items at Wal-Mart using that card. While the brother initially tried to cover for Vincent Brothers, he later confessed that he had used the card when it was revealed to him that Vincent Brother's signature had been forged on the receipt and that police had video surveillance footage of him making the purchase. Other related investigative information uncovered was the use of Vincent Brother's cell phone, again by his brother.

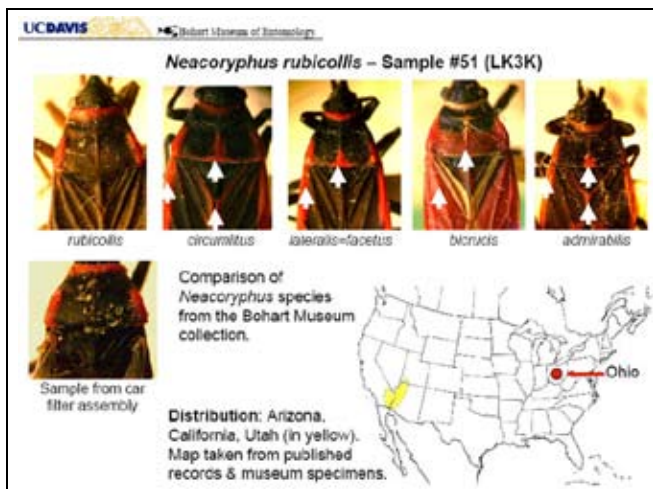
Because Vincent Brothers had access to the house, this case did not hinge on DNA or fingerprint evidence. Forensic entomology was critical in disproving Vincent Brother's sup-



These graphics illustrate some of the insect evidence from the Vincent Brothers case.



posedly airtight alibi. This was not the typical forensic entomology case, where the life cycle of insects is used to establish the death interval; rather this involved the identification of insects to specific geographic regions. The radiator grill and air filter from the Dodge Neon rented by Vincent Brothers was



shipped to Dr. Lynn Kimsey of the University of California at Davis. Dr. Kimsey meticulously removed insects and their parts from the grill. Through microscopic examination and comparison, she was able to identify certain parts and whole insects as species that inhabit the geographic regions of the western United State, in particular, Utah, Arizona, Nevada, and California. This was critical evidence that would be used at trial. Dr. Kimsey’s work in this case has been subject of such television programs such as *Animal Planet*, *Extreme Forensics*, and *Dateline NBC*.

The case took three years to come to trial. Many expert witness were called to testify including criminalists, forensic pathologists, a forensic pediatric pathologist, a behavioral analyst from the FBI, a so-called profiler/analyst, forensic entomologists, pest control expert, automotive engineers, human factor engineers, safety engineers, and a police interrogation expert. Many charges were leveled about the fact that the crime scene investigation was conducted haphazardly, and focused too much on the defendant. Yet, it was established that the processing of the scene and the evidence was thorough. Some of the issues that remained under contention were the establishment of the time of death, in that rigor mortis was inconsistent among the five victims. Although it could be established when and where they ate their last meal, and that they had not responded to attempts to contact them the following morning. Other issues that were raised at trial included the supposed presence of blood on the foot of the little girl, Lindsey Harper. A first-responding firefighter had stated that he saw blood and this “fact” was accepted by a pediatric pathologist. However, a criminalist examined the foot and tested it using a presumptive test for blood, which was negative. There was testimony from defense experts that stated the victim Joanie Harper was in a struggle before she

was shot and stabbed because she thought she saw defense wounds in crime scene photographs. Joanie Harper had no defense wounds. The blood flow patterns clearly demonstrated that she was lying in bed when attacked. It was also stated that the girl Lindsey Harper was shot elsewhere and then placed on the bed. Again, bloodstain pattern interpretation and the location of the bullet that perforated her body contradicted this opinion. One defense expert touting himself as a profiler stated that the initial crime scene investigation was botched. The scene investigators were overwhelmed by the process. He went on to say that there was no evidence of “staging.” He also stated that there were no bullet trajectories conducted at the scene, when crime scene and autopsy photographs clearly contradicted this opinion. He did not use the examining criminalist’s report to form his opinion. Essentially, this expert was hired to contradict or rather critique the training and expertise of the FBI’s behavioral analyst. The judge severely restricted his testimony. One of the outrageous statements made by this witness was referring to the American Academy of Forensic Sciences as being “largely a police science organization.”

A human factors engineer hired by the defense testified to the defendant’s ability to drive a vehicle cross-country. Another engineer hired by the defense testified to the capability of a 2005 Dodge Neon to drive at sustained speeds of 75 to 85 miles per hour. Bug experts hired by the defense attempted to critique Dr. Kimsey’s work as not being sufficient. They criticized her for not working with the latest data, although she was the person who conducted the research of some of recovered insects. During cross-examination, of one of the defense experts admitted that Dr. Kimsey’s identifications were correct. Lastly, an expert in police interrogation techniques charged the police detectives with using improper interview techniques on the brother of the defendant and his daughter, treating them like suspects as opposed to witnesses.

While the bug and mileage evidence offered at trial was compelling, the fact that the defendant took the stand in his own defense was the most damaging. The prosecutor caught him in 43 lies. His testimony on his whereabouts at the time of the murders did not add up. He attempted to create an alibi stating that he was involved in a minor automobile accident with a child bicyclist in Columbus, Ohio on the day of the murders. Unfortunately, for Vincent Brothers the individual that actually struck the bicyclist was found and was brought to Kern County to testify at trial.

Vincent Brothers was eventually found guilty of five counts of first-degree murder. He received the death penalty and is currently serving time at San Quentin while his case is under appeal. He also lost his case in civil court, which held him responsible for the bearing costs of the funeral and burial of his family.



Judge for a Day

I've been in lots of courtrooms during my tenure as a forensic scientist, and testified as an expert witness in over 200 trials, from municipal court to federal district court, from California to Missouri, and in cases as varied as capital crimes and drug smuggling. However, the one place I'd never been was in the judge's seat, so when my long-time friend Raymond Davis asked me to be his "judge" for a class he was teaching on courtroom communication, I said yes without hesitation. I'd met Raymond when he was my editor on *The CACNews* many years ago and had asked him to write the foreword for my book. He has even more experience than I do and he's turned his talent for effective communication into a thriving business, travelling all over the country teaching classes on courtroom skills for expert witnesses. He gave me no hint as to what I would be in for, just that he was choosing a prosecutor and a judge, and that he would play the part of defense attorney in a day-long session of moot court.

I'd participated in moot court before and figured it would be held at the hotel we were staying at in San Jose and probably have me sitting behind a table or something. He made it all sound pretty casual and low-key. The court session would be the culmination of a three-day class he was presenting at the CAC seminar hosted by the Santa Clara county District Attorney's crime lab.

I quickly warmed up to the idea and wondered just how realistic he wanted me to be. So I boned up on the Calif Evidence Code and even bought a judicial "robe" at a costume store. I figured I could just keep it put away unless it was clear the class was expecting a more colorful performance.

rior Court, had graciously given us the use of his courtroom for the entire day. As the doors were unlocked and we filed into the huge space I was awestruck. It looked as if a trial had been interrupted and everyone had simply gotten up and left. The lights were on, the computers were booted and the microphones powered up. It was a real, working courtroom.

I immediately got weak in the knees. No way. I can't sit in that chair and play judge. Someone's going to run in and arrest me! I sneaked into a corner and put on my robes. Slowly, I ascended the steps and eased myself into the huge padded seat. There in front of me was his computer, with a legal document still on the screen. All kinds of colorful buttons I dared not touch were in abundance. Apparently this judge thing was getting kind of technical. Even his monogrammed water decanter was sitting full, ready for him to pour.

I carefully opened my class notes and witness list on his desk, daring not to disturb anything and looked down at the courtroom from my new vantage point. I had to keep in mind the purpose of this whole exercise was to give the students the most realistic experience possible. Raymond had suggested I "fine" the witness 25 cents if they failed to explain a scientific term. I'm afraid he created a monster, because once I saw the magnificent space we were given I decided to play it straight and run a more solemn courtroom. I wanted students to know, too, that this wasn't all about them. A criminal trial is a place where a person's liberty may be taken, so I wanted them to see a real person as a defendant. That's always been a sobering thing for me as a witness, to see that person sitting in the defendant's seat looking at me, silently imploring me to tell the truth if they are innocent.



I immediately got weak in the knees. No way.
I can't sit in that chair and play judge.
Someone's going to run in and arrest me!

The day of the trial, the class of nine "witnesses", the "DA", Raymond as "defense attorney" and myself all drove over to the Santa Clara courthouse. OK, I thought, they probably have a storeroom or something with some old courtroom furniture we can use to make the setting more authentic. Well, not exactly. As we went through security my camera was confiscated and it dawned on me that we were in for a treat. Jack Komar, judge of Division 17 of the Santa Clara County Super-

Another thing Raymond wanted to do was sit together with the "DA" to give her some pointers about when to object. He needn't have worried. He had selected Dianne Burns, career criminalist, to play the role and she was terrific, methodically quizzing her witnesses about their procedures and drawing out explanations suitable for a nontechnical jury.

We had with us a visiting professor from a local university who was following crime lab workers for weeks as she gathered



Microscope Art

information for a paper she was planning to write. I immediately recruited her to play the part of “defendant.” She obliged with a twinkle in her eye. There we were, the cast was assembled, let the games begin. “Are the people ready?” I intoned, “defense? Very well, the people may call their first witness.”

While they were waiting to testify, the remaining eight students formed the “jury” and watched their counterparts testify. In real life, each of the nine students was a criminalist, some with more lab experience than others, but none with much courtroom time. Each had dressed up for court in smart business attire and each had brought a large piece of paper on which they’d drawn an illustrative exhibit. Earlier in class, Raymond had them pick an example of their own casework ranging from drunk driving to rape and even homicide. Now they were testifying about the results of their examinations of that evidence. To their credit, the witnesses stayed in character and did their job well. After each one had finished, the three “lawyers” gave a brief critique and then their student partner gave a more detailed analysis. The air was a bit tense as it would be in a real trial, but overall it was fun. The most common problem was simply not speaking loudly enough.

Raymond’s crackling cross examination kept the student witnesses on their toes. I would not want to face him as a real defense attorney. A favorite technique of his was to object to a question and then, if I sustained the objection, stand there and wait for a pregnant minute. Inevitably, the pressure would mount until the witness blurted out the answer only to be admonished for answering a question that had been quashed. “Just answer what was asked,” he’d tell them, “don’t ramble on with more information.”

My perspective gradually changed over the course of the day. I found myself being protective of my jury. I found it easy to be unbiased and enjoyed overruling or sustaining objections based on the merits of the arguments by either side and didn’t mind whether it was the prosecution or defense. I soon discovered that it was harder than it looked to keep track of who asked what and what the law was and what the merits of an objection were. It would have been nice to have had a court reporter! The power was a bit intoxicating. Sitting above everyone else in a black robe and speaking into a microphone, leaning back in a comfy chair all made the atmosphere a bit heady and I had to reel myself back to earth more than once.

The class only had time to hear the expert testimony, so there were no jury instructions or even a verdict, but that was OK. We ended the class with a summary from each of the principals, with me going last. While the others were speaking I crept down off the bench and slipped off the faux robes and made my way to the witness stand that each student had occupied. When it was my turn I urged each of them not to fear going to court. I told them I had known many career criminalists that hated testifying, thinking it to be an odious task they wished they could avoid. I said, “This chair is a teaching chair. Look on testifying as an opportunity to teach the jury. They are interested in what you have to say. Testifying is a privilege that is missing from more routine laboratory careers.”

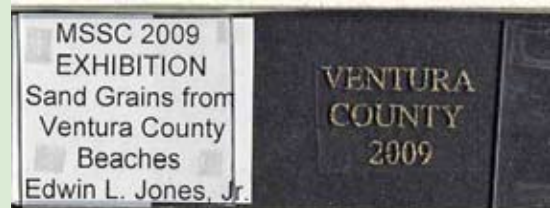
And so I ended my day as a judge. What an exhilarating and humbling experience—I hope I performed my duties well. As I left the bench, I smiled when I spotted a little brass plaque that Judge Komar had ensconced on the side of his desk:

“Oh Lord make my words tender, for tomorrow I may have to eat them.”

—John Houde

This slide is prepared from sand samples mostly collected by me. The template “VENTURA COUNTY 2009” font is 12 point Times New Roman type and the mounting media is ¾ inch Scotch brand double stick tape (Permanent). Each grain of sand is selected under a stereomicroscope and manipulated with fine forceps. Most of the sand samples are robust and are easily handled with forceps without damage. Some of the sand grains are fragile and are easily damaged by manipulation with forceps and/or trying to reposition them after they make contact with the sticky tape. The samples on this slide are literally from the 42 miles of Ventura County coastline. They are arranged from north to south. Most of the popular costal sand beaches are included in this slide.

—Ed Jones



Dining with a Founder: A Conversation with Jay Siegel

We want the facts to fit the preconceptions. When they don't, it is easier to ignore the facts than to change the preconceptions.

Jessamyn West (1902-1984)

We have the great pleasure today of sitting down with Dr. Jay Siegel, currently the Chair of the Department of Chemistry and Chemical Biology and the Director of the Forensic and Investigative Sciences at Indiana University/Purdue University Indianapolis. He gave the Founders Lecture for the California Association of Criminalists Semi-Annual Seminar in San Jose, and we decided we would be remiss if we deprived our readers of the opportunity for a little Q and A with one of only five forensic scientists to sit on the NAS committee that issued that little-known report issued last February (insert smirk here). So after a few persuasive emails and some logistical finagling, we met up in San Francisco (*at a tasty and taste-ful new tavern*) to find out what it was like to co-author the most cited report in National Academy history.

Why was this study necessary? Is forensic science really in such a sorry state?

This study came about because, in my opinion, there has never been enough money, nor any other kind of resource, required to make forensic science a true science. Universities have not been given either the money for research or the students to build the discipline. The big players (scientists) won't play because of this lack of resources. Holistic medicine receives more research money than forensic science!

Among other things, this has resulted in a lack of researchers with true experimental design expertise. Much of the research is the result of a caseworker doing a bit of research on a case-related issue. With the experiment proceeding whenever the worker can carve out a little time from case work, experiments are conducted on the most rudimentary level. As one example, Dr. Itiel Dror, with expertise in cognitive bias, should have bigger grants for controlled blind experiments on his specialty, but the lack of resources completely handicaps this effort.

The cost of forensic science, well done, daunts lawmakers. Pharmaceutical companies, as a random example, have profits to motivate their intense investment in new research topics. But life and death rarely gets into the

public's pocketbook on a long term basis, and ultimately, says Jay, we pay for forensic science with bad public perception. That is, when things go wrong, adverse publicity occurs, and the increasing perception of the public is that forensic science is poorly conceived and poorly executed. An interesting example to consider is the current push to place more individuals in the DNA database (or, in the extreme, everyone). Recent research indicates that as more individuals are placed into the DNA database, the "cases-solved" metric will plateau, and the gain in crime prevention does not materialize. While many complex reasons for this phenomenon may exist, it is due, in large part, to relatively few individuals being responsible for a preponderance of the crime. These individuals are typically the first to be entered into the database, and therefore adding more individuals to the database (who are not responsible

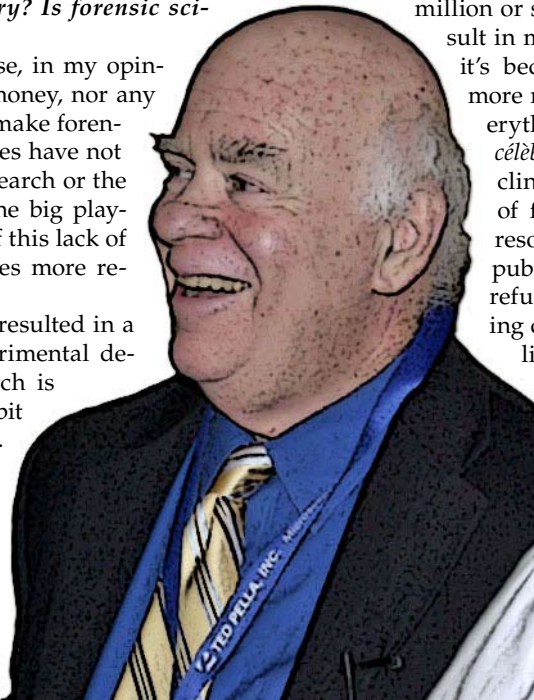
for as much crime, relatively speaking, as those first million or so convicted offenders) will not result in many more crimes being solved. So

it's becoming increasingly clear that as more money is poured into the "type everything and everyone for DNA" *cause célèbre*, payoff per dollar spent will decline. If the physical evidence darling of forensic science becomes prone to resource limitation, as well as adverse public reaction to DNA backlogs that refuse to diminish, then the remaining disciplines of forensic science stand little chance in the battle for dollars, and therefore, attention.

What if we had the research requested by the NAS in fields like fingerprints, firearms, and handwriting analysis? Would it be accepted by practitioners?

Jay sees this as an issue in the background and education of the examiners. He recently stood in front of the Indiana Chapter of the International As-

sociation of Identification and told them that they need to embrace this change, for it is coming, and is necessary. He believes that most fingerprint examiners are skilled practitioners, not necessarily scientists, who have developed in an environment that does not encourage scientific inquiry. Many



are trained in a law enforcement environment, where the prevailing attitude consists of doing what is needed to get the bad guys off the streets, as well as the belief that fingerprints have been accepted by courts for a century or more. These attitudes conspire to limit questioning of the discipline at any level.

We ask Jay what he thinks the fear might be among fingerprint practitioners, and he responds that they perceive their belief structure as being challenged, and that the discipline to which they have dedicated their life is being called into question. To consider that their conclusions might be without scientific foundation would be a devastating development indeed! Hence the long standing insistence on the infallibility of fingerprint analysis and zero error rates.

But the hallmark of a true scientist, Jay asserts, is the ability to change one's mind. If fingerprint examiners are unwilling to alter their views based on current research, they cannot be considered scientists, nor participating in a scientific endeavor, nor even using science as the foundation of their discipline.

This ushers in yet another issue in the complexity surrounding the delivery of forensic science to the administration of justice; to whom do labs and lab directors answer? To a large extent, it is the budget director, and if the competition is between a GC or guns and bullets, then guns and bullets will always win, because they have a clearer impact on public safety. And how does this relate to the pursuit of science? If the lab director's subtle or not-so-subtle pressures are to analyze as many cases as possible with as little money as possible, the adherence to science becomes secondary. This statement will likely upset many lab directors, but the failure to make science the top priority must inevitably deteriorate its practice.

So what, we ask, should analysts be saying about the meaning of their evidence in the face of such withering criticism?

Jay believes that, while over-claiming should stop, neither should capitulation be the rule of the day, either. We discussed a recent case in which DNA analysis yielded a partial profile that resulted in a frequency statistic of about 1 in 100. The laboratory reported this as "inconclusive." Of course, to old serology hands, that number looks pretty good, but Jay sees it as a willingness to give in when less-than-perfect or ideal results are achieved. He sees this as a lack of both integrity and education. The evidence does mean something; that you have to define and defend its meaning is a crucial part of forensic science. Here, he believes, education plays a key role in producing scientists with both the analytical and legal knowledge to properly analyze and present physical evidence.

What then, we ask, is the appropriate attitude for a scientist working in a forensic setting?

This is a crucial question for Jay, inasmuch as he believes this to be the most fundamental change that a single analyst can make. Do not, he admonishes, look at the physical evidence as supporting the prosecution (or defense) theory of the case; rather, treat the evidence as a scientific problem. The analyst must divorce herself from the downstream consequences of the case; she must see her work as providing solid, defensible scientific data and interpretation. The primary allegiance is to science, not to the furtherance of a cause (typically a conviction).

And speaking of the female analyst, do you know why most of the new hires are women?

Jay believes the phenomenon is related to female vulnerability (perhaps both perceived and real), and cites the details of a survey done by a television producer. She asked female students in Jay's forensic science program at Michigan State University why they chose forensic science as a career, and results of the survey showed that women believe that they can help in an issue about which they are concerned (public safety, in particular the vulnerability of women). Jay is perfectly satisfied with this trend, inasmuch as he believes that women are better analytical thinkers than men. It also appears that less of a glass ceiling has evolved in forensic science than in other professions, allowing for both the hiring and advancement of women in the profession.

Changing the subject: In your speech to the CAC, you discussed the relationship between forensic science and crime scene investigation. Please say more about that.

A lot of what happens at crime scenes is not science, whereas more emphasis could be placed on such. As a result, forensic scientists themselves do not consider it as a part of their discipline. This is a detriment to both our profession as well as to the collection of physical evidence. Forensic scientists need to be at crime scenes.

What are your thoughts and concerns about forensic science?

Forensic scientists do not have enough training in science. The culture of forensic science is very different from any other science profession. The discipline is not a pharmaceutical like Eli Lilly—the pressures and responsibilities are unlike any faced by other scientists. These pressures are pernicious and ever-present. Forensic scientists have not learned to resist these pressures and stand up to them. Forensic laboratories are more subject to prosecutorial pressure and the danger of bias when housed within a District Attorney's office than within a law enforcement agency such as a Sheriff's Office or Police Department. Moreover, public crime labs should be independent of all law enforcement agencies to minimize public perception of bias. The allegiance of the forensic scientist should lie with serving the administration of justice, not one side of an adversarial process.

Last thoughts on the NAS report?

The major problem with the NAS report was its tone; it appeared to be a castigation of the profession, easily lending itself to the support of mindless accusations by anyone with an axe to grind. There is much that is good within forensic science, yet that is hard to find or believe by reading the report. It is also easy to proof-text the report; using segments of the report out of context to support almost any claim about forensic science.

Taken as a whole, however, Jay believes that the report said something important about the state of the practice, and maps a legitimate route to the future. He strongly believes in an independent forensic science institute, as well as the removal of laboratories from the aegis of the departments of both law enforcement and district attorneys.

All in all, participating in the NAS Committee is an experience he's glad he had, but he is not wanting to do it again, at least not soon!

A Tribute to Distinction

Silent gratitude isn't very much use to anyone.
Gertrude Stein (1874 - 1946)

Sometime in the middle of October, I was notified that I was to receive the Anthony Longhetti Distinguished Member Award at the Fall CAC Semi-Annual Seminar in San Jose. To say that I was stunned is an understatement. I was speechless, for, like 5 minutes (this, of course, rarely happens).

That feeling was instantly replaced by gratitude. To the CAC and the board of directors, of course, but primarily for a long list of other individuals. Because the only thing that distinguishes me is the long list of individuals who have gone out of their way to mentor me, and attempt to make me a better criminalist (their failures to do so are my own fault!).

No one achieves anything by themselves; the individuals who assist us in our pursuit of excellence stand like benevolent spirits beside us, urging us to learn more, do the right thing, think of others, and think of the long term consequences of our actions. The one who ignores the accumulated wisdom of those consultations, informal chats, formal reviews, and side-by-side training sessions will deprive himself of the richness of the diverse views and well-earned history of treasured peers.

And we benefit not merely from those who are "on our side;" we gain at least as much insight from those who are critical of our work and our thought processes. As painful as it may be, the opposing attorney who flummoxes us with a question we failed to consider gives us something for reflection long after we have taken leave of the witness stand.

... I recommend that you, the reader of this short missive, pause and recall those who have molded you into the analyst you have become.

As I considered those who have made this kind of difference in my career, I asked those in attendance at the banquet, and now I recommend that you, the reader of this short missive, pause and recall those who have molded you into the analyst you have become. This invariably begins with that teacher/professor who infused us with the passion for this work; who taught us that not being able to practice our discipline would be to rob us of the very oxygen that keeps us alive. For me it was George Sensabaugh and John Thornton (in alphabetical order, not necessarily in order of importance). To whom do you owe this gratitude?

Then there was the analyst who mentored us when we were Baby Crims (the administrators insist on classifying these as Criminalist I's, but we know better). The first days and months were more than daunting; they were terrifying. Someone was there with infinite patience, reassurance, and gentle prodding; someone was there who believed in us, who saw the potential in us that we could not see in ourselves, and saw through the youthful arrogance for what it was, a mere cover for indecision and insecurity. For me, this patient man was Jim White. To whom do you owe this gratitude?

As I moved into the middle of my career (and by the way, I'm still in the middle of it, despite the fact that many of my peers have retired and a few have passed away), a large number of people surfaced to influence and assist me in my career. These include, in no particular order, Ray Davis, Cristian Orrego, Ron Linhart, Lynn Herold, Gary Sims, Lance Gima, Moses Schanfield, and, of course, Norah Rudin. Cataloging the contributions that these folk have made to my career would take the remaining space in this issue, and I will not attempt it here. To whom to you owe this gratitude?

And throughout my career, I have been challenged by those who didn't necessarily have my best interest at heart, but rather the adequacy (or lack thereof) of my analytical or thinking skills. To this day, as I work at the bench huddled



CAC President Mary Hong presents the award to Keith Inman.

over some piece of evidence, I imagine (a not to be named) analyst/attorney/critic peering over my shoulder, constantly asking whether I've done what's best for the evidence, or whether I shouldn't do that one more thing, or ensuring that I write down that other observation regardless of how tired or rushed I am. My work, I'd like to think, is better because of these imaginings. I think too of my times on the stand when an opposing attorney asked the question I hadn't asked myself, and felt the fool. I am indeed grateful to those who tested me; I don't take it personally, but have taken the challenges seriously, and deliberated on how best to incorporate the insights provided by them. To whom do you owe this (grudging) gratitude?

Should we keep our gratitude silent, at least two things will be true, neither of which are positive. We will not be letting our mentors know what positive influence they have had on our professional lives, which is one sort of tragedy. The other is that we will not encourage the gentle but critical upholding of one another in our professional pursuits.

I delight in singing my gratitude (out loud) to those who have believed in me. To whom do you need to make your gratitude known?

—Keith Inman

BOARD OF DIRECTORS

**President:
Mary Hong**



Orange County Sheriff-Coroner
320 N. Flower St.
Santa Ana, CA 92703
(714) 834-6383
mmh@fss.co.orange.ca.us

**President-Elect:
Adam Dutra**



San Diego PD Crime Lab
1401 Broadway, MS 725
San Diego, CA 92101
(619) 515-2793
adutra@pd.sandiego.gov

**Recording Secretary:
Jamie Miller**



Orange County Sheriff-Coroner
320 N. Flower St.
Santa Ana, CA 92703
(714) 834-4510
jemiller@fss.co.orange.ca.us

**Treasurer:
Michael Parigian**



Ventura Co. Sheriff's Lab
800 S. Victoria Ave.
Ventura, CA 93009
(805) 662-6803
michael.parigian@ventura.org

**Regional Director: (North)
Jeanette Wallin**



CA DOJ Jan Bashinski Lab
1001 W. Cutting Blvd, Ste 110
Richmond, CA 94804
(510) 620-3331
jeanette.wallin@doj.ca.gov

**Regional Director: (South)
Janet Anderson-Seaquist**



Ventura Co. Sheriff's Lab
800 S. Victoria Ave.
Ventura, CA 93009
(805) 662-6804
janet.seaquist@ventura.org

**Membership Secretary:
Patricia A. Huck**



LAPD SID-Serology/DNA Unit
1800 Paseo Rancho Castilla
Los Angeles, CA 90032
(323) 415-8815
N3190@lapd.lacity.org

**Editorial Secretary:
Gregory Matheson**



Los Angeles Police Dept.
1800 Paseo Rancho Castilla
Los Angeles, CA 90032
(323) 415-8112
B8927@lapd.lacity.org

**Immediate Past President:
Jennifer S. Mihalovich**



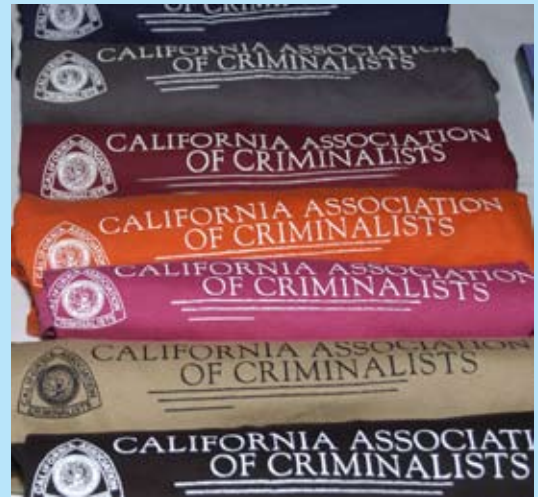
Oakland Police Dept.
455 Seventh St., Room 608
Oakland, CA 94607
(510) 238-3386
jsmihalovich@oaklandnet.com



The "CAC logo" is a registered service mark of the CAC and its use is restricted to official communications and by other authorization of the CAC Board.

interested in
becoming a
member?

Visit us online at
www.cacnews.org



If you see these great CAC
T-shirts in COLOR
then you've found the
online version
of the CACNews!
www.cacnews.org

Yosemite



Investigate the Wonders. . .



Spring 2010 CAC Seminar
California DOJ Fresno Laboratory
April 19-23



1122 Highway 41
Fish Camp, CA 93623
1-888-514-2167
www.tenayalodge.com

Contact: Nancy McCombs (559) 294-4026
nancy.mccombs@doj.ca.gov

