

The CACNews

News of the California Association of Criminalists • Third Quarter 2008



The President's Desk

The Task (Force) at Hand

In a previous President's Message (Second Quarter 2008), Julie Leon stated she wanted the CAC to grow and members to become more involved and interested in what we do as an association. This is a great segue into what I am currently involved in as a member of the California Association of Criminalists. I was appointed to the Crime Laboratory Review Task Force (Task Force) as set forth in AB 1079 at the Fall 2007 CAC membership meeting. This appointment has proven to be very educational in the inter-workings of government, the roles of prosecuting attorneys, defense attorneys, forensic scientists, law enforcement, and the general public.

The Task Force is composed of eighteen individuals. The entity the individual represents follows their name in parentheses. The following members of the Task Force are also CAC members: Jennifer Mihalovich (CAC), Greg Matheson (CA Police Chiefs Association), Dean Gialamas (ASCLD), and Barry Fisher (CA Sheriff's Association). The other members of the Task Force are Dane Gillette – Chief Assistant Attorney Gen-

A component for consideration by this task force is the certification of individual scientists. The CAC has a long history not only with the development of a certification examination but also its implementation. The development and implementation of certification is not a trivial task.

eral, Robert Jarzen – Sacramento Co. Crime Laboratory Director (CACLD), Steven Nash – Marin Co. Sheriff's Department (International Association for Identification), Jim McLaughlin – California Highway Patrol (CHP), Dolores A. Carr – Santa Clara Co. District Attorney (CA District Attorneys Association), Sam Lucia – San Bernardino Co. Sheriff's Office (CA Peace Officers Association), Jennifer Friedman – LA Deputy Public Defender (CA Public Defenders Association), Michael Burt – Private Attorney (Private Criminal Defense Attorney Organization), Arturo Castro – Attorneys Office of the Judicial Council of California (Judicial Council), William Thompson – Professor UC Irvine (Office of the Speaker of the Assembly), and Elizabeth Johnson – Private Forensic Science Consultant (Office of the President pro Tempore of the Senate). Two appointees have yet to be named by the Governor's Office. These individuals have been assigned to review the public criminalistics laboratories located in California. A formal written report as to the findings will be submitted to the Department of Finance and specified legislative committees by July 1, 2009.

The Task Force typically meets on the first Thursday of each month. The Attorney General's website has a link to information regarding these meetings (caag.state.ca.us/meetings/index.php). I encourage every CAC member to attend these meetings as input from the public is welcomed.

The Task Force is currently in the information finding process. We have developed surveys for the crime laboratories, attorneys, and law enforcement agencies. These surveys are a tool to gather information not only about the status of the crime laboratories but also the services provided by these laboratories. Additional information has been obtained from various sources including how other studies have surveyed publicly funded forensic crime laboratories, ABA Standards on DNA Evidence (2007), Innocence Project suggestions concerning external and independent crime laboratory oversight, and ASCLD-LAB accreditation. Public comments have come from Mr. Clay Larson (California Dept. of Public Health), Lisa Kahn (LA District Attorney's Office), Mary Gibbons (Oakland Police Department Criminalistics Laboratory), and Joseph Peterson (Cal State—Los Angeles). The information gathered will be used to form the basis of the Task Force's report to the legislators.

A component for consideration by this task force is the certification of individual scientists. The CAC has a long history not only with the development of a certification examination but also its implementation. The development and implementation of certification is not a trivial task. Therefore, it is vital that the Task Force has all the information on how and at what level forensic scientists are certified. Certification of the scientists in the crime lab can be obtained from a variety of specialized certifying bodies. My goal is to bring the information from these certifying bodies to the Task Force. A clear demonstration to the Task Force of forensic science professionalism in California will reflect favorably on the final report.

The CAC has a strong reputation for professionalism and adherence to ethical standards. Because of these and other valuable traits, it is important that the CAC, through its many members appointed to the Task Force and its membership in general, lead the way in guiding the Task Force in a direction

please turn to page 52



Jennifer Mihalovich
CAC President



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The deadlines for submissions are: December 1, March 1, June 1 and August 15.



On the cover...
The founders of the CAC. We'd like to make your acquaintance, pg. 8.

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CACBits



FSSoc/CAC Meeting: Correction

A previous announcement in the *CACNews* included incorrect meeting information about next year's FSSoc/CAC meeting. Here is the corrected information:

The FSSoc/CAC joint meeting in 2009 will be held in the summer and will take place in Lausanne, Switzerland, at the "Ecole des Sciences Criminelles (ESC)" (the Forensic Science Institute) of the University of Lausanne, commencing with welcome drinks and a [possible] workshop on Wednesday, June 24; and the full scientific program will be from June 25 through Saturday, June 27, 2009.

The joint CAC/FSSoc 2009 conference will also result in the awarding of the Joint President's Award. The CAC has made available ten \$1,000 stipends to help defray travel costs for members wishing to attend this meeting. Please contact a board member for details.

Fullerton High School Scholarship Available

The W. Jack Cadman Scientific Achievement Scholarship is awarded annually to an outstanding student of science at Fullerton Union High School. It is currently a \$500 scholarship which is given to a deserving senior who exemplifies the same interest in science that Jack had. Visit www.jackcadman.com for more information.

Raymond Davis, John DeHaan First to Receive New CAC W. Jack Cadman Award

The first ever winners of the W. Jack Cadman Award were present at the banquet of the Spring CAC Seminar. The award (*left*) features a plaque and clock. The winners of the award, which can only be won once by the same member, are Raymond Davis (*left, holding award*) and John DeHaan (*right, holding award*). Flanking the winners are five members of the W. Jack Cadman family who presented the awards, and were welcomed to the seminar by President Julie Leon (*center*).





Young family



Rick Takanaga



Rick Takanaga

Art Young’s Legacy: Scholarship for Aspiring Criminalists

On May 10, 2008, Arthur E. Young passed away after a two year medical battle. He was 67.

Art was an active member of the California Association of Criminalists and a past president of the CACLD, as well as being counted among the founding members the Bureau of Forensic services where he served as a criminalist, supervisor and manager for over thirty-six years.

Born in Chicago, Illinois, he proudly served his country as a naval officer on the USS *Yorktown*, during the Vietnam War. He graduated from UCSB with a B.A. and M.A. in marine biology and immunology.

He was a criminalist and lab manager for Riverside County Sheriff’s Dept. and CA Dept. of Justice, Riverside, for a total of 34 years. He was instrumental in creating, designing, and building the new crime lab for the DOJ in Riverside County dedicated March 2003.

Art’s legacy is his love for God, his family, his friends and fellow workers. He was committed to leaving this earth a

better place. He always encouraged young and old to become all they are capable of being and then some.

Art leaves his loving wife, Carol of 43 years; his daughter Debbie and son-in-law Doug and granddaughter, Veronica; his son Michael and daughter-in-law Elizabeth and 2 grandsons, Christopher and Spencer; and his mother-in-law, Gladys Rohe.

In honor of his many years of dedicated service to the profession of criminalistics, Art’s wife, Carol, has established an endowment scholarship in conjunction with Riverside Community College. More information can be found at aescholarship.com. Donations may be made in Art’s honor to RCC Foundation for Arthur Edward Young’s Memorial Endowed Scholarship for aspiring young criminalists at 4800 Magnolia Ave. Riverside, CA 92506 or to Riverside Hospice at 6052 Magnolia Ave. Riverside, CA 92506.



Founders Lecturer Honored

John DeHaan (r) presents a plaque of appreciation to Jim White for his “Founders Lecture” at the Spring CAC Seminar in San Diego.



Distinguished Member 2007

Jim Stam received the 2007 Distinguished Member award but wanted to accept it in his hometown, wearing a lei.



CAC Presidents: Past, Present & Future

Outgoing President Julie Leon (r) poses with incoming President Jennifer Mihalovich (center) and President Elect Mary Hong (l).

The Editor's Desk

Peering into the Mirror

Recently heard...

On a flight to the recent CAC seminar, the pilot asked, "What do you call a waffle on a beach?" The answer - "A sandy Eggo." And people think my jokes are bad!

Common ground...

"Humility doesn't require us to be self-deprecating. Humility is not about having a low self-image or poor self-esteem. Humility is about self-awareness."¹

On a quest for self-examination...

My jokes are bad!

A need for self-awareness...

The *Giants* management says that the team will be entertaining. Translation: "We know we're not all that good but please come out and watch us."

The reality is...

I would rather watch a bad, entertaining *Giants* team than the *Dodgers*, even if I were restricted to one baseball game a year for the rest of my life.

The stark realization...

A *Dodgers* fan could soon be writing this column. Hmmm...who is the Bylaws Committee chair?

Quotable quote...

Jack Cadman, referring to a potential applicant for a forensic science position, "He doesn't know what he doesn't know."

You should know...

My mom crocheted a blanket for my bed when I was growing up. The thing is, it started out to be a sweater. Why do you need to know? It's genetic, the intended editorial is now an article in this same issue. Don't let the length deter you from reading it!

On a more serious note...

I appreciated Jim White's Founders Lecture more than he'll probably ever know. I was struck by a quote he attributed to Jack Cadman when speaking of aerospace scientists considering themselves to be fully qualified to be forensic scientists, "They don't know what they don't know." When I heard that statement, I extended it with, "What they do not know they also may not consider to be relevant." I want to spend some time discussing those concepts in general.

Whether good or bad I know many different segments of our judicial system actually read the *CACNews* and maybe even this editorial. That includes not only my colleagues, but those who are at odds with various disciplines of this profession (and possibly me in particular), along with attorneys on

both sides. What I would like us to do is to practice a little self-awareness to see how each of the two statements, Jack Cadman's and my extension of it, apply to each of us.

Whether or not we will ever freely admit that we can be identified with these statements is not really an issue. Our very own behaviors, actions, attitudes and fruit will bear witness of what is actually in our heart. When we plant an apple tree, we are going to get apples. When we plant corn seed we are going to get corn. A dandelion weed will not produce an apple. It will also not produce corn. It's a weed. I quoted one of the best definitions on humility I have ever come across earlier in this editorial. It is not self-deprecating, having a low self-image or self-esteem. It is a matter of self-awareness. What does that mean? To be self-aware means being honest about the type of fruit that is going to appear.

Self-awareness involves a willingness to look at ourselves, our own biases, our own limitations, and our own motivations. It is a willingness to look beyond potential outside influences that could cause offense and get our defenses up. It is a willingness to look beyond our own boxed set of ideas, concepts and experiences. It is a willingness to examine our own hearts and being willing to deal with what we discover before asking others to deal with what we see in them.

Here's a question that I have asked myself as a forensic scientist. Am I willing to look at some of our long-held assumptions? I am not talking about the simple ones—I am talking about some of our core assumptions. Or, do we avoid doing that out of fear—fear of the result of such introspection? How would such a quest reflect on my previous casework? How would such a quest reflect on my previous testimony? How might I reconcile potential issues while still pursuing casework? I liken this, in some respects, to a rabbit trail. We sometimes go so far down a trail that we lose sight of why we started out. Worse, it might be possible that we keep going down the same trail, as unproductive as it is turning out to be, out of fear, fear that we're in so far that we cannot back out. There is too much time, energy and money invested.

Are we willing to explore the possibility that when others do not



Ron Nichols

CAC Editorial Secretary

understand what we are saying, we might be the source of the miscommunication and not their lack of a forensic science degree or their lack of experience? Are we willing to engage in professional and respectful discourse or are we going to dismiss questions and concerns out of hand based on stereotypes and previous experiences? If we have concerns about how we are being treated, self-awareness is a good place to start. How are we treating others? If we wish to be treated with professionalism, courtesy and respect we should be modeling it towards others instead of demanding it as a right. Approaching someone with humility and respect may not always result in a like response. At the same time, it is safe to assume an arrogant or disrespectful approach is almost certain never to result in a response bathed in humility and respect. Let's consider our own approach in these matters.

To colleagues and those readers of this column who aren't necessarily considered colleagues but have a professional acquaintance, interest and association in one or more of the various forensic science disciplines, I want to publicly apologize for any and all instances in which I did not treat you with courtesy and respect, and did not approach you in humility. In doing so, I was behaving arrogantly and I was wrong. I am especially concerned because I know that such behavior can be stereotyped and cause individuals to get their defenses up. When that occurs, useful and constructive dialog is inherently limited not only with myself but also with others.

As discipline-specific scientists we have been asked to be more self-aware, not only of ourselves but our disciplines as well. The question I pose to the other readers is are you

Are we willing to explore the possibility that when others do not understand what we are saying, we might be the source of the miscommunication and not their lack of a forensic science degree or their lack of experience?

willing to practice what you are asking of us—self-awareness? Jim White shared an example of us attending a capital crimes and death penalty symposium and then walking into a prosecutor's office offering him strategy on how to conduct a certain case, and not only that but insisting on it. I would not presume to do so not only out of respect but also a self-awareness that with that symposium I had only touched the tip of an iceberg of which the attorney has greater knowledge, much greater. So, why is it assumed that with a four hour specialized forensic science workshop or forum a non-forensic scientist now feels eminently qualified to offer non-qualified statements on the validity of what we do (or lack thereof) and how we perform our work? Seminars, workshops and forums that brief us on the tip of the iceberg do *nothing* more than qualify us to ask questions, not dictate policy.

If I am asked to be aware of my own biases, I would hope to be afforded the courtesy that the person asking will do the same. This goes beyond simple casework bias. This goes to

the bias that resulted in the original posed question. All I am suggesting is that, as I have in the past, before asking others to search their motives and biases we need to search ourselves. It is important to know not only where we are in relation to the issues being asked but our motivation for even asking the question. Often times I have found that my own searching reveals the issue. At the same time, I fully understand in professional scientific dialog such searching does not necessarily reveal and reconcile the issue. It does however, allow us to be more objective in our discourse which in turn helps set an environment for a fruitful discussion. I believe that I am aware of my biases and have done my best to deal with their presence. Can I be assured the same courtesy?

As a further example of this bias, in another presentation at the meeting, Tom Bevel remarked how some individuals, especially attorneys, may see forensic science as a buffet—pick out what you like. The remark was directed more towards defense attorneys focusing on those parts that will help his case with the acknowledgment that he was hopeful the prosecution would not do the same. Although our judicial system has its challenging moments, the adversarial system does work pretty well. The defense does provide a good check on the prosecution—a check on unintentional error made in good faith and intentional error made in bad faith. If it is assumed that the prosecution cannot be completely trusted (and not necessarily out of bad faith), shouldn't we assume the same about the second half of this adversarial process? How do we deal with those inherent biases?

Are we willing to explore personal motive and what is at the core of not only what we are doing but how we are doing it? I am not referring to only procedures and methods of analysis and examination. I am referring to issues of professional courtesy, conduct and respect toward one another and not only those in our specific arena. Is serving justice, and by extension our community, the real goal or is it more self-serving whether it be money, reputation, status or standing? How do we wield the power we are privileged to hold? It has been said that "Power corrupts and absolute power corrupts absolutely." I no longer adhere to that. In his book *Uprising*, McManus offers that power does not corrupt. It simply reveals our heart and who we really are. So, what does the power entrusted to you reveal about you?

In Proverbs we read that, "Pride goes before destruction, a haughty spirit before a fall" (Proverbs 16:18, NIV). The magnitude of our pride dictates the height of the fall. I have experienced personally that is far better to humble myself than to be humiliated. We also read that, "Before his downfall a man's heart is proud, but humility comes before honor" (Proverbs 18:12, NIV). The latter part of this is repeated elsewhere (Proverbs 15:33). If we are not being honored we might wish to begin by examining ourselves. Keep in mind though that just as wearing a skirt does not make a man a woman, so too being honored does not make one humble. We need to consider the source and motivations of those providing the honor. The bottom line comes back to self-awareness. Or, in a more simple statement, it is always better to check your own pants zipper than to have it revealed by someone else.

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

Row

¹McManus, Erwin, *Uprising*, Thomas Nelson Pub., Nashville, 2003, p. 47.

THE FOUNDERS OF THE CALIFORNIA ASSOCIATION OF CRIMINALISTS



“The CAC was founded 28 years ago by a small group of determined men practicing in a new and rapidly expanding field. The purposes of the organization were generally to foster an exchange of ideas and information, to establish friendship and cooperation, and to encourage a high level of competence and ethics. In the past few years, the association has witnessed a rigorous test of these goals, especially in the area of ethics. The CAC has risen to the task by strengthening its ethics procedure, establishing study groups, expanding the role of the training and resources committee and lengthening cocktail hours at meetings. Continued progress toward the goals of the association are more than ever dependent on its members being participants rather than observers. Without this involvement and commitment by its members the CAC can never hope to meet the changing needs of the profession...” —*Ed Rhodes, 1981*

JAMES W. BRACKETT 1918 - 2007

Santa Clara DA, San Mateo Coroner
President, CAC 1962-1963



CAC Archives

After graduating from the College of Chemistry, UC Berkeley, Jim Brackett served as an officer in the US Army (R&D, Ordnance Dept.) He then went on to work as a staff analytical chemist in the Standard Oil Company of California's laboratory. In 1949 Jim went to work as an assistant criminalist at Santa Clara DA's Laboratory. He presented a paper to the CAC at the first seminar in 1954, and continued to present papers to the CAC for 33 years. By 1960 he was working at the San Mateo Coroner's office and continued there until the mid 1970's, when he was again employed at Santa Clara's lab.

He succeeded Ray Pinker as CAC president in 1962, and for the next six years, he presented a new paper at nearly every CAC seminar.

"Jimmy Brackett had run all the known drugs and distributed the curves. Nobody worked in toxicology without a copy of that paper. The method became known as the Brackett and Bradford, or the B & B Scheme. To identify the particular barbiturate we used paper chromatography in gallon sized pickle jars, of course, this only worked when there was a high concentration of drug.

I can remember Jimmy Brackett returning from an AAFS meeting, saying that one of the toxicologists told him that "we in the CAC were really ruining the field." They had been content to say there was a barbiturate in the blood. Then the criminalists in California developed methods to determine how much was present— and then to identify the spe-

cific barb. These developments caused the toxicology departments in the Midwest and the East so much more work they were having a hard time keeping up." (Jerry Chisum: *Founders Lecture, CACNews*, 1st Q 2001)

"In 1953 I attended a state meeting of the IAI in Laguna Beach together with my colleague, James W. Brackett, Jr. There for the first time we met Ray Pinker and Clark Sellers, of Los Angeles, who were also on the program. It was our first opportunity to talk shop with someone in criminalistics from California. We learned from Ray Pinker the identities of other crime laboratory people in Southern California. In our discussions we thought that it would be of value to have a shop talk meeting of all criminalists in California." (L. Bradford: *Genesis of the California Association of Criminalists, CACNews*, 1st Q 2003)

"I have the fondest memories of his courtesy to me as a graduate student/neophyte criminalist at a CAC meeting many, many years ago. He was, I'm sure, one of our founders and I think it important that the *CACNews* be used to record the stories of those who founded this profession." (Hiram Evans, *pers. comm.*, 2008)

"In 1970, Brackett examined the use of various models to study 'idealized' striated marks. These 'idealized' marks consisted of individual elements within a set of striations defined by position only, without the additional defining characteristics of width, contour or height. The purpose of these models was to examine statistical and probabilistic application to striated tool marks." (Ron Nichols: *The Scientific Foundations of Firearms and Tool Mark Identification—A Response to Recent Challenges, CACNews*, 2nd Q 2006)

EARLY PRESENTATIONS:

"Recovery of Volatile Flammables in Cases of Suspected Arson by Steam Distillation." (CAC Seminar, 1954)

"Aspects of Second Crystallization" (CAC Seminar, 1958)

"Determination of Drugs in Urine" (CAC Seminar, 1960)

"Use of Derivatives in the Chromatographic Analysis of Narcotic Mixtures" and "Two-Dimensional Derivative Paper Chromatography" (CAC Seminar, 1962)

"Unusual Toxicology Case" (CAC Seminar, 1964)

"Natural Extractive from Blood" (CAC Seminar, 1964)

"Striated Toolmark Impressions and Mathematical Models" (CAC Seminar, 1965)

"Identification of Morning Glory Seeds" (with Harding, Dougherty and Carter, CAC Seminar, 1965)

"Effect of Phasing on Simulated Toolmarks: A New Test for Independence in Stochastic Phenomena" (CAC Seminar, 1966)

"Idealized Models of Striated Marks" and "Gas Chromatographic Identification of Barbiturates Using Derivatives" (with Lewis and Lebish, CAC Seminar, 1967)

"Chemical Preparations—A Laboratory Tool" (CAC Seminar, 1968)

"The Computerization of Toxicological Data" (with Evans and Finkle, CAC Seminar, 1968)

"The Chemistry of Doing Things Cheaply" and "Determination of Amphetamine, Methamphetamine and Related Amines in Blood and Urine by Gas Chromatography Using the Hydrogen Flame Ionization Detector" with Lebish and Finkle, (CAC Seminar, 1969)

LOWELL WILLIAM BRADFORD 1918 - 2007

Calif. Bureau of Criminal Identification and Investigation (CII), Santa Clara DA
Executive Secretary CAC 1953-1957

"In late 1945, Kirk offered Lowell a job in his commercial laboratory. The state crime laboratory (CII) trumped this long-awaited opportunity by offering Lowell a 6-month contract to work in the lab in Sacramento, which desperately needed help. Always a champion of the criminalistics profession, Dr. Kirk encouraged Lowell to help the state lab get on its feet, but they continued to confer with each other on a long-distance basis. Lowell then returned to Dr. Kirk's laboratory where he remained until his recruitment in 1947 by Santa Clara County's District Attorney to establish a laboratory in the basement of the county hospital to analyze blood and urine from suspected drunk drivers. It was at this point that Lowell developed the "Bradford Modification of the Kozelka-Hine Method" of determining blood-alcohol levels. He soon was joined by James Brackett, and, for a period of time, they were the only two employees in that office.

Lowell was involved in many pivotal activities along the way, such as founding the California Association of Criminalists and publishing countless articles on criminalistics subjects, often with James Brackett as a co-author. In private practice he continued to publish, much of which concerned the subject of questioned documents. In consulting status with the U.S. State Department, Lowell set up the crime labs in Saudi Arabia and at Scotland Yard. In 1978, he received the Roger Greene Award from the CAC for his contributions to the field of criminalistics." (Paul Dougherty, Edward Peterson: *Lowell William Bradford, Obituary, CACNews*, 4th Q 2007)



CAC Archives



Paul Dougherty, Ed Peterson

"Far UV Spectrophotometry" (CAC Seminar, 1964)

"Far UV Spectrophotometry Applications to Toxicology" (CAC Seminar, 1965)

"Drug Involvement in Drinking Driving Cases" (with Biasotti and Finkle, CAC Seminar, 1966)

"Performance of the DPC Intoximeter . . ." (with Biasotti, CAC Seminar, 1967)

"Pressing Professional Problems of the Immediate Future" (CAC Seminar, 1968)

"Concept of Criminalistics Institute" (CAC Seminar, 1970)

"Rapid Processing of Drug Evidence" (with C. Hider, CAC Seminar, 1970)

"Review of Lamp Filament Examination" (CAC Seminar, 1977)

"Quality Achievement in Crime Laboratory Work" (CAC Seminar, 1978)

EARLY PRESENTATIONS:

"Reference Samples for Blood Alcohol Assay" (CAC Seminar, 1955)

"Demonstrative Exhibits, Visual Education Devices and Techniques for Court" (CAC Seminar, 1955)

"Standards of Ethical Conduct in Defense and Civil Consulting" (CAC Seminar, 1956)

"Results of Critical Tests on the Breathalyzer" (CAC Seminar, 1956)

"Blood Paternity Methods and Nomenclature" (CAC Seminar, 1958)

"Lamp Filament Examinations in Traffic Accident Investigation" (CAC Seminar, 1960)

"Concepts on the Organization and Administration of Criminalistic Operations" (CAC Seminar, 1961)

DAVID QUENTIN BURD 1919-2003

Calif. Bureau of Criminal Identification and Investigation (CII)
Executive Secretary, CAC 1959-1961

"In 1941, he obtained a bachelor's degree in criminology from UC Berkeley. The following year, he moved to Sacramento to begin his career with the Department of Justice." (Edgar Sanchez: *The World Was David Burd's Adventure, Obituary, Sacramento Bee*, Jan. 22, 2004)

"Because Roger (Greene) held a commission as a lieutenant in the US Army Reserve, he was called to active duty late in January, 1942. He served as an ordnance officer in the US Army for the duration of World War II attaining the rank of major by the end of the war. The head of CII wrote a letter to Dr. Kirk asking him to recommend a graduate of the "Technical Criminology" program to fill Roger's position. David Burd applied. He was quickly hired and put to work in the laboratory almost immediately. Roger returned to Sacramento and the CII laboratory early in 1946 and resumed work there. By this time the caseload had become so large that one man could no longer handle it, so David Burd was retained as a second man in the laboratory." (Jack Cadman: *"The Roger Greene Award"* CACNews, Spring, 1992)

"Dave Burd took me to an IAI meeting one evening where I met the leaders of the identification bureaus. This was a very serious group of fingerprint specialists who were hungry for information on new scientific approaches to physical evidence identification processes." (Lowell Bradford: *Genesis of the California Association of Criminalists, CAC-News*, 1st Q 2003)

"Physical evidence doesn't lie as some people do. It may be misinterpreted, but it doesn't lie." (Dave Burd in an interview with the *Sacramento Bee*, 1964)

EARLY PRESENTATIONS:

"Comparative Soil Density Sedimentation Tests" (CAC Seminar, 1956)

"Soil Sample Studies" (CAC Seminar, 1957)

"Use of IR Spectrophotometer in Criminalistics Investigations" (CAC Seminar, 1962)

"Unidentified Bullet Registration File" (CAC Seminar, 1963)

"Clinkers from Hay Fires" (CAC Seminar, 1964)

"Paint Analysis and the use of the IR Spectrophotometer" (CAC Seminar, 1966)

"Individual and Class Characteristics of Tools" (CAC Seminar, 1966)

"The Connecting Link" (CAC Seminar, 1966)

"The Location of Non-Embalmed Buried Bodies" (CAC Seminar, 1972)

"Preparation of Lecture Slides" (CAC Seminar, 1977)



"I have had the good fortune of knowing several of the CAC Founders. I was a laboratory technician at the Santa Clara County Laboratory from 1970 to 1974 (minus two years in the Army) and I worked with Lowell Bradford, Don Harding, Jim Brackett, and Al Biasotti. (Al wasn't a founder, but he was a pioneer.) In 1974, I became a criminalist for Alameda County and worked with Bob Cooper until he retired in 1990. I also remember meeting John Davis and Dave Burd.

"Each of these men was very intelligent; each one had a very inquisitive mind; and each one was a teacher/mentor. They all seemed to fit the description found in Section I.A, of our Code of Ethics: "The criminalist has a truly scientific spirit and should be inquiring, progressive, logical and unbiased."

"Incidentally, the Code of Ethics of the CAC is over 50 years old. It is a very well-written document. I suggest that each of us read it again, carefully. I think it will remind us of what the CAC Founders were like, and it will inspire us to be more like them." (Bob Hinkley: *personal comm.*, 2008)

RONALD J. BRIGLIA 1928 - 2008

Orange Co Sheriff, Sacramento Co. Toxicology Lab
President, CAC 1967-1968



Angela Meyers

EARLY PRESENTATIONS:

“Chemical Changes of Glucose to Alcohol in Blood Samples”
(CAC Seminar, 1957)

“A Study of Tranquilizers from the Standpoint of a Crime Laboratory” (CAC Seminar, 1958)

“Ethanol Production in Urine” (with Gilmore and Vaniman, CAC Seminar, 1968)

Criminologist Added To Sheriff's Office

1953

Staff of the sheriff's crime laboratory, rated as one of the best in the state, had been augmented by 100 per cent with the employment of Ronald Briglia of Oakland as assistant to Criminologist Jack Cadman.

Briglia, a recent graduate of the University of California at Berkeley, primarily will handle toxicology examinations for the coroner's office and county hospital, Cadman explained.

Briglia, 25 and single, will also handle the blood alcohol tests made by the criminology department, it was explained, and will do some criminal work as time permits.

Briglia studied exactly the same courses under the same instructors at UC as Cadman and came to Orange County on the recommendation of Paul L. Kirk, professor of criminalistics and biochemistry at the school.

A specialist in the field of toxicology, Briglia spent seven years in the university obtaining a bache-

lor's degree in physiology and criminology and working for his master's degree.

Also like Cadman, the young criminologist said he lacked only his thesis to obtain the higher degree.

Originally from Oakland, Briglia will provide much needed help for the overworked criminology lab. Formerly, Cadman was required to handle all criminal work plus the toxicology and blood alcohol examinations for the county.

The addition of Briglia will not require any enlargement of the criminology lab located on the top floor of the sheriff's office, Cadman explained. It will, however, lighten the work load to a point where a lot of small details, previously left undone in routine criminal matters, can be taken care of.

As a native of Northern California, Briglia pointed out that along with his laboratory work, he is also being indoctrinated in the art of surf fishing and being a "beach rat."



CHECKING OUT ASSISTANT—Sheriff's Criminologist Jack Cadman, left, looks on as his new assistant, Ronald Briglia, seated, operates some of the equipment in the sheriff's crime laboratory. Briglia, like Cadman, a graduate of the University of California, joined the sheriff's staff last week and is scheduled to handle toxicology and blood alcohol examinations, according to Cadman. (Register Photo).

Ron Briglia with Jack Cadman in 1953.

Courtesy, Jack Cadman family.



CRIME FIGHTERS—Examining a sample of peyotl drug during the seminar of the California Association of Criminalists are, from left, Ray H. Pinker, chairman; Jack W. Cadman, new executive secretary of group, and Lowell Bradford, outgoing secretary. Times photo

50 CRIMINOLOGISTS CONCLUDE SEMINAR

The California Association of Criminalists yesterday concluded its two-day seminar at the Los Angeles Police Building on current problems and developments in crime lab technology.

Represented among the 50 criminologists present were the directors of California city and county crime laboratories, the California State Crime Laboratory, the University of California and the U.S. Internal Revenue Service.

Ray H. Pinker, director of the Los Angeles Police Department Crime Laboratory, was seminar chairman.

In the business part of the meeting, Jack W. Cadman, director of the Orange County Sheriff's Crime Laboratory, was named as the new executive secretary. He succeeds Lowell W. Bradford, director of the Santa Clara County District Attorney's Laboratory.

"The Los Angeles Police Department Crime Laboratory was reported to be the first laboratory in California, with the first police chemist appointed in 1923. In fact, the first in the United States, and perhaps the first in the world, although law enforcement had made use of consultant scientific examinations in many isolated cases earlier."

From Duayne Dillon's presentation, "Historical Development of Criminalistics," CAC Seminar, 1966

At left is a newspaper story covering one of the earliest CAC seminars (spring of 1957) and mentioning three of our founders. For the first eight years, the CAC didn't have "presidents." At that time, the chief board member was called "executive secretary." Lowell Bradford, Jack Cadman and Dave Burd each held that title until it was changed to president with Ray Pinker's term, beginning in 1961.

Courtesy, Jack Cadman Family.

WALTER JACK CADMAN 1918 - 2003

Orange County Sheriff
Executive Secretary, CAC 1957-1959

"Jack Cadman was the model for what every forensic scientist should be, a man of vision, integrity and persistent with an insatiable curiosity to learn all he could about the evidence in every case presented to him. He was eloquent in words and deeds. He was inventive, innovative and intuitive - both in case work and dealing with people. He explored new areas of science. He instilled in all that would listen that physical evidence always speaks the truth.

By the late 1950s, working with Dr. Theron Johns, of the Beckman Instrument Company, he developed and published innovative methods using the gas chromatograph and the ultraviolet spectrophotometer to identify trace amounts of accelerants, such as gasoline used to commit arson and alcohol in samples of blood, breath and urine.

Cadman and Johns' applications remain the basis for much of today's analytical toxicology and chemical testing.

In the early 1970's, the FBI invited Cadman and other Laboratory Directors to a planning meeting held at Quantico, Virginia. Those present would form the American Society of Crime Laboratory Directors, now in its 31st year. Cadman would serve as President and with his long time friend and associate, Anthony Longhetti, author the standards for laboratory accreditation." (Larry Ragel: *Walter Jack Cadman, Obituary*, CACNews, 1st Q 2004)

"Blood alcohol was one of the most time consuming determinations made by the lab. Jack wanted a more accurate and reliable method than the chemical technique in general use. He asked me if gas chromatography could be the answer. I knew that ethyl alcohol could easily be measured by gas chromatography, but the specificity and sample handling technology required for blood alcohol was unknown. This meant that much work on methodology needed to be done before the standards of perfection demanded by Jack were met.

We decided the only way to get a method was to develop it ourselves. Jack's days were already filled with his duties as head of the lab. I was busy working fulltime at Beckman, so we decided to do the work at night. That was the beginning of many night hours of work at the lab, on the fourth floor of the old jail in Santa Ana, CA. We quickly found that alcohol could be extracted from blood with an organic solvent and a sample of the extract injected into a gas chromatograph to measure the alcohol. Then I discovered that our work was far from finished. Jack's standards for a method to be used in the lab were virtually 100% perfection. (Theron Johns: *Reflections on Jack Cadman--Pioneer and Visionary*, CACNews, 4th Q 2005)

"During this time, I attended several CAC meetings at the suggestion of Dwayne Wolfer. This lead to meeting Jack Cadman, Tony Longhetti, Lowell Bradford, Larry Ragle, Jim Brackett and a number of other senior members of the CAC. Among these, it was Jack Cadman who next encouraged me and set a example to strive for. Whenever I think of a model of the quintessential forensic scientist, it is Jack Cadman that comes to mind. I regret that there are apparently no videotapes or films of the many papers he has given for newcomers to the field to see." (Luke Haag: *On Being a Student and a Teacher*, CACNews, 4th Q 2000)

"In 1948 Jack started the Orange County's Crime Lab in a converted women's restroom in the county jail. For the first 10 years he worked alone establishing methods for analyzing drugs and narcotics, and for typing blood found at crime scenes. Jack also created groundbreaking methods using the gas chromatograph and ultraviolet spectrophotometer for identifying samples of blood, breath and urine. His research laid the groundwork for development of the Breathalyzer, among other innovations. Jack worked tirelessly on Orange County's highest profile cases, utilizing his methods to provide unbiased evidence and testimony in the courtroom. His innovative and meticulous work earned the Orange County Sheriff's Crime Lab full accreditation even before the F.B.I.



CAC Archive



Jack Cadman Family



Jack Cadman Family

Jack Cadman in 1949.

crime lab gained its own accreditation. Jack's attention to detail and devotion to the truth, whether it exonerated or incriminated, were what made him the best at what he did. Despite advances and changes on multiple fronts in CSI, many of his discoveries provide the foundations for today's methods for analytical toxicology and chemical testing. The Orange County Sheriff's Crime Lab has grown from its modest beginning in a tiny, converted bathroom, with a staff of one; to a 120,000 square-foot facility with a staff of one hundred, and state of the art crime-solving equipment." (www.jackcadman.com)

EARLY PRESENTATIONS:

"The Value of the Acid Phosphatase Test for Semen" (CAC Seminar, 1954)

"Soil Analysis" (CAC Seminar, 1955)

"Report of Blood Alcohol Standard Sample Distribution" (CAC Seminar, 1956)

"The Use of Mosquito Fish as a Method for Screening Toxicological Cases" (CAC Seminar, 1956)

"Gas Chromatography Applied to Alcohol Determination" (CAC Seminar, 1957)

"Blood Alcohol Control Tests" (CAC Seminar, 1957)

"The Determination of Ethanol and Other Volatiles from the Blood using Gas Chromatography" (with Theron Johns, CAC Seminar, 1958)

"Some Effects Produced by the Impact Fracturing of Glass" (CAC Seminar, 1961)

"Isolation of Spermatozoa from Dried Seminal Stains" (CAC Seminar, 1962)

"Gas Chromatographic Determination of Blood Carbon Monoxide" (CAC Seminar, 1962)



Jack Cadman Family

Jack with Theron Johns (l) in 1960.

WILLIAM W. HARPER 1903 - 1983

Pasadena PD

William "Bill" Harper helped establish the Pasadena PD crime lab where he served as "consulting physicist" for several years, prior to Don Harding (who left in 1961). Like Harding, Bill Harper had worked with Charles Wilson at the Wisconsin State Police Crime Lab. He established "Forensic Physics," a private practice in Pasadena, and lent his firearms comparison expertise to the defense of Sirhan Sirhan, the accused killer of Robert F. Kennedy. Harper gained some notoriety in the 1970's when, after comparing the bullets recovered from RFK and another victim, asserted that there was a second gun involved.

"In 1973, Investigative journalist Ted Charach . . . interviewed William W. Harper, a 68-year old Pasadena-based criminalist and firearms expert, whose testimony in hundreds of cases had been relied upon by both prosecutors and defense attorneys since the 1930s." (www.patshannan.bizland.com/assassinationsrobertkennedyparttwo.html)

"William Harper, a veteran criminalist who was able to examine, but not remove, the slugs in LAPD custody, took the photos using a portable Balliscan camera he had helped to

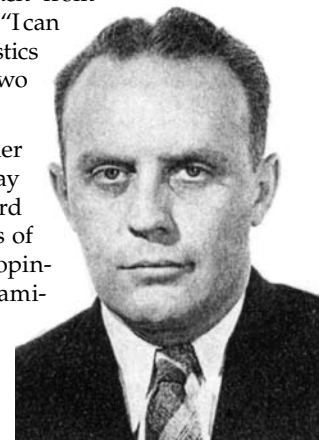
develop. Harper, who had worked in the field for three decades, including seven years with the Pasadena Police Department as a forensic consultant, said of his comparison of the [Robert] Kennedy bullet with one taken from ABC newsman William Weisel, "I can find no individual characteristics in common between these two bullets." (lookingglass.blog.co.uk)

Interestingly, three other founders, Jack Cadman, Ray Pinker and Lowell Bradford looked at the Balliscan photos of the bullets and offered the opinion that a full microscopic examination would be needed to make a conclusion.

EARLY PUBLICATIONS:

A Graphical Method for Rapidly Determining Minimum Vehicle Speeds from Skid Marks, *J. Crim. Law & Criminology* (1939)

The Behavior of Bullets Fired Through Glass, *Am. J. Police Science* (1938)



Paul Dougherty

ROBERT COOPER

Alameda Co. Sheriff
President, CAC 1965-1966, 1966-1967

"I worked for Bob Cooper in Alameda County from 1974 until he retired in 1990. He had a good scientific mind and he was knowledgeable in many areas. I remember one particular "crime scene" in 1988. Construction workers digging a trench had encountered some bones which looked human. Bob sent Joe Fabiny and me to the scene. We were criminalists—generalists, but not anthropologists. I had taken a short course in forensic anthropology, however, and, after a brief examination of the bones, I formed the opinion that they were in fact human bones, and that they were likely very old.

"Bob came to 'take a look' a little later. His examination of the bones and the surrounding area revealed much more than ours had. In a short time he noted that the bones were not of recent origin, the grinding surfaces of the teeth had been ground flat through wear, there were some old shell beads next to the skeletal remains, hematite ore was present in the dirt, and pieces of wood carbon from incompletely burned wood were present in the dirt. All of these observations supported his conclusion that this was an ancient native American burial site." (Bob Hinkley, *pers. comm.* 2008)

EARLY PRESENTATIONS:

"Introduction to Fiberfrax and its Identification" (CAC Seminar, 1960)

"Notes on the X and Ko-Rec-Type Typing Correction Material" (CAC Seminar, 1961)



Bob Hinkley

HARRY JOHNSON 1908 - 2007

Calif. Bureau of Criminal Identification
and Investigation (CII)



John Rush

"Photographs of Harry and his work are on the wall near the classroom at the CA Criminalistics Institute in Sacramento. He testified all over the state from the only lab DOJ had at the time (pre-1972). He was once one of only four criminalists working for DOJ." (Lou Maucieri: *Harry Johnson Remembered—One of the Few*, CACNews, 2nd Q 2008)

"Starting in the late 1940s, Mr. Johnson spent almost 30 years as a forensics expert with the state Bureau of Criminal Identification and Investigation. A chemist by training, he was an early criminalist who used a microscope, spectroscope and other scientific equipment and techniques to analyze evidence and testify about findings at trials." (Robert Davila: *Harry Johnson, 99, Pioneering State Criminalist*, Sacramento Bee, 2007)

"Roger (Greene) asked him to apply for the position at the crime lab. He was the top applicant out of three. He retired when he had to at age 70 (that law has been overturned). He was a Crim V in the Sacramento Lab.

Harry was the only experienced criminalist with DOJ in 1972. Dave Burd and Don Stottlemyer went to the Sacramento County Lab, Ted Elzerman returned to Illinois, Fred Wynbrandt went into partnership in a private lab with Ed Miller, and Jerry Chisum went to SRI. Harry was forced into a supervisory position, something he had resisted for years. He preferred to work on cases.

There is lots more to Harry's life as an inventor, innovator, criminalist, not to mention his personal life as a father and husband." (Eucen Fu, CAC e-mailing, 2007)

EARLY PRESENTATIONS:

"California Highway Patrol Conducting Survey of CO Involvement in Single Car Accidents" (CAC Seminar, 1962)

JOHN E. DAVIS 1919 - 1989

Oakland PD



John Davis in 1945.

John graduated from Cal Berkeley, then worked for Missouri State Highway Patrol Laboratory for two years. In 1945, he joined the Oakland Police Crime Lab, where he served as criminalist-in-charge.

"John E. Davis, an eminent criminalist and director of the Oakland Police Department (California) Criminalistics Section (crime laboratory) wrote a book entitled *An Introduction to Tool Marks, Firearms and the Striagraph*. Davis provided extensive information about the examination and identification of firearms and toolmark evidence. He also discussed his development of a specialized instrument that he named the striagraph. He described the instrument as '...a measuring, tracing and recording device suited to the analysis of micro surface-contours, that is, to the detection of microscopic irregularities in surface smoothness.' Although the instrument never proved to be successful past the research stage, it was the forerunner of later technology using advanced laser and digital imaging techniques for scanning the surface of a bullet." (National Forensic Science Technology Center., www.nfstc.org)

EARLY PRESENTATIONS:

"Christiansen Effect in Refractive Index Measurements" (CAC Seminar, 1956)

"An Introduction to Toolmarks, Firearms and the Striagraph" (Textbook published in 1958)

"Differentiation of Barbiturates by Crystal Test" (CAC Seminar, 1960)

"Replica Firearms Evidence" (CAC Seminar, 1960)

"Summary of Study of Latent Fingerprint Work of the Fifty Largest Cities in the U.S." (CAC Seminar, 1961)

"Use of the Monochrometer of the DK-2 in Refractive Index and Dispersion Comparison of Glass Fragments" (CAC Seminar, 1964)

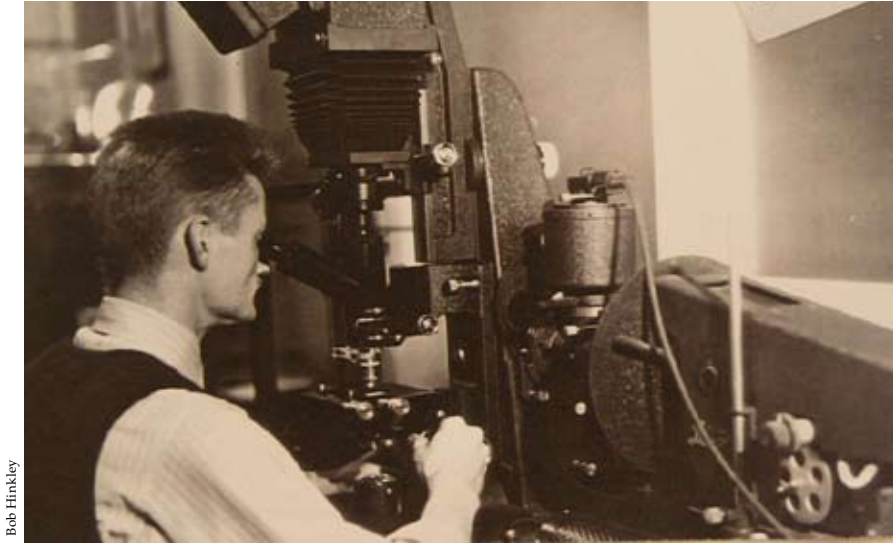
"Open Faced, Semi-Micro Column Chromatography--Preliminary Study" (CAC Seminar, 1964)

"A Simple Method for ABO Typing of Dried Bloodstains on Fibers by the Absorption-Elution Technique" (with Jan Bashinski, CAC Seminar, 1969)

"The Precipitin Test--A Procedure for Clarifying Samples" (CAC Seminar, 1969)



John Davis in 1973.



Bob Hinkley

John Davis at the Oakland Police lab.



Mary Gibbons, OPD

GEORGE W. LACEY 1917 - 2001 ?
Los Angeles Sheriff



CAC Archives

“I met George on several occasions in the 70s when he was a defense expert in DUI cases and I was on the other side. I know he had been chief criminalist of the lab up until sometime in the 1960s and started his forensics career in Texas —I believe with DPS or the Texas Rangers—I’m not certain.” (Barry Fisher, *pers. comm*, 2008)

EARLY PRESENTATIONS:

“Microchemical Tests for the Dangerous Drugs” (CAC Seminar, 1954)

“Bullet Coatings” (CAC Seminar, 1957)

“Viewpont of the Defense Expert” (CAC Seminar, 1961)

ROGER SHERMAN GREENE, III 1908 - 1963

Calif. Bureau of Criminal Identification and Investigation (CII)

"Roger was an outstanding scientist employed by CII from its inception in 1931. He was one of the first full time, scientifically trained criminalists employed by a law enforcement agency. (Ed Jones: *Face Game*, *CACNews*, Fall 1996)

"The laboratory when I joined the staff in 1947 was staffed by Roger S. Greene and David Q. Burd." (Lowell Bradford: *Genesis of the California Association of Criminalists*, *CACNews*, 1st Q 2003)

"Roger started the one-man state laboratory in Sacramento from essentially nothing. He developed a fine laboratory. Because Roger spent very little time talking about himself, his widow was not able to come up with much information about his early experiences. As had been anticipated by the director of the CII who was his boss, a great deal of his work was associated with firearms problems involved in cases. It became evident years later that he was able to handle practically any problem involving physical evidence. By all reports and indications, he was an outstanding scientist. His great curiosity about nature and the world around him had been observed by his parents from the time he was very young, according to his wife. He carried that 'need to know the truth or the closest approximation of the truth he could find' with him for the rest of his life.

"Roger began to receive and work cases from the entire state as his reputation for solving cases spread through word of mouth among law enforcement investigators, district attorneys and others. He dearly loved to solve problems through understanding and interpreting physical evidence. We all began to get a glimpse of his intellect and vast experience as the CAC was struggling through the formative years in the middle 1950s. We were a very small group in those days and we met to discuss our problems. So, even though most of us had not known Roger during the years prior to World War II, we gained a great deal of insight into the man's abilities. Some of the things he brought out were in response to someone's question regarding a problem case. At other times it could be an aside to the person seated next to him." (Jack Cadman: *The Roger Greene Award*, *CACNews* Spring, 1992)

"A blood stained piece of glass was submitted to the laboratory. Some people had heard a shot, then a car drive off at a high rate of speed. There was a blood pool near the tire tracks. I thought how quickly we could have resolved the case and told them whether the blood was human or not. We would run the precipitin test. However, when Roger Greene worked this case, there was no precipitin test. He examined the blood under the microscope. He stated that the blood contained a couple of hair follicles, too small for identification, but didn't look human, he couldn't be sure but they were probably from a domestic animal. The size of the blood cells was also slightly smaller than human cells. He then stated that he had cultivated the stain. The bacteria were identified as that associated with mange in dogs. Therefore, he concluded, the blood was from a mangy dog." (Jerry Chisum: *Founders Lecture*, *CACNews*, 1st Q 2001)

"This is the highest honor the Association can bestow, and as such it is given only rarely. There have been only 8 recipients since its establishment in 1963. In 2002 the Membership voted to give the Award posthumously to Anthony

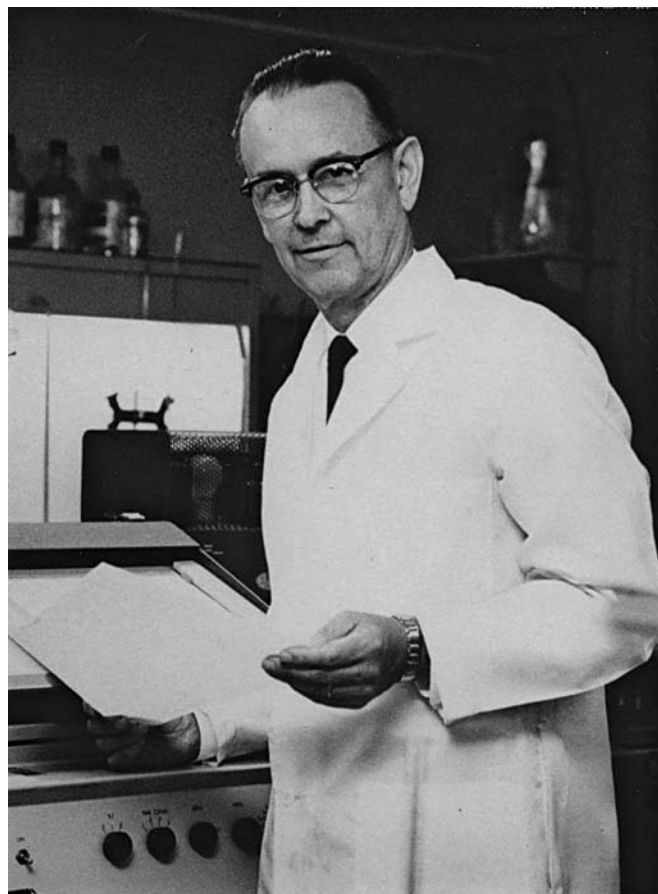
Longhetti as a tribute to the long-lasting impression he made on countless individuals in our profession." (Kevin Andera: *CACNews*, 1st Q 2004)

"After three years I missed criminalistics and court work so I applied for a position vacated at the state lab by the death of Roger Greene. He was the first criminalist for the state lab." (Fred Wynbrandt: *Founder's Lecture*, *CACNews*, 1st Q 2004)

As of 2008, the recipients of the Roger Greene award are: Anthony Longhetti, 2002; Lucien Haag, 1999; Dr. Walter C. McCrone, 1991; Lowell Bradford, 1977; John Davis, 1976; Bryan Culliford, 1971; Jack Cadman, 1970; Paul Kirk, 1966; Ray Pinker, 1965.

EARLY PRESENTATIONS:

"Laboratories of Europe" (CAC Seminar, 1960)



CAC Archives

DON M. HARDING 1917 - 2005

Wisconsin State Lab, Pasadena PD, San Mateo Sheriff, Santa Clara DA
President, CAC 1964-1965

After leaving the Navy as a Lt. Cmdr., Don worked as a QD examiner with Charles Wilson at the Wisconsin State Crime Laboratory from around 1948 to about 1953. He then came to California, accepting a job with Pasadena PD.

Don was working at the Pasadena crime lab during the formation of the CAC.

In 1962 he was hired to replace Morris Grodsky at the San Mateo Sheriff's Crime Lab. Within two years he was elected to the office of CAC president, accepting the gavel from Tony Longhetti.

In 1967 he moved to the Santa Clara County District Attorney's lab where he remained for the rest of his forensic career, retiring around 1987.

In his later years, Don became an ordained minister and performed marriage ceremonies.

"I first met Don when my father took me to the "office" which was the San Mateo crime lab. I was a fourth-grader and in awe of the work being done. Don was always funny and kind and encouraged me to pursue a career in criminalistics. I will always be grateful for his guidance in selecting a college major to put me on the right career path. His wife, Dorothy, was a microbiologist, and somehow I ended up with that as my major, too. Coincidence?" (John Houde, *pers. comm.*, 2008)

EARLY PRESENTATIONS:

"Discussion of Odd and Unusual Contaminants in Food and Drink" (CAC Seminar 1954)

"Skeletal Identification" (CAC Seminar, 1954)

"Internship in Criminalistics" (CAC Seminar, 1955)

"Toolmark Casting and Comparisons" (CAC Seminar, 1956)

"Fingernails as Evidence" (CAC Seminar, 1956)

"Toolmark Recovery in the Field using a Casting Technique" (CAC Seminar, 1959)

"Autoeroticism" (CAC Seminar, 1961)

"New IBM Typewriter" (with F. Hilley, CAC Seminar, 1961)

"Projectile Trajectories" (CAC Seminar, 1963)

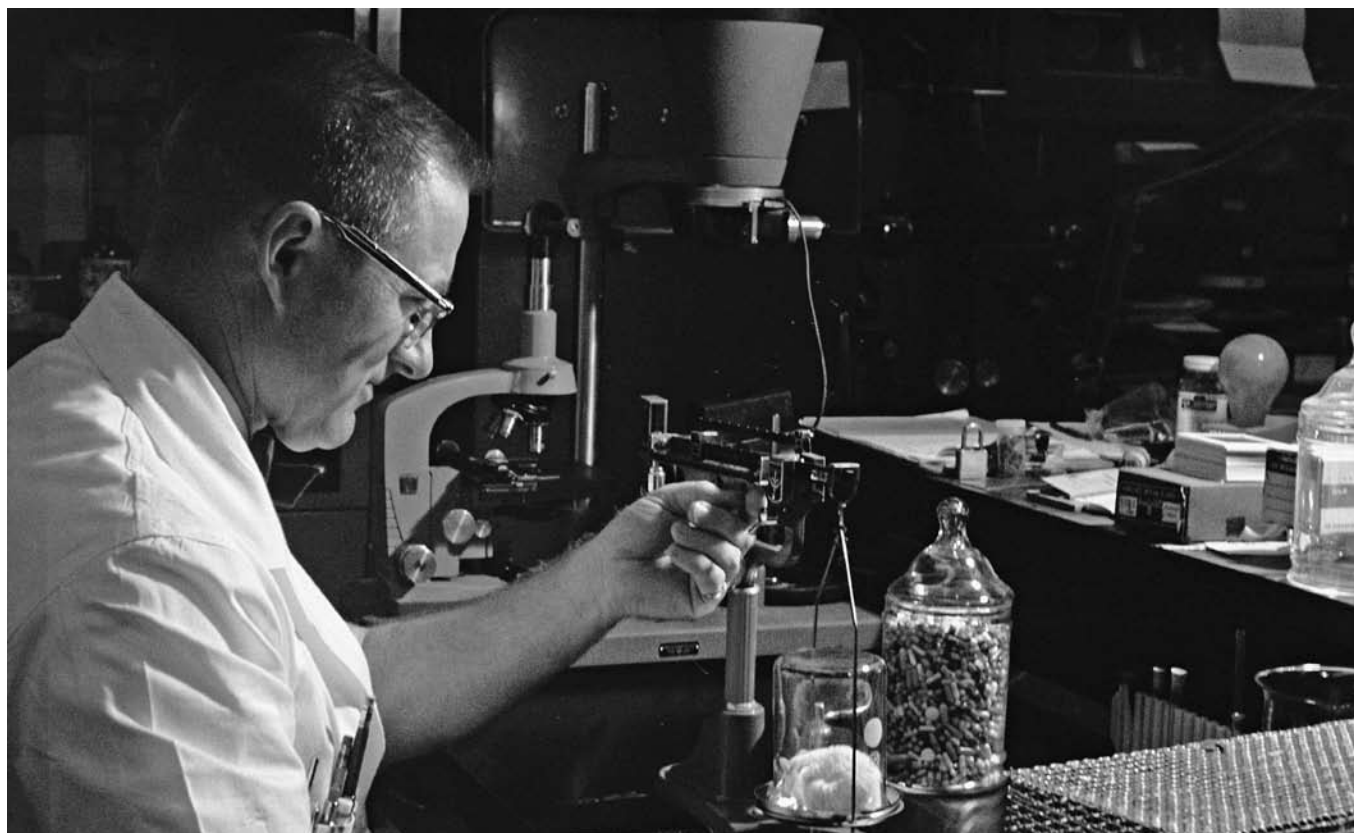
"Identification of Wigs" (CAC Seminar, 1964)

"Identification of Morning Glory Seeds" (with Brackett, Dougherty and Carter, CAC Seminar, 1965)

"Inquiry into the Standards of Practice of Blood Alcohol Analysis" (with Bradford, Finkle, Biasotti, and Smith, CAC Seminar, 1967)

"Breathalyzer Experiences Under Operation Conditions Recommended by the CAC" (with Smith, Finkle, Bradford and Biasotti, CAC Seminar, 1967)

"An Acid Phosphatase Activity Study" (CAC Seminar, 1970)



Don Harding in 1966, at the San Mateo sheriff's lab.

Walter Houde



CAC Archives



Paul Dougherty

Leland Jones, featured in *True Detective* magazine, ca. 1945.

LELAND V. JONES 1879 - 1971 ?

Los Angeles Police Dept. Crime Lab

Lee was appointed to the LAPD lab in June of 1929.

"Lee Jones was a detective assigned to the lab. He worked with Ray (Pinker) on many cases, one of his famous cases was the Black Dahlia case. He attended most CAC meetings. He was a large man, about 6'1" and weighed over 200. He was grey-haired by the time I met him. He was, at the CAC meetings, always joking and smiling. Lee set up the program at CSULA, followed by Ray, Chuck, Jack, Tony, and now, Joe Peterson." (Jerry Chisum: *pers. comm.*, 2008)

"Lee's book is *Scientific Investigation and Physical Evidence*, subtitled *A Handbook for Investigators*. Published by Charles C. Thomas, 1959, the book describes Lee as assistant professor, Los Angeles State College, formerly, instructor, University of Southern California, formerly, commander of the Scientific Investigation Division Los Angeles Police Department." (Jim White, *pers. comm.*, 2008)

"A disturbing rumor has reached me from more than one source that it is believed in law enforcement circles in southern California that the criminalistics program of the University of California, Berkeley, will shortly be dropped. I am at a loss to explain the origin of such misinformation. . . At the present time there is no intent on the part of the university to drop the criminalistics program, either this year or in the foreseeable future."

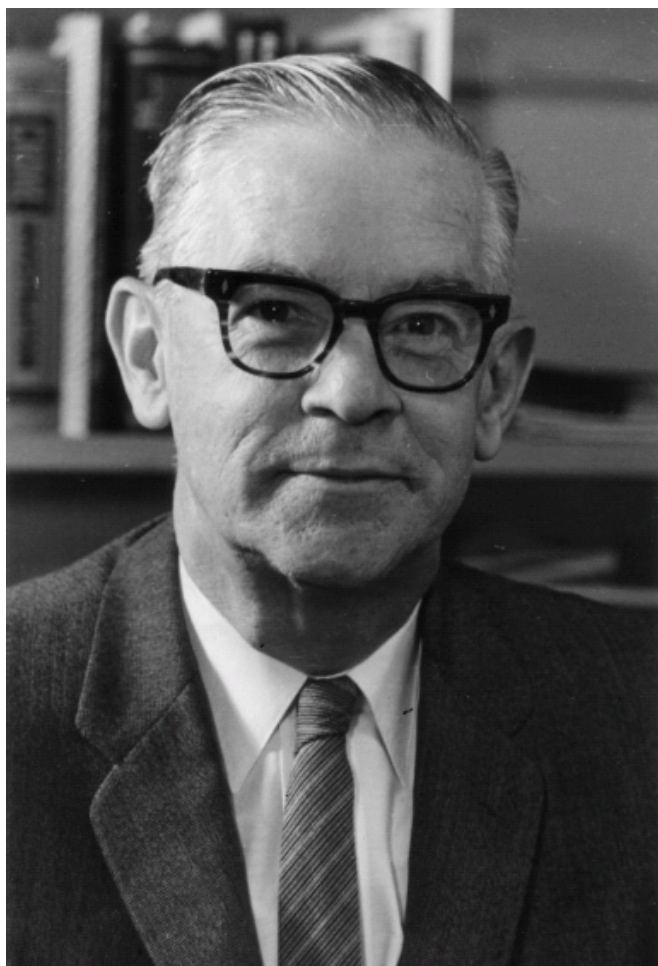
*Letter from Paul Kirk to Leland V. Jones,
Prof., L A State Coll., April, 1960
Courtesy, Jack Cadman family*

"...Training is of most importance and is necessary if a field of endeavor is to be classified as a profession and competent workers in that profession are to be developed...the CAC should do more to lead in the development of suitable academic training and consequent professionalization."

*Paul L. Kirk: "Where is Criminalistics Going?"
Presented at the Spring 1961 CAC Seminar*

PAUL LELAND KIRK 1902 - 1970

University of California, Berkeley
President, CAC 1968-1969



CAC Archives

"Professor of criminalistics at UC Berkeley, Paul Kirk is still considered a giant in the field of forensic science. A great innovator in what he termed 'ultramicroanalysis,' Paul developed methods used all over the world in medicine, research and industry. He authored over 250 articles and five textbooks in such diverse fields as refractive index, toxicology and fire investigation." (Ed Jones: *Face Game*, CACNews, Fall 1996)

"Paul Leland Kirk was a chemist, forensic scientist and participant in the Manhattan Project who was specialized in microscopy. He is best known for his work in the Sam Shepard case. He investigated the bedroom in which Sam Shepard supposedly murdered his wife and provided the key blood spatter evidence that led to Shepard's acquittal in a retrial over 12 years after the murder.

At UC Berkeley, he created a major in technical criminology and when August Vollmer established the school of criminology, Kirk was appointed to chair the criminalistics department.

Kirk was also an avid supporter of Locard's exchange principle. As a result of his detailed descriptions of the principle, Kirk's words have repeatedly been mistaken for those of Edmond Locard himself. Unlike others before him, Kirk understood the limits of the principle and argued for caution in the interpretation of exchange evidence.

The highest honor one can receive in the criminalistics section of the American Academy of Forensic Sciences carries Kirk's name." (*Wikipedia*)

In the CAC, ". . . the Paul Kirk Award is given to outstanding members employed in the profession for fewer than six years and who demonstrate an interest in a professional organization, not limited to the CAC. In 1994, it was established that the recipient of the Paul Kirk Award is also the recipient of the Presidents Award. The Presidents Award was established to encourage a collegial relationship between the CAC and the Forensic Science Society by promoting scientific exchange and fellowship between members." (Shannin Sullivan, CAC Awards Committee)

EARLY PRESENTATIONS:

"An Enzyme Method for the Determination of Blood Alcohol" (CAC Seminar, 1957)

"A Suction Air Draft Evaluation of the Kozelka-Hine Distillation Method" (CAC Seminar, 1957)

"Extraction Process for Toxicology Samples" (CAC Seminar, 1957)

"A Micro-Electronic Chromatographic Apparatus" (CAC Seminar, 1957)

"Magnabrush Kit for Latent Print Development" (CAC Seminar, 1961)

"Where is Criminalistics Going?" (CAC Seminar, 1961)

"Progress Report--Individuality of Blood" (CAC Seminar, 1962)

"Report on the I.I.T." (CAC Seminar, 1968)

"Resources for Criminalistics Laboratories" (CAC Seminar, 1969)

RAY H. PINKER 1905 - 1979

Los Angeles Police Dept. Crime Lab
President, CAC 1961-1962

"By 1932 Ray Pinker was in charge of the scientific aspects of that (LAPD) laboratory. His original baccalaureate degree was in pharmacy from USC. But he was much more than just a pharmacist. He was well versed in the examination of practically all types of physical evidence. Roger (Greene) was destined to be his only peer in the state of California. Pinker was well known and respected by police investigators and prosecutors throughout southern California. Ray was never a sworn police officer and therefore free to take cases from other agencies and work them on his own time." (Jack Cadman: *The Roger Greene Award*, CACNews, Spring, 1992)

"Ray was LAPD's first civilian polygraph examiner. He was hired in 1929 as a civilian police chemist and later promoted to the civilian rank of chief forensic chemist (the first) with the duties of technical director of scientific investigation." (Ed Jones: *Face Game* CACNews, Fall, 1996)

"Ray Pinker as technical director of the Los Angeles Police Department laboratory has served longer than any other criminalist in California in the practice of general criminalistics." (Bradford: *Recent Advances in Scientific Service to Law Enforcement* (presented in 1955), CACNews, 3rd Q 2001)

EARLY PRESENTATIONS:

"Problems in the Field of Typewriter Identification" (CAC Seminar, 1954)

"Notes on Color Photography" (CAC Seminar, 1955)

"Reagent Impurities in Phosphatase Tests" (CAC Seminar, 1956)

"A Critical Evaluation of the Intoximeter" (CAC Seminar, 1957)

"The Present Status of Chemical Tests for Intoxification" (CAC Seminar, 1958)

"Oral Interviews of Prospective Criminalists" (CAC Seminar, 1961)

"LAPD Experience with Breathalyzers" (CAC Seminar, 1962)

"MOBAT" (CAC Seminar, 1962)

"The Talking Corpse" (CAC Seminar, 1964)

"Hair study of AAFS" (CAC Seminar, 1964)

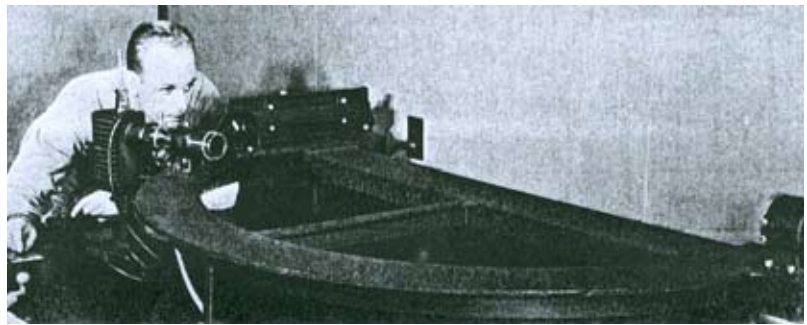
"Water Soluble Paper" (CAC Seminar, 1964)



Paul Dougherty



Greg Matheson



Paul Dougherty

Ray Pinker in 1937, from the LAPD publication, the *Guardian*.

"Today, very few crimes, such as murder, escape solution under the microscope. So valuable has the use of scientific instruments become in the work of crime detection, in Los Angeles at least, that no murder investigation is started without the presence of a police forensic chemist..."

LAPD *Guardian*, 1937

HILLARD REEVES 1923 - 1968

Richmond PD

"Hillard was adamant that as a new graduate of the criminalistics program at Cal I should go to CAC meetings. He wanted me to get to know the people and hear what they had to say. He very much thought that membership in the CAC was important part of being a criminalist. When seminar time came around he knew that one of us needed to stay at the lab so he sacrificed his spot for me so that I could attend and he stayed behind to tend the shop so-to-speak. That's the kind of person he was- a very special one indeed. I am only sorry that I didn't have more time with him when he was well." (Dorothy Northey: *pers. comm.*, 2008)

"Marking time until the new Hall of Justice in the Civic Center is completed is the Richmond Police Department's first criminologist.

"He is Officer Hillard Reeves, a graduate of a four-year laboratory course at the University of California, where he studied under Dr. Paul L. Kirk, who is internationally known in the field of crime detection.

"Since his appointment to the police department in June, Officer Reeves has been assigned to patrol duty to gain on the scene experience in crime investigation.

"However, when the new Hall of Justice is complete, he will move into a laboratory that will mark another tremendous stride in the modernization of the Richmond Police Department.

"During his training, Officer Reeves has received instruction in ballistic problems, photography, physiological fluid identification, comparison microscope, physical examination, chemical microscopy, blood detection and identification, chemical tests for intoxication and personal identification through foot and shoe impressions, teeth and portrait parle.

"In numerous cases, a crime laboratory technician can spell the difference between conviction and acquittal in court', Chief of Police W.W. Vernon has stated.



Duayne Dillon

"In the past, when Richmond police found laboratory analysis mandatory in prosecution of the case, material for examination often was forwarded to the FBI laboratory in Washington.

"In addition to his laboratory experience, Reeves has been trained in the search of a crime scene, marking and preserving of evidence, and safe transportation of evidence." (Unk. newspaper clipping, courtesy Duayne Dillon)

EARLY PRESENTATIONS:

"Restoration of Decomposed Finger for Fingerprints" (CAC Seminar, 1956)

Note: Some references spell his first name as "Hilliard."

We gratefully acknowledge the efforts of so many members who searched their archives and generously shared memories, anecdotes and photos. Special thanks to: Paul Dougherty, Ron Nichols, Gordon Deeg, Jerry Chisum, Jim Norris, Jim White, Hiram Evans, Julie Leon, Dorothy Northey, Alex Taflya, The Jack Cadman family, Angela Meyers, Greg Matheson, Bob Hinkley, John Rush, Eucen Fu, Barry Fisher, Jennifer Mihalovich, Mary Gibbons, Wesley Grose, Dan Nathan, Paul Kayne, Wayne Pluntree and Duayne Dillon.



Do “Law-Science Matters” Matter?

Jim White

San Diego CA, May 2008

I was asked to give this year’s Founders Lecture shortly after we learned of the death of Lowell Bradford. This caused me to reflect on the founders, many of whom I had the pleasure and privilege to know.

I remember Brad for his many contributions to the profession of criminalistics and to the CAC. Also, when I graduated from the program at UC Berkeley, Brad was one of several founders who declined to offer me employment.

At that time (1964) there were not a lot of jobs opening in crime laboratories. It would take the infusion of funding for drug analysis in the ‘70’s, serology in the ‘80’s and DNA in the ‘90’s and into the present time to create laboratories of the size we see today.

The nature of crime laboratories and the practice of criminalistics at the time of the founders have been captured elegantly in the article by John Houde on the Eugene Doran murder¹. Here John describes a small laboratory within a small police agency. The criminalist had constant and complete knowledge of an ongoing major investigation and was able to make significant contributions to that investigation.

Some of our founders came to their laboratories with police backgrounds and some were scientists without law enforcement experience. But as a group they realized that the practice of scientific crime investigation must move from specialized police officers to specialized scientists.

The growing membership of the CAC recognized their special place in the world of science, law and police work. In 1963 they adopted a formal definition of their science. At their 21st semiannual seminar in Ventura they stated that criminalistics was:

“That profession and scientific discipline directed to the recognition, identification, individualization and evaluation of physical evidence by the application of the natural sciences in law-science matters.”²

This definition remains true today, and in its simplest terms is shown in Figure 1.

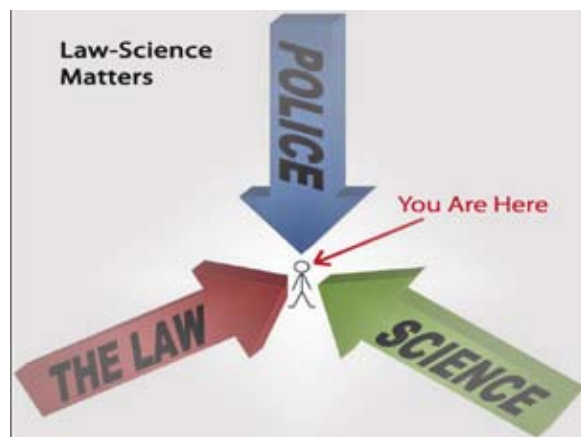


Figure 1. Law-Science Matters, a practical view

Two examples from the early days of the CAC highlight the special role that criminalists have played in this unique position in the criminal justice system.

Gunshot residue testing with diphenylamine

The use of diphenylamine to detect nitrate residues on hands resulted in the so-called Paraffin or Dermal Nitrate test. This test was championed by I. Castellanos of the Cuban National Bureau of Identification who stated in 1941 that the test can be used “...in determining whether or not a suspected person had fired a short-barreled firearm ... or in contact with gunshot residues.”³ This test was enthusiastically received by the police community. Although there were cautionary statements in the literature when I began my career in 1964, homicide investigators would frequently ask if we would “paraffin test” the suspect.

O’Hara and Osterburg advised general caution in their 1949 text⁴ and in the first edition of Crime Investigation (1953) Kirk states:

“...nitrates or other materials which may give the same chemical reactions may be deposited on the hands from cigarette smoking, handling of fertilizers and other sources ... [or] the person firing the gun frequently gives a negative dermal nitrate”⁵

The final nail in the “paraffin test” coffin may have come from Interpol who stated in 1964:

“The seminar did not consider the traditional paraffin test to be of any value, neither as evidence to put before the courts, nor even as a sure indication for the police officer ... The test should no longer be used.”⁶

Thus the dermal nitrate test is offered as an example of a test championed by police investigators but discarded after critical evaluation by criminalists.

Hair comparisons by Neutron Activation Analysis (NAA)

Analytical chemists knew that NAA was a sensitive and accurate method for the quantitation of suitable trace elements in materials. Using this method, they determined that different trace element distributions were found in hair samples from different individuals.

Perkons and Jervis of the University of Toronto stated “Hair from any one individual has a unique micro-composition ‘pattern’ as compared with other individuals.” And, “Positive identification of any individual by his hair is feasible...”⁷ This led Stuart Kind, not one given to hyperbole, to describe the work as “A breakthrough in Forensic Science”⁸. The nuclear reactors necessary to perform this analysis were owned by universities and private industry. Scientists at these institutions were accepting samples and testifying to their findings, often quoting statistics of uniqueness rivaling those of DNA testing.

One of these practitioners, General Atomics of San Diego, did present their research at CAC seminars and subject it to the review of criminalists. Under this scrutiny it became apparent that the claimed uniqueness suffered from intrapersonal variation (hairs were “more unique” as aggregates than as individual hairs), external contamination and changes over time.

A review paper ultimately concluded “I am convinced that irrefutable hair identification from its trace element composition still belongs to the realm of wishful thinking.”⁹

Thus NAA comparison of hair is offered as an example of a test championed by scientists but discarded after critical evaluation by criminalists.

The role that criminalists played in evaluating the use of these tests in law-science matters is shown in Figure 2.

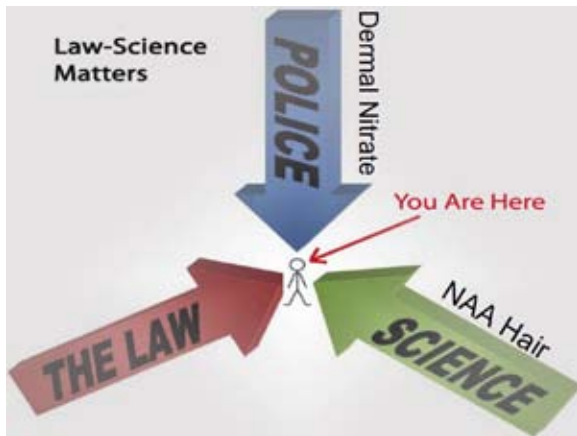


Figure 2. Successful defense against police and science influences

Interpretation of DNA findings by attorneys

Today criminalists, particularly DNA analysts, are feeling a new pressure (Figure 3).

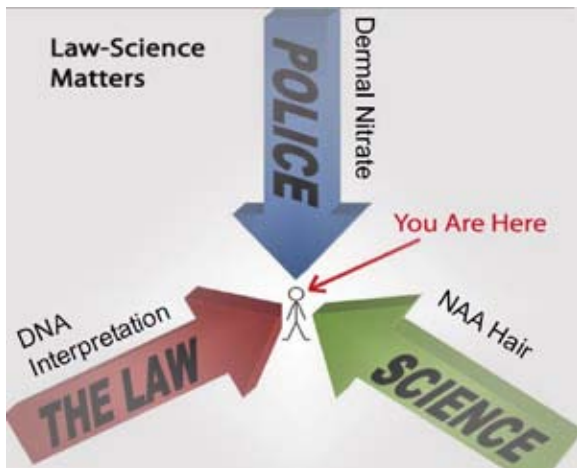


Figure 3. The attack of the lawyers

Attorneys go to forensic science seminars and learn, primarily from other attorneys, how to use and interpret DNA findings.

This seems about as logical as us spending our seminar time learning about death-penalty law and then telling our prosecutors whether they should seek that penalty in a particular case.

A recent case in Orange County (CA) illustrates the danger in this practice.¹⁰

Following an armed robbery a suspect, James Ochoa, was identified and an article associated with the robbery was submitted for contact DNA. A profile was obtained which was reported as eliminating Mr. Ochoa. The prosecutor decided that the "elimination" could be explained by multiple donors and preceded with the case using eye witnesses. Mr. Ochoa was sent to prison.

About a year later, the "multiple donor" DNA profile was matched to ...(drum rolls, please)... a career armed robber. Mr. Ochoa was released from prison.

Thus, in this case, DNA is offered as an example of a test interpreted by an attorney, ignoring the critical evaluation by the criminalist. This may be our new battleground. A conflict that will only be won by sticking to the principles of our science.

As if this wasn't enough, we have additional pressures on our practice of criminalistics.

The growth of scientific analysis

In the previous lecture in this series, Brian Wraxall presented this table¹¹ (Figure 4) to show the growth in number (hence discrimination potential) of genetic markers over his career as a forensic serologist. I converted this table to a graph (Fig. 5), taking the liberty to exclude the DNA systems of 2003.

I found the graph interesting in that it generally spanned the years during which I was primarily involved in bench work, much of it in serology. Although this graph represents the growth of genetic typing systems it could, with a change in the numbers on the abscissa, represent the number of drugs which, as a forensic toxicologist, I was required to be able to identify.

It could also represent the growth of the proportion of women as members of CAC, certainly an event of no less significance than the addition of a few genetic markers. This graph, then, appears, to be a reasonable estimate of the growth

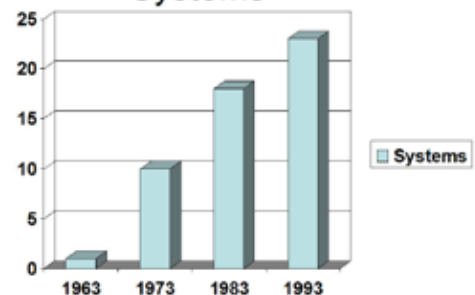
Genetic Markers in Use Over 40 Years

1963	1973	1983	1993	2003
ABO	ABO	ABO	ABO	STRs
	MIN	M only	PGM	YSTRs
	Rh	PGM	ADA	Miso
	PGM	ADA	AK	
	ADA	AK	6PGD	
	AK	8PGD	G6PD	
	8PGD	G6PD	Hb	
	G6PD	Hb	EAP	
	Hb	EAP	GLOI	
	Hb	GLOI	EsD	
		ESD	Gc	
		Gc	Tf	
		Tf	Gm	
		Gm	PepA	
		PepA	CAII	
		CAII	PGM ST	
		PGM ST	Km	
			Am	
			GoST	
			HLA DQA/PM	
			DNA RFLP	
			D1S80	

Wraxall, Founders Lecture, Fall, 2006

Figure 4. Genetic Marker analysis, 1963-1993

Available Blood Typing Systems



From Wraxall, 2006

Figure 5. The all-purpose graph

of practically anything during the later part of the 20th century. You are welcome to use it for any purpose you need.

The speed at which information is being accumulated and dispensed has caused concern among scientists and non-scientists alike.

In his book, *Structure of Scientific Revolutions*, Thomas Kuhn coined the term "paradigm shift" to represent fundamental change in the way we look at our universe. This became perhaps the most overused term of the time. It was not meant to describe the scientific equivalent of cosmetic surgery, but rather events such as described by Copernicus, Newton and Einstein.

Kuhn took everyday science to task. Typical scientists are not objective and independent thinkers. Rather they are conservative individuals who accept what they have been taught and apply their knowledge to solving the problems that their theories dictate.¹²

This is a little unsettling as first he tells me that I am not objective, then that I am conservative. But this view remarkably mirrors a frequently aired complaint about contemporary forensic science. That rather than trying to determine the most significant questions to answer in a case, we simply reach into our bag of certified reliable tricks and apply them to the submitted evidence.

Outside of science there are also concerns about our ability to manage the sheer amount of information we receive and to sort the good from the bad. Maryanne Wolf, Director of the Center for Reading and Language Research at Tufts University, describes the Twilight of the Reading Brain: "The addictive immediacy and the overwhelming volume of information available in the 'Googled world' of novice readers invite neither time for concentrated analysis and inference nor the motivation for them to think beyond all the information given."¹³

This is a concern. We must ask ourselves if we give each new piece of information that comes to us careful and due consideration before acceptance.

Where are we?

When I was learning from Tony Longhetti, he frequently stated that the difference between us and a clinical laboratory was that our cases were "hand crafted." By this he meant that each case was judged on its own requirements and the appropriate tests performed.

At that time, Tony had a case receipt system in the San Bernardino laboratory. Each case was logged in by a criminalist and ideally submitted by the case officer so that the individual needs of each case could be discussed at that time. But, by the time I left his laboratory in 1968 more and more submissions were being made by evidence couriers and case management at the time of submission was disappearing under increasing caseload.

We cannot return to the halcyon days of early criminalistics as describe in the Houde article, but that does not mean that we can ignore the important principles of that approach to case work.

You may receive a request for DNA analysis of fifteen stains from a crime scene, with no knowledge of what questions the investigator wants to answer with this analysis. You could call the investigator to discuss the case, or decide to do the tests because you can do that in less time than it would take to get in contact with the investigator.

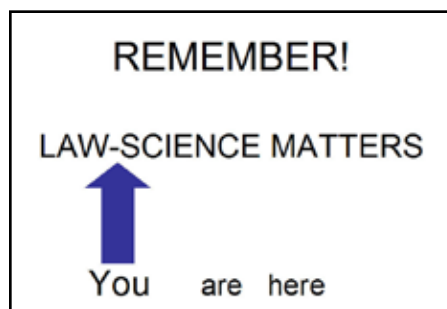
This might be a good decision unless it turns out that the case issue was not answerable by DNA but rather by the

pattern of the bloodstains, or some fibers associated with the stains that are now altered or gone.

In many cases, a little case management can save a lot of unnecessary work and identify avenues of inquiry that were not obvious to the case investigator. Laboratory managers and supervisors should recognize that this is time well spent.

There are many scientists in our laboratories who have case management skills. In this day of approved methods and formalized training we must remember that apprentice style training is neither archaic nor illegal. If a case manager is discussing a case with an investigator or attorney, the newer analyst who may be doing the DNA or the toxicology in the case should be brought in, not only to learn the process, but perhaps to add their own specialized expertise to the discussion.

The fundamental principle described by the founders that separates our science from others is that we are the hyphen in law-science matters. We must remember the responsibilities of this unique position:



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CAC Northern Section Report

Upcoming Northern Section Dinner Meeting

Before you leave for a long 4th of July holiday weekend enjoy dinner with your colleagues. The Northern section of the CAC is hosting a dinner meeting on Thursday July 3rd at Francesco's Italian Restaurant in Oakland. See the website for more details.

This meeting is graciously sponsored by Forensic Science Associates and boasts Brian Ford as the guest speaker. If you missed him in San Diego make a point to hear him speak. He is a fabulously witty and knowledgeable speaker. Professor Ford's presentation is entitled "Ingenuity and Problem Solving by Cells" and will include a discussion and video clips showcasing the problem-solving ability of microorganisms.

Study groups that will be meeting include: DNA and possibly Fire Debris

Recent Study Group Activity

The Drug Study Group met on June 11, 2008. New Hallucinogens – featuring Roger Ely of the DEA and Mark Kalchik of the DOJ. There will be a discussion and round table including hand-outs of analytical information. Please bring copies of analytical data from casework.

The Firearms Study Group met last month and the next meeting is scheduled for September 17, 2008. There will be a special guest presenter from Belgium.

The QA Study Group is interested in having Mark Reufenacht, from Heusser Neweigh in Concord present a 2-day course on Uncertainty Measurements. He is a vendor for many local labs for NIST traceable weights and balance calibrations. He has given this course to other organizations such as AFQAM. The class may be useful for QA managers, technical leads, and analysts in all lab units, especially those preparing for ISO accreditation. This class would be sponsored by the CAC, hosted by Contra Costa County, and organized by Paul Holes and Stephanie Williams. No date for this event yet. Maximum attendance is 30 students.

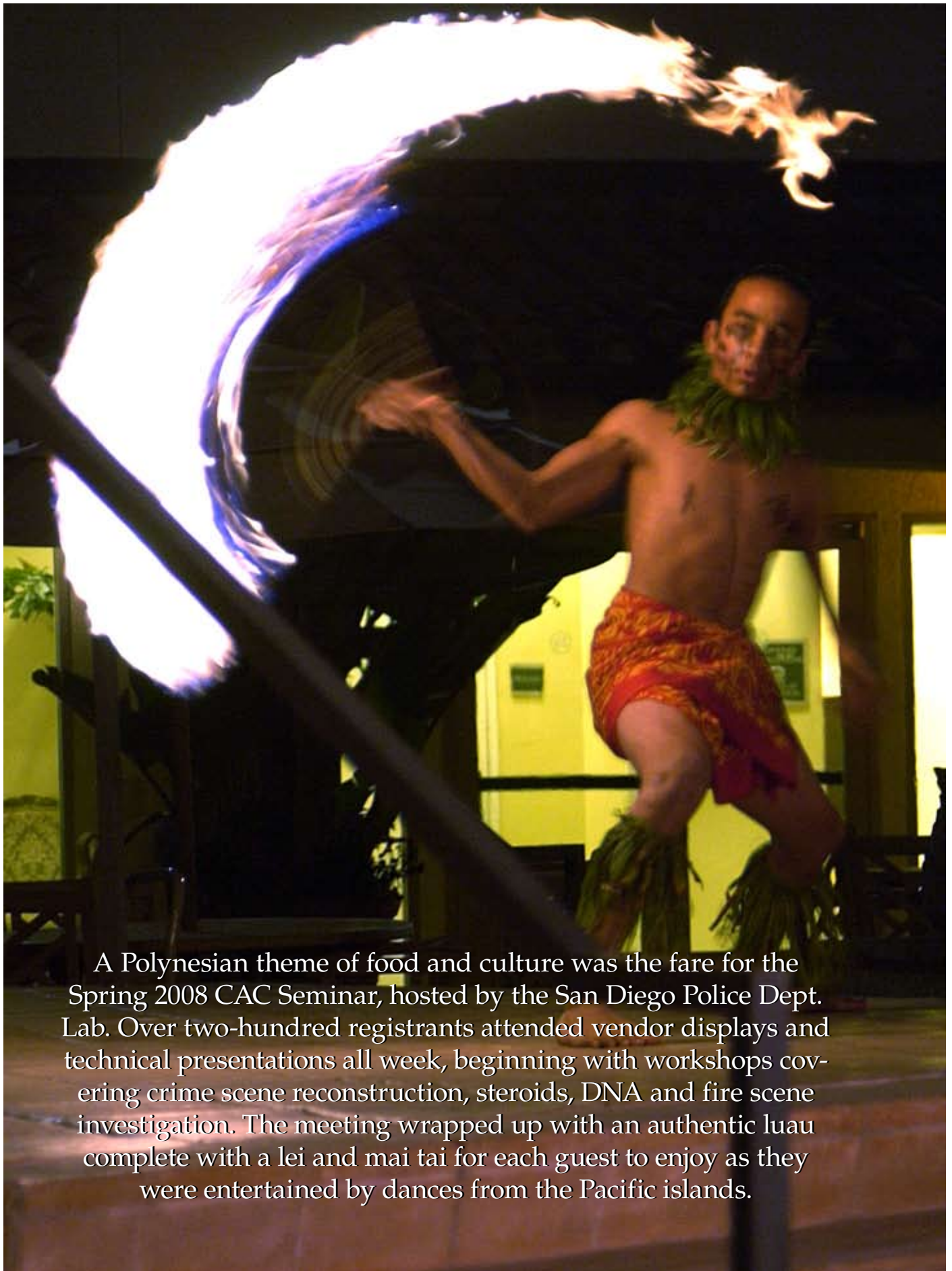
—Shannon Cavness



New CAC Board Members Welcomed

(Clockwise, from lower left) Past President Julie Leon, President-Elect Mary Hong, Recording Secretary Jamie Miller, Treasurer Michael Parigian, Membership Secretary Patricia Huck, President Jennifer Mihalovich. Not shown, Regional Director, North, Jeanette Wallin.

At the seminar banquet, departing board members Wayne Moorehead, Shannon Cavness and John Simms were each presented with a certificate of appreciation for their hard work.



A Polynesian theme of food and culture was the fare for the Spring 2008 CAC Seminar, hosted by the San Diego Police Dept. Lab. Over two-hundred registrants attended vendor displays and technical presentations all week, beginning with workshops covering crime scene reconstruction, steroids, DNA and fire scene investigation. The meeting wrapped up with an authentic luau complete with a lei and mai tai for each guest to enjoy as they were entertained by dances from the Pacific islands.

San Diego Meeting 2008



The first two days of the seminar included the CAC board of directors meeting (left), the the crime scene reconstruction workshop (middle left), the steroids workshop (middle right), the DNA workshop (bottom left), and the fire investigation workshop (bottom right).





At the fire investigation workshop, controlled cubicle fires are extinguished under the watchful eye of John DeHaan (far left). The resulting debris is then analyzed under the watchful nose of "Hollie," the accelerant detection dog. Workshop participants removed burned items and looked for telltale patterns (above).





Forensic author Dana Kollmann autographs her book, "Never Suck a Dead Man's Hand."



San Diego Meeting 2008



Featured speaker, Brian Ford (l), enjoys a discussion with Wayne Moorehead.

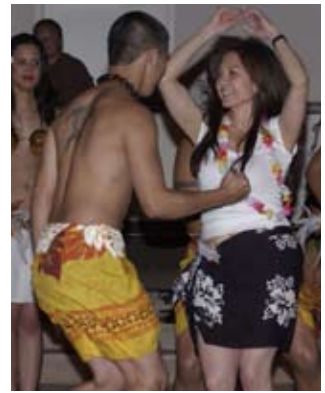


Sightings during the evening bay cruise.





San Diego Meeting 2008



So long, from San Diego!





The Forensic Disadvantage Suffered by Forensic Scientists

Astaria Restaurant in San Mateo continues to be our office; they practically have our orders ready when the reservations arrive from Open Table. The only debate is what to debate. So we decide to debate debating. Or, more properly, the discipline of forensics.

We feel badly for those in the field of forensics. First, a widely watched celebrity trial captivates the public's interest in science and law. Next, numerous documentary-style shows feed the voyeuristic fascination with gore and science. Finally, television, for the second time in 30 years, imbues one job description with the power of at least five (detective, coroner, crime scene tech, criminalist, lawyer, and numerous other specialties) and feeds the frenzy with three shows that nonetheless fail to sate the desire for "information" about forensic science. And over this period of time and episodes, the term properly describing our field, *forensic science*, became shortened to the single word, *forensics*. Not even those in the field of forensics, with their hard-earned and highly evolved skills in reasoned debate and public speaking, could forestall the name of their discipline becoming co-opted by unknowing fans of "science applied to law."

William Safire identifies three phases of compression within the English language; the last phase, shortspeak, of which the emoticon is but one example ;-), ensures that our precious time is wasted by nothing extraneous. As forensic science becomes a normal part of our daily lexicon, the ever-present need to delete anything that might waste our time blurs two distinct disciplines into a single confusing term. lol

Forensics, of course, is the practice or study of formal debate. While Thornton has pointed out its etymology as coming from the Latin *forensis*, the term was applied by the Greeks to a series of contests for speakers that developed and recognized the abilities their society felt central to democracy. Later this skill in public advocacy, including the development of evidence, found one of its important venues in the law courts, and the term "forensic" became associated with the art and science of legal evidence and argument.

Typically, our rants address the "science" part of forensic science; indeed we frequently complain that both practitioners (who should know better)

and commentators tend to, somewhat tellingly, drop the word completely. It is the use of "forensics" in the legal arena that captures our attention this time. When, and how many times, in your education were you required to hone your skills in public speaking and argument? How many of us have had courses in logic and philosophy? We are tempted to answer for you: twice maybe, once perhaps, or most likely, never. A quick survey of the top universities offering forensic science programs reveals that none of them require specific classes in debate, public speaking, argument or logic. Some offer classes that include expert testimony as part of a class on the law and forensic science, and likely all of them offer something like a moot court exercise for students. Oddly, the adequate and competent communication of our results and opinions is nothing more than an addendum to the degree requirements for our discipline. As a roommate once remarked to one of us (KPI), "my test tubes understand me." Scientists are trained to use and communicate through this and other similar expressions:

$$\text{pH} = \text{pK}_a + \log \frac{[\text{A}^-]}{[\text{HA}]}$$



Contrast this with a law degree. Attorneys are drilled from their first day in law school to accumulate evidence and present it in a convincing and logical manner, using language and the power of expression. The language that they are trained to use is everyday English, not some arcane discipline-specific nomenclature (we're speaking of the persuasion portions of a law curriculum, not the legal aspects, which of course has its own jargon). In addition, those entering courtroom litigation are given further instruction in persuasion and courtroom tactics.

So let's pose this question: who will be understood by the fact-finders; one who asks, "Have you stopped beating your wife yet?" or the one who answers " $\frac{P(A|B) - \frac{P(B|A)P(A)}{P(B)}}{P(B)}$?"

Peter Barnett has suggested, in a *forens-i* quote that we can no longer find, that forensic science is the only discipline that has no control over the material it examines (that is determined

... those skilled in debate are increasing the odds that the side for which they are advocating will prevail. In other words, absent something more than the once-a-career participation in a Raymond Davis Courtroom Presentation class, we're losing ground and credibility in the one forum where our results are intended to make a difference: the courtroom.

by the crime event), does not define the relevant question (that is determined by the law), and does not control the forum in which its answers are provided (a courtroom whose rules for expression are strictly governed by law). Nowhere is this lack of control more striking than in the courtroom, where the philosophy of advocacy and the rules of evidence presentation combine to propel the work of the expert into just the direction desired by one or, schizotypically, both advocates. And because the use of science within the justice system is rapidly increasing, those skilled in debate are increasing the odds that the side for which they are advocating will prevail. In other words, absent something more than the once-a-career participation in a Raymond Davis Courtroom Presentation class, we're losing ground and credibility in the one forum where our results are intended to make a difference: the courtroom.

Both of us have participated in workshops hosted (always separately) by the prosecution and defense bar communities that focus on tactics to use when confronting expert evidence (usually DNA evidence).¹ The common theme for these sessions is, "tell your story through the expert." The specifics of this tactic are allowed by law, which decrees that a lawyer may lead a witness on cross-examination. This means that an attorney is not obligated to ask open-ended questions of the expert, but can essentially testify themselves by making any sort of statement they wish, followed by some form of, "Isn't that correct?" In this way, the attorney is allowed by law to focus on those areas favoring his spin on the evidence, at the same time ignoring, distracting, or obfuscating that evidence which is unfavorable to his theory of the case. And make no mistake, both prosecution and defense groups have developed this tactic to a fine art, and practice it religiously.

Some examples from the training are given as illustrations.

1. Cross examination is really our turn to testify.
Cross-examination serves as a direct path to final argument.
2. Use leading questions beginning with:

¹ Ironically, we are asked to "act" in the role of an expert. We can never quite figure out whether we're expected to channel Gil Grissom/Katherine Willows, or act how we think an expert should act. BTW (shortspeak for 'by the way'), we had to look up these characters to reference them here, inasmuch as neither of us has watched even one episode from the canon of CSI.

- i. "Do you/can you/have you/are you/you'd agree that/you can't tell"
3. Maintain control by yanking the leash when needed
 - i. Provide the answer yourself
 - ii. Challenge the witness
 - iii. Make the witness agree with a short, simple thoughts
4. Contrast the ideal with the actual
5. The name of the game in any cross-examination is maintaining control of your witness. This witness has been anointed with credibility by the judge in the eyes of the jury, meaning that you must maintain absolute control, leaving no wiggle room for the witness to do anything but answer your precise question.
6. First get facts helpful to your case, then get concessions, finish with impeachment.
7. If the expert has not considered witness statements, he is unprepared and his opinion is incomplete. If the expert did consider all of the witness statements, she is biased for considering non-scientific evidence.
8. Some [attorneys] try to become the expert. I am not that bright or quick a study to do that. Therefore I subscribe to my own method which is **not** to do battle on *their* ground but on *mine*. I cannot trade [expert] terms and meanings with an [expert] even if the [expert] is an idiot from my perspective so I cross them on what I know better than they could ever hope to...*the facts* (of the case).

How one responds to these tactics has not become the focus of the education and training of the forensic scientist just yet. The responses by the expert to these tactics tend to be much more a personal choice than a professional one. Some experts militantly attempt to re-define the question and answer on their own terms, becoming argumentative and querulous. In our experience, this is rarely effective, and should not be confused with taking a courageous stand in defending one's position. Others meekly acquiesce to any suggestion made by the cross examining attorney, trusting the attorney calling the witness to rehabilitate the testimony. Most attempt some middle ground, but with little training in real 'forensics,' the expert is almost always at a disadvantage.

The reader should not construe this column as somehow standing with hands to our face, eyes wide, a look of terror, horror, or misery on our countenance (well, a little misery perhaps). This is the state of the law, we know that going in, and we always have the option of not participating. Should we think this violates our sense of 'how it should be,' we have the option of doing something about 'it.'

²How would the judiciary respond to a paper published by scientists delineating how evidence (any evidence, not just physical evidence) should be received by courts? We suspect amused silence would be the most likely rejoinder.

³Link to <http://www.netlingo.com/emailsh.cfm> to decipher this shortspeak.

As a start, we observe the following:

- The law makes the rules for the admissibility of evidence, including physical evidence.
- Most scientists naively believe that pure science is all that is required to participate in legal proceedings. This belief is encouraged by attorneys who would prefer to control the proceedings to their expedient advantage.
- Both sides of the adversarial process have developed protocols for presenting physical evidence most favorable to their side.
- Scientists have not been invited into the legal standard-setting process, nor responded to the resulting standards (Frye; Daubert; Kumho; Federal Rules of Evidence).
- Legal groups have now established procedures not merely for the admission of physical evidence, but for the actual analysis itself (ABA standards, 2007).²
- The NAS publications on physical evidence (DNA, elemental analysis of bullet lead) are prescriptive only as a reaction to controversy.

In other words, we seem to have ceded the field of science to law in most cases. The law does not seem to have enough respect for forensic science to invite it into mutual discussion and dialogue about the use of science within the law. Our default role as the straight man is based in part on our inability to master the art of debate and persuasion. Until our profession takes seriously the integration of the *forensic* descriptor into the practice of *forensic science*, in research, curriculum, and practice, we can anticipate that our disparate, chaotic, dis-harmonic voice(s) will be ignored by those who use our services. FAWC.³

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ABA Standards for Criminal Justice: DNA Evidence, 3d ed. © 2007 (found online at <http://www.abanet.org/crimjust/standards/dnaevidence.html#3.2>)

“Genetic Witness” Author Responds to Book Review

Thanks so much for providing a copy of your review of *Genetic Witness*. [“Genetic Witness: Through the Lens of a Social Scientist,” *The Proceedings of Lunch, CACNews*, 2nd Q 2008] I love your style and I find myself reading your columns even if I’m not directly interested in the subject you’re addressing. I thought it was a very fair critique of the book “through the lens” of forensic science. There was nothing that jumped out at me as being at all mean-spirited (other than the infomercial comment towards the end of the review, but your point is well-taken) and I think that most of your criticisms were warranted.

I just wanted to point out that I was a bit puzzled by your claim that because my book examines a technique that is no longer used it seems “dated” rather than “historical.” History is by definition an examination of dated things. As you rightly note, it’s still too early to write a good history of more recent iterations of DNA profiling, so I didn’t even try. There is a very strong tendency within the sciences (forensic science included) to always be looking ahead to what advance lies just down the road, rather than to take stock of what has happened in the past. The goal of my book was primarily to ensure that the events of the late 1980s and early 1990s were not forgotten or completely whitewashed by powerful individuals within the scientific and legal communities (including, ironically, Scheck and Neufeld). I am happy that you think I did a good job on this task. Also on this note, my book documented the controversy surrounding DNA profiling. STR was the “nail in the coffin” of debates about the systematic reliability of DNA profiling.

I wanted to state for the record that I went to great lengths to get many perspectives on DNA profiling (which

can be seen at the end of the book in my list of interviewees). Yes, Bill Thompson was instrumental in helping me understand what happened during the “DNA Wars,” but I actually spent as much time talking to George Sensabaugh over the course of my research. The only major person who I did not interview was Bruce Budowle, who failed to return my emails or phone calls.

As far as my central claim that there is no strong systematic method for discovering and rooting out errors, I just wanted to point out that the scientists who discovered errors while working for the defense generally could do so only after the tremendous effort of defense lawyers to conduct successful discovery procedures. All of the defense lawyers I spoke to told me that during the period I cover in the book it was incredibly difficult to gain access to the kinds of information and documents that are necessary to carry out a good scientific review. If things have changed very recently, I am extremely happy about it and think that this is a fantastic development.

Finally, one minor clarification: the image on the cover isn’t from early Cellmark publicity material. Rather, it was an image recently produced in-house that was never used for its intended purpose. Their marketing people offered it to me when they couldn’t find an original piece of artwork from their first advertising campaign (which isn’t at all surprising given how many times the company has changed hands).

Anyway, thanks for taking the time to read my book and critically analyze it. I look forward to continued dialogue and discussion with you in the future.

—Jay Aronson

SPRING 2008

CAC SEMINAR

ABSTRACTS

The First Microscope Detective

Professor Brian Ford

World-renowned microscopist, lecturer, broadcaster and publisher.

Ask people to estimate when the microscope was first used to solve a forensic puzzle and most might guess sometime before WW2. Others might go back further, to the time of Sherlock Holmes, but the real date is centuries earlier. Today we will trace the early years of the microscope and show that the pioneering microscopist Antony van Leeuwenhoek shapes up well, compared to what we do today.

Serial Number Decipherment

Hugh Curfman

San Diego Police Department Crime Laboratory

The Smith & Wesson 40F pistol contains a serial number plate that, when defaced, is difficult to restore using chemical restoration techniques. Questioned document examination techniques were used to restore the nubs of bar code remaining after the criminal's scratching and scraping attempt to destroy all meaningful content. The restored and enhanced bar code was then able to be read using the WASP Bar Code CCD LR Scanner.

Additionally, use of the VSC 2000 (Foster & Freeman Video Spectral Comparator) enabled the decipherment of the defaced alphanumeric portion of the serial number plate.

Each technique, bar code enhancement versus alphanumeric decipherment, stands on its own, and each may have additional applications in which the other is not helpful. Already, limitations in the use of the VSC 2000 have been revealed in casework, and will be discussed in the presentation.

A Methodology for Crime Scene Analysis

Tom Bevel

TBI, LLC, Norman Oklahoma

Crime Scene Analysis has two phases. The first is practiced while at the crime scene. It is informal and gives direction for the investigation and scene processing. The second phase is done after the crime scene is processed, the collected evidence is analyzed, and all reports are completed. The second phase is a formal process and employs the scientific method as an accepted methodology. This process forces the investigator to consider all viable ways an action could have been accomplished. The analyst then forms hypotheses for each of the possibilities, tests each possibility against the scene evidence and its analysis in order to identify the "best explanation" for each of the investigative questions being analyzed. This presentation will review the second, formal phase of crime scene analysis using the memory aid "PhD etc".

Detection of Cathine and Cathinone in Khat Stems

Wisam Maroge

Drug Enforcement Administration, Southwest Laboratory

The recurring number of seizures of khat (*Catha edulis*) in Southern California has brought about the need for preserving the active ingredients of seized khat until delivery to a forensic laboratory for analysis. It is shipped fresh, in bundles, in well-sealed containers, to retain moisture and minimize degradation. However, lengthy storage and heat cause one of the active ingredients in khat, cathinone, to undergo enzymatic reduction to cathine and phenylpropanolamine. Cathinone is a Schedule I substance, under U.S. Federal Law, and is most potent in khat leaves less than 48 hours old. Cathine is a Schedule IV substance that produces a similar, but lessened, effect than cathinone; however, it does not lose its potency after harvesting. Fortunately, cathinone and cathine are also present in the stems of the khat plant. This work examined two methods for the storage of seized khat stems with the goal of preserving cathinone. The data showed that khat stems, either frozen or dried at room temperature, allowed for the detection of cathinone for the length of the study (7.5 months).

The Janet Moore Homicide

Criminalist David Cornacchia and Author Tom Basinski

San Diego Police Department Crime Laboratory

In 1988, twenty-seven year old Janet Moore was brutally murdered in her apartment in downtown San Diego. Conventional serology testing that was conducted at the time, suggested that the perpetrator may have sustained significant injury which resulted in substantial blood loss. No suspects were ever identified, and the case went cold.

Seventeen years after the crime, investigators would get a break in the case from an unlikely source 3,000 miles away...

Forensic Ethics Codes: Overview and Content Survey

Carolyn Gannett

San Diego Sheriff's Crime Lab

This talk will describe the purposes of codes of ethics and guidelines for behavior. The contents of 23 forensic associations' codes of ethics or guidelines for ethical behavior were surveyed. The contents will be presented in spreadsheet format for easy reference.

The Imprecision of the Expert's Language

Raymond J. Davis

CourtSkills

This paper is not a commentary on the technical language used by experts in the courtroom. Rather, on the inaccurate use of the English language where the court demands a greater precision and accuracy in testimony. Over the past twenty years, I have listened to experts use the vernacular language when a more formal use of the language is required and appreciated. A major reason we do not speak proper English may be due to the influence of 185 languages spoken in America. Unlike most cultures that require the correct use of their language, Americans are more forgiving and rarely correct another person. I rarely do, not wishing to give offense. Recall the last time you corrected someone or they corrected you.

I have been studying Swedish for many years and when I failed to pronounce words correctly or failed to follow gram-

matical rules, I got blank stares in return. I recall several embarrassing times when family and friends corrected my English. That experience made me much more consciously aware of how I speak. From those humbling moments, I have endeavored to speak better, particularly in the courtroom.

Because of the formality of the courtroom, where every utterance is recorded, the expert must be diligent in the proper use of language to ensure accuracy of testimony. I am convinced that our credibility and stature in the courtroom is more dependent on how well we speak than upon our credentials. Why? Jurors accept that we are experts and thus focus on how well we communicate our work and results to them, in a clear and compelling manner. Therefore, we must avoid use of the vernacular in the courtroom.

I will highlight some examples in my presentation of terminology that should be, and should not be used. However, first and foremost, do not include jurors in your work. Do not use 'you' when you mean 'a person'. Example from a medical examiner: "When you're stabbing someone with a knife and the blood gushes out onto your hands it can cause the knife to slip over your hand cutting yourself." Correct testimony: "When a person is stabbing someone . . ."

Additional elements that erode our credibility are the repetitious use of words such as 'just', 'basically', 'only' and 'simply'. These words minimize the importance of the work conducted in the laboratory, the sophistication of the instrumentation utilized, and the national standards by which these tests are approved. The most egregious example I've heard using all four words was uttered by a young fingerprint expert. "I'm just a latent print examiner with only four months on the job and simply followed the protocol that gave me basically the results I'm testifying to."

I've heard experts refer to their extensive formal training as "in-house training." This again minimizes the importance of the specialized training people receive through their agency. Remember, young kids applying for a job at Burger King get in-house training. Another one is, "I respond to field calls." What's a juror to think about that phrase? Or worse, "I respond to crime scenes." Never in my career did a crime scene ever call me requesting me to stop by for an investigation. A correct response is, we respond to requests to go to a crime scene. It is critical that each witness focus on the art of their discipline and not just the science of their discipline when testifying.

Justice and Science: Trials and Triumphs of DNA Evidence

George W. Clarke

Judge of the Superior Court, San Diego

Forensic DNA testing technologies have presented the criminal justice system with powerful and unique tools in the solution of crime. Small, often invisible, biological material can successfully be obtained from evidence items previously thought to be useless in criminal investigations. The development and use of polymerase chain reaction-based ("PCR") techniques revolutionized the ability to exclude or include known individuals as the donors of the smallest evidentiary samples. This presentation will summarize the author's experiences in obtaining the admission, in court, of forensic DNA technologies and their impact on the resolution of criminal prosecutions and post-conviction exonerations.

Study of Nylon Bags for Fire Debris

Christina Henry

Criminalist, Santa Clara Co. District Attorney's Crime Laboratory

Evidence for ignitable liquids analysis must be packaged in airtight containers in order to prevent loss of vapors and cross-contamination. Kapak brand FireDebrisPAK™ has been used in the past to contain fire debris, but is no longer being produced, therefore, use of an alternative container is necessary. There are several nylon bags being marketed now for containing fire debris. This paper will compare two of these nylon bags, Grand River and Sirchie, to Kapak FireDebrisPAK™ for possible interferences, contamination and loss.

Benzylamines: The New Meth "Look-A-like"

Ramona M. Sanderson

Forensic Chemist, U.S. Department of Justice, Drug Enforcement Administration, Southwest Laboratory

In early 2007, the Southwest Laboratory identified benzylamines in exhibits submitted for analysis. The frequency of benzylamine exhibits increased by the year's end. In all such cases, the original submissions indicated that the exhibits were suspected to contain methamphetamine. The benzylamines identified were: N-methylbenzylamine HCl, N-ethylbenzylamine HCl, and N-isopropylbenzylamine HCl. In each case, the respective benzylamine was identified either in combination with both methamphetamine HCl and DMSO₂ or unadulterated. The exhibits consisted of crystalline shards lending to the appearance of 'ice' methamphetamine. The analysis and comparison of N-Methylbenzylamine HCl, N-Ethylbenzylamine HCl, and N-Isopropylbenzylamine HCl by GC-MS, FTIR-ATR are presented to aid in the separation and identification of these substances.

Forensic Tales

Dana Kollmann

Assistant Professor, Towson University and a Consultant for TRC Garrow Associates

Dana's Sicilian mother made sure she was prepared for any unfortunate event that might await her. She always wore clean underwear in case she was hit by a bus, carried red ribbons in her pockets to ward off evil spirits, had fresh onions on hand to shove in her socks in the event of a fever, and knew that placing a hat on a bed or forgetting to kiss moldy bread before throwing it away were recipes for disaster. But, the day a dead man's hand wound up in Dana's mouth was the day she realized that in forensics, anything can happen – red ribbons or not! Sit back and laugh as Dana Kollmann talks about the unique way that she wound up in the field of forensics and the rather bizarre situations she encountered as she melded her interests in archaeology, physical anthropology, and crime scene investigation.

Blood/Breath Alcohol Concentration Ratios in Practice

Lisa Merzowski

Criminalist, San Diego Police Dept. Forensic Chemistry Unit

Those in the contentious world of forensic alcohol analysis and expert witness testimony have heard many arguments about the ratio of a blood alcohol result compared to a breath alcohol result. A myriad of scientific articles explain, discuss, and debate what the true ratio of alcohol in the blood versus the breath really is. What is agreed upon is that the ratio of alcohol in a person's breath, compared to the venous blood

in a person's body, changes depending on the stage of alcohol absorption. This issue will not be debated here. The purpose of this presentation is to compare the blood and breath alcohol results from driving under the influence (DUI) arrests made in San Diego over the past three years. These arrested subjects gave either a single or duplicate breath sample on an Intoxilyzer 8000 breath testing instrument followed by a venous whole blood sample that was later tested by heated headspace gas chromatography. These dual subject results give an indication as to what the relationship of blood and breath alcohol concentrations are in drinking drivers in the city of San Diego. This data shows what San Diego's average DUI blood and breath alcohol concentrations are compared to worldwide averages. In addition, this data allows some conclusions to be drawn about the phase of alcohol absorption typically observed in subjects arrested for DUI.

Applications of Ignitable Liquid Analysis to Problems in Toxicology

Wayne Moorehead

Orange County Sheriff-Coroner Department

Methodologies used for capturing and analyzing burned debris for ignitable liquids can be applied to particular cases of toxicological interest. Like burned debris, matrix problems from various samples can complicate normal extraction efficiencies.

Abuse of inhalants and attempts at suicide by consuming volatile petroleum products, presents difficulties in recovery by liquid extraction and solid phase extraction methods. The typically non-polar hydrocarbon structures of petroleum chemicals and their various synthesis products are similar to the fats and other metabolic products of the human matrix that can interfere with the extractions.

By using the static adsorption-elution method borrowed from ignitable liquid recovery in fire debris analysis, the majority of the matrix materials can be separated from the compound(s) of interest. Using different strategies for analysis can improve detection of the volatile components. Additionally, one case of petroleum consumption suicide will be discussed.

High Candy

Janine Miller

San Diego Police Department Crime Laboratory

Medical marijuana was legalized in California under the Compassionate Use Act of 1996. Fueled by a newly-defined consumer base, companies have responded by manufacturing a variety of marijuana-laced products. The San Diego Police Department Crime Laboratory received such items seized from an owner of a medical marijuana storefront. Unusual items included butters, jams, syrups, honey, rice treats, and candy bars. The items were packaged to visibly mimic mainstream products. Although seemingly obvious to assume the cannabinoid content of these items by the marijuana leaf logo and "for medical use only" label, the crime laboratory was called upon to confirm this assumption. With this goal, the SDPD forensic chemistry unit has validated an extraction method, developed by the Armed Forces Institute of Pathology, to isolate cannabinoids from complex food products in a form suitable for GC-MS analysis. This presentation will provide an overview of some of the unusual items in this case and the efficacy of the extraction methodology.

Sampling Methods for Qualitative Analysis: A Summary of Arbitrary and Statistical Approaches

Amy C. McElroy

San Diego Police Department Crime Laboratory

Forensic analysis of narcotics is a straightforward process when only one item is impounded. Impounds containing a large number of items (i.e. multiple bindles, many different colored balloons with unknown material, several bricks, or thousands of tablets) require us to make a decision about the appropriate number of samples to examine. How many do we need to sample in order to be confident we have an accurate representation of that population? In order to become ISO accredited, a sampling plan must be developed to answer this question. In this presentation, both non-statistical and statistical approaches will be reviewed with practical applications, and the current approach the San Diego Police Department Crime Laboratory uses for narcotics analysis will be discussed.

Stable Isotope Ratios in Human Hair are Related to Geography

James Ehleringer

Department of Biology, Univ. of Utah, Salt Lake City, UT 84112

Stable isotope analysis is a valuable laboratory measurement that complements other analytical techniques used in forensic science. Its value is in providing information that relates to the relatedness of two pieces of evidence as well as to the geographical origins of biological materials. Here we present a model to predict the recent geographical travel histories of humans based on analyses of the stable isotope composition of their scalp hair. This region-of-origin model incorporates hydrogen and oxygen atoms in hair protein to predict the hydrogen and oxygen isotope ratio values of scalp hair. We evaluated model predictions with analyses of human hair from 65 cities in 18 states across the USA. The model explained more than 85% of the observed variation. Based on the geographical distributions of the isotope ratios of tap waters, we constructed maps of the expected average hydrogen and oxygen isotope ratios in human hair across the contiguous 48 states of the USA. These maps revealed regions across which stable isotope values of human hair were isotopically distinct. We apply this model to three different law-enforcement investigations directed at determining the regions-of-origin of these unidentified murder victims.

World's Worst Microscopy

Professor Brian Ford

World-renowned microscopist, lecturer, broadcaster, and publisher.

Prepare to be horrified by some appalling bad practice in the world of microscopy. Massive mistakes on television, confusion in the press, errors by people who should know better. Brian has been presenting an annual summary of 'world's worst microscopy' at the Inter Micro meeting each year and today we get the overview. Steel yourself, and bring tissues for your tears of sheer amusement.

Variation in Developmental Time for Geographically Distinct Populations of the Common Green Bottle Fly, *Lucilia sericata* (Meigen)

Meagan B. Gallagher

Forensic Science Graduate Group, University of California at Davis

Time between death and discovery of remains, or, post-mortem interval (PMI), can be assessed using blowfly maggot age. Female flies rapidly lay eggs on decedents following death; these eggs and the maggots that hatch from them develop more rapidly as temperature increases. Where development temperature is known, age of maggots, as determined by maggot length or developmental stage, estimates the period of time a decedent has been dead. Forensic entomologists around the world rely on published, species-specific development tables to make these PMI estimations.

We determined if three regionally collected populations of the same blowfly species, *Lucilia sericata* (Meigen), develop at different rates by rearing them in a common garden experiment. Using post-feeding wandering as an endpoint, we measured the time for development for each population at 16°C, 26°C, and 36°C. For the 16°C trial, the time measurement started at hatch, while for the higher temperatures, the experiment began at oviposition. The three populations exhibited differences in developmental times within each temperature treatment. This study demonstrates the importance of constructing local population-specific developmental tables when estimating larval age to determine post-mortem interval.

Forensic Soil Comparisons by Color, Particle Size Distribution, and HPLC Analysis: An Exploratory Study

Duane Mauzey, MS, D-ABC, Adjunct Instructor, San Diego Forensic Science Program, National University, San Diego

Forensic soil analysis has traditionally focused on mineralogical identification as a means of comparing and contrasting samples collected in the course of criminal investigations. Various inorganic and physical analysis techniques have been employed in crime labs for many years, in order to evaluate mineralogical content. The organic components of soil have largely been ignored up to this point as a potential source for further sample characterization. This study explores what, if any, additional information can be obtained from a soil sample by extracting and analyzing its organic components via high performance liquid chromatography (HPLC). A comparison was made between the ability of two traditional techniques (Munsell color classification and particle size distribution) and HPLC analysis to differentiate between soil samples collected from the sides of eight Los Angeles area freeways. In total, ninety-seven samples were collected, analyzed and compared. The HPLC chromatograms were converted to numerical (x,y) values so that correlation matrices could be utilized in order to quantify any differences in the analytical power of the three methods. Following the creation of correlation matrices for all three data sets, HPLC analysis of organics was found to have great potential for more effectively differentiating sampling locations than Munsell color comparison or particle size distribution.

Measuring the Impact of SFPD DNA Casework

Matthew Gabriel, MFS

San Francisco Police Department Forensic Services Division

The creation of the national DNA Databank has had a tremendous impact on solving violent crimes within the country. The San Francisco Police Department, which serves a City and County population of ~775,000 residents, receives a small percentage (~5%) of the total number of DNA Cold Hits within California. To date, nearly 200 Cold Hits have been obtained for SFPD investigations dating from 1968 through 2008 for cases assigned to many of the details within SFPD Investigations Bureau (including Homicide, Sex Crimes, Burglary, Robbery, Gang Task Force, Juvenile, and others). Of these 200 Cold Hits, a number of individuals have been linked to two or more violent crimes (primarily in cases related to sexual assaults) through DNA testing alone, and interstate matches have been obtained with Oregon, Arizona, Ohio and several other states. Currently, unsolved homicide cases result in offender hits at a rate of one in every four DNA profiles uploaded.

With the knowledge gained from prior DNA casework testing, more recent DNA programs including (1) Additional Sexual Assault Evidence (ASAP) CAL-DOJ consortium grant in partnership with SFPD and other local CA agencies, (2) an SFPD high-throughput property crimes section, and (3) contact DNA testing in felony gun possession cases for FBI Trigger Lock and/or local prosecution, focus heavily on case and/or evidence sample prioritization to effectively utilize staff resources and maximize the benefits of the DNA Databank. The recent creation of a DNA Cold Case Unit, which includes members of the Crime Laboratory, SFPD Investigations, and SFDA's Office, has also allowed a more effective and strategic case approach to addressing probative DNA Cold Hits. Many of the benefits and challenges presented by increasing numbers of DNA Cold Hits and subsequent Cold Case tracking, as well as mechanisms for data and information sharing of these investigative leads, increase the need for effective Cold Case management at the city and county level.

From ABO to STRs: The Rickieann Blake Homicide

Annette Peer

San Diego Police Department Crime Laboratory

On April 11, 1986, at 2210 hours, a passing motorist discovered the body of a fourteen year old Rickieann Blake in the roadway of an off-ramp from the 1-15 freeway in the city of San Diego. Rickie had been reported missing from the family home, to the Chula Vista Police Department at 0500 hours on April 11, 1986. She was last seen alive at 2300 hours on April 10 by her sister, watching TV. in her residence. This homicide went unsolved for 17 years. This presentation details the unusual circumstances surrounding Rickie's death, and chronicles a case that went cold four times, but was never forgotten.

Resolving Extremely Commingled Skeletal Remains from the Korean War Through Mitochondrial DNA Testing

Jamie Steinitz, MFS

Armed Forces DNA Identification Laboratory, Rockville, Maryland

One of the primary missions of the Armed Forces DNA Identification Laboratory (AFDIL) mitochondrial DNA section is to aid the Joint POW/MIA Accounting Command-Central Identification Laboratory (JPAC-CIL) in the identification of missing service members from previous U.S. military conflicts, including World War II, the Korean War, and the

Vietnam conflict. While all of these encounters were characterized by large numbers of commingled remains, recoveries from the Korean War, which took place from 1950-1953, have been particularly challenging in presenting multi-victim cases that are difficult to separate into individuals.

The Korean War resulted in over 30,000 American casualties and approximately 8,000 of that number are still unaccounted for. Between 1990 and 1994, the Democratic People's Republic of Korea (DPRK) unilaterally returned 208 caskets of skeletal remains to the United States. These caskets are referred to as the K208.

This presentation will focus on the AFDIL's commitment to the mitochondrial DNA testing of the K208. New technologies targeting autosomal DNA in an effort to aid the identification process will also be discussed. AFDIL has processed a large number of these skeletal elements already, and mitochondrial DNA has confirmed what JPAC-CIL anthropologists already suspected; a majority of the caskets, purported to contain the remains of a single soldier, actually contain the skeletal remains of many individuals. After mitochondrial DNA testing is performed, the anthropologists at the JPAC-CIL segregate each collection of remains into potential individuals.

Simultaneously, maternal references are collected and tested for comparison to the mitochondrial DNA profiles generated from the commingled remains. Comparisons are conducted using AFDIL's bioinformatics system, LISA (Laboratory Information Systems Applications).

To date, the AFDIL mitochondrial database contains references for over 59.3% of those missing from the Korean War. The identification of the K208 commingled remains continues to be a priority mission for the AFDIL and the use of mitochondrial DNA testing results in successful leads for many of these cases. It is our hope that the use of mitochondrial DNA and future developing technologies will ultimately result in the re-association and identification of missing soldiers so that they may be returned home to their families.

Environmental Forensic Microscopy

Richard S. Brown, M.S., DABC

Executive Director, MVA Scientific Consultants

Environmental forensic microscopy is a term used to describe the application of microscopical methods of analysis to the classification of particles that have been released into the environment to determine the source or origin of the particulate. The techniques used by the environmental forensic microscopist are identical to those used by the trace evidence examiner who uses different types of microscopy to characterize and identify particles and unknown materials. A combination of techniques is used, including polarized light microscopy (PLM), scanning electron microscopy-energy dispersive x-ray spectrometry (SEM-EDS), Fourier transform infrared microspectroscopy (FTIR) and transmission electron microscopy-energy dispersive x-ray spectrometry with selected area electron diffraction (AEM). Case examples demonstrate the strengths and weaknesses of the different microscopes when applied to World Trade Center (WTC) dust, identification of building materials, "exploding" portable air field components, and nuisance dust.

Update on the Development of a Searchable Forensic Soil Database (SQUID)

Marianne Stam

California Dept. of Justice, Riverside, Criminalistics Laboratory

This presentation discusses progress in the development of the Soil Query Information Database (SQUID), a searchable forensic soil database. Sample collection, statistical considerations, the GIS based database, and the preliminary evaluation of different soil characteristics that may be the most useful as discriminatory tools will be presented.

Currently, at least 300 soil samples have been collected within the 36 square mile study area. Seventy-five of these were collected from a 10 square mile swath of the southwest corner of the study area, and approximately fifty were collected from a 6 square mile area in the northeast part of the study region.

The 90 to 180 micron and the less than 90 micron fractions of the southwest samples have been evaluated for their color, and the whole samples for their magnetic susceptibility. Preliminary examinations of the data suggest that these two easily obtainable features may be important for the discrimination of soil samples in this area.

The northeast section of the study area contains multiple alluvial units derived from differing parent material. Because of the high variability within these units, attributes such as magnetic susceptibility and color may not be suitable for discriminating between them. Consequently, the samples collected here will also be examined for their heavy mineral content and the ability of these minerals to distinguish between the different alluvial soils.

Discriminate analysis is being applied to the soil color, magnetic susceptibility, and trace mineral data to differentiate the geologic and soil units. A GIS map database is currently under construction to exhibit spatial variability. It is comprised of multiple layers including the geologic map units and their attributes. Attributes such as color, trace minerals, magnetic susceptibility, particle size, and heavy mineral separations will contribute individual GIS layers. This study will serve as a pilot project that can guide the development of a greater statewide or regional system.

Challenges Faced by the Tijuana Crime Laboratory

Fernando Zuniga Chiquette

Tijuana Crime Laboratory

The Tijuana Crime Laboratory is the state crime laboratory of Baja California and performs analyses for the jurisdictions of the Baja California cities of Tijuana, Mexicali, Ensenada, and Tecate. The Tijuana Crime Laboratory also assists the states of South Baja California, Sinaloa, and Sonora. The laboratory performs general forensic analyses such as toxicology, narcotics, and substance identifications. Since 2002, the Tijuana Crime Laboratory has developed its capacity for DNA analysis. The DNA unit performs determinations in homicide, sexual assault, kidnapping, and human identifications. The Tijuana Crime Laboratory is still expanding and faces many challenges. The various challenges faced by the Tijuana Crime Laboratory will be presented along with interesting cases from south of the border.

The Identification of Human Remains from a 1992 Helicopter Crash Site in Baja California, Mexico.

Shawn Montpetit

San Diego Police Department

In 1992, the Department of Urban Development and Ecology of the Baja California government commissioned a covert census in an attempt to politically position themselves for a substantial budget increase. A prominent Texas conservationist agreed to perform the census and traveled to Baja California to begin work. The conservationist, named Lloyd Kolbe and father to Darren Kolbe a noted singer/songwriter, left his campsite in the mountains of Baja California and was never heard from again. His fate and whereabouts were a mystery for 14 years when, in September of 2006, a helicopter crash site was found in the Calamajué Mountains of Baja California. DNA analysis performed at the San Diego Police Crime Laboratory was able to answer some of the questions surrounding the helicopter crash. Yet, some questions still remain unanswered. This presentation will describe the circumstances surrounding the census and the analysis of the remains from the crash site including how Miniflter™, a new DNA typing kit designed for challenged samples, was used to help identify the remains from this 14 year old crash site.

Photoshop Applications to Bloodstain Pattern Analysis

Carolyn Gannett

San Diego Sheriff's Crime Lab

Some applications of Photoshop to bloodstain pattern analysis will be presented. Included will be: overlaying of luminol or fluorescein images onto flash images; spatter mapping; flattening images taken at an angle; and enhancement of images to improve visualization of blood in photos.

Quest for Conviction—Words, Reality, and the Dando Shooting

Professor Brian Ford

World-renowned microscopist, lecturer, broadcaster, and publisher.

The celebrated British television presenter Jill Dando was shot dead outside her London residence. After forensic and legal investigation and a widely-reported trial, a suspect was gaoled (jailed) for the murder. A review of the evidence shows how slight it truly is. There are singular difficulties posed for lay members of a jury in interpreting forensic science, and this case shows that the force of words - rather than the nature of the evidence - can hold sway in producing a verdict that is, at best, highly questionable.

Effects of Distance on the Deposition of GSR

Richard Patron

Forensic Science Services, Orange County Sheriff-Coroner

This study was conducted to determine the distance at which gunshot residue (GSR) may be deposited on individuals who have been shot or shot at. Two 9 mm Beretta model 92FS semi-automatic pistols were used to fire control and experimental ammunition. The control ammunition, Fiocchi CAL. 9 mm Luger 115 gr. FMJ, produced three component particles containing lead (Pb), barium (Ba), and antimony (Sb).

The experimental ammo, Sellier & Bellot 9mm Luger 115 gr. FMJ has a primer cap with a tin foil liner, and produced particles containing lead (Pb), barium (Ba), antimony (Sb), and tin (Sn)(experimental particles). Eight adhesive discs were mounted to each of the twelve cardboard targets. Control and experimental shots were taken at 10, 15, 20, 30, 40, and 50 feet from the muzzle of the firearm, and a ninth disc was used to sample the area around the bullet impact site. One hundred and eight discs were collected and analyzed by automated scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDS). Twenty-seven 20, 14, 16, 11 and 4 experimental particles were detected at 10, 15, 20, 30, 40, and 50 feet respectively. The results of this study indicate that GSR may be deposited on individuals who have been shot, or shot at, from a distance of up to at least 50 feet from the muzzle of the firearm. Therefore, positive GSR results from shooting victims should be interpreted with caution.

CSI: Dipteran Genomics

Aaron Tarone

Univ. of Southern Cal., Molecular and Computational Biology

Forensic entomology can be used to help estimate a postmortem interval (PMI) by taking advantage of 1) the rapid colonization of a body by blow flies and 2) the reliable development of insects. Though accurate, such estimates can be imprecise when based on older developmental stages, which have longer durations. Body size can be used to refine PMI estimates based on blow fly evidence; however, this trait is not useful for predicting the ages of the least precise stages of blow fly development. Two fields of research can be relied upon to improve PMI estimates: molecular and quantitative genetics. Current research uses the expression levels of developmentally regulated genes to assess blow fly ages. These data indicate that gene expression can significantly improve the precision of an age estimate. As PMI predictions become more precise however, work must also be done to improve their accuracy, which can be achieved through a quantitative genetic analysis of blow fly development rate. Finally, future directions of research, dependent on massively parallel signature sequencing, offer the chance to produce genome-level analyses of blow fly gene expression, potentially enabling a much more detailed understanding of blow fly development than is currently understood.

After School Activity: Murder in Middle America

Bill Wilson

Microtrace Scientific Laboratories

A teenage boy was stalked and brutally killed after he returned home from school one fall day in 1998. A suspect was arrested and charged with the crime. The police believed that the crime occurred one way; we were brought in to evaluate the case and drew different conclusions based upon our reconstruction. A protracted legal battle ensued regarding admissibility of key evidential items pertinent to the case. After four years, the issues were resolved and the case went to trial. Based on microscopical evidence and bloodstain pattern interpretation, the suspect was convicted. This presentation will address key elements of the crime and demonstrate with graphic photographs how the crime was actually committed.

DNA Stabilization During Storage and Transport

Steven Lee

Biomatrix, Inc.

DNA sample storage is of paramount importance in forensic, epidemiological, clinical, and genetic laboratories. In forensic DNA laboratories there is always the possibility that cases may be re-opened and any stored DNA sample may need to be re-tested. This is especially important when the amount of DNA is limited. Forensic evidence samples such as hairs, bones, teeth and sexual assault evidence may contain less than 100 pg of DNA. In addition to sample quantity, degradation, exposure to UV, storage buffers and temperature of storage may lead to differences in the ability to recover and re-test the sample. Utilization of the most efficient storage method is critical in the ability to re-test samples. Low yields or loss of DNA may even preclude or diminish the ability to test crime scene samples using current STR methods. Optimal storage of DNA extracts is pivotal for downstream analysis.

Biomatrix, Inc. has developed a technology for the stable, dry storage of biological materials at ambient temperatures. SampleMatrix™ (SM), was derived from studies on extremophile organisms, some of which may be reduced to anhydrous conditions, a state known as anhydrobiosis. SM may protect DNA by forming a protective sheath around DNA, forming a barrier to degradation and loss.

An international consortium of leading forensic, academic and government laboratories has been formed to evaluate SM as an alternative to conventional freezer storage. In one study, the quality of control DNA (K562) recovered from room temperature dry storage in SM at various time intervals is being assessed. Recovered samples will be quantified using qPCR and agarose gel electrophoreses. Preliminary results indicate that the integrity of DNA samples stored dry in SM is maintained over 4-6 months as compared to samples stored in standard microfuge tubes. Samples stored in SM were amplified using a variety of STR multiplexes including Powerplex 16, Identifier and Profiler Plus. No detectable inhibition to PCR amplification of the STR multiplexes was observed even in the presence of high concentrations of the SM. DNA samples stabilized in SM were protected from fluctuating temperatures and humidity (up to 51.60C and 73% RH) during continuous shipment in a non-insulated shipping container for 208 days. Preliminary data also show that artificially degraded DNA was stabilized in SM at room temperature.

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Unexpected Christmas Tree Staining Results: Problem and Solution

Jennifer Riedel

Oregon State Police, Springfield Forensic Lab., Springfield, OR

Background

The Christmas Tree stain is used to visualize spermatozoa (and other cell types) in biological smears and consists of two dyes used sequentially: nuclear fast red (NFR) and picroindigocarmine (PIC). When the stain works properly, spermatozoa heads stain a bright pink while the cytoplasm of vaginal and oral epithelial cells stain blue/green with gray/mauve nuclei. In the late 1960s, this stain combination became a standard forensic procedure to visualize spermatozoa because of the contrast of the bright pink sperm against a field of blue/green epithelial cells [1].

On two occasions, we observed unusual results when using the Christmas Tree stain at two different Oregon State Police (OSP) Forensic Service Division laboratories. The reagent was staining the epithelial cell cytoplasm yellow to red instead of the expected green to blue-green color. This diminished the contrast between the sperm heads and the epithelial cells making it difficult to locate spermatozoa. The problem was isolated to the NFR solution, not the PIC solution.

History

Christmas Tree stain is a popular stain for the microscopic examination of spermatozoa. It is also known as Oppitz's stain because Oppitz originally developed the stain for forensic use in 1969, with his published article being translated in 1972 [1,2]. It is a differential stain consisting of two components: nuclear fast red (NFR) and picroindigocarmine (PIC). Similar differential staining procedures using carmine, basic fuchsin, or hematoxylin along with PIC have been in use since the late 1800s [3].

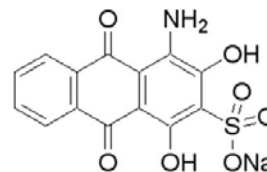
The nomenclature of stains and dyes has historically been confusing because different names were used to describe the same dye and different dyes had similar-sounding names. In 1923-24, the English Society of Dyers and Colourists developed a classification system to solve this problem and assigned a single numerical number to each dye, regardless of its common name(s). This system was revised in 1956 and the Colour Index number (C.I. No.) or (C.I.) remains a current way to identify a particular dye [3].

A second method to identify dyes is by their CAS Registry Number. A CAS number is a unique identifier designated to one substance. Currently there are over 27 million CAS Registry Numbers for organic and inorganic substances. The CAS Registry is operated by the American Chemical Society [4].

Nuclear fast red is also known by the common names of Kernechtrot and Calcium Red. Its C.I. number is 60760 and its CAS number is 6409-77-4. Indigocarmine is also known as Indigotine 1, 1a and C.I. Acid Blue 74. Its C.I. number is 73015 and its CAS number is 860-22-0. In use, indigocarmine is commonly dissolved in aqueous picric acid, causing the resulting stain to be called, "picroindigocarmine" [3,5,6].

Biological dyes are classified and grouped by similarities in chemical structure (e.g. nitroso dyes, azo dyes, diazonium salts, xanthenes and acridines, etc.); NFR is an aminoan-

thraquinone dye [3]. It is a nuclear dye (e.g. stains nuclei) and works in the presence of a metallic mordant, typically aluminum. A mordant is a material that increases the selectivity and/or effectiveness of the dye; without the mordant the dye may not work [1, 3, 6]. Without the addition of the mordant (aluminum sulfate) to solution, NFR is a dye for calcium deposits [1]. The structure of NFR is as follows with a molecular weight of 357.276 and chemical formula of $C_{14}H_8NO_7S Na$.



Like NFR, indigocarmine is a polycyclic dye and is considered a phenanthroline. It is sometimes used as a plasma stain and, in solution with aqueous picric acid (PIC), it is a collagen or connective tissue stain [3,6].

NFR is a relatively simple reagent, consisting of NFR, aluminum sulfate, and water. Aluminum sulfate exists in anhydrous form (CAS 10043-01-3) and in various levels of hydration with the readily available and affordable octadecahydrate form $[Al_2(SO_4)_3 \cdot 18H_2O]$ (CAS 7784-31-8). Aluminum sulfate is hygroscopic and therefore absorbs water from the atmosphere [7]. Recipes for NFR do not specify what level of hydration of aluminum sulfate is needed, or whether that level of hydration is related to the success of the reagent. The reagent is prepared with hot water or is heated to facilitate the dye dissolving into solution.

Purpose

A series of experiments was conducted to identify the reason NFR was staining epithelial cell cytoplasm too red and not green as expected.

Procedures

In the Oregon State Police Forensic Laboratory, slides are stained with NFR for at least 10 minutes and then rinsed with water. Then PIC is added to the slide and allowed to stain for 10-15 seconds, and then a final ethanol rinse follows before mounting with a clear mounting medium and cover slip. Edwin Jones of the Ventura County Sheriff's Office Crime Laboratory inferred that this timing sequence is common in other labs [8].

However, Edwin Jones experimented in the early 1990s with a different staining time sequence. He concluded that greater contrast could be achieved between the green background (epithelial cells) and the pink spermatozoa by decreasing the amount of time the NFR was allowed to stain the specimen and increasing the amount of time PIC was in contact with the specimen. He proposed a 1 minute / 1 minute time sequence for NFR and PIC. This sequence continues to be used today in his laboratory [1,7].

OSP Division Procedures Manual

Allow NFR to stain for 10 minutes. Rinse with DI water. Add picroindigocarmine green (PIC) to slide for 15 seconds. Rinse with ethanol.

Modified Staining Procedure per Edwin Jones

Allow NFR to stain for 1 minute. Rinse with DI water.
Add PIC to slide for 1 minute. Rinse with ethanol.

Eleven different NFR reagents were prepared, varying a single variable each time. Each NFR reagent was stained per OSP Procedures Manual timing sequence as well as with Edwin Jones' timing sequence. Exact reagent compositions, lot numbers, etc. along with tabulated results are available upon request but were omitted to save space.

Discussion

The following variables were examined and did not correct the problem of epithelial cell cytoplasm staining red:

- Preparing the NFR reagent with shorter heating times versus heating overnight
- Increasing the amount of aluminum sulfate in the reagent
- Decreasing the amount of aluminum sulfate in the reagent
- Altering the hydration level of the aluminum sulfate: $\text{Al}_2(\text{SO}_4)_3$ versus $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$
- Whether the source of the epithelial cells is from the vagina or the mouth
- Whether the source of the epithelial cells is from different individuals
- Changing the distilled water source
- Purchasing new powder dye, suggesting that age or expiration of NFR may have an effect.

Using Edwin Jones' timing sequence partially corrected the problem, likely because it didn't allow the red NFR stain to be in contact with the epithelial cells for as long. However, using a set of Christmas Tree stain reagents that did not produce abnormally red cytoplasm in combination with Ed Jones' timing sequence resulted in weakly stained (light pink) spermatozoa.

The only factor that fully corrected the problem was altering the time elapsed from when an NFR reagent was made to when it was used. Several months after the eleven reagents were made, their physical appearance changed from a homogenous, clear, bright pink color to a duller and darker pink color with visible sediment. The solutions were stored at room temperature. More importantly, even with agitation, the older reagents did not dye cytoplasm red when they were subjected to staining times greater than a minute. In fact, with time, the solutions behaved as expected and the OSP Procedures timing sequence produced acceptable and expected results.

Conclusions

The results suggest that when the NFR reagent is first made, it is a super-saturated solution. When it is used during this time to stain biological smears, epithelial cells stained too red with longer staining times, diminishing the contrast that makes the Christmas Tree Stain the stain of choice for microscopic spermatozoa searches. Within several months, the same reagent yielded acceptable results (green epithelial cytoplasm) with increased staining times.

Recommendations

Three recommendations to ensure quality control with Christmas Tree Stain procedures include:

1. Allow a variable time that NFR stains a biological smear. It is recommended that a minimum of 1 minute to over 10 minutes be permitted to accommodate the varying degree of saturation a new NFR solution may have in its first few months.
2. Establish a routine whereby the Christmas Tree Stain reagents are checked at least monthly using a known smear of both epithelial cells and spermatozoa. Based on the timing sequence and resulting appearance of this monthly check, the analyst can determine what the best timing is for case samples during that month. This check is especially critical in the first months following a new NFR reagent preparation.
3. Last, allow the ability for the PIC to stain for at least a minute before rinsing to increase contrast.

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- [5] <http://www.sigmaldrich.com>
- [6] Lillie, R. D., *Histopathologic Technic and Practical Histochemistry*, The Blakiston Company, Inc., New York, 1954.
- [7] <http://www.intox.org/databank/documents/chemical/alumsuf/cie171.htm>
- [8] Personal communication with Edwin Jones on March 22, 2006.

Amendments to *JD Franz, Inc. CAC-CMS Acceptance Survey Report*

Dated September 27, 2007

(Posted on www.cacnews.org)

In January of 2008, it was brought to the attention of the CAC Northern Firearms Study Group CMS Acceptance Survey Committee that data in Table 21 of the JD Franz, Inc. CAC-CMS Acceptance Survey Report dated September 27, 2007 that was posted on the *CACNews* website appeared to be incorrect. The committee reviewed this table and found that it was indeed incorrect. The committee then brought this concern to the attention of JD Franz, Inc. with a request to review Table 21 and the remainder of the report for any additional errors and/or oversights and to issue an amended report with any necessary corrections. JD Franz, Inc. reviewed the report and determined that the Table 21 was inaccurate because data from the previous table had been inadvertently repeated in Table 21. After completing the review of the remainder of the report, JD Franz Inc. identified another three areas which required clarification or amendment. JD Franz Inc. prepared an amended report with revisions occurring on the first two un-numbered pages and pages i, 5, 6, 17, 19, 21, 26 and B-4. These revised pages all reflect the revision date of February 20, 2008 with the original report date of September 27, 2007 remaining the same. Appendix D with an explanation of each amendment was also added to this amended report.

The committee wishes to emphasize that the revisions/amendments provided by JD Franz, Inc. do not change the conclusions discussed in the original report dated September 27, 2007. In this regard, the committee quotes a portion of the JD Franz, Inc. amended report as follows:

"A discussion of all four amendments to the report follows.

Perhaps most important in this regard is the fact that none of the amendments to the report change our fundamental findings or our conclusions. We stand by the following summary of our conclusions based on the results of this research:[1]

- The CMS method of firearm and toolmark identification remains controversial
- The majority of examiners accept the method as being valid, and two in five use it as an extension of pattern matching
- Court challenges to the use of CMS have reportedly been rare, and feedback from the courts has been predominantly positive
- It appears likely that as more examiners read about the technique and receive training in it, its use will increase
- As knowledge and understanding of the technique continue to spread, acceptance is likely to grow as well"

The committee encourages any interested parties to download the amended report and review it for his/her own information. This amended report, still baring the original date of September 27, 2007, will have the revision date of February 20, 2008 as a footnote at the bottom of the cover page.

Respectfully Submitted,
CAC Northern Firearms Study Group
CMS Acceptance Survey Committee Members
Chris Coleman, Bruce Moran, John Murdock

A book was recommended by a friend. He reads quite a bit but recommends few. So when the recommendation was repeated, not once but twice, I decided to pick it up. The first chapter alone was worth the price of admission. In his book *Uprising*, Erwin McManus discussed the concept of being a voice as opposed to being an echo. Being this is an issue dedicated to the founders of the California Association of Criminalists (CAC), I thought it would be an opportune time to discuss the voice—echo concept and how it applies to forensic science and life in general.

First, let's examine our analogy. A voice is what causes the movement of sound waves. The voice is the originating source and as such will have the substance for the expressed content. The echo is the repetition of sound by reflection of the sound waves coming from the originating voice. I am certain some are picturing a guy in the Alps yodeling away and listening as the sound waves reflect back. We can hear the content but it sounds different—it sounds hollow and empty. This is because in fact it is hollow and empty. It lacks both substance and the originating power. In fact, it is repetitive almost as if trying to convince us of its substance when, in actuality, there is none to be found.

In the simplest form, as individuals we are either a voice or an echo. We might think that a number of people could not be so discretely categorized – that they might operate as an echo in one situation and a voice in another. My personal belief is that the character traits necessary to be an effective voice are actually incompatible with being an echo in any environment. A true voice will tolerate being an echo for only so long before a choice is made; and it will mean either a change in the environment or leaving the environment all together.

There are three traits that characterize a true voice, one that will extend into generations and of which legacies are born. These traits include humility, integrity and courage. Keep in mind that though they will be discussed individually, a balance of all three has to be achieved. Without it, there will be an appearance of some of these traits but for all the wrong reasons.

What does it take to become an echo? Nothing. If we want to be an echo, then simply do nothing. Do nothing except that which is expedient, self-serving, and self-gratifying.

VOICES AND ECHOES

Essay by Ron Nichols



The first is humility. Humility as used here is not what may come to mind for many. In his book, McManus correlates humility with self-awareness. It is not self-deprecating or denial of inherent goodness or talents. An unknown author has remarked that humility is not thinking less of one's self it is thinking less about one's self. Humility is truly other-centered and not self-centered. In this discussion, it would be good to briefly discuss false humility. This has an appearance of humility but, it is only superficial. John Bevere has said false humility is knowing and saying the right thing to say about yourself even though you truly believe something different.

The second trait is integrity. In a prior article (*CACNews*, Spring 1998, pp. 10-12) I discussed that even with good intentions, we can build a house that appears sound but upon closer inspection has a faulty foundation. Being a homeowner, I know how expensive and time-consuming it can be to repair a faulty foundation. At the same time, while a fresh coat of paint may help it look nicer, it is not going to be any more sound than when we started. I also discussed how, depending on what definition someone chose to use for their purpose, integrity can have many different looks. Just because something adhered to someone's code of ethics or behavior does not mean that they truly had integrity. Quoting the summary, "It does not take much effort to adhere to 'a code or standard of values' but it does take a tremendous amount of effort and courage to be 'unimpaired', 'undivided', and 'whole'." Integrity simply means unimpaired, undivided and whole. What you see is what you get.

The third character trait is courage. A courageous individual is one who is more concerned with doing what is right than by the consequences of right behavior. Immediately, one may identify this as arrogant behavior and indeed it may be. If there is no attempt to serve but simply make a point of doing what is right, "come hell or high water," then such an attitude is pretty arrogant.

However, what distinguishes arrogance from true courage is that a courageous individual will not only make the right decision but also serve by doing his or her best to mitigate the consequences of those right decisions. What does this service look like? Well, first it is bathed in humility and integrity. It is bathed in self-awareness and self-assessment. "What are my motivations?" "Where are my limitations and who else can help bring balance to those?" The person who calls for change without looking first at his or her own foundation will be soon revealed as a hypocrite, one who calls others to take the plunge but not willing to look at one self. It involves a willingness to take a good, hard, long look at our own basic set of assumptions before asking others to explore theirs. Finally, it involves transparency and self-disclosure. "I do not have all the answers but will offer help in what I can."

When thinking of voices, what comes to mind is that group of individuals we refer to as our founders, so well portrayed on the front cover of this issue. These men comprised the voice of the early movement of criminalistics in California. Yet, it did not end there. Many of their students also became voices. It's true that they were not the originators but they were so able to genuinely embrace the message that they too became voices—voices with a different color painted by their own experiences whether good or bad. While the colors may be different, each of them has a substance of common core values such that when they speak it is not hollow and empty. Their voices moved sound waves and put things into motion.

The importance of these early men cannot be underestimated. Not only did they influence the next generation but that next generation influenced the following generation. That third generation is now influencing the next. I consider myself to be in that third generation of those influenced by those who founded the CAC. I was hired at Contra Costa County and my supervisor was Kathy Holmes, a forensic scientist influenced by John Davis. I later worked at Oakland Police Department, a laboratory having John Davis as its original director. Later I worked under Chuck Morton, a student of Paul Kirk's. These experiences do not even consider the students of Jack Cadman from Sacramento State I worked with or others who could trace their own roots back to Paul Kirk at Cal Berkeley. In reality, few in California can trace their roots and not find some influence of the founders in their professional history. I know personally of instances where voices are being proliferated beyond California and into the states north and east.

While the founders and those who have come after may not have exercised all three character traits in perfect harmony and balance, there was still that sense of integrity and the courage to fight for what they knew was right. They knew the importance of sound foundations and how some regulatory programs and functions could give an appearance of integrity when in actuality less of it existed than what appeared. At the same time, when humility is deficient such a quest becomes more of a push and no one likes to get pushed around. In fact, they are much more likely to push back and push back harder. Still, we can take that sense of integrity and courage of our founding fathers and bathe it in humility to take that voice that was so instrumental in the early years of forensic science and make it a still relevant voice.

It will take a tremendous amount of effort to be a voice. These character traits I discussed are not bestowed, they are built and it takes time to build them. They are built through circumstances and trials. It's kind of like exercise. If we want to be more fit, it takes purposeful work; work that is designed to stretch us beyond that with which we are comfortable. One does not simply proclaim him or her self to be a voice and therefore be a voice. One is recognized as a true voice only by others and only when they have witnessed character traits of humility, integrity and courage at work to make for a better community.

On the other hand, there is always the choice to become an echo. What does it take to become an echo? Nothing. If we want to be an echo, then simply do nothing. Do nothing except that which is expedient, self-serving, and self-gratifying. Do nothing except offer up complaints on what's wrong with the world but not look at our own biases or offer up and work at potential solutions. It takes no effort to take the path of least resistance. It takes no effort to medicate rather than to struggle and it takes no effort to be selfish as opposed to selfless. Want to be an echo? Fine—do nothing. You'll get there.

In the movie *Braveheart*, William Wallace remarked, "All men die, not all men live." Echoes are hollow and empty and before long they fade with no lasting substance. They die. On the other hand, voices live and not just for their time. Voices live into the future generations as legacies because they had substance, substance that could be embraced by those who came after. While saddened by the echoes abounding, I am thankful for the voices of those individuals responsible for founding this organization and those who have added their own unique color to that collective of voices. It is that journey with which I will throw in my lot and I hope that is your choice as well. □

that provides value and improvement to the delivery of forensic science services in California. It is essential that the opportunities afforded our community through the creation of the Task Force be used to benefit the criminal justice system as opposed to merely creating additional bureaucratic red tape. Toward this end, all members of the CAC need to be educated and aware of the activities of the Task Force.

Please take the time to read the Task Force "Vision Statement", "Mission Statement" and supporting legislation provided below and visit the Task Force web site. Educate yourself on the process so you can be a part in providing direction and input to a group that can have a significant impact on the future of forensic science in California.



Vision Statement

Providing forensic science service that is timely and of the highest possible quality is essential to the effective prosecution of criminal cases, to protecting the rights of criminal defendants, and to the safety of the citizens of California.

Mission Statement

It is the mission of the Crime Laboratory Task Force to meet the mandate of AB 1079 by reporting to the Legislature on the status of the state, county, and local crime laboratories and to make recommendations on how best to ensure the timely and effective delivery of the highest quality forensic services. To carry out this mission the Task Force will:

1. Survey government crime laboratories in order to inventory their staffing, workload, budget, major instrumentation, and organizational placement within the controlling agency;
2. Survey client agencies and other stakeholders as the operation of government crime laboratories and suggestions for improvement of forensic science services;
3. Identify through presentations and information from external subject matter experts the most appropriate means of addressing the forensic science needs of California;
4. Identify specific areas in criminal laboratory organization and management, staff and training, funding, and performance standards where improvements could be made;
5. Work as a team in an open and transparent manner to ensure that the perspectives of all stakeholders, including prosecutors, defense counsel, law enforcement, and the public are heard and considered in completing the Task Force report and recommendations;
6. Complete and submit a final report of its findings on or before July 1, 2009, as required by AB 1079.

BILL NUMBER: AB 1079 CHAPTERED
BILL TEXT

CHAPTER 405
FILED WITH SECRETARY OF STATE
OCTOBER 10, 2007
APPROVED BY GOVERNOR OCTOBER 10, 2007
PASSED THE SENATE SEPTEMBER 7, 2007
PASSED THE ASSEMBLY SEPTEMBER 11, 2007
AMENDED IN SENATE SEPTEMBER 4, 2007
AMENDED IN SENATE AUGUST 1, 2007
AMENDED IN SENATE JULY 16, 2007
AMENDED IN ASSEMBLY JUNE 1, 2007

INTRODUCED BY Assembly Member Richardson
(Principal coauthor: Senator Romero)

FEBRUARY 23, 2007

An act to add Section 11062 to the Penal Code, relating to law enforcement, and declaring the urgency thereof, to take effect immediately.

LEGISLATIVE COUNSEL'S DIGEST

AB 1079, Richardson. Crime laboratories.

Existing law requires the Department of Justice to perform duties in the investigation, detection, apprehension, and prosecution or suppression of crimes.

This bill would require the department, to establish a task force, as specified, to conduct a review of California's crime laboratory system. The task force would be required to review and make recommendations as to how best to configure, fund, and improve the delivery of state and local crime laboratory services in the future and to report its findings to the Department of Finance and specified legislative committees by July 1, 2009. The bill would also set forth related legislative findings.

This bill would declare that it is to take effect immediately as an urgency statute.

THE PEOPLE OF THE STATE OF CALIFORNIA DO
ENACT AS FOLLOWS:

SECTION 1. The Legislature finds and declares the following:

(a) There are significant questions regarding the structure, staffing, funding, and workload priorities of California's forensic analysis delivery system. There is also concern that existing law enforcement needs are not being met and that this situation will worsen if not addressed quickly.

(b) Forensic science is an increasingly vital element in the field of law enforcement. This highly specialized work covers at least 10 different specialties and is becoming more sophisticated as our scientific knowledge increases.

(c) Recruitment and retention levels of state criminalists are dwindling as demand for services increases. The state is experiencing a serious shortage of criminalists resulting in a significant backlog in unprocessed DNA samples. This problem

will get dramatically worse in 2009 when state law dramatically increases the number of persons subject to DNA testing.

(d) There are no universal standards for certification for criminalists in California nor is there a mandatory requirement that all criminal laboratories meet minimum standards. California currently has 11 Department of Justice crime laboratories providing services to approximately 40 percent of California's law enforcement agencies. The remaining law enforcement agencies are served by at least 19 local criminal laboratories that fall under the command of a district attorney, sheriff, or police chief.

(e) The creation and growth of crime laboratories in California has evolved over decades without any statewide planning, review, or coordination to maximize the capabilities and effectiveness of these critical assets.

SEC. 2. Section 11062 is added to the Penal Code, to read:

11062. (a) The Department of Justice shall establish and chair a task force to conduct a review of California's crime laboratory system.

(b) The task force shall be known as the "Crime Laboratory Review Task Force." The composition of the task force shall be comprised of a representative of each of the following entities:

(1) The Department of Justice.

(2) The California Association of Crime Laboratory Directors.

(3) The California Association of Criminalists.

(4) The International Association for Identification.

(5) The American Society of Crime Laboratory Directors.

(6) The California Highway Patrol.

(7) The California State Sheriffs Association, from a department with a crime laboratory.

(8) The California District Attorneys Association, from an office with a crime laboratory.

(9) The California Police Chiefs Association, from a department with a crime laboratory.

(10) The California Peace Officers Association.

(11) The California Public Defenders Association.

(12) A private criminal defense attorney organization.

(13) The Judicial Council, to be appointed by the Chief Justice.

(14) The Office of the Speaker of the Assembly.

(15) The Office of the President pro Tempore of the Senate.

(16) Two representatives to be appointed by the Governor.

(c) The task force shall review and make recommendations as to how best to configure, fund, and improve the delivery of state and local crime laboratory services in the future. To the extent feasible, the review and recommendations shall include, but are not limited to, addressing the following issues:

(1) With respect to organization and management of crime laboratory services, consideration of the following:

(A) If the existing mix of state and local crime laboratories is the most effective and efficient means to meet California's future needs.

(B) Whether laboratories should be further consolidated. If consolidation occurs, who should have oversight of crime laboratories.

(C) If management responsibilities for some laboratories should be transferred.

(D) Whether all laboratories should provide similar services.

(E) How other states have addressed similar issues.

(2) With respect to staff and training, consideration of the following:

(A) How to address recruiting and retention problems of laboratory staff.

(B) Whether educational and training opportunities are adequate to supply the needs of fully trained forensic criminalists in the future.

(C) Whether continuing education is available to ensure that forensic science personnel are up-to-date in their fields of expertise.

(D) If crime laboratory personnel should be certified, and if so, the appropriate agency to assume this responsibility.

(E) The future educational role, if any, for the University of California or California State University systems.

(3) With respect to funding, consideration of the following:

(A) Whether the current method of funding laboratories is predictable, stable, and adequate to meet future growth demands and to provide accurate and timely testing results.

(B) The adequacy of salary structures to attract and retain competent analysts and examiners.

(4) With respect to performance standards and equipment, consideration of the following:

(A) Whether workload demands are being prioritized properly and whether there are important workload issues not being addressed.

(B) If existing laboratories have the necessary capabilities, staffing, and equipment.

(C) If statewide standards should be developed for the accreditation of forensic laboratories, including minimum staffing levels, and if so, a determination regarding what entity should serve as the sanctioning body.

(d) The task force shall also seek input from specialized law enforcement disciplines, other state and local agencies, relevant advocacy groups, and the public. The final report shall also include a complete inventory of existing California crime laboratories. This inventory shall contain sufficient details on staffing, workload, budget, major instrumentation, and organizational placement within the controlling agency.

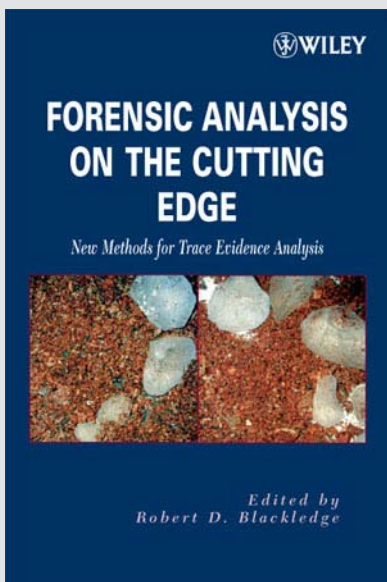
(e) The first meeting of the task force shall occur no later than 60 days after the effective date of this act.

(f) On or before July 1, 2009, the task force shall submit a final report of its findings to the Department of Finance, and to the budget and public safety committees of both houses.

SEC. 3. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting the necessity are:

Given the importance of combating crime in the state in the most efficient and expeditious manner possible, it is necessary that this act take effect immediately.

Off the Press (and Still Hot)



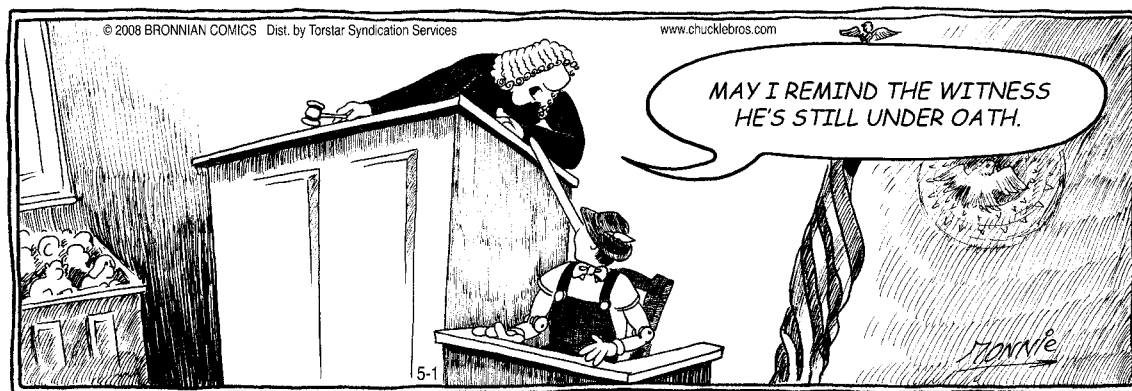
Forensic Analysis on the Cutting Edge

Edited by
Robert Blackledge

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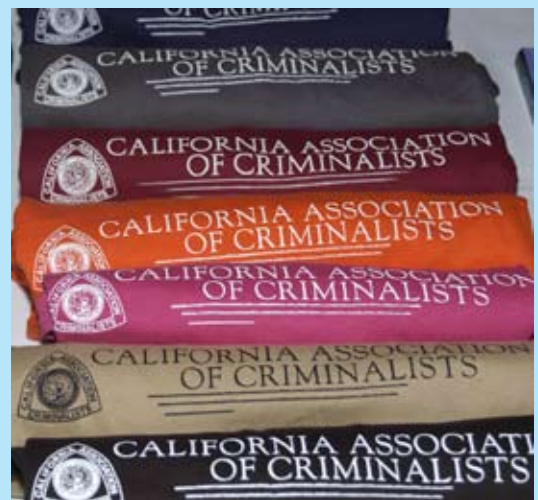


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