The CAC News

Newsletter of the California Association of Criminalists

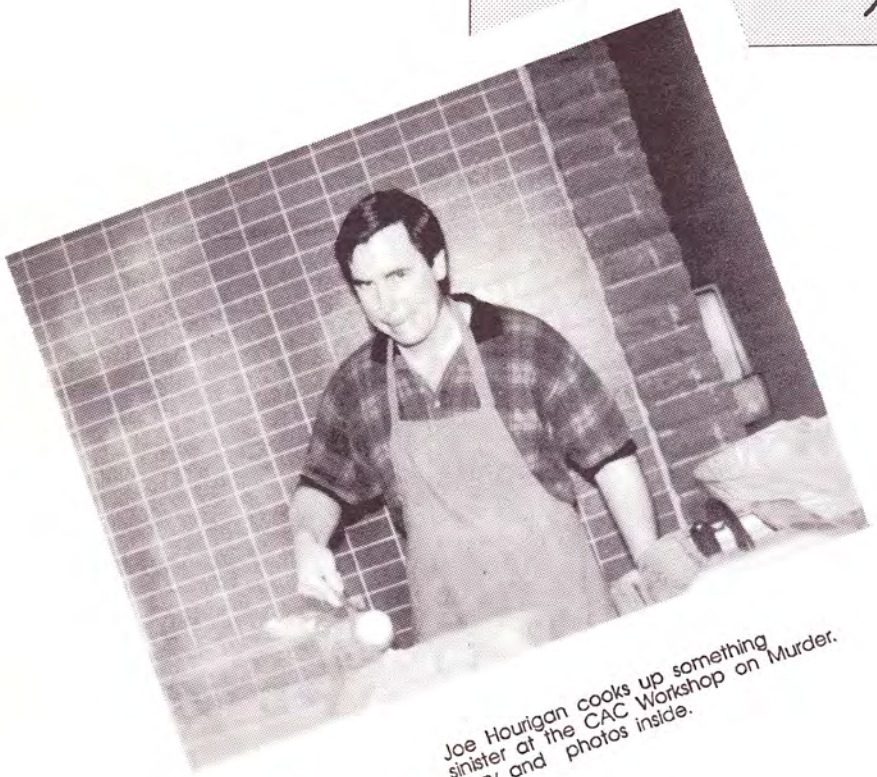
Fall 1992

A Message From The President

Historically, one of the appeals and a major perquisite of working for the government was job security. However, someone is trying to change the rules, and hard times are no longer limited to the private sector. Though most laboratories have been able to avoid actually laying off personnel, the uncertainty still exists. That feeling of not knowing is something which I understand and can sympathize. My career in criminalistics started on June 7, 1978, the day after the voters approved Proposition 13. The City of Los Angeles immediately threatened a ten percent cut back on all City departments. If this occurred it would mean laying off two criminalists. The layoffs never occurred, but for over a year a real possibility was finding myself without a job. Since that time, our laboratory has doubled in size. The point is that for those of you on the lower end of the seniority ladder the pendulum is always swinging and times will improve. Best of luck to all of you.

Talking about money, the Board of Directors is revisiting the question of the cost of CAC dues and whether or not to retain the journal. There are very good arguments on both side of the issue. If you would like to express your opinions, please contact me, I want to hear what the membership thinks.

Finally, if you or someone you know is interested in running for a CAC Board position, contact Lance Gima at (510)540-2434, you won't regret it.



Joe Hourigan cooks up something sinister at the CAC Workshop on Murder. Story and photos inside.

Inside . . .

MEETINGS...

NORTHEASTERN ASSOCIATION OF FORENSIC SCIENTISTS

October 15-17, 1992

The Eighteenth Annual Meeting of the Northeastern Association of Forensic Scientists will be held at the Bally's Park Place Casino Hotel and Tower in Atlantic City, New Jersey. Six sections are scheduled that include: Toxicology, Documents/ID, Serology/DNA, Drug Analysis, Criminalistics and Computers in Forensic Science. A PCR Analysis Symposium and "Statistics for Spectroscopists" Workshop are also scheduled. For further information, please contact: Robert Adamo, Westchester County Dept. Labs and Research, Forensic Laboratory, Dana Road, Valhalla, New York 10595, (914) 593-5600.

cont'd on next page

The CACNews

Lisa M. Brewer
CAC Editorial Secretary
Editor

John Houde
Ventura Sheriff's Lab
Layout/Design

is published four times a year (January, April, July, and October) by the California Association of Criminalists, a non-profit professional society dedicated to the furtherance of forensic science in both the public and private sectors ©1992.

Notice to Contributors

This newsletter publishes material of interest to its readers and is pleased to receive manuscripts from potential authors. Meeting announcements, employment opportunities, course announcements, etc. are also solicited.

Advertisements are also accepted, although a fee is charged for their inclusion in The CAC news. The acceptance of any advertisement is at the sole discretion of the Editorial Secretary.

Because of the computerized typesetting employed in The CAC News, the Editorial Secretary requests that where possible, submissions to the News be made in the form of IBM or MS-DOS compatible files on 5.25 or 3.5 inch floppy disks (high or low density). It is preferred that text files from word processors be saved as ASCII files without formatting codes, e.g. bold, italic, etc. An accompanying hardcopy of the file may be submitted along with the disk to illustrate the author's preference for special emphasis.

Graphics, sketches, photographs, etc. can also be placed into articles. Please contact the Editorial Secretary for details. FAX submissions are also acceptable. The FAX number for the Editorial Secretary is (408) 298-7501.

The deadlines for submissions to The CAC News are: December 15, March 15, June 15 and September 15.

MEETINGS *and CLASSES.*

NORTHWEST ASSOCIATION OF FORENSIC SCIENTISTS

October 27-30, 1992

The Fall Semi-Annual Seminar of the NWAFS will be held at the Columbia River Red Lion Inn in Portland, Oregon. Workshops include Microtoming, Crime Scene Photography and Paint Analysis. A Wildlife Forensic Serology Symposium, a homicide case study and two roundtable discussions in the areas of toxicology and trace analysis are also scheduled. For further information, please contact: Ken McDermott, Oregon State Police Forensic Lab, 1111 SW 2nd Avenue, Portland, Oregon 97204, (206) 577-2095.

SOUTHWESTERN ASSOCIATION OF FORENSIC SCIENTISTS

October 27-30, 1992

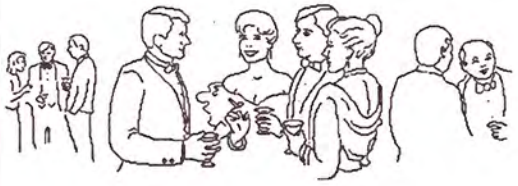
The Fall 1992 Meeting of the Southwestern Association of Forensic Scientists will be held in Estes Park, Colorado. It is being hosted by the Colorado Bureau of Investigation. Program will include guest speaker and instructor, Dr. Walter McCrone. For further information, please contact: James Crippin, Colorado Bureau of Investigation, 3416 N. Elizabeth, Pueblo, Colorado 81001, (719) 542-1133.

TESTS FOR BAC IN HIGHWAY SAFETY PROGRAMS - SUPERVISION AND EXPERT TESTIMONY

The Scientific Investigation Unit of the Huntington Beach Police Department will be hosting "Tests for BAC in Highway Safety Programs - Supervision and Expert Testimony" October 25-30, 1992. The course will be taught at HBPD and will emphasize the scientific aspects of Forensic Alcohol Analysis. This is fundamentally the Indiana University course put on by Robert Borkenstein, D.Sc., modified for California. Specific topics will include: breath alcohol analysis (8 hours), urine as a sample medium (4+ hours), physiology of HGN, pharmacology and retrograde extrapolation. Some of the instructors confirmed include Robert Borkenstein, D.Sc., Kurt Dubowski, Ph.D., Robert Forney, Sr., Ph.D. and Alan Wayne Jones, Ph.D.. For further information, please contact Jeff Thompson, Supervising Criminalist, Huntington Beach Police Department, Scientific Investigation Unit, 2000 Main Street, Huntington Beach, California 92648, (714) 374-1582.

TESTS FOR BAC IN HIGHWAY SAFETY PROGRAMS - SUPERVISION AND EXPERT TESTIMONY

December 6-11 (inclusive), 1992 (40 hours) at Indiana University in Bloomington, Indiana. Arrangements for housing will be made by IU Conference Bureau at the Indiana Memorial Union, a first-class facility. Hours are 1130-1915 on Sunday and 0800-1700 Monday thru Friday. Tuition is $850 which includes all training materials but does not include room and board. Registration is limited to the first thirty (30) reservations - telephone reservations must be confirmed in writing within five (5) days. Payment of tuition can be made upon arrival or by voucher. Letters of intent are preferred over telephone enrollments. For further information, please contact Prof. Robert F. Borkenstein, Center for Studies of Law in Action, Indiana University, Sycamore Hall 302, Bloomington, Indiana 47405, (812) 855-1783.



MURDER MOST ENTERTAINING

It was not an exceptionally noteworthy murder, not unlike many that occur on a regular basis in the big city. The victim, Edna Luce, was only eighteen years old, however, she had already seen her share of the seamier side of life. Her boyfriend found her lifeless, sexually assaulted body just an hour or so after he had left her side. The blood was still oozing out of the single bullet hole in her head. In and around her body were the clues necessary to bring the guilty to trial.

The detectives assigned to the case realized that there was a large quantity of valuable physical evidence at the scene. They realized too that they were only one of over a hundred homicide teams submitting evidence to an already overworked and understaffed (although otherwise excellent) laboratory. The results of the analytical tests would be delayed. Also, confounding the situation was the Department's current fiscal crisis. Homicide investigations are allowed only a fixed budget to spend in solving the crime. Analytical requests must be chosen carefully.

Due to her history and the locale of her murder, the police have an extensive list of suspects who could have perpetrated this crime. Among them were:

Humberto Gomez Rodriguez:

The son of an East LA prostitute who sold his services to a child pornographer. He received no formal education and has no visible means of support, however, he usually has large quantities of cash, acquired by doing "odd jobs". He is occasionally seen in the company of his old friend Trisha Robinson and is said to occasional provide her with a variety of services. Numerous copies of the periodicals Jugs, Hooters, Bottoms Up and Tits and Asses were found in his room during the search. However, these items were not included in the official inventory in that they disappeared prior to booking.

Previously reported arrests: Assault, Prostitution

Trisha Robinson:

Trisha's past is unknown; she may have arrived in LA at a young age with the dreams of becoming a movie star. Trisha is a known prostitute and a drug seller for Larry "Skinny" Williams. She is known as his favorite and usually works as supervisor for the rest of his stable. She is frequently seen with an old friend Humberto, last name unknown.

Dennis Wong

Dennis has one older brother who works in a chinese restaurant. His father and mother are divorced. He lives with his mother who works from 3pm to midnight. He's been suspended from school for skipping classes and vandalism. He is often seen in the company of Chaca Rodriguez. When he goes to school he uses the RTD or rides his bicycle.

Chaca Rodriguez:

Chaca has three brothers and two sisters. His mother and father work during the day. His oldest sister is a nurse and works the morning shift at a nearby hospital. Chaca is a reported gang member and has been suspended from school for vandalism in the last year. When he is in school, he rides there on his bicycle or gets dropped off by his father. He is often seen in the company of Dennis Wong.

Rently Johnson:

Rently is an unemployed truck driver. He has been found to have a violent temper. He has three prior arrests for assault, no convictions. He is known to spend time with Edna. It is believed that Rently is one of the few that Edna doesn't charge.

Monnette Washington:

Monnette stated he had a hard childhood but refused further comment. He is currently a known gang member, affiliated with the Berendo Bay Crips. He is a man of few words but stated that he had seen Edna on numerous occasions but didn't "know" her. Previously reported arrests: Carrying a concealed weapon Attempt rape-charges dropped victim recanted story. Spitting on the sidewalk.

Miguel "Toker" Zaragoza:

Toker is known affectionately as the "Local Loveable Burglar". He works part time at a San Pedro tow yard where it is believed he fences his stolen goods that he acquires by burglarizing locked garages where he can easily access the unlocked vehicles inside. He is an ex-gang banger that has found religion in fishing. Toker can be found raping the ocean of bonita, bass, barracuda and various other local "pescados".

Taloola Fuddrucker:

During daylight hours, Taloola works at a local truck stop. It is reported that she also works on an "on-call" basis for Skinny Williams, but only for those special clients interested in things a little rough. She lives alone over the truck stop. She has one arrest for

prostitution in Hollywood. However, all charges were dropped when the judge wouldn't believe that anyone would actually pay for her services. She stated that she keeps the gun in her car for personal protection because she is scared to go out alone. It is reported that she once had a "thing" with Rently Johnson.

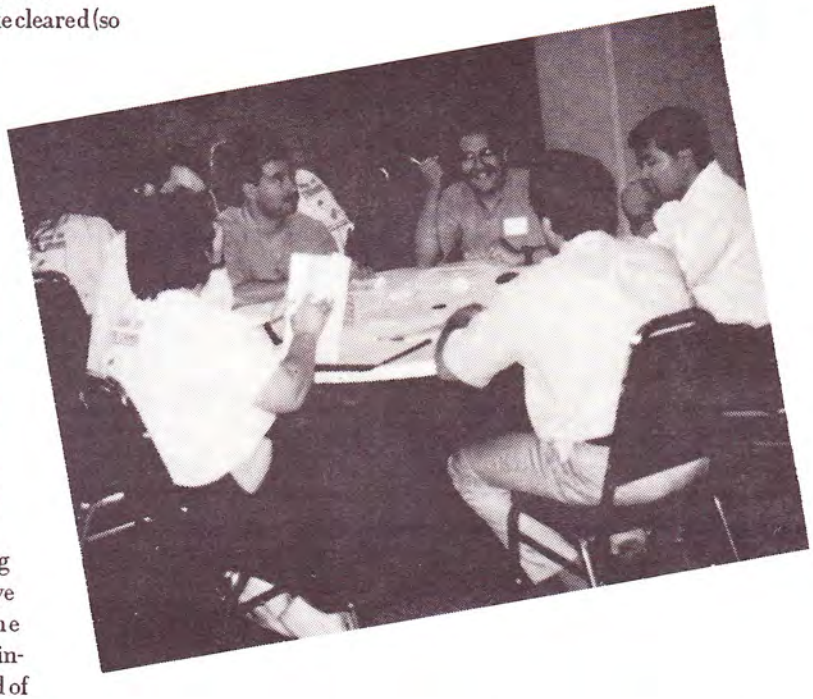
* * *

Even with all of these obstacles, the crime will be solved and the guilty sent to prison. For a job well done, the detectives' reward is a T-shirt, beer, steak and eclair.

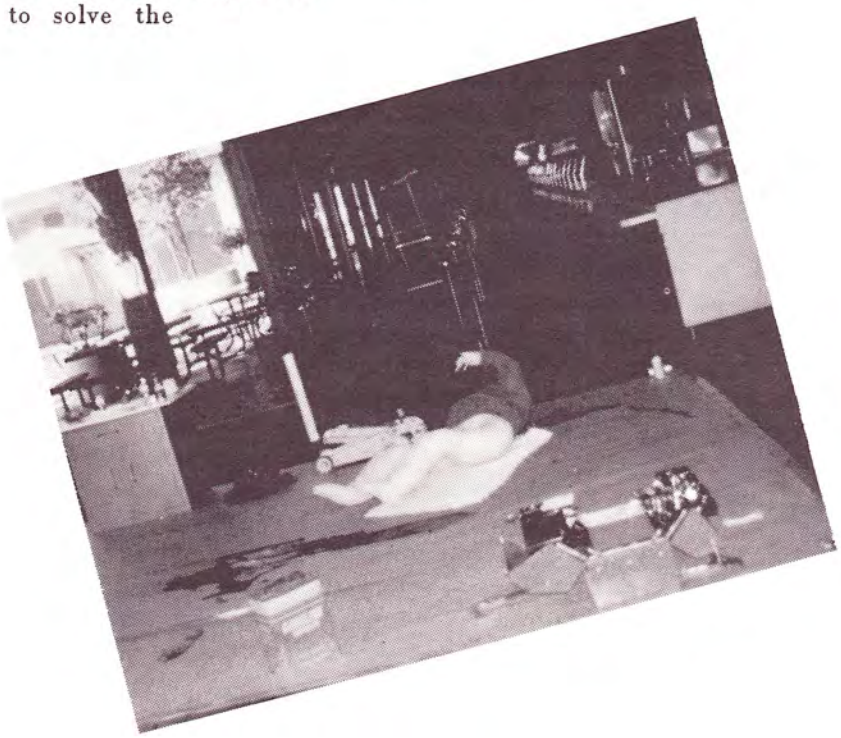
A typical homicide investigation in the City of Los Angeles? No, the above scenario was the background of the first Crime Scene Solving Competition and Steak Fry hosted by the LAPD Crime Laboratory. Thirty six criminalists and aspiring criminalists put there reputations on the line and participated in the competition. There were six teams of six, all working toward being the first to solve the crime. Others showed up later to partake in the barbecue.

When the smoke cleared (so to speak, the barbecue was the only thing really smoking), all of the teams identified the murderer and many of the minor players, but one team found that last little piece of information that won them the coveted first place prize.

The winning team was led by Steve Renteria of the LASO. His crew of investigators consisted of Manual Munoz of the LA Coroners Office, Rafael Garcia and Jonathon Salvador of LAPD and Paul Bienvenue, a graduate student and new affiliate member of the CAC.



A lively discussion involving crime scene techniques evolves at the CAC workshop. More photos on following pages.



The competition was followed by an informal and very enjoyable steak/chicken barbecue prepared and cooked by Rick Bingle, LAPD Lab Director, and his "kitchen crew" consisting of Joe Hourigan and Larry Blanton. Additional help was provided by Chris Hargens, Starr Sachs, Erin Riley and Mike Mastrocovo.

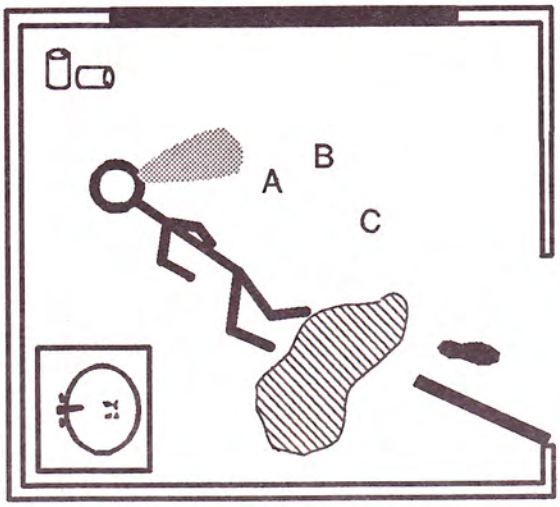
The other winning team consisted of the LAPD Criminalists that developed, prepared and presented the competition: Diana Holsinger, Sue Johnson, Greg Matheson, Scott Vogel, and Collin Yamauchi.

The evening was a lot of fun for both the participants and the staff. We all learned a great deal and look forward to Crime Scene II, the sequel.

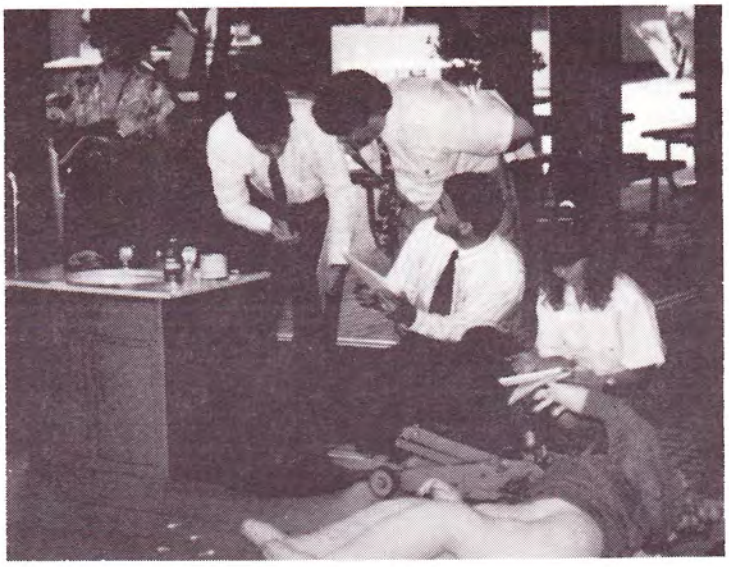
P.S. - Someone left a yellow legal pad with extensive notes, not related to the meeting.

—Greg Matheson

SCENE OF THE CRIME

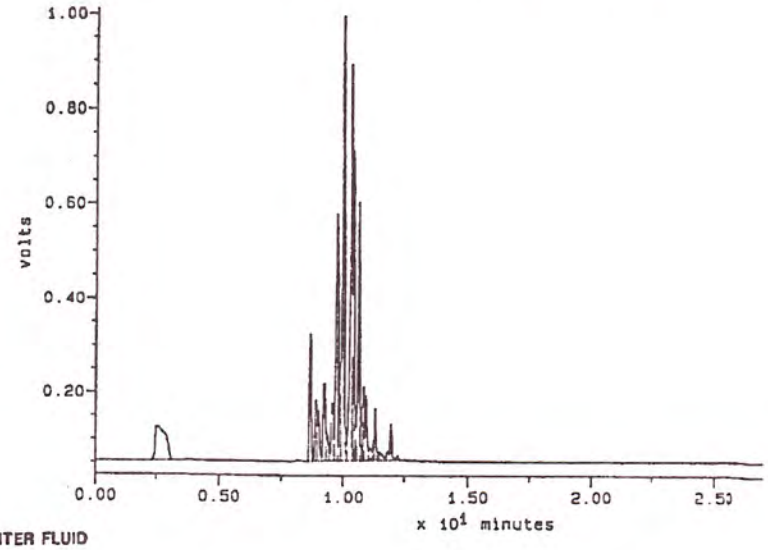


CAC Summer Murder Works
8-20-92



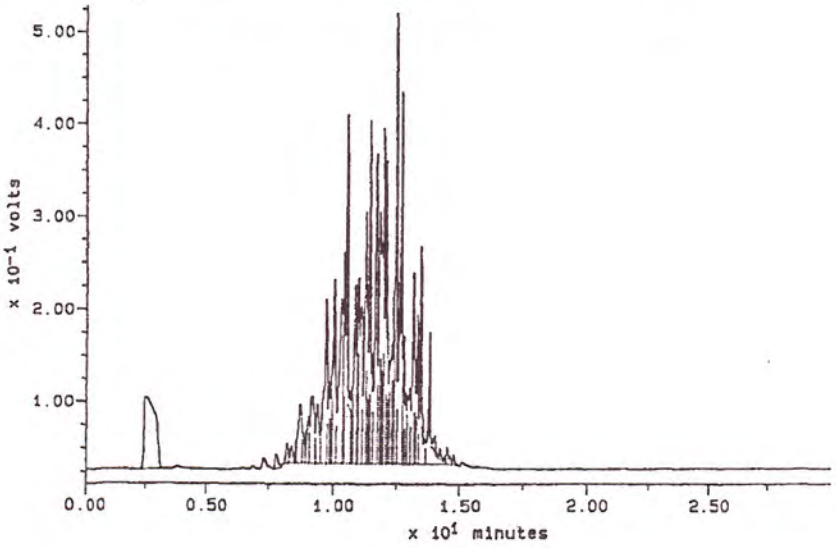
Gulflite Formulation Changed

"OLD" GULFLITE CHARCOAL LIGHTER FLUID - ODORLESS



A quick note of warning is appropriate for analysts doing fire accelerant identifications. As part of a fire investigation, I purchased ten different brands of charcoal lighter products for analysis. I almost didn't buy Gulflite, but I did. I almost didn't analyze Gulflite, but I did. Much to my surprise the chromatogram I got from my Gulflite odorless product was not what I had come to expect. There is now a C12-C16 petroleum distillate fraction in addition to the isopar pattern of the past. A regulatory affairs representative with the manufacturer confirmed that a formulation change had taken place which meets their flavor, flash point, smoke and other standards regarding the "odorless" product.

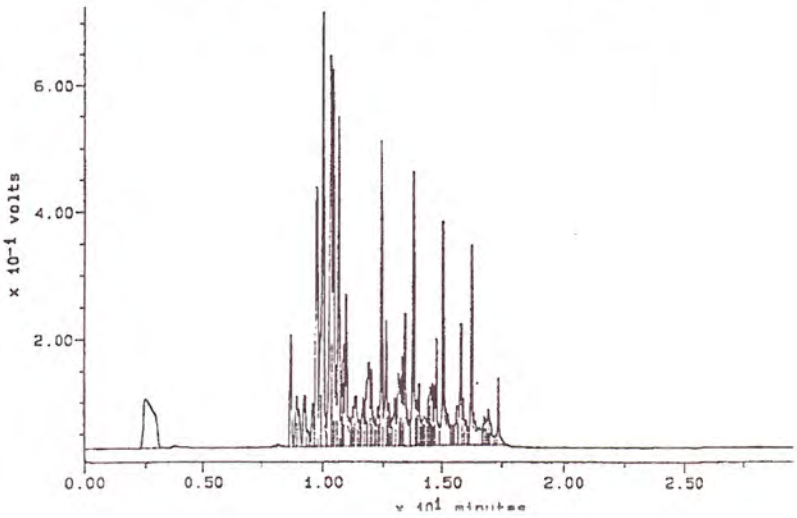
GULFLITE MESQUITE FLAVORED CHARCOAL LIGHTER FLUID



Also, the Gulflite mesquite flavored product was distinctly different from both the "old" and "new" odorless products. I have no previous experience with the mesquite flavored product and didn't ask if any changes regarding it had taken place.

—Larry Pederson
City-County Forensic Laboratory
PO Box 759
Greeley, CO 80632

"NEW" GULFLITE CHARCOAL LIGHTER FLUID - ODORLESS



For 57 years the murder of this man was shrouded in mystery...

Now the truth can be told.
Find out October 23rd.

Ventura

California Association of Criminalists Fall Seminar October 22-24 Ventura DoubleTree Hotel– Call Margaret Schaeffer, Program Chair (805) 654-2333 for info.

J. Houde

Northern Section

On June 17, 1992, Roger Ely and the DEA Western Laboratory hosted a dinner meeting at The Old Spaghetti Factory located in Jack London Square, Oakland. The guest speaker for the evening was Merllyn Ching, Administrative Assistant for Raucher, Pierce and Refsnes, Inc. Her topic was presentation graphics. The meeting was attended by 28 individuals.

Some Northern Study Groups met on the same day and are described below.

FIREARMS STUDY GROUP

Chair: Lansing Lee, Oakland PD

Lansing Lee presented highlights of the 1992 AFTE Training Seminar held in Miami. Special note was made on the progress in computerized casing and bullet database, searching and comparisons by the FBI's DRUGFIRE program and Forensic Technology's BULLETPROOF system. Other papers given included unusual shotgun patterns using rifled barrels, a single SEM used for comparison work, computer animation for forensic presentations and acoustic signatures of firing.

Discussions revolved around various open case files used in the various laboratories regarding bullets and casings. The possibility of sharing these files between laboratories was discussed from acknowledgement that the various shooters are crossing jurisdictional boundaries. The Study Group's ongoing breech face project will be incorporated into the regional open case file.

Interesting cases, more useful court displays and future projects were discussed. Future meetings will include presentations on reloading ammunition and common firearm modifications. A "Back-to-Basics" segment to be included in future meetings will have discussions on individual approaches and techniques used in the various aspects of firearms examinations such as distance determination, trigger pull, ejection pattern, test firing, most often used references, etc.

—Lansing Lee

TRACE EVIDENCE STUDY GROUP

Chair: Ron Nichols, Oakland PD

The topics included "Back-to-Basics" with six different topics identified. The hair swap was not successful.

DRUG STUDY GROUP

Chairs: Diane Bowman and Mary Trudell, Oakland PD

The Drug Study Group met on June 9, 1992 at the Oakland Police Department. The guest speaker was Dr. Alex Stalcup, an Addiction Medicine Specialist. His topic was "Stimulants: Current Status of Use/Abuse, Changes in their Usage and Patient Detoxification".

Southern Section

The following study groups met on June 25, 1992:

TRACE STUDY GROUP

Chairs: Lynne Herold, LASD; Jeff Thompson, HBPD; Wayne Moorehead, Orange Co Sheriff-Coroner

Lowell Bradford conducted a workshop on headlamp filament evidence at Huntington Beach Police Department. Twenty nine individuals were in attendance.

SEROLOGY STUDY GROUP

Chairs: David Hong, LASD and Don Jones, San Bernardino Co Sheriff

As part of the "Back-to-Basics" sessions, Dave Stockwell from San Bernardino County Sheriff's Crime Lab lectured on Gm/Km. Brian Wraxall from SERI, lectured on methods and interpretation of Gm/Km results. David Sugiyama from Forensic Science Services, discussed his experiences using Gm/Km in casework. Ron Linhart from LASD, presented Gm/Km results obtained from three laboratories from a homicide case; discrepant results and other issues were discussed. The session was videotaped, contact the Training and Resources Committee. Future "Back-to-Basics" sessions will be on ABO, Gc, and Transferrin. Twenty individuals were in attendance.

The following study groups met on July 9, 1992:

TOXICOLOGY STUDY GROUP

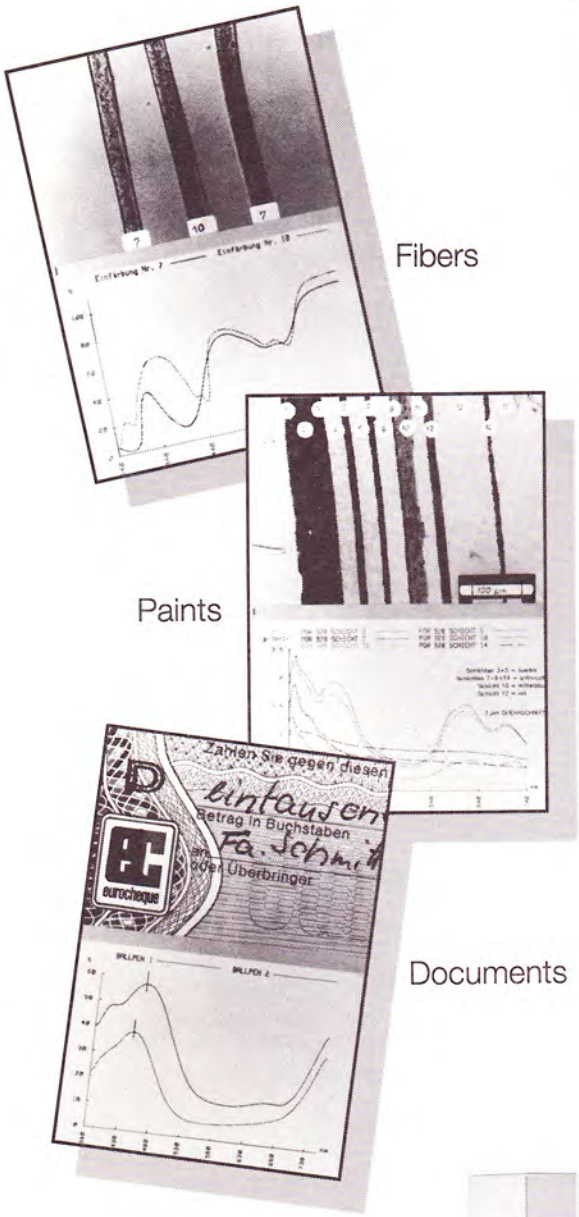
Chair: Manuel Munoz, LA Co, Chief Medical Examiner-Coroner

DRUG STUDY GROUP

Chairs: Elizabeth Thompson and John Davis, Orange Co Sheriff-Coroner

Twenty individuals attended a combined Toxicology and Drug Study Group meeting. Dr. Larry Plon, a Pharmacist Specialist-Psychiatry at UCI Medical Center, lectured on pharmacology of controlled substances and the treatment of people addicted to those substances. Dr. Plon has been an expert witness in Orange County courts and testified during the Randy Kraft trial. Drug screening and confirmation surveys were distributed.

In microspectrophotometry, all the evidence points to Zeiss.



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FORENSIC SCIENTIST 3

The Washington State Patrol Crime Laboratory Division is seeking applicants to fill two positions within the division - one in Seattle and one in Spokane. A background in firearms and toolmarks analysis is needed.

Minimum requirements are: Five years of full-time paid experience in a forensic science laboratory performing firearms and toolmark examination which includes testifying as an expert witness in courts of law, OR a Bachelor of Science degree in forensic science, or a natural science which includes 20 semester (30 quarter) hours of chemistry and 5 semester (8 quarter) hours of physics; and three years full-time paid experience in a forensic science laboratory performing analyses of physical evidence which includes testifying as an expert witness in courts of law. Annual salary: $35,076 to $44,880. For further information, contact Mr. Frank Lee, Firearm/Toolmark Section, Washington State Patrol, Seattle Crime Laboratory, Public Safety Building - 2nd floor, Seattle, Washington 98104, (206) 464-7074.

CRIMINALIST II/III

The Santa Clara County District Attorney's Crime Laboratory is seeking applicants for a Criminalist II/III position. Minimum qualifications include an appropriate Bachelor's degree and two years (Criminalist II)/four years (Criminalist III) work experience. Additional education for DNA training may be submitted for some work experience. Background in serology/DNA is required. Monthly effective salary is $3521-4266 (Criminalist II)/$4066-4923 (Criminalist III). For further information, contact Benny Del Re, Santa Clara County Crime Laboratory, 1557 Berger Drive, Room B-2, San Jose, California 95112, (408) 299-2220.

VOLUNTEERS NEEDED

The CAC Training and Resources Committee is looking for volunteers to assist in the preparation of old CAC Seminar Abstracts for inclusion in the computer searchable Abstracts-On-Disk. We need volunteers who are willing to type the seminar abstracts on a word processor in the format used by the computer searching program available through the CAC Merchandise Committee. If you are willing to help with this project, please call Peter Barnett, 510-222-8883, for more information.

I recognized you from your composite drawing!"

The CAC News

TECHNICAL NOTE

John N. Houde,[1] B.S.

Application of a Rewashing Technique to Enhance Absorption-Elution

REFERENCE: Houde, J., "Application of a Rewashing Technique to enhance Absorption-Elution," *The CAC News*, Fall 1992

ABSTRACT: The absorption-elution thread technique can yield more information when bloodstained threads are rewashed after the initial procedure, and then subjected to the elution technique again. Difficulties due to sweat contamination may be thus resolved.

KEYWORDS: absorption-elution, rewashing, sweat contamination

Early work by Siracusa [1] proved that dried blood could be treated with A or B antisera and then washed and heated, thus releasing absorbed antibodies. These antibodies could then be mixed with A or B reference cells and any agglutination would be indicative of the ABO group of the original sample. A careful reading of Siracusa reveals an indirect suggestion that this process could be applied more than once for the same sample, following a suitable washing step.

The process thus described became the basis of the absorption-elution as presented by S. S. Kind [2], and then modified by Howard and Martin [3]. In 1973, Bashinski and Davis [4] briefly mentioned that the same sample could be tested repetitively if necessary, but their procedure is not used by this laboratory.

Frequently, this laboratory will receive articles of evidence which have been either worn or handled by individuals who secrete their blood groups in body fluids such as sweat. Typical examples include knife handles and trousers. During the course of a violent event, blood from another person may be deposited on the evidence, and it is necessary to distinguish this blood from the sweat donor. Sometimes, especially in the instance of knives, there will be no clean areas from which to take a control sample.

Clean cotton threads are used to collect blood from the evidence, or in the case of stained fabric, threads from the original cloth might be used. The samples and controls are tested in the manner of Culliford [5].

One of absorption-elution's strengths is that of sensitivity. Unfortunately, this can be one of its weaknesses as well, in that contamination from sweat may cause a rather strong agglutination.

Once the first reading of the threads has been done, the entire plate containing the threads is rinsed with copious amounts of chilled saline. The plate is then blotted dry and fresh reference cells suspended in saline + 2% BSA is applied again. Then the entire plate is incubated in a moisture chamber at 56°C for a bit longer than the first time, five minutes more or so. Next, the plate is rotated for as long as 60 minutes. Using known blood samples as controls, it will become obvious when the unknowns are ready to be read.

Table 1 shows the results from an actual case. The agglutination was scored as follows: "-" no agglutination, "+1" rare clumps of cells, "+2" occasional clumps of cells, "+3" considerable clumping of cells and "+4" complete agglutination with virtually no free cells.

[1] Criminalist, Ventura County Sheriff's Crime Laboratory, 800 S. Victoria Ave. Ventura, CA 93009.

Table 1. RESULTS OF ABSORPTION-ELUTION AND REWASH

ITEM	A	[rewash]	B	[rewash]	O	[rewash]
Bloodstain on cardboard	+4	[+4]	+4	[+4]	+4	[+4]
control area	+2	[-]	+3	[-]	-	[-]
Bloodstain on floor	-	[-]	+2	[-]	+4	[+3]
control area	+1	[-]	+4	[-]	-	[-]
A_2B control	+4	[+3]	+4	[+4]	+4	[+4]
O control	-	[-]	-	[-]	+4	[+4]

In the case illustrated above, it was necessary to distinguish between two bleeding victims who left bloodstains on various items at the scene. Blood found on a piece of cardboard was typed as group AB, although without the rewash step the results would be less certain, since the control areas also gave a strong agglutination. Likewise for a bloodstain found on the floor which was typed as group O, yet would have been difficult to interpret without the rewash due to the interfering group B substances present.

It is apparent that "genuine" blood group substances persist after a rewash step, whereas contamination due to environmental factors such as might be found on control samples does not. The type of substrate, and how well saturated the blood undoubtedly influences just how persistent the sample actually is.

This laboratory has been using a rewashing step since 1984, and has found it to be invaluable in resolving difficult absorption-elution questions.

References:

[1] Siracusa, V., "La sostanza isoagglutinabile del sangue.",*Arch. Antrpol. Crim. Psichiatr. Med. Leg.* ", 43 (4 ser. 14), 1923, pp. 362-364

[2] Kind, S. S., "Absorption-elution grouping of dried blood smears.", *Nature*,1960 ,Vol.185, pp.397-398.

[3] Howard, H.D. and Martin, P. D., "An improved method for ABO and MN grouping of dried bloodstains using cellulose acetate sheets.", *J. Forensic Sci. Soc.*, 1969, Vol. 9, pp. 28-30.

[4] Bashinshki, J., and Davis, J. E., "A simple procedure for ABO typing of dried bloodstains on fibers by the absorption-elution technique.", *J. Forensic Sci. Soc.*, 1973, Vol. 13, pp. 217-222

[5] Culliford, B., *"The Examination and Typing of Bloodstains in the Crime Laboratory."*, National Institute of Law Enforcement and Criminal Justice, 1971

Acknowledgement

The author wishes to thank Edwin L. Jones, Jr. for suggesting the concept of this paper.

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A. Reed and Virginia McLaughlin Endowment
Chair: John Murdock
Larry Ragle
Hiram Evans
Jim White
Carole Sidebotham

Ethics
Chair: Linda Hartstrom
Lansing Lee
Jim Stam

Founder's Lecture
Chair: Rich Brown
Dave Hong
Bruce Fukayama

Historical
Chair: Carolyn Gannett
Ron Raquel
Rob Keister
Mary Hong

Merchandise
Chair: Patty Lough
Curtis Heye
Larry Blanton
Debbie Madden

Nominating
Chair: Lance Gima
Susan Narveson
Susan Swarner

Public Health Liaison
Chair: Kathy Holmes
Jeff Thompson
Dan Nathan
Craig Anderson

Public Relations
Chair: Eric Parsons

Seminar
Chair: Tina Chan
Debbie Madden
Dave Hong

Training and Resources
Chair: Carol Hunter
Peter Barnett (abstracts)
Jeff Thompson
Michael Parigian
Steve Secofsky
Gary Sims

TECHNICAL NOTE

Paul Baughman[1]

A COMPARATIVE STUDY OF BLOOD AND BREATH DATA FROM THE SANTA CLARA COUNTY DISTRICT ATTORNEY'S CRIME LABORATORY

INTRODUCTION: The C.M.I. Intoxilyzer 5000 has been in service in Santa Clara County since May 7, 1990, replacing the C.M.I. 4011-A Intoxilyzer. The data presented in this paper is an "in-field" correlation study of blood and breath samples taken from DUI suspects during a period starting May 23, 1990 to April 22, 1991.

METHOD: Over a one year period, blood and corresponding breath test results were collected. This produced 326 paired data points with a BAC greater than 0.00%. An additional 33 paired data points were omitted because the blood and breath BAC results were 0.00%.

The blood samples were analyzed by direct injection gas chromatography using a Hewlett-Packard 5720A gas chromatograph with FID detector and Carbowax 1500 packed column. Breath testing was conducted on various in-field Intoxilyzer 5000 evidential breath testing instruments. The blood alcohol levels in this study ranged from 0.03% to 0.31% (w/v).

The treatment of the collected data involved certain considerations before a statistical analysis was performed. First, the mean of both breath results was considered. Secondly, the mean of the blood results was considered. The results were then looked at as a whole with no consideration for time between breath testing and blood sample collection (Figure 1). Blood and breath results that were collected more than 20 minutes apart were omitted in Figure 2. Blood samples that were drawn within twenty minutes of the breath tests were considered to be close to simultaneous sampling. No correction for alcohol elimination was used in either figure.

RESULTS AND DISCUSSION: The Intoxilyzer 5000 showed a definite ability to determine alcohol concentration in breath. In many instances, the breath test result is lower than the actual blood test result. This confirms that the 2100/1 ratio is low for the majority of the population tested.

In both figures, the blood/breath results show that the mean breath result is 0.01% lower than the blood result. The standard deviation in Figure 1 is ±0.024. The blood/breath BAC difference in 90% of the population tested is 0.00% with an 0.01% difference in 98% of the population. With the 20 minute sampling consideration in Figure 2, the blood/breath BAC difference in the 90% and 98% population is the same as Figure 1 with a standard deviation of ±0.013.

The 0.02% and 0.03% difference between blood/breath time corrected results (Figure 2) may reflect elimination variations or individuals in the absorptive phase.* The breath results that were 0.06% and 0.04% lower than the blood results (Figure 2) may be attributed to the failure of capturing a substantially alveolar specimen.

SUMMARY: The results of this study compare favorably to other studies published in the scientific literature. The data supports the idea that the Intoxilyzer 5000 is a valid instrument for the use in evidential breath testing.

*The 0.03% and one of the 0.02% differences were determined from high blood alcohol level samples (greater than 0.23% BAC). The breath results in these samples are within 10% of the blood value.

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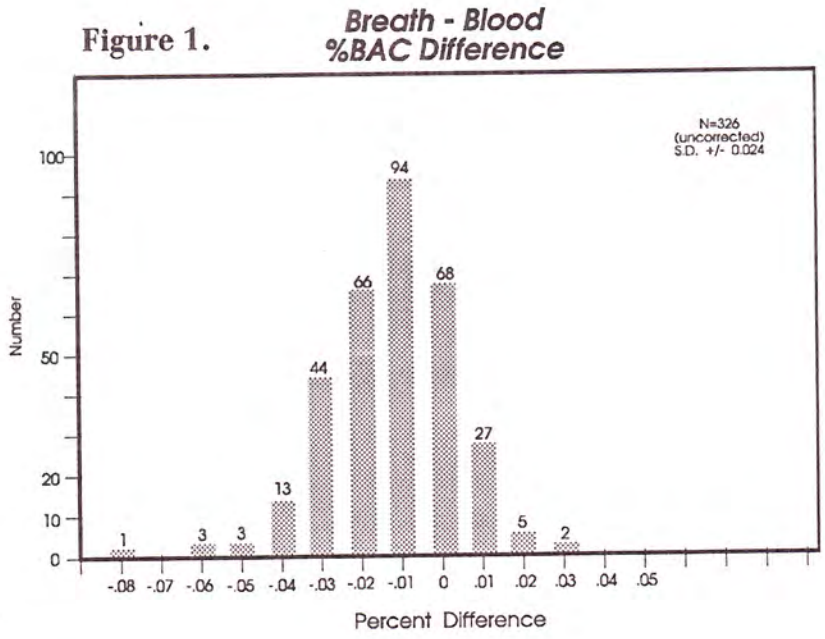
Figure 1.



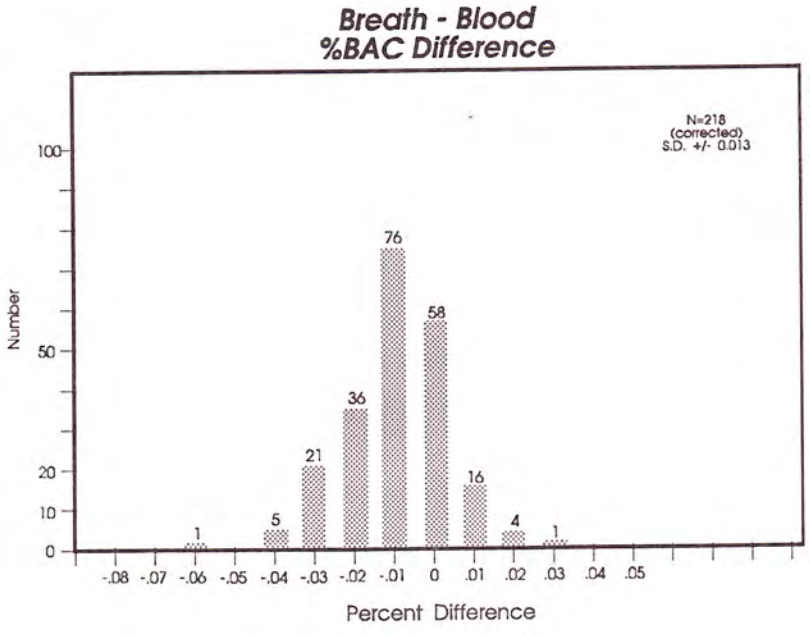


Figure 2.
Blood Samples collected within 20 minutes of breath testing.