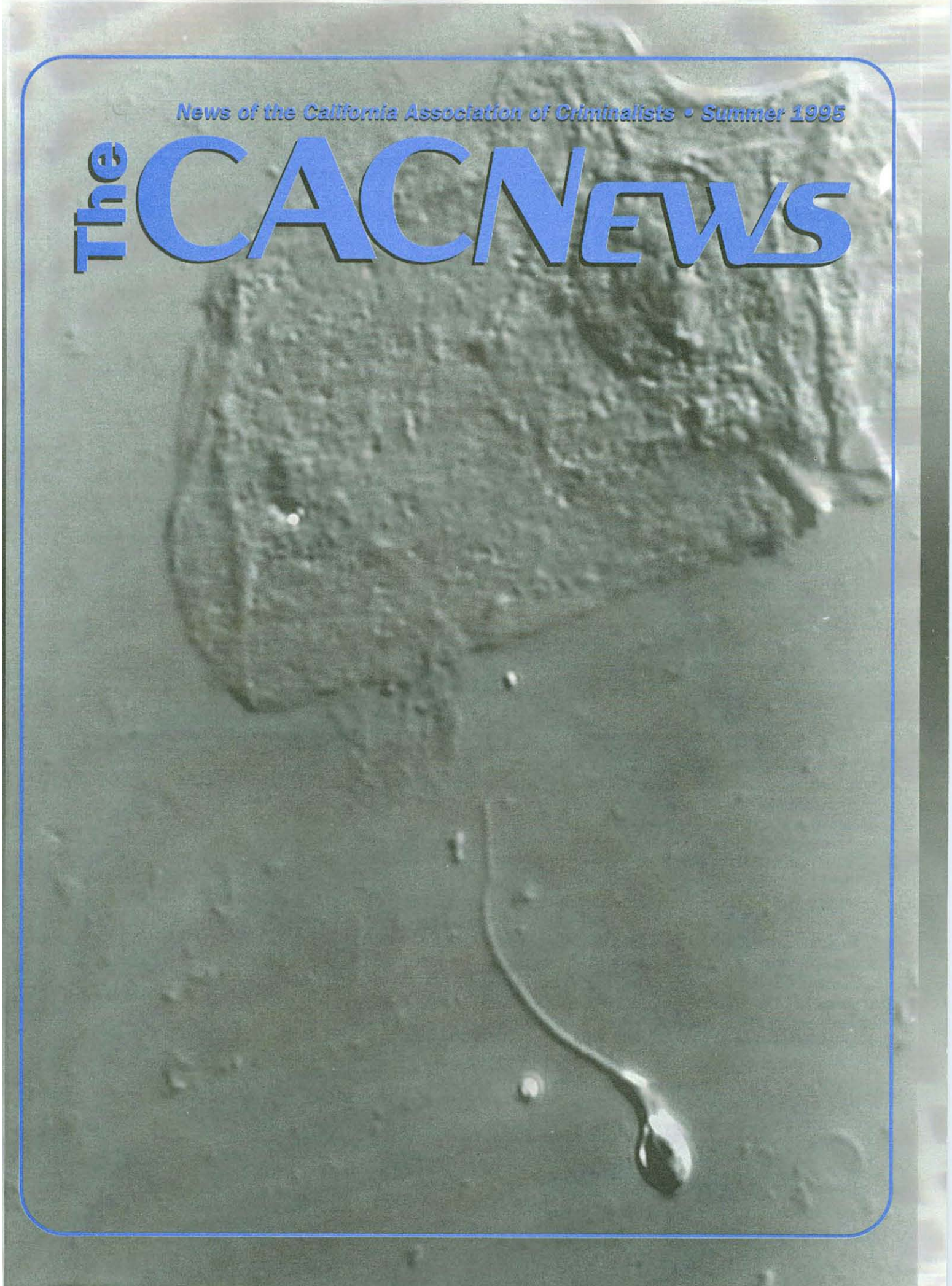
News of the California Association of Criminalists • Summer 1995

The CAC News



The President's Desk

First of all, in classic presidential style, I want to thank you for your "vote of confidence" electing me to this position. For those of you that know me, my philosophical goals are well known. Therefore, for those of you that don't know me, here we go...

A year ago at the business meeting just before the officer elections I told you that I have two missions if elected President: one, to increase professionalism and two, to improve competency —within Criminalistics.

To achieve these goals, we need to expand the horizons of our training, to encourage certification of our analysts, and to encourage our members toward a more active participation in our professional careers.

Here are just of few of the changing attitudes invading criminalistics: More and more, analysts view their occupation as a job not a profession. Because certification is not required and agencies won't pay for it, analysts say "why take the test, it's not required of me." CAC 's $75 dues are just too much money. CAC training courses, which are substantially underwritten by the A. Reed and Virginia McLaughlin Endowment fund, are void of attendance, especially of CAC members.

Cures for these symptoms are afloat! Why not encourage laboratory management to hire those analysts who choose this field as their career rather than those who look upon it simply as a job? We should require as one of the terms of employment membership in a professional forensic association and mandatory certification of each analyst. Criminalists should be motivated to join CAC and to take advantage of the many benefits that this organization has to offer its membership.

What are those benefits, you ask? Reduced registration rates to excellent semi-annual meetings teeming with training and technical presentations; reduced costs for training in technical areas; regular study group interaction in multiple areas of criminalistics; Certificate of Professional Competency (CAC members wrote the test); an excellent newsletter offering an informal exchange of information; an international journal subscription with technical information exchanged in a formal format as well as publication of our semi-annual meeting abstracts. The list goes on....

The success of these various programs and benefits, the success of our profession is dependant upon every one of us. Let's encourage our membership to participate; let's encourage new memberships from among our peers.

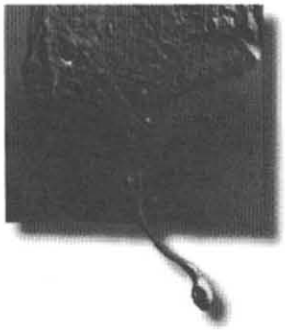
These are my goals. I hope that they are yours as well.

Carol

The CACNews 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.

The CAC News

Summer 1995



On the cover:
A sperm cell appears to be beating a hasty retreat from a vaginal epithelial cell in this view. Further exploration of this image can be found in the CAC Training Video, *"Microscopic Examination of Sexual Assault Evidence."* Photographed using differential interference contrast (DIC) microscopy by Edwin L. Jones, Jr., Ventura SO.

Departments

Features

Technical Papers

Recreations

Notice to Contributors

This newsletter publishes material of interest to its readers and is pleased to receive manuscripts from potential authors. Meetings and course announcements, employment opportunities, etc. are also solicited. Advertisements are also accepted, although a fee is charged for their inclusion in The CAC News. Please contact the Advertising Editor for further information. Because of the computerized typesetting employed in The CAC News, we 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). Text files from word processors should be saved as ASCII files without formatting codes, e.g. bold, italic, etc. An accompanying hardcopy of the file may be submitted along with the disk to illustrate the author's preference for special emphasis. Graphics, sketches, photographs, etc. may 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 are: December 15, March 15, June 15 and September 15.

CACBits/Section Reports

Southern Section

Before leaping into the routine description of Southern Section Activities since the last Newsletter, I would first like to share a few musings I've gleaned from my predecessors' report to the Board of Directors. For those of you who were not aware, **Barb Johnson** has just completed two terms (four years) as the Regional Director South. As the new kid on the block I have to pick up where she left off, which is why I am writing this column from her report. Barb, it seems, had a very busy end to her tenure. Besides hosting a dinner meeting on April 4, compiling files and mailing lists for her successor, and preparing her final report she still found time to give birth to Matthew Dean on April 20th. Congratulations Barb!

The Los Angeles County Sheriff's Department hosted the April 4th dinner meeting held at Capistrano's Restaurant in Arcadia. The guest speaker for the dinner was the Honorable Dino Fulgoni, judge for the Superior Court in Pasadena. Judge Fulgoni presided over a sizable turnout of sixty-four attendees and spoke about "Expert Witness Testimony." As a former Los Angeles County Deputy District Attorney and as a judge for the Superior Court, Judge Fulgoni has had ample opportunity to listen to, review, and rule on various aspects of expert testimony, including testimony of some of our members in attendance (for whom he was highly complimentary) as well as other forensic disciplines such as forensic psychiatry (for which he was less enthused.) Judge Fulgoni's comments at a time when expert witnesses are being scrutinized under a microscope in the O. J. Simpson case was a timely and appreciated topic.

Among the study groups held earlier in the day, the DNA study group (co-chaired by **Rob Keister** and **Erin Riley**) and Serology study group (chaired by Dean Gialamas) had a combined meeting to discuss the collection procedures for biological evidence collection and handling which focused on the potential for "contamination" in DNA PCR analysis. A more detailed account of this discussion, compiled by **Dean Gialamas**, is to be published in the CAC News. After this round table discussion, **Paul Coleman** (SDPD) reviewed DNA papers presented at the February AAFS meeting in Seattle and Rob Keister followed with a review of the TWGDAM meeting held in January.

The Blood Alcohol Study Group (chaired by **Dan Nathan**) discussed "Courtroom Presentation of Evidence" given by the California Criminalistics Institute and its usefulness in DUI testimony. This was followed by a discussion of the impact of the Bransford case on breath alcohol testing, a survey of breath alcohol programs in southern California, and a round table of interesting cases in blood and breath alcohol.

Jim Bailey (LASO) was invited to speak about "Drugs Under the Microscope" at the Drug Study Group (chaired by **Manuel Munoz**.) As part of the topic of microcrystal tests, Jim provided handout material reprinted from various authors (Fulton, Clarke, Stegvart, and Stellman) which listed useful schemes of nomenclature, classification, use, and bibliographic information.

As your new Regional Director South, I would like to thank the CAC members who have accepted Study Group Chair responsibilities for the coming year: Rob Keister (OCSO) and Erin Riley (LAPD) who will continue to co-chair the DNA study group; **Penny Laferty** and **Wayne Moorehead** (both OCSO) who will co-chair the Trace study group; **Dan Anderson** (LA Coroner) and **Chris Hargens** (LAPD) who will co-chair the Toxicology study group, and Dean Gialamas (Cal Lab) who will chair the Serology study group. Due to reassignments of Manuel Munoz and Dan Nathan the Drug and Blood Alcohol study groups are seeking chair positions. If you have an interest in either of these areas, are a current member of the CAC, and can spare a few hours of time every few months, I'd like to hear from you!

Dave Stockwell,
Regional Director South

Cross Examination

Jobs • Meetings • Courses

Criminalist I

San Bernardino County Sheriff's Department, Scientific Investigations Division announces openings for two Criminalist I. These are renewable OCJP grant positions in the areas of controlled substance testing and clandestine laboratory investigations. This announcement was anticipated to be effective July 1, 1995 with the salary approximately $40,500. For further information, please contact Hiram K. Evans, Supervising Criminalist, (909) 387-2200; FAX (909) 387-2688.

Forensic Scientist

Qualifications include knowledge and experience in forensic principles, practices, procedures and techniques used in the examination of physical evidence such as GSR by SEM and AA, trace evidence microscopy, fire debris analysis, bloodstain pattern recognition, etc. A bachelor's degree in physical, natural or forensic science is required. Must be able to interpret analytical results, prepare written reports and be court qualified to present expert testimony. Please send resume to California Laboratory of Forensic Science/Cal Lab, 3890 Prospect Ave., Suite A, Yorba Linda, CA 92686.

continued on page 25

American Academy of Forensic Sciences

P.O. Box 669 • Colorado Springs • CO 80901-0669 • (719) 636-1100 • Fax (719) 636-1933

The Criminalistics section of the American Academy of Forensic Sciences has pledged support to the regional societies in the education and training of forensic scientists. Funding is available from the section for workshops, seminars textbooks, etc. However, these funds are not inexhaustible. Therefore, to assist the most societies, funding requests should be less than $500. Requests will be reviewed by the committee until the funds are gone. Funds must be spent on regional society functions occurring before February 1996.

REQUEST FORM

TO: Finance Committee, AAFS Criminalistics Section DATE:

FROM: _____ ORGANIZATION: _____

SUBJECT: Request for Section Funds

TYPE OF FUNCTION: _____

DATE OF FUNCTION: _____

AMOUNT REQUESTED: _____

DATE FUNDS NEEDED: _____

FOR WHAT PURPOSE WILL FUNDS BE USED? _____

_____

_____

HOW WILL THE CRIM SECTION BE ACKNOWLEDGED AS A BENEFACTOR? _____

_____

WHO CAN BE CONTACTED FOR FURTHER INFORMATION? (NAME, PHONE/FAX #'s) _____

_____

TO WHOM SHOULD THE CHECK BE MADE OUT TO AND MAILING ADDRESS? _____

_____

A letter must accompany the request form and be sent to:

Carla M. Noziglia, Chair
AAFS Criminalistics Finance Committee
1025 Pagosa Way
Las Vegas, NV 89128-3348
Telephone/FAX: (702) 363-7057

Our Fifteen Minutes of Fame

Raymond Davis

The O.J. Simpson case has certainly given the profession of criminalistics some much needed publicity (I think). So often we find ourselves referred to as police chemists, lab technicians, criminologists, police scientists, this expert and that. Despite what titles we are called by, the public has gotten a clear picture of what criminalists do. That's what I think is good for our profession. We don't make evidence fit the facts. "We call 'em like we see 'em!" Now, at some point during this trial we have seen and heard some of the expert testimony. Although I have heard colleagues comment on how they would have answered certain questions, including me, the overall consensus has been that they have done an admirable job under extraordinary circumstances. Rarely do we find ourselves subjected to such rigorous scrutiny for days on end through mindless and tedious questions. The level of minutiae has exceeded anything I've ever experienced in my career. With questions such as, "How much blood remains in a pipette after dispensing?" Can you imagine days and weeks of that kind of nonsense? I commend the experts for their patience and professionalism. I have viewed the expert's testimony with perhaps a more critical eye than most due to my participation in the CCI Courtroom Presentation of Evidence class. This CCI course offers up a host of do's and don'ts and I saw a few do's and a lot of don'ts. Despite that, however, the one impression I have taken from all of the experts has been how credible and believable they were. It wasn't perfect, it was however, honest, forthright and memorable. I am convinced that if we can communicate that believability to a jury that finds itself faced with a mountain of scientific evidence, we will have accomplished our objective as expert witnesses. Let us acknowledge our colleagues for the incredible effort they've made in the Simpson case and on behalf of our profession.

"Despite what titles we are called by, the public has gotten a clear picture of what Criminalists do."

From the Reader

Editor:

After returning from the Spring CAC Seminar in Walnut Creek, I was compelled to write and thank all planners, organizers, participants, and not least hosts. The seminar was informative, educational, enjoyable and certainly worth our efforts to travel from Louisiana. CAC members who attend these seminars take advantage of an invaluable resource. I would urge all members to attend as many of the seminars as possible and to encourage your co-workers to join and participate. Thanks again to all, and I hope to see you at future seminars.

David M. Epstein
Acadiana Criminalistics Lab, New Iberia, LA

Dean Gialamas

A Request From T&R

I am taking this opportunity to provide a guest editorial (which is more of a plea) in this issue of the ***CAC News***. For those of you who do not know me, I am a criminalist at the California Laboratory of Forensic Science (Cal Lab) and the chairman of the CAC's Training and Resources (T&R) Committee. T&R is responsible for helping members become better professionals and improve their work product by providing training classes (usually at costs significantly reduced to CAC members through the support of the A. Reed and Virginia McLaughlin Fund), maintaining specialty topic videos available free to CAC members only, providing abstracts of our previous semi-annual meetings to new members, and much more. Regardless of whether you are new to the Association or you are a long standing member, **T&R needs your input**!

Specifically, we need input from members about their training needs. Each year for the last several years, T&R has solicited input from membership about the classes they would like to see T&R sponsor. As of late, the responses to the surveys returned to T&R have not been supported by the attendance of the membership in the classes requested. (For example, the 1994-1995 surveys returned to T&R had McCrone's Microchemical Methods Class as a top choice for advanced microscopy classes. As a result of the response received, McCrone Research Institute brought their class to Southern California in March of 1995. The class was almost canceled due to lack attendance. Only three of the seven paying students in the class were CAC members and another three were not even forensic scientists.)

We would like to hear from the membership, necessarily from "lab bench" criminalists ***and*** management, concerning class interests and ability to attend. We are interested in finding out why interest in some classes is so large, yet when the classes are offered, we have difficulty filling them.

We want to get the bench criminalist's perspectives. Do the surveys meet your needs for choices in training? Is T&R successfully accomplishing that goal? If not, what can T&R do to improve? If you expressed interest in a class that was offered by T&R but did not attend, why? Did your agency not pay for the class? Did your agency fail to pay you for the time off? Did your agency not give you the time off? Would you attend the class even if you had to pay for part or all? Did your interests change? Was your assignment at the time of the class offering different than at the time of the survey? Did T&R "flood the market" by offering a class that is offered elsewhere?

And now management's perspectives: Is T&R helping you meet your goals in training your staff? If not why not? How can we improve? Is funding available, tight, or non-existent for sending your staff to CAC sponsored training classes? Can you send more than one criminalist to a training class? If criminalists were reassigned, would you let them attend anyway if they could use the information? Are you willing to encourage CAC membership among your criminalists if they (and your agency) receive the benefit of lowered class tuition/registration fee? Should we seek POST reimbursement? Is T&R not announcing the classes soon enough to schedule time off for staff? Are your employees not announcing the classes soon enough?

Questions, questions. There are many more than I have room to write (or you have time to read) but those expressed are food for thought. So my plea goes out to all. Call, write, fax or respond to the ***CAC News*** with your comments. Whatever method of response you prefer, please do not hesitate to contact me. As chair of T&R, my goal is to help criminalists get the most training and exposure to areas in criminalistics as they can while it is available. Remember, the training need not necessarily be on technical subjects. Also the training need not stop at the bench level: Management classes could also be made available.

In these financially difficult times, I would urge both bench criminalists and management to take advantage of the available financial support from the generous A. Reed and Virginia McLaughlin Endowment. Did you know: Most McCrone microscopy classes are normally $650 for tuition in Chicago for forensic scientists, but because of the Endowment Fund, several members have taken up three McCrone classes for a mere $600 combined total without ever leaving California!

Bottom line is one of T&R's main duties is to help train members. Just tell us what you would like to see for classes and under what conditions bench criminalists and management need in order to attend so we can provide the greatest impact and best results with regards to our professional development.

I look forward to hearing from you all.

Dean M. Gialamas
Cal Lab
3890 Prospect Ave, Suite A
Yorba Linda, CA 92686
Phone: 714-524-9461
FAX: 714-524-9466

The State or Life of Criminalistic Evidence: A Commentary on the Theory of Physical Evidence

by Professor Tadeusz Hanausek

The problem of the state or condition of criminalistic evidence appears more or less in every aspect of Forensic Science. The age of the evidence or its boundaries of identification are based on such evidence. The problem is however, dependent in its basic form on the understanding of the term "criminalistic evidence". According to Professor J. Sehn, understanding the concept of criminalistic evidence is not uniform. Adopting one of several concepts of evidence implies the type of relationship to the concept of its life span. Thus there is the need to determine one's own position and the understanding of the subject of criminalistic evidence. By criminalistic evidence, I mean all determinable results which are either created by some event or connected to some event. The most significant characteristic of criminalistic evidence is the capacity to carry information. This capacity is by no means constant and that is the main thrust of the problem. Indeed, the imminent traits of life itself lies in its dynamics and therefore criminalistic evidence has a life of its own. It undergoes changes and transforms being a subject of a reaction to various internal and external factors.

From this concept of criminalistic evidence comes certain well defined consequences of great importance to the interpretation of its state or condition. Following this line of thought, criminalistic evidence is a consequence or a result of predetermined changes in reality. By the term 'result', I understand that there is a change in objective reality. A change which is bound to some fact or some behavior in time and space. Consequently, it has to be stressed that criminalistic evidence is a result, thus there is a causal connection between evidence and the occurrence or phenomenon which created it. For example: If we say that 'A' is evidence of "X" it is because "X" is responsible for creating 'A'. A question can now be posed whether we talk about evidence only if "X" is the sole reason of 'A' or if it is also one of many. In my opinion, 'A' becomes evidence of "X" when "X" is a main reason while holding the belief there may be other reasons. But "X" is a causal factor of 'A' without which 'A' would not have been created (*conditio sine qua non*) . It does not appear likely that we could all but isolate any other extrinsic factors. And it does not at all diminish the importance of the main reason and the role it plays in the cause and effect process of the birth of criminalistic evidence.

From this idea of evidence resulting from some occurrence, derives the consistent understanding of evidence as objective phenomenon or even material phenomenon. This is so because the unquestionable determination of cause and effect can only be made in relation to such phenomena. In determinations relating to subjective matters such as memory, one cannot be absolutely certain if and to what extent the context of a memorized event changed or became modified by various influences. Thus it is not always possible to determine what is the cause and effect of one memorized version of events.

Under such circumstances, there is a basic obstacle in determining causal connections between a memorized version of an event and its actual occurrence. It is difficult to recognize a memorized version as its only possible result. And therefore, it becomes quite risky to include memory in the category of "evidence". It appears that Anuschat was correct when he concluded that evidence is everything that a criminalist is able to detect and utilize is some analytical way. It is doubtful however, that a memory of some event can even be considered by a criminalist as evidence without some cloud of misinterpretation or at least without due consideration of the source. It is for this reason that evidence adduced from memory can only be understood as a shortcut and not as true criminalistic evidence.

This analysis does not conclude that real or objective evidence is stable and never subject to change. Such evidence may change but those changes should, in most cases, be scientifically explained. At least, one can quite accurately determine just what are the precise processes of transformation. Often these changes can be so acute as to cloud the 'informative value' of the evidence. If such changes do occur, the evidence no longer carries the causal connection with the original event. It now becomes the result of that process of transformation which may remove the original "informative value" from the evidence and injects new or additional information. In that sense we can say that the criminalistic evidence is alive, although in a life of its own. Further, that is loses its connections with the event which produced it in the first place. Following are some simplified examples: Water spills out of a glass onto a hard surf ace producing evidence in the form of a wet spot. This spot however, is not stable because water evaporates. Similar situations exist with blood stains which, for some period of time, retain their informative value as physical evidence allowing a criminalist to notice them and then to conduct the proper analysis. With the passage of time however, (time becoming a transformation factor), blood stains undergo changes that may lose its informative value which can directly reflect upon the event which generated this stain to begin with.

Analyzing various possibilities of existence of those changes which prove that criminalistic evidence has its own life, we can accept the following scenarios:

a) A range of changes does not completely eliminate informative values of evidence causally connected to the event which created the evidence.

b) As a result of various elements having no con-

nection whatsoever to the original event, the evidence loses most but not all of its original value relating to the event which created it in the first place.

c) The evidence acquires different values becoming more the result of changes after the event than the event itself. This situation creates problems of mutual value ratios between those connected to the event and those resulting from changes independent of the event. It is often a situation involving "notes from the memory". Because they can possibly throw those difficult to establish ratios out of balance. Therefore, they should not be considered true evidence in a criminalistics sense.

d) The evidence loses all capacity to carry the original information and no longer can be construed as true criminalistic evidence.

The above outlined possibilities are a basic look at the changes inherent in the value of criminalistic evidence. Within each category, there may be shifting of values or there may be many degrees of resilience in the capacity to carry them. In any event, the overall picture allows for the following conclusions:

1. The criminalistic evidence documents the event as long as it is the result of those things that created the event and not the elements or factors not directly related to or connected to the event.

2. The criminalistic evidence documents the event as long as it possess the capacity to carry the informational value about the event.

3. From the moment of its creation to the moment of its collection or disappearance, the criminalistic evidence "lives" in a sense that it is subject to many changes which influence the way it preserves its value to 'read' its causal ties with that event. And by extension, the capacity to carry informational value about the event it produces.

The realization of the phenomenon of the state or 'life' of criminalistic evidence, its changes appear to be very important to a criminalist for detection, security and collection of that evidence. And finally, for its identification and interpretation based on accepted scientific principles.

—Translated from the Polish by Richard A. Grzybowski

Editors note: Professor Hanausek is Chairman of the Criminalistics Department at Jagiellonian University Law School in Krakow, Poland. He has published 296 scientific articles and 12 books in the field of Criminalistics. Five references published in foreign journals accompanied Professor Hanausek's article. I chose not to include them here. However, I can send them to you when you get up to speed on your Polish.

CAC Founder's Lecture— Oct. 1994

Margaret Pereira on

Women and the Development of Forensic Science

I would like to say how very honored I am to have been invited to give this prestigious lecture. Your Association and the Forensic Science Society have profited mutually by close links for some thirty years and I sincerely hope that this will continue long into the future.

John DeHaan approached me nearly a year ago with an invitation to speak on the subject of "Women in Forensic Science", In this day and age the involvement of women is certainly not a rarity, I am pleased to say. However, on reflection, I recognize that, even in the enlightened times in which we live and regardless of the obvious physical differences, most women face problems not encountered by their male counterparts and I shall be dealing with some of these later. One positive feature is the feminine experience of life which enables them to offer insights into forensic problems which are different from those of their male colleagues.

In the United Kingdom, there are now many women who have established highly creditable reputations in the subject and this has been the situation for more than two decades. I know that this is also true of the USA, but I suspect that they have achieved rather more prominence in your country. One only has to consider the number of women presidents of your own association; names like Dorothy Northey, Jan Bashinski and of course, your current President, Mary Gibbons. The American Academy of Forensic Sciences has also had its share of women presidents including June Jones, Maureen Owens and Marina Stajic. I regret that there are far fewer names to recount in our forensic associations in the UK. I am proud to be the immediate past president of the Forensic Science Society. I am sure that although I happen to have been the first woman elected to the presidency, the distinction of being the only one will be short-lived. We have another professional body in the UK— the British Academy of Forensic Sciences. BAFS has had two women presidents, Professor Barbara Dodd and myself.

I think that it might be of interest to look at the progress of women in forensic science in the UK. The history is interwoven with my own career and I hope that it will not be regarded as too much of an ego trip if I give a brief synopsis of how I came to be here today.

When I was at school, I developed an ambition to enter the medical profession and specialized in science subjects in my final two years. I was competing for a place at medical school just after the end of World War II. At that time the odds were stacked against women

continued on next page...

entrants to the medical profession added to which 90% of all university places were being allocated to ex-service people. Perhaps, had I been an outstanding candidate (or had a close relation in that profession) I might have been successful but instead, I found myself without a university place because of the rather unusual circumstances of the times. I decided to look for a job in a related field and I was offered two positions; one as a trainee medical laboratory technician and the other as a scientific assistant in the Metropolitan Police Laboratory in London. I accepted the latter because the pay, although meager, was marginally better. I was assigned to the biology laboratory and the initial intention of the management was that a young lady should not be involved in casework because of the nature of the majority of the investigations undertaken. Including myself there were only seven scientific staff and I was the first woman to be employed in the laboratory apart from the cleaning lady. Even the typist was a male! There was not even a "ladies" lavatory. She and I had to walk some distance to another building, taking our umbrellas when it rained. These arrangements caused me to develop a certain self discipline which has been a considerable advantage throughout my life! Conditions today could not be more different. At the Met Lab there is now a scientific staff of about 230 of whom about 90 are women. In recent years, there has been a significantly higher recruitment of women than men. Likewise under the Home Office, the Forensic Science Service employs 593 scientific staff of whom 272 are female.

I was told that a woman could not possibly be employed in such a role, that I would be unable to stand up to the rigors of cross-examination and I would almost certainly burst into tears when the going got rough.

I spent my first few months preparing standard collections for the lab, mounting reference samples of hairs and fibers and later preparing sections of timbers. (Identification of wood fragments was an important element of forensic biology at that time. Sawdust mixed with alum crystals was used as a fire proofing material in the lagging of safes and safe blowers were frequently showered with this material.) Eventually, the work intake of the lab increased and someone took the daring step of introducing me to casework and exposing me to the details of the police reports most of which were concerned with sexual offences. I had been confident that I knew the facts of life but it soon became apparent that there were some practices of which I was completely unaware. I leave you to guess! And so I learned to search clothing and other items for contact traces such as hairs and fibers and various stains of biological origin, to examine slides for spermatozoa and to test stains for species origin and ABO type.

The prospects for entering medical school continued to look bleak and, for a number of reasons, I decided to enroll as an evening student to read for a degree in biological subjects in the University of London. I attended college on four evenings each week and washed my hair on my night off. I graduated in 1953 with a good degree and was delighted at the prospect of becoming a "reporting officer." This would mean that I would be allocated my own cases and would testify in court instead of providing assistance to my senior colleagues. However, my joy was to be short-lived as I was told that a woman could not possibly be employed in such a role, that I would be unable to stand up to the rigors of cross-examination and I would almost certainly burst into tears when the going got rough. A further objection raised was that, as a woman, I would have to go through the menopause. I was all of twenty five at the time! Not surprisingly, I was highly indignant despite having been promoted to a technical grade for which I had not yet reached the minimum age. But for this, I would probably have left forensic science altogether. However, I was unable to obtain alternative employment at the, same salary level; instead I settled into a situation of assisting the Director in most of the major homicide cases and started some interesting research projects in serology. The work became more challenging and I was hooked on forensic science. Nevertheless, I continued to protest against the refusal to accept me as an expert witness simply because I was a woman.

In 1960, the sex barrier came down suddenly and quite unexpectedly. The laboratory hosted the Medico-Legal Society and laid on various displays with members of staff giving short commentaries on different aspects of the work. Many of our guests were leading criminal lawyers and I found myself under attack by a well known attorneys who specialized in defense work and who had given some of my male colleagues a very hard time in court. Unknown to me, the Director was listening outside the door. He had clearly been surprised at how I dealt with the situation and a few days later, I was allocated mv first case. I was well aware that if I did not perform well, it would certainly set back the chances of women being accepted for some years to come. I was also determined to do well in my own career and fortunately, there were no disasters. It was not long before other women were taken on as reporting officers in the Met. Lab. although it was years before the regional laboratories followed suit. It is now almost unbelievable to recall some of the attitudes of the time. For example, the Director insisted that I was not properly dressed for court without a hat. He was getting on in years and quite archaic in some respects. He went to court dressed formally in black coat and striped trousers and was absolutely horrified at the prospect of one my colleagues attending court in an advanced stage of pregnancy. This conservative attitude was not limited

to the Director. After I had given evidence in a case of buggery, a judge complained that he had never before experienced such an embarrassing incident in his court and instructed the Director not to let it happen again. I later discovered the circumstances of the case. The passive man had pleaded guilty and the active man, not guilty. The latter had put up a most unlikely explanation of what had transpired and probably, the judge felt unable to ask a woman if the defense was plausible despite the fact that she was a qualified biologist and as such could be expected to knew something about the mechanics of male sexual activity! In the event, his complaint turned out to be to my advantage as most of these cases were very routine.

I was allocated many major cases of homicide and rape but none of the humdrum male indecency cases. I was soon to be joined by another woman reporting officer, one Sheila O'Sullivan (now Keatina). A very pompous old Counsel defending in a rape case obviously felt that there were some questions one could not ask an unmarried lady. He said "Tell me, is it Mrs. or Miss O'Sullivan?" Sheila left him quite frustrated by replying "Doctor, please". He asked no further questions. After a very successful career as an expert witness, Sheila is now in charge of training at the Met Lab.

I left the Met. Lab. in 1976 on appointment to Deputy Director at the Home Office Central Research Establishment (CRE) and was soon promoted to full directorships first in the Aldermaston laboratory and later at Chepstow.

I was responsible for commissioning it and for ensuring that the staff settled down well together. The laboratory was officially opened by HRH Prince Charles in March 1980. It was essential to persuade the police forces served by the laboratory that the service they received would not deteriorate as a result of the change. Fortunately, the staff of the new lab was quickly integrated which was a great asset in gaining the confidence of the police. This was both a challenging and enjoyable episode in my career. I recall one amusing incident while I was there when a Japanese visitor came to the laboratory. A colleague introduced me as the director and the man kept looking to the left and right of me obviously looking for a man. I was forced to tell him that I was the director. The poor man was covered in confusion and explained that in his country this would not have been possible.

In 1982 I was appointed Controller of the Home Office Forensic Science Service. This required a move back to London which meant that I could again take up permanent residence with my long suffering husband. As Controller, I was responsible for six regional laboratories and CRE. This was a very demanding job and satisfying in many ways but I have to confess that I missed the close contact with casework and the camaraderie of the laboratory. I spent five and a half years in that post and retired in 1988.

One aspect of my earlier career which I found rather sickening was the press coverage. The inaccuracy and hyperbole was so irritating. Following involvement in a high profile homicide case, I was dubbed Miss Murder — a title which stuck for many years. I was once reported to have burst into tears on meeting a murder victim's husband and I was even credited by one inventive journalist with having discovered that blood contained proteins and enzymes! When I was described as "a well groomed woman" instead of the usual cliches of "attractive brunette" or "brilliant young scientist", I knew that I was really over the hill!

I would now like to discuss the many initiatives of other women forensic scientists. Firstly, I would like to pay tribute to Barbara Dodd. She was based at the London Hospital Medical College and much of her work related to paternity testing but she was also employed by the defense on stain examinations. She is a person of the highest integrity and her scientific work was highly regarded.

He said "Tell me, is it Mrs. or Miss O'Sullivan?" Sheila left him quite frustrated by replying "Doctor, please".

Shirley Butcher was a tough Australian in the chemistry division in the Met. Lab. having previously worked in the Government Chemist's Laboratory in Malaya. She was an absolute perfectionist and a force to be reckoned with. No one went out of their way to cross swords with her. Shirley saw the need for specialization in arson investigation — a male preserve if ever there was one, so she setup the laboratory's Fire Investigation Unit.

By the beginning of the seventies, there were many women in the Met. Lab. including some very bright and well qualified individuals. A number of initiatives were setup by some of the younger women in the Biology Division. For example, we had been seriously deficient in hard facts relating to the survival of seminal constituents in the human vagina. Since the pill had become the predominant method of contraception, it was possible to undertake a meaningful study and Anne Davies and Elizabeth Wilson set up a program to investigate this subject. Volunteer donors within the laboratory provided vaginal swabs and gave precise details of time intervals after sexual intercourse and the taking of swabs. Samples were also provided by some women who were not sexually active. Each donor had a number known only to Elizabeth who, in consequence, must have had unique knowledge of the sexual activities of her colleagues. Fortunately, she is a person of total reliability and there was never the slightest suggestion of breach of confidentiality! This was a research project which really

continued on next page...

needed an initiative from women. There was actually a notice in the ladies room asking "Have you remembered your swabs today?" I recall Anne Davies reading a paper on this topic at the IAFS meeting in Edinburgh in 1970. She was very pregnant at the time and I could not help musing that delegates might be thinking that perhaps her condition was the direct result of her research!

Anne Davies set up a Sexual Assault Index in the Met. Lab. and this has become a highly valued source of intelligence for the police in London and also to the National Intelligence Bureau.

Anne's work in developing the Index eventually led her into the field of offender profiling and she is currently a member of a specialist team at the Home Office which is developing this form of expertise in the UK, following the FBI initiative.

Anne Priston is yet another Met. Lab. woman who has shown much initiative. Those of you who are biologists may be familiar with the Metropolitan Police Laboratory Methods Manual which was published in 1987. Anne did a splendid editorial job on this while she was pregnant. This is another example of a woman combining the roles of forensic scientist and raising a family. She has made a special study of legal matters in relation to forensic science and is about to spend a period of attachment to Treasury Counsel. This department handles all major criminal cases in England and Wales.

Women are well represented in Dublin. ...most of the biologists there are women. There is a great spirit of cooperation between forensic scientists on both sides of the border in the island of Ireland.

Frances Lewington has become deeply involved with another aspect of forensic work. Frances became concerned about the conditions under which victims of rape and other sexual assaults were examined and took over the organization of facilities in the London area. In a collaborative exercise with certain medical examiners, well equipped examination rooms were set up and every consideration was given to the comfort of victims. This included ensuring that examination rooms were sensitively sited and that, after examination, it is possible for victims to attend to their hygiene in comfort. They are also given comfortable track suits in which to change as their own clothing is usually needed for examination in the laboratory.

Pam Hamer is a chemist in the Met. Lab. Quite early in her career she volunteered for a two year secondment to the Northern Ireland Forensic Science Laboratory at a time when that lab was under great pressure due to the escalation of terrorism.

She spent a period out of the Met Lab employed by the commercial company Foster & Freeman to work on the semi-automated system for glass refractive index measurement— GRIM. This instrument has been a great boon in the comparison of the RI of glass fragments.

Two women formerly of the Home office Forensic Science Service have set up their own firms as independent forensic scientists. In both cases they were later joined by their husbands, also forensic scientists. The firm "Forensic Access" which was set up by Angela Gallop is particularly successful. Her firm has enlarged and can now cover most aspects of forensic science. Angela is exceptionally articulate and is often consulted by the media on forensic matters. She takes radio and television in her stride like a professional broadcaster.

Although I cannot attempt to refer to every woman who has made her mark in forensic science, I would like to draw attention to two younger women, Sarah Westwood and Cecilia Buffery. Sarah has been successful as a research worker in the field of blood and body fluid typing at CRE and has published in a number of prestigious journals. Cecilia was at the Met. Lab. working on DNA.

My successor is also a woman. Dr. Janet Thompson is a scientist but does not have a forensic background. She has had the enormous responsibility of transforming the Forensic Science Service to Agency Status which means that instead of being directly funded from the public purse, it has had to become a self-funding organization selling its services to the police and other agencies. The new conditions have given the Service greater flexibility in the work it undertakes.

In addition to scientists, women medical examiners (Police Surgeons) have been around for many years, even longer than I have! Until a few years ago we had no women forensic pathologists but now, out of a total of 47 on the home Office list, there are four women and I am sure this figure will rise. In another related field, Sue Thornewill is head of fingerprint training at the National Training Centre for Scientific Support to Crime Investigation. I am sure that the very thought of her appointment would be enough to make some of the old fingerprint specialists of my youth turn in their graves! There is also an increasing number of women Scenes of Crime Officers.

I have also attempted to consider the situation of women in forensic science outside British mainland although my information is not as comprehensive as I would have liked it to be. Across the Irish Channel, Stella McCrossan is a chemist and a leading light in the Northern Ireland Forensic Science Laboratory. She had a major role in establishing the laboratory in its new premises following the devastation of the former lab due to an IRA bomb. Stella is a person of great drive and a very active member of our Society. Over the border in the Republic of Ireland, Sheila Willis is head of Chemistry at the Forensic Science Laboratory in Dublin.

She is a powerful personality both in her work and in her relaxation. The last time I met her she had just climbed the Matterhorn! Women are well represented in Dublin. Maureen Smyth is head of biology and most of the biologists there are women. There is a great spirit of cooperation between forensic scientists on both sides of the border in the island of Ireland. A few years ago Stella and Sheila were joint conveners of one of our Society's very successful meetings.

Professeur Michele Rudler, one time director of the Laboratoire Interregional de Police Scientifique in Paris, now heads the Institut Universitaire de Medicine Legale et de Droit Medical in the University of Paris and is Chief Medical Examiner for the city of Paris. She gave up her former post because she was unable to continue her research in toxicology. She is also the French expert on chemical weapons at the UN. On being asked if she had found being a woman a handicap in her career, she replied that she had experienced many difficulties but that she had succeeded because she was a fighter and she loved her work. She also expressed a wish that I would be able to promote the cause of equal rights for women scientist's in Europe. Another woman who holds a senior position is Margaret Lawton. She is the director of the forensic science laboratory in New Zealand. There must be many achievements by women in the USA which are not included here but you do not need a Brit to lecture you about your own country.

Unfortunately, it is not possible to give a global picture of the relative proportion of women vis a vis men working in forensic science and the positions they hold. In the UK there is now quite a high percentage of women involved and there is a good proportion of reporting officers but there are still relatively few women in senior positions. Of course there are some obvious reasons for this. Many women give up their careers to raise families or take a long break which naturally has an adverse effect on the promotion stakes particularly in a subject in which there are many advances in a relatively short space of time. There are also other problems which are even more specific to forensic science; forensic scientists have to be prepared to attend scenes of crime at any time of the day or night. The demands of court are also very intrusive into one's personal life and one needs a very understanding husband to put up with the demands of the job. Of course, wives of forensic scientists are expected to take such vicissitudes in their stride! In the UK we have seen a number of forensic marriages and it has been said that having a spouse who really knows and accepts the demands of the job is a definite plus. In addition to the obvious impediments to promotion which raising a family can bring, there is still a feeling among women in the UK that an element of sexual discrimination remains and that one's chances of reaching a senior position as a woman are definitely reduced. Two of the women I have mentioned in this talk have said, quite independently, that they think women have shown more initiative than their male colleagues and that this is at least partly due to what they consider to be limited career development opportunities. If this is so, one might justifiably conclude that women have given a great deal to forensic science but they have not yet reached their full potential in terms of seniority.

So far I have considered the position of women in forensic science more or less in isolation but it is perhaps useful to consider the enormous progress which has been made in this subject and also the responsibilities of the forensic scientist. I find it almost horrifying to look back on the limitations of forensic science in my early years. Of course, all aspects of science have come a long way but I cannot help feeling that, in those days, forensic science in the UK, and I suspect elsewhere as well, was something of a poor relation in scientific terms. I made my first visit to the USA in 1964 and managed to include a visit to the FBI lab. I went in expectation of finding a laboratory far in advance both in equipment and accommodation compared with our lab at the old Scotland Yard building. Instead, I felt almost as if I had just come home. Although there were differences in the crime pattern such as the greater use of firearms in the USA, many of the problems were the same. There were even cardboard boxes under the benches containing items for examination just like our lab in London. How very different both labs are today, highly organized and very well equipped.

I wonder how long it will be before many of the systems on which we relied so much will become obsolete. Will typing in such systems as ABO, PGM and haptoglobin be a thing of the past? I suspect so.

One aspect of the work of a forensic scientist in my early days, was the wide range of so-called expertise that one was expected to be able to provide. I was happy to cope with blood and body fluid stains, with identification and comparison of hairs and textile fibers and even comparison of shoe prints and toolmarks. I drew the line at toxicology and other forms of analytical chemistry. Theft of coal was not unusual when I was young. Coal was then the principal form of domestic heating and furthermore, it was rationed. (Because of the dire economic situation in the UK due to the war, many commodities were rationed until 1953.) Comparison of coal samples was a ghastly job. It involved digesting the samples in pyridine to extract the spores and carrying out differential counts of the various spore types. The process took days and I always felt that we were short of hard evidence of the significance of match-

continued on next page...

ing samples. I am glad that I was only involved in this work as an assistant as I would not have felt competent to testify on this matter.

From these early beginnings, which perhaps only people of my vintage have experienced, it has been very exciting to witness the development of forensic science from very rudimentary methods to the present day state of the art. When I started, one needed a blood stain about the size of a dime to determine the ABO type. We did not even have anti-H in those days. Since nearly half of the UK population are of group 0, this meant that unless we were able to demonstrate the presence of anti-A and anti-B, we had the unacceptable situation of negative reactions from a large number of the stains that we attempted to type. Over the years many additional markers have become available for dried stain work with the various polymorphisms identified by electrophoresis and isoelectric focusing to say nothing of the great breakthrough with the introduction of DNA analysis in dried stain work. I wonder how long it will be before many of the systems on which we relied so much will become obsolete. Will typing in such systems as ABO, PGM and haptoglobin be a thing of the past? I suspect so.

Analysis of blood and urine for alcohol levels, particularly in drink driving cases has been bread and butter work for forensic scientists. In the UK, although breath testing has been standard for many years, motorists have the option of blood analysis for confirmation if they are over the statutory limit. In days gone by, analysis depended on measuring the degree of reduction of an oxidizing agent and involved tedious titrations. The introduction of gas chromatography brought about an enormous improvement in efficiency and accuracy. The analysts used to pipette the samples by mouth and careless individuals had the occasional unfortunate accident! I quote this example because it gives an idea of the appalling lack of sound health and safety standards at that time.

There were no comparison microscopes for work on hairs and fibers. I recall the introduction in the late fifties of a bridge to connect two simple microscopes. It was a marginal improvement but within a few years we were able to commission the development of a sophisticated comparison microscope with matched optics complete with the option of a UV light source. The development of thin-layer chromatography enabled further comparison of fiber dyes. This was particularly useful with dark colored fibers. Microspectrophotometry was another useful development as was the introduction of infrared spectrography for distinguishing different types of acrylics. This is but one example of the progress which

concludes on page 26

Greg Matheson

Observations From the Witness Stand
— *or* —
Sitting in the Hot Seat of Department 103 Criminal Courts Building Los Angeles

What were my expectations of Criminalistics when I chose to make it my career?

I expected to:

- Be technically challenged.
- Be required to maintain a level of technical expertise commensurate with the type of analyses being performed.
- Support my knowledge and the basis for my knowledge before a court of law.
- Be required to act in a professional manner and
- Be treated professionally.

I did not expect to:

- Be personally challenged in areas not associated with my profession.
- Have my personal honesty and ethics vehemently challenged.
- Have these events occur before the general public.

Most people do not enter criminalistics with the expectation, or even the desire, to achieve general public celebrity. Though I realize that my work is subject to public review and criticism, I had expected it to be limited to the confines of the legal arena.

Recent events have required members of our profession to 'perform' in an arena that is foreign to most of us — the forum of larger public opinion and scrutiny.

There were times when I wanted to believe that the trial of O.J. Simpson should be like any other. After all, testifying is simply answering the questions placed before you, as straight and honestly as possible. However, the critiques and reviews, from all sources, that occurred in this case can effect the witnesses in many unique ways. Not necessarily in the words that will be used, or the honesty or professionalism, but rather on the stresses placed on the witness. Knowing every word and action will be analyzed, dissected and potentially misunderstood or misinterpreted by many people. The majority of which are not associated with the trial, creates a layer of stress not normally encountered. Having a live television camera in the courtroom gave the feeling of being a specimen placed under a microscope. It was occasionally possible to forget its presence, then mid sentence I would hear the motor activate and would wonder if it was panning away or zooming in for a close up. A whole new dimension in courtroom distraction. The only way to describe the feeling associated with this case is 'consuming.' One of the duties of a criminalists is to testify in a court of law. This, like so many other things associated with any profession, is only one aspect of the job. The ideal criminalist would be highly intelligent, loaded with common sense, very experienced in technical subjects and life in general, able to prepare and complete vital and relevant research projects, maintain a high case output and finally, be able to articulate all of these knowledge, skills and abilities with the ease and poise of a professional orator. Unfortunately, most are gifted with the ability to claim only one, two or at most three of these strengths.

Due to the constant analysis by legal experts and the scrutiny of the general public, it became obvious that many misconceptions and misunderstandings exist regarding expert witness testimony. The most unfair misconception I observed was when a person's ability to testify was equated with their technical capabilities and intellect. Also, the legal analysts failed to comprehend that a criminalist's performance on the stand can be directly influenced by the skill of the attorneys. The answers given are many times directly related to and limited by the wording of a question. The performance on a single day or collection of days may not be reflective of a person's ability on most other days.

The most unfair misconception I observed was when a person's ability to testify was equated with their technical capabilities and intellect.

Before testifying I received advice and support from family, friends and colleagues. The best advice I received and I passed on to those that followed was the simplest and the most obvious— to be totally honest. Even though everyone knows the importance and necessity of telling the truth on the witness stand, it was still the best advice. You can never be cornered, belittled or disgraced if you admit to your shortcomings and support your strengths and successes while advocating only the evidence and your results. It may not be what the prosecution, defense or even your management wants to hear, but by being totally honest and straightforward, you can walk out of the courtroom with your head held high, knowing you are a true professional. The attention this crime receives is out of proportion when compared to the many brutal murders that occur in the City of Los Angeles. But the reality is, the attention exists. All of the members of the LAPD Crime Lab are trying to deal with the unprecedented attention that this case has brought to our laboratory and the profession. Though it has been difficult, I believe as long as we do the best job that we can, learn from our successes as well as our mistakes, and work toward improving our profession, the experience will ultimately be positive.

Supreme Court Again Reviews "Usable Quantity" in Drug Cases

and Reaches Same Conclusion (more or less)

I have been called many things, fortunately "lawyer" is not among them. As criminalists, though, we practice in the legal environment and if the lawyers are to dictate practice, we can at least be cognizant of the latest set of "rules" set down for us by that subgroup of lawyers known as judges.

People v. Rubacalba (6Cal.4th 62) is a California Supreme Court case which revisits the issue of usable quantity in controlled substance cases.

Usable quantity questions have been addressed for some time by the courts, but no matter how often the court speaks, the issue never seems to quite go away. California case law apparently begins with *People v. Leal*[1] which stated possession of "useless traces or residue" is insufficient to sustain a prosecution for possession of a controlled substance. In typical legal fashion, the Court did not elaborate on what constitutes "useless traces or residue." So analysts or analysts within the context of what minimum quality the local district attorney will file, have somewhat arbitrarily set what constitutes a residue.

This often leads to the question of whether the sample was sufficient to produce a "narcotic effect." Without a quantitative analysis and knowledge of what amount produces a physiological effect, the criminalist may not be able to provide an answer.

The California Court of Appeal in *People v. Pohle*[2] indicated it was not necessary to show possession of such an amount of the active components as would be sufficient to produce a narcotic effect. In short, the question of narcotic effect is moot, yet how often have we all been asked just that question in court. Moreover, the Court of Appeal in *People v. Camp*[3] specifically stated there was no need to prove the weight or volume of controlled substance in a sample.

In 1993, the issue of usable quantity was again addressed by the California Supreme Court in *People v. Rubacalba*[4]

In Los Angeles County Superior Court, Pascual Hernandez Rubacalba was tried on a charge of possession of cocaine. An LAPD officer testified he saw Mr.Rubacalba drop an off white object about one-quarter the size of an aspirin which resembled rock cocaine. The officer opined that the object was a usable quantity based on the fact that it "could be placed in a pipe or similar smoking device and smoked". Attempts by the defense to inquire of the officer and the criminalist about the amount of cocaine needed "to get one high" and the purity of the cocaine were disallowed upon prosecution objection.

The jury was instructed that the defendant had to have knowledge of the presence of the controlled substance, its nature as a controlled substance, that the substance possessed must be "in an amount sufficient to be used as a controlled substance"[5], and that it is not necessary that "the amount possessed, if used, would have the effect it is ordinarily expected to produce, referred to as narcotic effect"[6]. The jury convicted Mr. Rubacalba, who appealed on the basis that the trial court improperly restricted defendant's right to cross examine the prosecution's witnesses.

In discussing the case, the Supreme Court reviewed both Leal and Pohle cases along with *People v. Schenk* (We reject the contention that the crime of possession of a restricted dangerous drug requires that the quantity of the drug be sufficient to produce a drug effect)[7], *People v. Karmelich* (chemist testified he did not perform a quantitative analysis and could not say whether the substance contained more than one-tenth of 1 percent heroin)[8], *People v. Harris* (the expert did not test for, and did not testify as to the purity of the substance, although it admittedly was adulterated)[9] and *People v Carmichael* (no quantitative chemical analysis needed even though the chemist was unable to state the amount of pure heroin present in the powder and the possibility exists that only traces of heroin were present in the mixture)[10].

In typical legal fashion, the Court did not elaborate on what constitutes "useless traces or residue."

"These cases make clear that the *Leal* usable-quantity rule prohibits conviction only when the substance possessed simply cannot be used, such as when it is only a blackened residue or a useless trace. It does not extend to a substance containing contraband, even if not pure, if the substance is in a form and quantity that can be used. No particular purity or narcotic effect need be proven" wrote Justice Arabian in the majority opinion. Within this context, the trial court did not abuse its discretion in sustaining relevance objections on questions of purity and the amount of cocaine needed to get "high".

The presence of the narcotic must be reflected in some form as reasonably imputes knowledge to the defendant.

—Hiram Evans, MSc, FABC
San Bernardino

[1] *People v. Leal*, 64 Cal.2d 504; 1966.
[2] *People v. Pohle*, 20 Cal.App.3d 78; 1971.
[3] *People v. Camp* 104 Cal.App.3d 244; 1980.
[4] *People v. Rubacalba*, 6 Cal.4th 62, 1993.
[5] CALJIC No. 12.00.
[6] CALJIC No. 12.33.
[7] 24 Cal.App.3d 233
[8] 92 Cal.App.3d 455.
[9] 15 Cal.App.3d 498,501.
[10] 258 Cal.App.3d 103,108,107.

Off the Wire

TV Cameras in Court: Time to Rethink?

O.J. Simpson's murder trial has lasted so long and become an entertainment bonanza in part because TV cameras are allowed to cover the proceedings, a Simpson attorney who initially supported such coverage said Saturday.

"I now shudder at how naive and idealistic I was," Gerald Uelmen told newspaper editors.

Uelmen, speaking about the many other high-profile cases that during their time were dubbed "The Trial of the Century," said the only thing that makes Simpson different is the TV coverage.

And the adverse effects, he said, -particularly on witnesses, could mean the end of cameras in the courtroom for such sensational trials.

"To find out what's really happening in the next trial of the century, the American public may have to start reading newspapers again," he said. "We'll all be better off if they do."

Uelmen spoke at the annual joint meeting of the California Society of Newspaper Editors and the Associated Press News Executives Council.

A former dean of Santa Clara University Law School, Uelmen is a member of the legal team defending Simpson on charges he murdered his ex-wife Nicole Brown Simpson and her friend Ronald Goldman.

Uelmen said he supported cameras in the courtroom because it would "open the walls of a tiny courtroom and allow everyone who was interested to come in to observe and learn." But he said his idealism turned to alarm.

"The witnesses in this case have borne the greatest brunt of media intrusion into their lives, and we may never be able to sort out all of the ways their credibility was enhanced or diminished by their celebrity."

In court, he said, lawyers seem to argue longer and "a dramatic put-down of the lawyers on the other side is a sure sound bite on the evening news, and a way to regain momentum on a bad day."

Uelmen said incredible demands are being put on the trial-by-jury system to improve society and at the same time "entertain us on a daily basis."

"We have created such unrealistic expectations that disappointment is inevitable," he said. "Whichever way this trial comes out, we will return to a world in which cops still lie, husbands still beat their wives, black people and white people still don't listen to each other and senators still make asses of themselves."

Excerpted from an AP story in the San Francisco Sunday Examiner and Chronicle

Insider Information

Los Angeles Police Dept.: New hires: Nabila Abdelsayed, Chris Coleman, Kevin Hollomon, Michelle Presley, Elizabeth Swanson Promotions: Joe Hourigan and Larry Blanton from Criminalist III to Supervising Criminalist.

San Mateo Co. Sheriff: New Hires: Linda French (Baxter), Jim Mudge (from San Diego SO) Promotions: Bill Lewellen from Criminalist to Supervising Criminalist.

San Diego Police Dept.: New Hires: Janine Dowgialo, Suzette Sanders (from Chicago PD), Tanya DeLaney (From San Diego Sheriff) and Jennifer Shen (From San Diego Sheriff) Resignations: Sandy Wiersema to the FBI

San Diego Sheriff Office: The whole laboratory moved to 5255 Mount Etna Dr San Diego, CA 92117 Resignations: Tanya DeLaney (To San Diego PD), Jennifer Shen (To San Diego PD) and Jim Mudge (to San Mateo Sheriff)

Orange County Sheriff: Resignations: Dan Gammie (to private engineering practice)

Ventura County Sheriff: Resignations: Dan Anderson (to Los Angeles County Coroner)

Los Angeles Co. Coroners Office: New Hires: Dan Anderson (from Ventura County Sheriff)

California Laboratory of Forensic Science: The laboratory moved to - 3890 Prospect Avenue, Suite A Yorba Linda, CA 92686 New Hires: Susi Goodhart

Riverside DOJ: Promotions: Kristen Rager, from Lab Tech to Criminalist

San Bernardino Sheriff: New Hires: Gisela Eszeki, as Lab Tech

Santa Clara County DA: New Hires: Cynthia Hall (from DOJ Berkeley) Resignations: Douglas Rudolfi (to Illinois State as a Document Examiner)

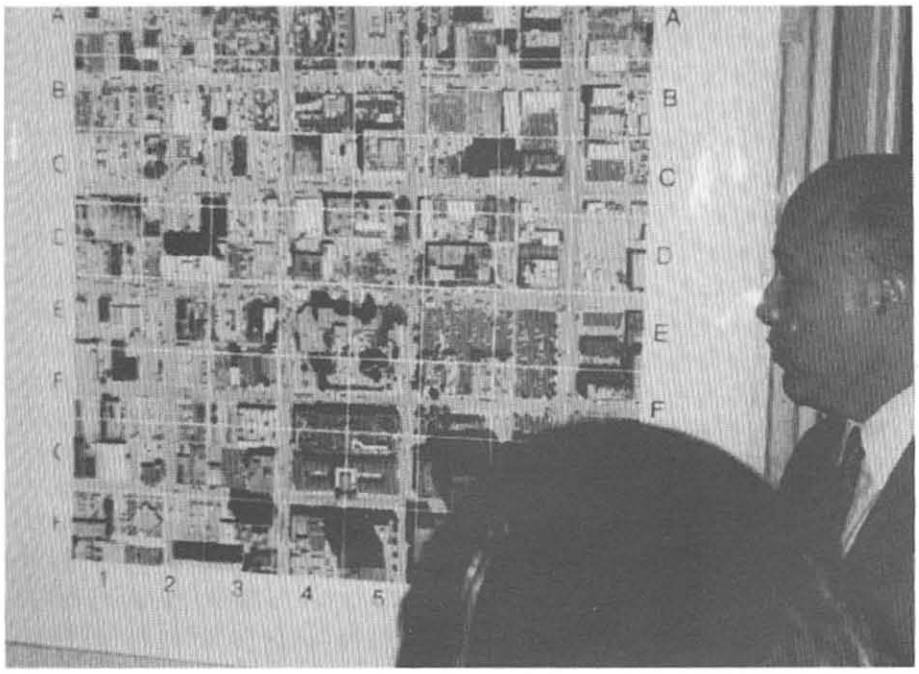
Sacramento DOJ: New Hires: Chip Pollack (from Contra Costa Co)

Los Angeles County Sheriff: New Hires: Keri Dunn, Meena Hum, Jason VanCleff Promotions: Ron Linhart, from Supervisor to Assistant Laboratory Director - Lynn Herold and Ken Sewell from Criminalist to Supervising Criminalist. Mike Oto and Magdy Nasih from Lab Tech to Criminalist

Contra Costa County Sheriff: New Hires: Amy Bradburn Promotions: Bruce Fukyama from Criminalist to Supervising Criminalist Resignations: Chip Pollock (to DOJ Sacramento)

Sacramento County DA: New Hires: Kristi Abbott, Leslie Poole (Forensic Lab Techs), Trevor Wilson (Criminalist) Promotions: Brian Escamilla from Lab Tech to Crim II, Jim Beede from Criminalist III to Supervising Criminalist

San Francisco Police Department: New Hires: Corbin Yem (Criminalist), Pam Hoffsass (PO/Criminalist)



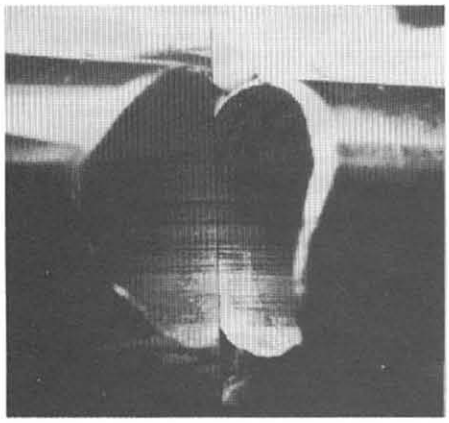
Ground Zero

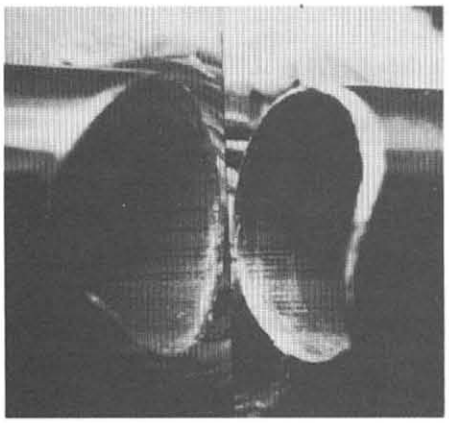
Oklahoma City.

An FBI agent describes an aerial view of the infamous bombing site (left) at the Spring 1995 Seminar, hosted by the Contra Costa lab.

Glimpses of Spring '95

The seminar hosted by Contra Costa included *(clockwise from upper right)* Jim White accepting a Merit Award for years of service as Treasurer; Pete Barnett presenting the Edward F. Rhodes III Distinguished Service Award to Gloria Rhodes; OJ juror entertainers "The Raspyni Bros." entertain at the CAC banquet; Hiram Evans accepts the Distinguished Member Award from Pres. Mary Gibbons; incoming Pres. Carol Hunter accepts the gavel from Mary. *Top photo: Paul Dougherty, all others: Karen Sheldon.*





An Interesting Physical Match

I was recently requested to compare the antenna torn from an automobile with an antenna assembly removed from a suspect vehicle involved in a sexual assault. Briefly, the circumstances surrounding the antennae began after the victim was told to get out of the suspect's vehicle. Upon exiting the vehicle the victim grabbed the antenna and broke it off. While at the hospital the victim refused to relinquish the antenna to anyone but police and held on to it until they arrived.

Examination of the fractured ends of the antenna pieces revealed thin tubular metal construction. The edges offered a poor quality physical match due to distortion and the extreme thinness of the metal. Extrusion marks produced during manufacture of the antenna tubing, however, were present on the inside surface of the antenna pieces. The markings were compared on the comparison microscope. Soft fluorescent lighting was used to evenly illuminate the curved interior structure of the antenna pieces. The pieces were supported in clay on each stage in an upward angle to permit the best view of the interior surface. Low magnification and high f-stop settings were used to maximize depth of field during photography of the curved surface.

Excellent agreement of the striated extrusion marks were observed around the interior circumference of the tube (*see photos*). Observation of these markings strongly bolstered my opinion in concluding that the two antennae pieces had once been the same antenna rather than struggling with an opinion involving an otherwise poor quality physical match. Although not noted in the photographs, surface scratches on the exterior of the antennae also displayed good agreement.

—Bruce Moran
Santa Clara Co.
District Attorney's Crime Lab

The Santa Clara DA's Crime Lab
has reserved the elegant
Crown Sterling Suites Hotel in Milpitas–
in "Silicon Valley"
for the upcoming
Spring 1996 Seminar, May 14-18,
of the
California Association of Criminalists.
Please make your plans now to attend.

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Technical Note:

Specificity of Microcrystalline Tests for Heroin

*John I. Thornton**

Several publications exist for the benefit of attorneys engaged in the defense of clients charged with possession or sale of drugs or narcotics. Conspicuous among these is the publication entitled *Defense of Narcotic Cases,* by Bernheim [1].

In this publication the issue of the specificity of microcrystalline tests is raised. Bernheim refers in the text to the somewhat obscurely reported work of Splies and Shellow [2] in which the "same" crystals were obtained with heroin and with three heroin analogs, viz., diacetyldihydromorphine, dipropionyldihydromorphine, and dipropionylmorphine. The reagents used were platonic chloride and gold bromide. However, Shellow, as quoted by Bernheim [1] has summarized this work by saying:

Each of these compounds yields a color, crystal structure or precipitate which cannot be distinguished from those formed by heroin.

The subject has been of haunting interest to me for a number of years, since I would include myself among those who consider microcrystalline tests to have high specificity.

Reference to the original work of Splies and Shellow [2] indicates that they never actually said in the original work that their three new compounds and heroin gave indistinguishable crystals. What Splies and Shellow said was their three synthesized phenanthrenes and heroin gave the following:

	Test Reagent	
Compound	**PtCl4**	**AuBr3(HCl)**
Diacetyldihydromorphine	rosettes, yellow needles	sheaves, orange--brown
Dipropionyldihydromorphine	rosettes, yellow blades	sheaves, orange--brown
Dipropionylmorphine	rosettes, yellow blades	sheaves, orange--brown
Diacetylmorphine	rosettes, yellow needles or blades	fine sheaves or rosettes

The reader will note, however, that these are general terms, and within the scope of these terms the expression of a crystal habit characteristic of a single compound may still be evidenced. I don't know why anyone would want to do it, but it would be possible to apply the designation of "blades" to both the "Christmas seals" of racemic amphetamine and the "lightning bolts" of methamphetamine, as given with gold chloride, despite the fact that they can easily be distinguished from one another. Lundquist [3] writes that the validity of a microcrystalline test:

[D]epends on the exact recognition of the crystals formed, as with a given reagent a dozen alkaloids may all give 'needles' differing but slightly in form and habit.

And Fulton [4] puts it thusly:

The chief characteristics of size, form, and aggregation are immediately obvious and so is color. The details, however, require careful examination... Observe carefully such details of form as that the ends of blades, rods, prisms, or bard are 'square' slanting, pointed incised or ragged. Observe the variations in crystals in the same test drop and the relations between different forms.

I have for years wanted to check out whether these materials are in fact indistinguishable, by synthesizing the three phenanthrenes and testing them to determine the precise crystal form. Commonsense chemistry says that they would be distinguishable, because Mother Nature isn't likely to ignore an extra carbon or a couple fewer hydrogens when packing the molecules into a crystalline precipitate. Still, the actual testing of these heroin analogs would be the only way to properly resolve this issue.

And herein lies the problem. I have, over the last 20 years, tried unsuccessfully to synthesize the dihydro derivative of morphine. Dihydromorphine is the starting material for the further synthesis of the phenanthrenes of Splies and Shellow. When I was at the University of California, and encountered a student with a strong background in synthetic organic chemistry, I gave them a few grams of morphine and had them attempt the synthesis precisely described by Splies and Shellow. This work was carried out over the years by perhaps half a dozen different people, all of whom were better chemists than I could ever hope to be, but with the same result... the product was the same as the starting product, i.e. morphine. We consistently failed to recover dihydromorphine from the reduction of morphine with hydrogen, using platinum oxide as the catalyst. For years I assumed that we just hadn't executed the synthesis properly and that the fault was resident in us; in short, I assumed that morphine was a real stinker to reduce.

But at the present time, I suspect that some other factors are at play here. It may well be that morphine is a stinker to reduce, but it wouldn't be any harder to reduce in California than in Wisconsin. If we are having so much trouble with the conversion, could it be that Splies and Shellow had the same problems? If the diacetyldihydromorphine products of Splies and Shellow was still partly or largely diacetylmorphine, it would explain why their diacetyldihydromorphine crystals were so similar to heroin. Could it be that the starting material for their further synthesis wasn't dihydromorphine, but simply morphine? I don't know that this is actually the case, but our experience here certainly makes us wonder.

References

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Forensic Biology Sample Collection and Handling Techniques: A Look at Methods Utilized by California Crime Labs

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Abstract:

On 04 April 1995, the Southern Serology and DNA Study Groups of the California Association of Criminalists met jointly to discuss forensic biology sample collection and handling methods in the controlled laboratory environment and in the non-controlled field environment. This meeting demonstrated that a specific, uniform methodology common between laboratories was not apparent. Although the specific techniques varied, the principles applied by all the laboratories were similar and the methodologies chosen were aimed at contamination prevention as an important priority with secondary thought to maximum sample recovery. The group was not as concerned with manipulative methods in the controlled laboratory environment as they were with the non-controlled sampling and handling in the field, especially by individuals who lack the proper training and experience.

Key Words: sample collection, sample contamination, sample manipulation, field collection, contamination prevention

Introduction

On 04 April 1995 the California Association of Criminalists (CAC) Southern Section Serology Study Group and the CAC Southern Section DNA Study Group held a joint meeting to discuss topics concerning forensic biology sample collection and handling techniques. The discussion was led by DNA Co-Chair Rob Keister (Orange County Sheriff-Coroner Department) and Serology Co-Chair Dean Gialamas (California Laboratory of Forensic Science). The purpose of the joint meeting was threefold. First, the meeting helped to establish what techniques California DNA laboratories were utilizing in sample collection and handling in the controlled laboratory environment. Second, the meeting attempted to establish what techniques conventional (traditional) serology laboratories should be utilizing in the controlled laboratory environment. Third, it addressed issues concerning sample collection and manipulation in the field where the environmental conditions cannot be controlled.

A cross-section of mostly southern California laboratories were represented at this informal meeting. The laboratories included:

California Laboratory of Forensic Science
DOJ-Berkeley DNA Laboratory
DOJ-Riverside Laboratory
Long Beach Police Department
Los Angeles Police Department
Los Angeles County Sheriff's Department
Orange County Sheriff-Coroner Department
San Bernardino County Sheriff's Department
San Diego Police Department
Technical Associates, Incorporated
Ventura County Sheriff's Department

General comments from the meeting will be addressed in this manuscript. The methods of individual laboratories will not be discussed here. Although the specific techniques varied, the principles applied by all the laboratories were similar and the methodologies chosen were aimed at contamination prevention as the primary priority. The meeting did not have an agenda or formal structure, so points may not have been discussed in length. Therefore, this manuscript is not intended to be a complete discussion of all the possible proper methods and/or techniques, but rather a summary of the points addressed at this informal gathering.

Sample Collection —*Collection in the laboratory*

All the agencies agreed that sample manipulation should be in physical areas separated from the that of DNA processing. They used one or more of the following sample collection devices (in random order): cloth swatches, cloth threads, filter paper, swabs, and sterile gauze. All agencies agreed that if the sample could be scraped, then transfer of the sample via the methods listed above should be avoided. Some agencies favored certain techniques while others found them difficult to work with. Swabs were favored for their ability to collect a sample using sterilized conditions (i.e. sterile swab) and minimal utensil/criminalist manipulation (i.e. only touch the stick). Many reported that swabs are difficult to extract and their use in limited size samples could prevent results from being obtained (e.g. using a swab to sample 1.0 mm size bloodspatter). Cloth swatches and threads were favored for their ability to extract well, but they

[1] *Co-Chair, CAC Southern Section Serology Study Group and Criminalist, California Laboratory of Forensic Science;* [2] *Co-Chair, CAC Southern Section Serology Study Group and Criminalist, San Bernardino Co. Sheriff's Dept.*

require greater utensil/criminalist manipulation thereby potentially increasing the chance for possible contamination. Some report no difference in extractability of the swabs in comparison to the swatches. Swabs and swatches were reported to have greater extraction capabilities than filter paper. Sterile gauze and cloth threads reportedly had the same "features" as the cloth swatches. The techniques can vary amongst analysts based on the size and location of the stain as well as the experience of the analyst/laboratory in performing tests and extracting the maximum amount of sample from the various sampling media mentioned.

All the agencies present agree that a control sample should be taken in the area of the stain to evaluate (1) any possible underlying contamination and (2) to determine if there are any substrate problems. The control sample should preferentially be unstained, although, in certain cases unstained areas are not always available. The main purpose of the control is for comparative purposes, chiefly used for sample result evaluation and/or interpretation. If equal or higher levels of activity are present in a control sample when compared to an evidence stain, then the evaluation and interpretation of the stain result will, obviously, be problematic. Control samples with lower activity than an evidence stain may or may not be problematic, depending on case/sample circumstances.

It was recommended that all personnel simply submit the item to the laboratory for proper handling and sampling prior to analysis and manipulate a sample in the field as a "last resort."

Sample Collection—*Collection in the field*

Collection by criminalists in the field were similar to the laboratory practices. All the agencies had some concern about improperly (sometimes untrained) personnel collecting samples. In these situations, it was recommended that the ill/untrained personnel simply submit the entire item to the laboratory for proper sampling prior to analysis and, therefore, manipulate samples in the field as a "last resort."

Many of the agencies agreed that without properly trained personnel present at the crime scene, the laboratory has no 'control' over how or where the control samples are taken. All the agencies agreed that the controls should be taken in manner identical to an agency's laboratory practices. It should be noted that if the entire item is collected and submitted to the laboratory when possible, then the control is included, inherently, for the laboratory.

Sample Handling—*in the laboratory*

All the agencies used one or more of the following sample handling utensils (in random order): forceps, razor blades, scalpel blades, scissors, and tweezers. Razor blades and scalpel blades were favored for their inexpensive cost and the ability to use the sharp tip to pierce the sample for manipulation into a vial without using another tool to manipulate the sample. Some suggested using a blade only once and then disposing of the blade to prevent any possibility of cross-contamination, while others felt that if internal studies have shown that cleansing is effective, then the blade could be used until dull. Scissors are used in the same manipulative manner as the blades (i.e. use then pierce), although they are not economically disposable; therefore, some suggested using the scissors only on one sample and autoclaving prior to subsequent use, while others have shown proper cleansing is effective to re-use the utensil. Forceps are only used when necessary; if used, the recommended manipulations follow that of the scissors. The techniques can vary amongst analysts based on the size and location of the sample as well as the experience of the analyst/laboratory in manipulating the sample with the various utensils mentioned.

All the agencies use a clean, fresh sheet of paper, "Kimwipe", or weighing paper for underlayment of samples during manipulation. All reported the ease of use and the inexpensive cost for this preventative measure. One agency reported that paraffin film was used to cover samples in order to prevent aerosol contamination when necessity forced manipulation while samples were exposed. Separate areas of sample collection/manipulation and areas of DNA analysis are stressed by all through physical space and/or time.

Sample Handling —*in the field*

Sample handling by criminalists in the field were similar to the laboratory practices. Again, the agencies had some concern about improperly trained personnel manipulating samples. In these situations, it was recommended that all personnel simply submit the item to the laboratory for proper handling and sampling prior to analysis and manipulate a sample in the field as a "last resort."

Utensil Cleaning —*in the laboratory*

Utensil cleaning varied between laboratories significantly more than any other methods discussed. Variations ranged between using only disposable utensils, thereby, eliminating the need for cleansing, to using utensils with scrupulous cleansing between uses until the utensil is no longer effective. When cleansing was used, the methods and cleansing agents varied significantly. Many reported a cleaning process which was performed in duplicate (i.e. double washes); the only exception were those using autoclaving as a cleansing mechanism. Many reported using ethanol (or a solution of ethanol in water) as a liquid cleaning agent. Concerns were raised about this commonly used solvent for the purposes of sample manipulation since ethanol is routinely used in clinical laboratories as a fixative; it was not known if using ethanol does more harm than good as a cleaning agent. Others recommended using sterile distilled water or sterile saline. Proponents of this method stated that their research shows water/saline was more effective at removing DNA from utensils than did ethanol. Additionally, bleach and other disinfectants, such as germicides, were recommended by others. One laboratory washed their utensils twice and between each wash used a flame to sterilize them. Another used ethanol and bleach as a cleansing agent.

A marked difference was noted in the intensity of cleaning between DNA laboratory analysts and the conventional serological analysts. Although strict procedures were followed by the conventional serology analysts, the intensity of the cleaning was not the same as reported by the DNA laboratories. As such, less scrupulous cleansing of the utensils are performed in the conventional serology laboratory since small amounts of contamination, if it exists, does not affect their methods. As one analyst stated, "There is a big, important difference between cleaning cells versus cleaning raw DNA material."

Utensil Cleaning —*in the field*

Utensil cleaning by criminalists in the field were similar to the laboratory practices. Again, the agencies had some concern about improperly or untrained personnel manipulating samples while maintaining clean utensils. In these situations, it was recommended that all personnel simply submit the item to the laboratory for proper handling and sampling prior to analysis and manipulate a sample in the field as a "last resort." Field personnel should follow similar methods of cleaning as the laboratory, with special emphasis on rigidity and intensity to prevent sample contamination. It was recommended that the field personnel use cleaning reagents in squirt bottles for cleansing rather than a dropper or a beaker filled with reagent to prevent possible cross-contamination issues.

Adaptation of DNA Analyses to Conventional Serological Methods

Some of the laboratories have modified their DNA analysis procedures to accommodate for conventional serological methods. Such methods included: ABO(H) antigen typing, amylase (saliva) testing, microscopic examinations for cellular material, p30 quantitation, presumptive tests for blood, presumptive tests for semen, and water soluble proteins (e.g. PGM). The laboratories are accomplishing this via preparing a water soluble extract of their stain prior to exposure to the DNA manipulative procedures. This is reported to be a very simple water, saline or buffered solution extract which has no effect on DNA sample preparation.

"There is a big, important difference between cleaning cells versus cleaning raw DNA material."

Since many laboratories are currently phasing out some of their conventional serological analyses, concern was raised about the increasing number of DNA analysts who lack conventional serological

experience. Some remarked that there are questions that DNA cannot answer alone: identifying and/or determining relative levels of physiological fluids, elucidating some mixtures, typing of aspermic semen donors, serum testing, racial marker identification, etc. All agreed that while many laboratories are "phasing out" the conventional methods, it cannot be phased out completely. Clearly, laboratories realize that there are a number of methods available to conventional serological analyses that prevent its demise altogether.

Some laboratories reported using conventional serology methods to screen samples for DNA testing. The methods are more rapid and have very little cost in relation to DNA procedures. Some laboratories are looking at other DNA methods (D1S80 and STR's) to replace their conventional serological screening. Capillary electrophoresis, although not mentioned at the meeting, may also be a screening technique utilized in the future.

Adaptation of Conventional Serological Methods to DNA Analyses

Many laboratories are modifying their conventional methods manuals to adapt toward the methods of DNA analysis. Sample contamination prevention methods (including using sterile reagents), utensil cleaning methods and the addition of reagent blanks (as a DNA control) were topics referred upon. Laboratories have modified their procedures in light of the reality that many conventional samples may, one day, be on the lab bench of the DNA analysis section. DNA analysts are concerned that the proper contamination prevention procedures were utilized (i.e. sample manipulation and utensil cleaning), otherwise, the integrity of the samples could be breached. Some laboratories are now placing sterilized reagents and equipment (tubes, utensils, pipettes, etc.) on the conventional serology workbenches. Reagent blanks prepared along with the samples are also recommended as internal checks of the reagents used for extraction.

Conclusion

Although an informal gathering, the combined Southern California CAC Study Group meeting provided some insight to the methods and thoughts used by laboratories. Sample handling and collection methods did vary from laboratory to laboratory (and even between DNA sections to conventional serology sections within the same laboratory), but all agencies focused on sample contamination prevention as a priority when forensic biology samples are being manipulated. A common secondary focus by many of the agencies was to choose particular sampling media that offer maximum sample recovery. Proper controls must also be taken to ensure the integrity of the samples and the results. Ill-trained or untrained field personnel should refrain from sample manipulation if possible; it is preferred that the entire item, when possible, be submitted to the laboratory to ensure that the proper manipulation under a controlled environment when properly trained personnel are not present at the scene. Another alternative is, of course, proper training of field personnel.

Methods to prevent contamination through cleaning varied between laboratories. While all analysts agreed that proper technique would prevent cross-contaminated samples, the specific techniques to control contamination tended to diverge between what is required for sample collection and what is required in sample analysis. As was pointed out in the text, a method which suffices to remove cellular material is the minimum requirement to manipulate samples during collection, whereas laboratory protocols must be rigorous enough to prevent the unintended transfer of sample during analysis. A vigorous wiping action with damp tissue paper is likely sufficient to remove cellular material from utensils in the field, however this same action may not be sufficient to remove extracted DNA from utensils in the laboratory. There is a need, therefore, for all laboratory analysts to review work habits in sample manipulation in the laboratory to prevent implement transfer of material. For example, PCR methods can successfully amplify DNA from residual substrate of samples extracted for conventional markers. The analyst in such an example should utilize a method stringent enough to prevent transfer of DNA, since it is the more sensitive PCR method which is most likely to be affected by contamination, if present, than the conventional electrophoresis methods.

By their very nature forensic biology samples are assumed to be contaminated with potential microbial and/or chemical agents encountered in the environment. This type of contamination is unavoidable. The question concerning this type of contamination has traditionally been: Will such

contamination alter test results such that an incorrect typing result can occur? This question is answered for each genetic marker system through environmental insult studies. Only genetic markers stable enough to retain correct typability are selected as forensic genetic markers.

A second contamination issue, and the one at the heart of the issue in this manuscript, is the introduction of additional agents, or the unintended transfer of material, through the collection and analytical processes. Due to the potential sensitivity of new methods such as PCR amplification for DNA analysis, this type of contamination is being reassessed. In many ways the issues presented by unintended cross transfer of evidence is no different than that posed in the collection and handling of trace evidence. The age-old procedures for due care and diligence in the collection process, maintaining physical separation of questioned samples and reference standards in both space and time, as well as a trained eye for potential sources of cross transfer of trace evidence are equally and properly applicable to forensic biology.

Although this manuscript does not address the absolute methods that must necessarily be used in sample manipulation, for those who missed the meeting or those who have a vested interest in the methods, insight has been given about what peers and colleagues in California are doing to address those issues. □

Jobs/Meetings/Courses, cont'd

Forensic Wound Pathology Seminar

A four day seminar is scheduled July 24 - 27, 1995 for criminalists, crime scene investigators, emergency personnel, physicians, nurses, attorneys and any other forensic personnel. Sponsored by the California Association of Criminalists Training and Resources Committee in conjunction with the University of California at Irvine, School of Medicine, the seminar will be instructed by Dr. Patrick Besant-Matthews. The cost is $50 for CAC members, *reduced price thanks to the CAC Endowment Committee and the A. Reed and Virginia McLaughlin Fund.* Non-CAC Members pay $150.

Topics: The Coroner, the Medical Examiner and the Community•Blunt and Sharp Injury•Injury by Shotguns•The Medicolegal Autopsy and the Report•Disasters and Disaster Planning•Myths in Forensic Pathology•Time of Death•Photography for the Non-photographer•Motor Vehicle Accidents•Basic Forensic Toxicology•Saturday Night Blast — Gunshot Wounds•Burns, Fire and Arson•Death by Asphyxia•Identification of Unknown Remains•Introduction to Forensic Dentistry•Drink, Drank, Drunk•Electrical Deaths•Expert Witness Testimony and the Courtroom•Rape and Sexual Assault. (Topics may be added or deleted as time permits).

Registration is LIMITED! Deadline to register is Friday, June 16, 1995. No registration at the door; you must preregister. CAC members will be given first priority. All others will be admitted on a first come, first served basis. No refunds for cancellations will be given after the deadline date.

For More Information or Registration Contact:
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4. Applicants are screened to ensure that they meet the requirements outlined in Article II of the CAC Membership Handbook.
5. Your application will be presented to the Board of Directors at their next quarterly meeting. If approved by the board, your application will be presented to the membership for a vote at the next CAC Seminar.

has been made during the course of my career. The sophistication of instrumentation has totally transformed the way forensic science is performed today. Can anyone now imagine the prospect of undertaking toxicological and other analyses without modern instrumentation? No GC/MS; no SEM/MPA; no FTIR. In my early days condensers and even retorts were commonplace and wet chemistry was the order of the day. I recall a case in which the only way the presence of cantharidin in an extract of viscera could be established was by performing a scratch test on the arm of a member of staff and observing the development of a blister. The Met. Lab. instrumentation consisted of a spectrograph which was used mainly for analysis of paint flakes, a Hartridge spectrometer for CO estimations, a refractometer for measuring the RI of glass fragments, some cameras, and a few microscopes only two of which had binocular heads. It was said that a chemist's most important instrument was his nose and that if he had a cold he might as well stay at home. Modern instrumentation has revolutionized forensic chemistry. Another important aspect of modern forensic science is the wide range of data bases which have been built up thus allowing reliable opinions to be given on the evidential significance of a wide range of different materials.

Can anyone now imagine the prospect of undertaking toxicological and other analyses without modern instrumentation? No GC/MS; no SEM/MPA; no FTIR. In my early days condensers and even retorts were commonplace

Giving testimony in court can perhaps be regarded as the normal end product of a forensic scientist's work. In the UK, prior to 1968, it was necessary for us to attend court on numerous occasions, often giving evidence at both preliminary hearings (Magistrates' Courts) as well as at trials (Crown Courts). As a result, those of us who are long in the tooth have much experience in the witness box. There are not many of us left. These court attendances involved a lot of travelling and much time was wasted waiting around. In general, witness statements are now read to the court unless the evidence is going to be challenged. This is much more efficient in terms of the economic use of experts' time but it does mean that court appearances are likely to be more stressful.

Of course our respective legal systems have a common ancestry, both depending on the adversarial system. Continental Europe uses the inquisitorial system. There are arguments for and against both systems. One of my concerns is that the adversarial system encourages an attitude of contest and of witnesses belonging to a team which has to win. Ideally witnesses, and particularly professional witnesses, should be totally impartial but these are the very witnesses who COULD have career advancement or pecuniary gain in mind when making statements and giving evidence. Personal vanity is another hazard but this might be a problem regardless of the judicial system. I do not wish to give an alarmist impression that bias of professional witnesses is commonplace. The great majority of forensic scientists known to me are of the highest integrity and dedicated to impartiality. Within the adversarial system justice is best served when competent experts are available to both prosecution and defense. In the UK, with certain notable exceptions, the prosecution has had a monopoly of really experienced forensic scientists. Fortunately, reliable experts are now more readily available to the defense but engaging such experts is costly and financial constraints remain a problem.

During the latter part of this century, increasingly greater emphasis has been placed on Quality Assurance in forensic science. I know that much has been done in this respect here in the USA and we have been very active in the UK as well. I do not propose to go into details about the various measures which have been taken but, with the great advances which have been made in the forensic applications of modern science, Quality Assurance is a matter of paramount importance. Greatly enhanced sensitivity demands that much more consideration must be given to the possibility of contamination and the huge advance of the statistical significance of DNA evidence, for example, means that the burden of responsibility of the scientist is proportionally increased. And this does not only apply to risks of wrongful conviction; risk of wrongful exclusion of the guilty may be equally serious. I recall the murder of a young woman many years ago when, as a result of bloodstain typing, a suspect was excluded. Not long afterwards, the same man was found guilty of murdering two young children and confessed to the previous offense while in prison.

Many people outside our profession think we have very glamorous jobs. They have no conception of how difficult, tedious and down right revolting the work can be. Neither do they comprehend the responsibilities. However stringent the quality assurance procedures and however carefully witness statements are checked by senior colleagues, at the end of the day it is the individual giving evidence who bears the responsibility for all that he or she says. They can be faced with outstandingly skillful advocates asking very cunning questions and there is no opportunity to seek advice. It is therefore essential in the interests of justice, that scientists of high integrity and ability can be attracted to, and retained in this important work. I am pleased to note that, after a period in which the responsibilities of forensic scientists were not fully recognized, that career prospects for forensic scientists in the UK have improved.

M.P.

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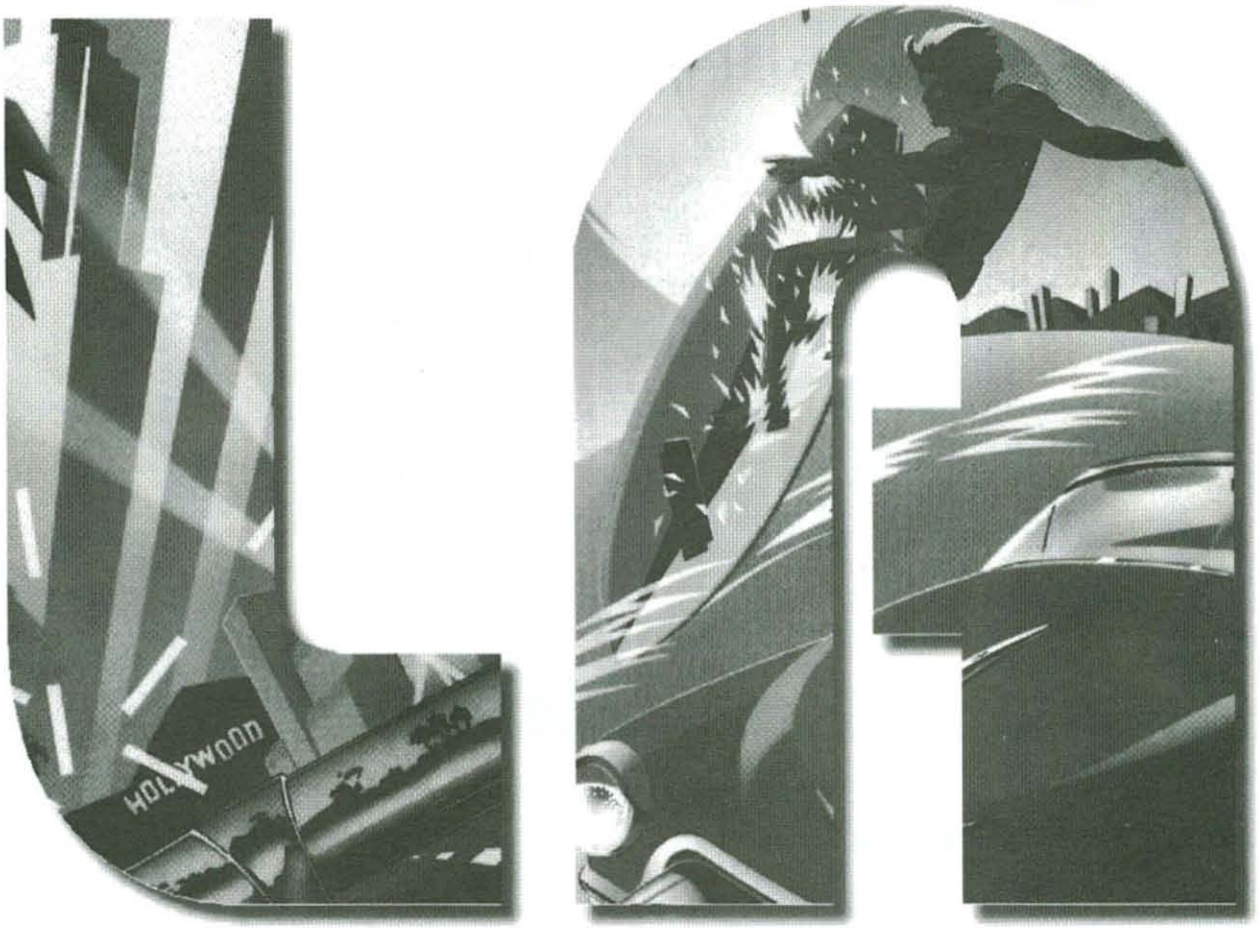

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