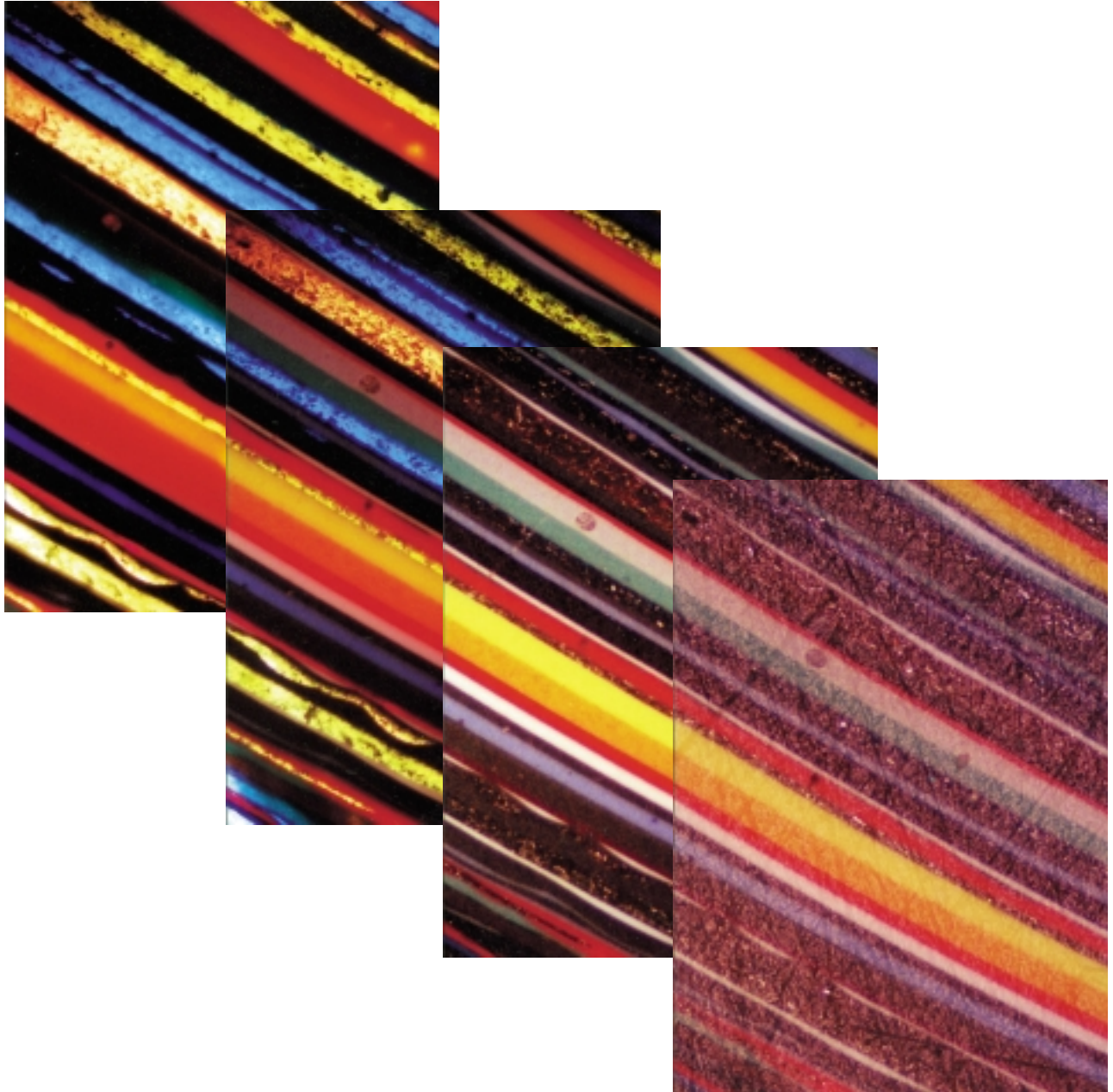


The CACNews

News of the California Association of Criminalists • Third Quarter 1998



The President's Desk

As I sat down to write this first address, I wondered if others had the same difficulty in putting pen to paper, or in my case, fingers to keyboard. What do I discuss? What tone do I want to set? Whom do I acknowledge? Will my grammar be acceptable? If it isn't, can I blame it on Raymond and John?



To begin I wish to acknowledge and thank you, those within the Association, for the confidence you have shown in me to nominate and elect me to serve as your President for the upcoming year. I find it to be a distinct privilege to be following Carolyn Gannett, a long-time board member. I have had the opportunity to now serve two terms on the same board as Carolyn and have found her commitment to the Association, to the profession and to professionalism to be very admirable. I also find it to be a great pleasure to have Hiram Evans coming in right after me. If you're looking for a person more rabid about microcrystalline tests than myself, you need look no further than Hiram. But, you don't have to talk to either one of us long to figure out that the heart of the issue is not microcrystalline tests, but rather one of this profession and professionalism. Then, as I examined the presidential coconut I recognized many of the names not because I personally knew them, but rather because of their commitment to this Association, this profession and professionalism. It is my sincere hope and desire to do my best to carry on this tradition.

As I have indicated in past articles and in a presentation at the recent CAC meeting in Monterey, it is my belief that the key to strengthening our profession for the push into the 21st century lies in strong leadership and mentoring. In a recent article I addressed the issue of integrity, arguing that it was the key to effective leadership. At the recent CAC meeting, I argued that if integrity was the key to leadership then mentoring was the key to multiplying that leadership into the future generations. At this point it becomes necessary to discuss our profession in the context of the prevailing world-view so that we can see and understand why strong leadership and mentoring are going to be so vital to the health and success of our profession.

While at times it may seem like it, we do not exist in a vacuum. If anything, the O.J. Simpson trial should have shattered that thought. No. We and our profession exists within a context. Individually we have all been influenced not only by our families and friends, but also through the universities and colleges we have attended. We have each developed not only skills designed to be applied in forensic science but also patterns of thought which also have an influence in the way in which we apply our scientific knowledge. Want an example?

The most simple example I can come up with is the Sir

Arthur Conan Doyle's character of Sherlock Holmes. Doyle was writing in the modern period, a period held to be synonymous with the Enlightenment Period. The Enlightenment was a philosophical movement developed in the 18th century which was concerned with an examination of previously held doctrines and institutions from the point of view of rationalism. Simply put, logic ruled. Everything was the way it was for a reason. It was up to science to determine the reason. Most notably, evolutionary theory developed during this Enlightenment Period. This was a direct assault

on the accepted norm of creationism which was being taught in the public and private schools. Science flourished during this period as people sought logical answers to their being and purpose.

This is not going to be a dissertation on Enlightenment or evolutionary theory. Rather, it was introduced for the purpose of setting Sherlock Holmes into a context. Holmes didn't have much in the way of the hi-tech instrumentation we now boast of. His was a logical pursuit of cause and effect. His thought pattern could be directly tied into the world-view at that time, the rule of logic. I would argue that if one were to examine the notes and case reports of many of our founding pioneers, we would find similar patterns of thought. Now, that is not to say that their conclusions were not flawed. Indeed I have read many cases where I find myself aghast some of the conclusions that were drawn.

But right now, let's move forward. Many scholars would argue that we have moved into a period of time regarded as post-modernity. This is primarily a post-war development that began in the existentialist movement in Europe. In plays, writings and essays of this period, existentialist writers wrote of the loss of hope about meaning and purpose in human lives. We are living in a period of challenging reason. We are living in a period of individualism where one's reality is not necessarily the reality of another. We have become disillusioned with human progress. We have come to realize that we truly cannot be certain of anything. There are endless possibilities. This has developed into confusion and uncertainty as to where we stand.

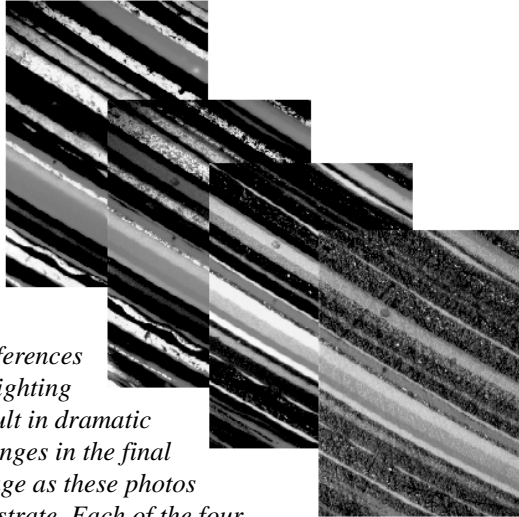
Just as the thinking and practice of the founding fathers could be associated to the world-view prevailing at that time, I believe there are signs of post-modern thinking in our profession today. Look at our reports. Many are couched in non-committal language such as "May have been caused by...." or "Include, but not necessarily limited to..." There is no scientific certainty here. In addition, it seems at times that there are as many opinions on a matter of forensics sometimes as there are experts in the field. Now, the question is not whether we are in the midst of this post-modern movement or not, because we are. The question is, how will Criminalistics fare in this period?

We are already involved in reacting against this post-

Third Quarter 1998

C O N T E N T S

On the cover...



Differences in lighting result in dramatic changes in the final image as these photos illustrate. Each of the four views is of exactly the same area of a multi-layered paint chip. (l-r) Transmitted light, transmitted with epi illumination, epi illumination alone, co-axial illumination. Courtesy Edwin L. Jones, Jr.

The CACNews

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CAC SPONSORS COURTROOM CLASS

All CAC members interested in the three-day "Courtroom Presentation of Evidence" course are invited to submit applications. Send a copy to Dean Gialamas, Chair, Training and Resources, c/o Los Angeles Co. Sheriff, 2020 W. Beverly Blvd., Los Angeles, CA 90057-2404. One course is scheduled for Dec. 2-4, 1998 in Sacramento at the California Criminalistics Institute. Another course will be scheduled with a date to be announced. Members from public agency and private sector labs may apply (no fees for members). The class is limited to twelve students and is POST reimbursable, Plan IV. Student selection is made possible by significant funding from the CAC's A. Reed and Virginia McLaughlin Endowment. This course was recognized by the Office of Traffic Safety with their 1997 Outstanding Achievement award. For further information contact Lou Maucieri at (916) 227-3575.

CAC AWARDS ANNOUNCED

Most Outstanding Presentation award was given to **Jerry Chisum**, CCI, for his paper, "Pitfalls in Bloodstain Interpretation," presented at the Spring 1998 seminar. This award was shared with **Robert Blackledge**, NIS Regional Forensic Lab. for his paper, "Additional Forensic Science Applications of FT-IR Spectroscopy." Each speaker received a Merit Award Certificate and a \$100 stipend. Congratulations!

ED RHODES AWARD

Bonnie Choy, from SERI, was this year's winner of the Ed Rhodes Award.

MEMBER'S PHOTOS WANTED

We are pleased to print photos of interest to the membership. Members may send photos of dinner meetings, seminars or CAC classes and activities to the CACNews.

OHIO: FORENSIC SCIENTIST / LATENT FINGERPRINT EXAMINER

\$16.78 to \$24.30/hr

Conducts tests on physical evidence for the presence of latent prints utilizing various chemical, powder dusting, fuming, and staining techniques; performs comparisons of latent prints with known finger, foot, and palm impressions for identification purposes; develops cadaver prints; enters searches of fingerprints into AFIS and compares candidate images; develops conclusions and formulates opinions based on accepted fingerprint identi-

fication procedures. Prepares laboratory reports for use by law enforcement personnel and courts of law; testifies in court as an expert witness; may receive, log, and transport crime-related evidence.

Bachelor's degree in a directly related science (e.g., Chemistry, Biology, Forensic Science, Physics, Health Science, Medical Technology, etc.), and three (3) years experience as a court qualified latent print examiner.

Send resume to Ohio Attorney General's Office, Bureau of Criminal Identification and Investigation; P.O. Box 365, London, Ohio 43140. You may also apply by sending your resume and cover letter via e-mail to recruit@ag.ohio.gov. For information regarding the Ohio Attorney General's Office, please visit our web site at www.ag.ohio.gov. The Attorney General's Office is an Equal Opportunity Employer.

ALABAMA: FORENSIC SCIENTIST TRACE EVIDENCE (SWORN)

\$40,092 - \$61,074/yr

The Alabama Department of Forensic Sciences is seeking qualified applicants for the position of Trace Evidence Section Supervisor in its Birmingham Regional Laboratory. Responsibilities include supervising Trace Evidence services in North Central Alabama and casework.

Minimum qualifications include a Bachelor's Degree in Chemistry or closely related field and four years of experience in Trace Evidence.

For additional information contact: Victor W. Weedn, M.D., J.D. Alabama Dept. of Forensic Sciences P. O. Box 55725 Birmingham, AL 35255-5725 Phone: (205) 933-6621 Fax: (205) 933-0820.

NEVADA: FORENSIC LAB MANAGER—DNA TECHNICAL LEADER

Salary Range: \$4357-\$5734 / mo

Las Vegas Metropolitan Police Department. This position will coordinate, develop, supervise and lead the DNA operation of the Forensic Laboratory; oversee and participate in all work activities; perform a variety of tasks relative to DNA analysis and serve as technical leader of the Biology/DNA Detail. Candidates must have a minimum of five years of journey level experience in forensic laboratory including three years of full time DNA experience. The experience must also include the explanation and presentation of laboratory tests in a court of law as an expert witness. The best candidates will have the additional educational and experience requirements of DNA technical

leader as determined by the DNA Advisory Board (see "Quality Assurance Standards for Forensic DNA Testing Laboratories," draft of Feb 97). Employment application, including training and experience evaluation will be reviewed. Best Candidates will be invited to the practical examination and then to the Oral board. The process also includes a background and medical examination. Application Procedure: Contact the Las Vegas Metropolitan Police Department, Personnel, Monday - Friday 8am to 4pm (PST) and request an application at (702) 229-3497. Contact: Linda T. Errichetto, Director of Laboratory Services, LVMPD Forensic Lab. Contact Address: 400 E. Stewart Ave. Las Vegas, NV 89101 Contact Phone: (702) 229-3292 Contact E-Mail: L1471E@LVMPD.COM

OHIO: FORENSIC LAB SUPERVISOR

\$43,056 to \$56,368/yr, 3% incr. July 1
Ohio BCI&I Lab., Richfield, OH.

Provides technical and administrative leadership to Forensic Scientists and other personnel assigned to the BCI Northeast Laboratory. Supervises overall crime laboratory operations (Serology/DNA, Trace, Chemistry, Latent Fingerprints, Firearms/Tool marks, Evidence Receiving, Photography and Clerical Sections). Assists in coordinating individual laboratory operations with the statewide system, conducts various studies, surveys and evaluations of operations; oversees examinations, court schedules, reports to law enforcement; assists investigative units as appropriate in determining assistance requirements of Forensic Scientists in specialized areas of expertise. At the direction of the appropriate administrative authority, assists in the planning and development of Northeast Laboratory policy matters; reviews and recommends updates and/or changes to the Standard Operating Procedures Manual, N.E. Laboratory goals and objectives and case and testing procedures; assists in establishing and executing proper protocols for testing. At the direction of the appropriate administrative authority, oversees and assists in the development of the quality assurance program for the N.E. Laboratory: Controls accuracy and reliability of the program, conducts and/or supervises quality control and validation testing as well as proficiency testing, assigns scientific duties and reviews reports. Provides both formal and informal training; advises law enforcement agencies and makes recommendations regarding lab procedures and services, evidence handling, submission procedures, etc.; addresses community groups on BCI services

Jobs • Meetings • Courses

and activities; conducts tours. Acts on behalf of and represents the appropriate administrative authority as required: attends special committees, meetings, conferences, legislative hearings and makes public appearances; performs miscellaneous tasks as required.

Completion of graduate core program in physical or biological science plus 3 years experience in analytical testing and evaluation of crime related evidence -OR- completion of undergraduate major core program in physical or biological science plus five years experience in analytical testing and evaluation of crime related evidence.

Send resume and cover letter to the Ohio Attorney General's Office, Bureau of Criminal Identification and Investigation, Personnel Section; P.O. Box 365, London, Ohio 43140. You may also apply by sending your resume and cover letter via e-mail to recruit@ag.ohio.gov. For information regarding the Ohio Attorney General's Office, please visit our web site at www.ag.ohio.gov.

OHIO: FORENSIC SCIENTIST / FIREARMS EXAMINER

\$16.78 - \$24.30/hr

Ohio Attorney General's Office, Bureau of Criminal Identification and Investigation, Bowling Green, Ohio. Basic duties include but are not limited to: conducts tests on evidence such as comparison and identification of fired bullets and cartridge cases to suspect weapons; test clothing for gunshot residue/distance determinations; evaluates mechanical condition of weapons; operates DRUGFIRE work station; performs tool mark identification, footwear and tire impression exams; testifies in court as an expert witness; etc. Preferred qualifications include a Bachelor's degree in a directly related science (e.g., Chemistry, Biology, Forensic Science, Physics, Health Science, Medical Technology, etc.), and three (3) years experience as a court qualified firearms examiner.

Send resume to the address below or e-mail same to the below listed e-mail address. Contact Carol White, Personnel Section, P.O. Box 365, London, Ohio 43140. Phone: Voice (614) 466-8204, Fax (740) 852-4453, e-mail: recruit@ag.ohio.gov

ILLINOIS: LATENT PRINT EXAMINER

Salary commensurate with exp.

Baccalaureate Degree with science courses, court qualified, minimum four years experience in a crime laboratory is

preferred. Formal certification by the International Association for Identification (IAI) as a Certified Latent Print Examiner, and/or formal certification by the Federal Bureau of Investigation as a Certified Fingerprint Specialist.

ILLINOIS: STAFF SEROLOGIST

Salary commensurate with exp.

Each applicant must possess a Baccalaureate Degree in a natural science or forensic science, court qualified and three years experience (min) in a crime laboratory is preferred.

DuPage County Sheriff's Crime Laboratory, located in Wheaton, IL (34 miles west of Chicago), Lt. Richard Vaughan, Laboratory Director, 501 N. County Farm Rd., Wheaton, IL 60187. Phone (630) 682-7198 Fax (630) 682-7908

The preceding seven job announcements were received via the internet and not verified for accuracy.

VIRGINIA: FORENSIC TRACE EVIDENCE SUPERVISOR (FORENSIC SCIENTIST SUPERVISOR)

\$47,474-\$74,119/yr

The Department of Criminal Justice Services, Division of Forensic Science, Northern Laboratory (Fairfax) is seeking a qualified applicant to examine evidence and to supervise a regional trace evidence section. Position provides technical and administrative supervision and training for assigned staff. Independently performs comprehensive chemical and physical analyses on a diversity of evidence submitted by law enforcement agencies. Analyses are confirmed through complex scientific instrumentation, chemical, physical and microscopic techniques, reference sources, and individual examiners specialized expertise. Prepares Certificates of Analysis on findings for use by the criminal justice system; and testifies in criminal court proceedings as a qualified expert on laboratory findings and results. Communicates with and instructs law enforcement agencies and legal

officials on testing procedures, results and the handling of evidence. Position requires occasional overnight travel.


Comprehensive knowledge of chemistry and knowledge and experience in the operation of computerized laboratory instruments, laboratory safety and QA/QC required. Bachelor's degree in chemistry or closely related field required; advanced degree in chemistry preferred. Prefer experience in a forensic trace laboratory environment, performing examinations in two or more of the following trace areas: glass, paint, explosives, synthetic fibers and fiber debris analysis. Experience in presenting and defending analytical results in a court of law as an expert witness required. Experience in supervision and in conducting training in trace evidence preferred. Must be able to manage multiple tasks efficiently, analyze and interpret data, develop sound conclusions, maintain accurate records, and analyze, and solve technical problems. Must possess a valid driver's license. A color blindness test may be required.

Applicants must submit a State Application form (#10-012) to the Department of Criminal Justice Services, 805 East Broad Street, 10th Floor, Richmond, VA 23219, ATTN: Human Resource Officer, no later than 5:00 p.m. on July 1, 1998. Applications may be faxed to (804) 786-6484. For assistance call Gene Colburn at (804) 786-8730.

Please turn to page 10

Ed Jones' Face Game

Forensic Anthropologists
Ans. in back.



MY SUMMER VACATION BEGAN IN PARIS. The city of lights and endless nights. Parisians just don't seem able to go home at night. Proof was forthcoming as we were startled on our first night by a small group of people playing their guitar and singing American pop songs at 3:00 a.m. just below our second floor window. Two nights later, another group sang and danced in the street until 3:30 a.m. No shouts or curses from a single window. Must be normal activity.

This is a city of museums and in fact, the city itself is a museum. In every corner of the city, one can see majestic monuments, stately parks, historic buildings and too many statues to count. Many of the buildings mark their history. I was struck by the sheer size of the city and its constant activity. From 6 a.m. to well past 3 a.m. this city is on the go. Curbside restaurants, bistros and cafes were filled with people all day long. I wondered why they didn't go home like us normal folk here in the USA. Sitting in a small bistro on the Left Bank and watching the world go by confirmed all the stories I had heard about Paris. Imagine sitting just 3 feet from the curb as cars zip by and pedestrians squeeze by your table. It would never happen in California. The Health Department would close them down. Speaking of cars zipping by. Car lanes to a Parisian are only a suggestion. They seem to drive as if they do own the entire road. But the difference between them and us is that if someone crowds in front of you here we lay on the horn or give them a sign that says they're number 1. You know what I mean. There was a great deal of cooperation amongst the drivers so much so that I never heard any horns. It looked like chaos but the heavy traffic flowed quite well. I guess the big difference is that Parisians don't take it personally like we do. It was all so civilized. I liked that.

Our hotel was located on the Left Bank, just one long block from the river Seine. It had been NAZI headquarters for a brief period during WWII and now catered to the English speaking public. The Hotel d'Angleterre was small, about 20 rooms with a very helpful and pleasant staff. I found the snobbish Parisian attitude non existent. Everyone we met was very nice and in fact treated the tourists with courtesy. Money talks. My cousin and her husband drove down from Brussels and joined us in Paris. They showed us the sights and the best places to eat. And did we ever eat. My wife tried escargot for the first (and last) time. It would have taken us weeks to do and see the things we did without their help. I have seen movies and pictures of the Eiffel Tower but nothing compares to standing near it and marveling at the immense structure.

We then traveled with them to their home in Brussels. Brussels is the future capital of Europe and the new European

Union. Brussels seemed not to have changed in the 11 years since we last visited there. It's a beautiful city with great big parks and old historic buildings. I went out with my cousin's husband for an early morning run in a nearby park and it was

great. Later my wife and I took a train to the city of Ghent and spent the day wondering around and taking in the sights. We saw a building with its construction date earlier than the birth of Columbus! That's old. The highlight of our stay was having dinner near the Grand Plats and then watching the evening light and music show. Our departure from Brussels took us back to Paris via the French speed train, GTV. The two hundred mph bullet train took only 1½ hours as compared to a nearly 3 hour car ride. Just before the train left the station, a lady informed me that I was sitting in her assigned seat. I looked at her ticket and she had the same car and seat assignment as me. Same date but I noticed a different price on the ticket. I assumed that it was lower due to her age. She was very distressed at the prospect of standing the whole way and so I gave up my seat. I went and sat in the restaurant car and planned on speaking with the conductor to sort the whole thing out. After we were under way I went back and got my wife and she joined me in the restaurant car. When the conductor finally passed through the restaurant car I told him of my problem. He said he would take care of it and it would be fine to stay where we were. The conductor returned and informed me that the lady did indeed have the right car, seat assignment and date, but the wrong time. Later she came to the restaurant car and apologized in her best English. As it turned out, this snafu couldn't have worked out better for us. Our seats had us sitting along side people with questionable bathing habits and we ended up riding in the restaurant car all by ourselves. A most pleasant trip. I would love to tell you what we saw from the train window but it ripped by us so fast it was all a blur! I went back to our hotel to pick up our luggage and we headed out to Charles de Gaul airport.

An uneventful trip to Stockholm made me realize how quickly one gets around in Europe. My wife's brother Roland picked us up at the airport dressed in a disguise to fool us. I spotted him right off and spoiled his surprise for his sister. He lives in Linghem about 2 hours south of Stockholm. I was look-



I now saw
things I had
not observed
before simply
because I
was just
observing.

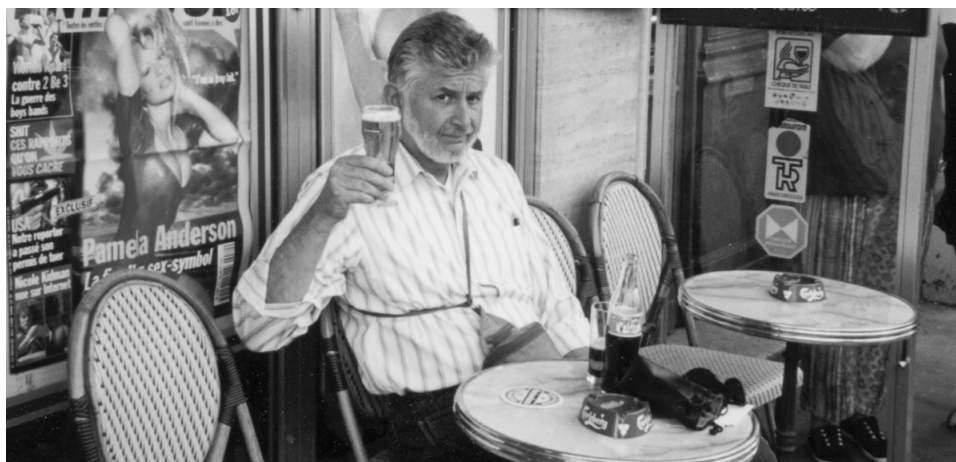
ing forward to seeing his wife Marie and their children. I haven't seen my in-laws for over 11 years and I was overdue. Linghem is a suburb of Linköping, the city where the noted forensic alcohol expert A. W. Jones works. Marie had prepared a sumptuous salmon dinner and it felt good to be back again. Marie works as an administrator for the Swedish Prison System. She investigates the spending practices or as she says the spending malpractice's at the various prisons. Very interesting stuff. After spending a few days with them, Roland gave us his car to go visit my wife's other brother and mother who live in the western part of Sweden. A 3 hour drive and we met up with Torgny and his wife Eva-Gill and their two girls. Torgny is a criminal investigator with the Swedish National Police in Karlstad. The day we arrived coincided with one of Karlstad's most popular foot races, the Gota Joggen. A 15K run through the city, along the river, into the parks and ending at their sports stadium. He was interested in running it as well and we both signed up and I had a great run. There were 3500 runners and 4000 fans cheering us all along the course. I never saw that many people cheering runners in the states. Who would have thought that running was a spectator sport. We later met up with her mother Eva who lives in a rest home. I couldn't believe what a beautiful facility it was. If they have anything of that quality here it would cost \$5K per month to live in. Eva will be 88 this year and I was impressed by how clear and sharp her mind is. She recited poetry and could remember things my wife had forgotten.

Traveling on Swedish roads was quite amazing. Most of their roads including some highways are just two lanes with a broad shoulder. When you come upon a slower driver they automatically pull over to let you pass. No lights or honking the horn is necessary in Sweden. The drivers were very astute and cooperative and I found driving there a refreshing experience. Then we took Eva and headed back to Roland's house to spend a couple more days. We were planning a family get together and Torgny's family would be joining us over the weekend. In the meantime, I got in a little more running time by taking advantage of a wonderful 3K cross country ski trail near their home. Before the reunion, Roland had to take his sail boat from the repair yard to his marina some 6 hours away. I helped him crew. We set out in the afternoon and traveled about 3 hours before birthing the boat at one of the millions of islands that dot the eastern coast of Sweden. We had a traditional Swedish dinner on board, boiled potatoes, herring, dark bread, strong cheese and beer. We forgot to bring water, so Roland just took some water out of the Baltic. It must be better water than the Pacific

Ocean. The next morning he called and told my wife to pick us up at his marina at 11 a.m. I wondered how he could know how long it would take. We arrived at 11:01 a.m. Amazing trip and at one point we passed by the Swedish tennis great Bjorn Borg's island. It was a very large island with several beautiful homes on it. Most of the islands in the Swedish archipelago are privately owned but anyone can birth their boat on it for a visit. Bjorn wasn't home so we didn't stop in for coffee. Roland is a master sailor and he showed me how to read navigational maps. Along with sonar and ground positioning satellite we knew where we were every minute of the trip. We had a great family reunion and then it was off to Stockholm and the remainder of the trip. We were fortunate to know someone who lives in Gamla Stan (Old City) and we stayed in his flat. The building was built in 1643 and had been remodeled about 5 years ago. We were right in the heart of Stockholm which just so happened to be designated as Europe's Cultural Capital for 1998. We visited my wife's friends and a niece who was an au pair in Los Altos, California in 1993. We also made a point to see the Vasa ship. This ship was the crown jewel of King Gustav II Adolf and it sank on her maiden voyage in 1628. The cause was due to insufficient ballast given the fact that it carried 64 cannon and over 450 men and supplies. The ship was found in 1956 and rescued from the river 5 years later. It was in remarkably good condition. The cold Baltic waters and very low salt content preserved the Vasa over the centuries. We saw part of it in 1976 while it was being sprayed with the preservative PEG. And now it resides, almost in its original condition in a special museum on another island that makes up the city of Stockholm.

So after reading about my summer vacation you're probably wondering what this had to do with criminalistics. Not much unless I tell you that on this trip I found myself for the first time making observations about the world around me without comparison or judgment. I simply noted the activity around me and how things worked in other cultures. On my previous trips I was always comparing how different our societies were, judging ours to be better and more efficient in so many ways. I now saw things I had not observed before simply because I was just observing. I turned off my judgment meter and took in the information my brain was receiving. Not weighing or analyzing whether this information I saw was better, worse, more practical or efficient than my experiences here. Kind of what we need to do when we go to crime scenes. I realize how important it is to keep an open mind and just let the information reach us without having to qualify it. And that was my summer vacation. I hope you have a great one too.

Raymond



Having a cool one at a Parisian curbside bistro.



John Simms —

Quality Assured

Discrepancy? Whassat?

A funny thing happened on the way to finalizing our discrepancy protocol document. We forgot to detail some important procedures such as dealing with the final documentation of the discrepancy review: who keeps the reports, where are they filed, how do you make them handy for the defense?

So I started asking questions of our neighboring accredited labs and found that some had pretty well detailed these procedures out and others had not. In fact, some sort of forgot the whole issue of discrepancy report, completely. Sounds like a survey! I posed these questions to the Quality Assurance Survey Team that you have been introduced to in the last column. I was expecting some nice, neat, clear cut answers to help us finalize our document as well as have a neat and tidy column to write for CAC. I definitely stepped into a can of worms.

Fact: some labs I talked to DID have these questions answered in their protocol. Others did have most of them addressed while still a couple did not have any protocol involving discrepancies / discrepancy reports. How we ultimately ended up handling these critical documents will be discussed shortly. But first, let's take a look at what the survey team had to say about these issues.

I had to define what a discrepancy report was for some members of the team. It may be due to differences in terminology but it goes something like this: you have completed casework results. You have a report, it is issued. Something in the case causes attention to be brought back to those results and now there is a question as to the accuracy of those results. The case may have been reanalyzed. The analyst may have discovered an error in their own procedure. The point is, now there may be a discrepancy in the case. I assume here that everyone has a protocol on how to handle the situation. There is a review process that is conducted. Did the Lab analyst do something wrong? Did it use faulty equipment? Was there a typo in the report that changed the results? Do

the results appear correct and the Lab is standing behind those results?

If the lab was in error, and corrective actions need to be taken, or if the results were ultimately deemed to be OK, all of this is still documented in a report. What happened, how did it come to the supervisor's attention, what did the review process find, and what corrections were made in the process. For those who did not know what a discrepancy report was, I hope this clarifies it for you. How a discrepancy comes to the lab's attention, whether or not you have a discrepancy, and how your review process works, is all judged on a case by case basis. We have a review process standardized so that regardless of the case circumstances, a consistent approach is used each time to make sure no shortcuts are taken, or controversial issues are dealt with and brought to the forefront.

Now you have this report. What do you do with it? Survey says:

Pete Barnett (Calif.) Acknowledges a lab's responsibility to check on apparent discrepancy. What if the discrepancy occurs before the final report—now what?

Henry Lee (Conn.) First time—should be confidential. Second time—should be public notice.

Larry Presley (Wash. D.C.): Court discrepancies go into a personnel performance folder. Case discrepancies are documented with a corrected report that goes into the case file. Proficiency test discrepancies—these files seem to be eternal. Court case *Giglio* makes anything negative in a federal case discoverable.

Ed Blake (Calif.): Any discrepancy in evidence analysis should be reported, described, and explained in the Lab re-

port. To not report discrepancies is unethical and possibly criminal.

Ed has many things to say about this whole issue and offers the following web site about serious discrepancy misconduct in Toronto.

www.gov.on.ca/ATG/english/morin/morin.html

In fact, Ed is going to be speaking to CAC on this issue at the fall seminar in San Diego, October 14-17, 1998.

Bruce Johnson (Oreg.): Any documentation connected with any case is normally kept with that case and purged according to normal records retention policies and subject to normal discovery. Some of those files may additionally be kept in a separate QA file.

Bruce says, along with many others I have talked to, he is working on establishing a more detailed protocol.

Pete DeForest (New York): Discrepancy reports go in the case file.

An interesting QA process was discussed at one of Pete's last meetings. In one agency, cases are randomly selected to be retested before the release of final results. The reanalysis notes go into the QA file.

Sandy Mays (Wyom.): Corrected and original reports are both retained in the case file and subject to normal discovery process.

So what did we end up with? We ended up with a policy that looks pretty consistent with the procedures you have seen here.

The original of the final report will be kept in the case packet. Report copies will be maintained by the Unit Supervisor and QA Manager. Documentation will be purged along the following guidelines:

a) Supervisor files will be purged according to the standard requirements of maintaining and purging employee files.

b) QA and case packet files will be purged according to normal department requirements. As soon as clerical announces a purge for a particular year, the QA manager will search the QA files for any review reports from the corresponding year and purge them.

I posed these questions on the *forens-I* (internet list server) and everyone was strangely quiet about these issues. All I received was more questions. Wonder why that is?

This discussion may have resolved in some part the questions raised about discrepancy reports, but it has also raised other questions. We hope to have a lively and thought provoking presentation/discussion at the fall seminar.

John Simms

State to Audit Local Labs

Text of Assembly Bill 920, Rep. Davis. California Forensic Science Laboratory Enhancement Program. Existing law requires the Office of Criminal Justice Planning, among other things, to develop the comprehensive statewide plan for the improvement of criminal justice and delinquency prevention activity throughout the state, and to develop comprehensive, unified, and orderly procedures to ensure that all local plans and all state and local projects are in accord with the comprehensive state plan, and that all applications for grants are processed efficiently. Existing law provides for the establishment of the California Criminalistics Institute within the Bureau of Forensic Services of the Department of Justice for the purpose of, among other things, the facilitation of a comprehensive and coordinated approach to meet the high technology forensic science needs of crime laboratories operated by the department and local law enforcement agencies. This bill would require the State Auditor to conduct a specified assessment of the needs of existing forensic science laboratories and submit a report to the Legislature on the needs assessment by January 1, 1999. The bill would also appropriate \$275,000 to the State Auditor to conduct the needs assessment required by this act.

SECTION 1. Chapter 10 (commencing with Section 13890) is added to Title 6 of Part 4 of the Penal Code, to read:

CHAPTER 10. CALIFORNIA FORENSIC SCIENCE LABORATORY ENHANCEMENT PROGRAM

13890. It is the intent of the Legislature to review the needs assessment report, as provided for in Section 13892, prior to providing additional funds for support of local forensic laboratory services or improvements. 13891. This chapter shall be known and may be cited as the California Forensic Science Laboratory Enhancement Act. 13892. (a) The State Auditor shall conduct an assessment of the needs of existing forensic science laboratories. (b) The assessment shall determine what changes, improvements, and augmentations are needed in laboratory procedures, personnel, programs, and facilities in order for the laboratories to become accredited or maintain existing accreditation by the ASCLD/LAB, by January 1, 2004.

... in order for the laboratories to become accredited or maintain existing accreditation by the ASCLD/LAB, by January 1, 2004.

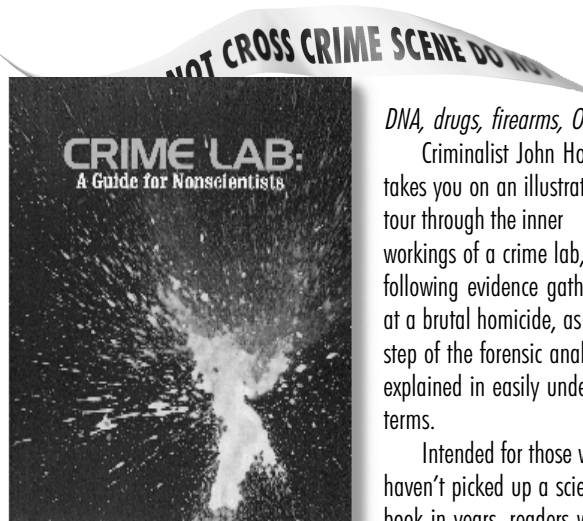
ited or maintain existing accreditation by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board, by January 1, 2004. The assessment shall identify specific changes, improvements, and augmentations for each of the laboratories, and shall include estimates of costs to implement the assessment and a schedule for implementation if funds become available. The assessment shall also review the services currently provided by the laboratories as well as the relationship between the local forensic laboratories and the Department of Justice's regional forensic laboratories, including, but not limited to, consideration of alternatives to providing laboratory services, such as laboratories for provision of specialized services, use of private laboratories, and consolidation of services within existing state or local laboratories.

(c) In conducting the needs assessment, the State Auditor shall contract as necessary using the American Society of Crime Laboratory Directors as a resource. The State Auditor shall also establish an advisory committee composed of at least one representative of each of the following: (1) California Association of Crime Laboratory Directors. (2) California Police Chiefs Association. (3) California State Sheriff's Association. (4) California District Attorneys Association. (5) The California State Association of Counties. (6) The California League of Cities. (7) The Department of Justice's Bureau of Forensic Services. (8) The Judicial Council. The advisory committee shall meet during the needs assessment and provide information and assistance to the State Auditor. (d) The State Auditor shall submit a report to the Legislature on the needs assessment by January 1, 1999. SEC. 2. There is hereby appropriated two hundred seventy-five thousand dollars (\$275,000) from the General Fund to the State Auditor to conduct the needs assessment of existing local forensic science laboratories required by Sec. 1 of this act.

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JOBS · CLASSES, cont'd

VIRGINIA: FORENSIC TRACE EVIDENCE EXAMINER (FORENSIC SCIENTIST SENIOR)

\$34,756 - \$54,262/yr

The Department of Criminal Justice Services is seeking a qualified applicant to examine trace evidence in the Central Laboratory, Division of Forensic Science, Richmond, VA. Independently performs comprehensive chemical and physical evidence analyses on gunshot residue cases submitted by law enforcement agencies. Prepares Certificates of Analysis on findings for use by the criminal justice system; and testifies in criminal court proceedings as a qualified expert on laboratory findings and results. Analyses are independently performed on an automated scanning electron microscope, energy dispersive x-ray system. Provides training to law enforcement officials. Position may require frequent overnight travel.

Bachelor's degree in Chemistry or a closely related chemical field required, with an advanced degree in Chemistry preferred. Knowledge and experience required: in the operation of a scanning electron microscope/energy dispersive x-ray system; in the operation of computerized laboratory instruments; laboratory safety and QA/QC. Prefer experience in a forensic trace laboratory environment performing gunshot residue examinations. Experience in presenting and defending analytical results in a court of law as an expert witness is preferred. The successful applicant will be able to manage multiple tasks efficiently, maintain accurate records, analyze and interpret data, establish work priorities and develop sound conclusions from analyses. A valid driver's license is required. A color blindness test may be required.

Applicants must submit a State Application form (#10-012) to the Department of Criminal Justice: Services, 805 East Broad Street, 10th Floor, Richmond, VA 23219, ATTN: Human Resource Officer, no later than 5:00 p.m. on June 15 1998. Applications may be faxed to (804) 786-6484. For assistance call Gene Colburn at (804) 786-8730.

CALIFORNIA: FORENSIC LAB. TECH.

\$28,000-35,000/yr

CRIMINALISTS

\$37,000-50,000/yr

San Bernardino County Sheriff expects to be recruiting in May/June, 1998. Successful applicants will possess at least a Bachelor's degree in a natural science (i.e. biochemistry, chemistry, biology, etc.).

Letters of interest can be sent to: P. M. Kellett, Sheriff's Scientific Investigations Division, 200 South Lena Road, San Bernardino, CA 92415.

CALIFORNIA: FINGERPRINT EXAMINERS AND/OR CRIME SCENE INVESTIGATORS

\$27,000-33,000/yr

San Bernardino County Sheriff expects to be recruiting in May/June, 1998. Letters of interest can be sent to: P. M. Kellett, Sheriff's Scientific Investigations Division, 200 South Lena Road San Bernardino, CA 92415.

CRIME SCENE ANALYSIS COURSE, JUNE 8-12, 1998 AURORA, CO.

Cost: \$110.00 registration fee

The course is designed for the first officer on scene at a major crime, but would be equally beneficial to the detective, evidence technician or crime scene investigator. **Curriculum:** Significance of evidence, crime scene documentation, preservation and collection of evidence, latent print development, blood stain pattern basics, gunshot residue collection, plaster casting. For additional information contact Rita or J.R. at (303) 683-7895 or Jeff Baker at (303) 739-6245.

CRIME SCENE TECHNOLOGY WORKSHOP, AUGUST 3-7, 1998, AURORA, COLORADO

Cost: \$500.00 tuition fee covers all supplies, film and publications.

The course is designed for investigators, crime scene specialists, and other people responsible for the proper collection, preservation and processing for physical evidence. Students should already have a sound foundation in the principles and procedures used in crime scene investigation.

Curriculum: Advanced development and enhancement of latent prints crime scene photography, identification and documentation of blood stain patterns, presumptive blood detection, casting techniques—footwear, tire, tool and bite marks, use and development of 3D diagrams, practical field exercises hands-on application of all topics, chemicals, tools and equipment.

For additional information contact Jeff Baker at (303) 739-6245 or the Institute of Applied Forensic Technology at (407) 880-8149.

MAFS TO MEET IN MICHIGAN

October 5-9, 1998, 27th Annual Meeting of the Midwestern Association of Fo-

rensic Scientists at the Crowne Plaza Hotel, Ann Arbor, MI. **CONTACT:** Scott Stoeffler, McCrone Associates, Inc. 850 Pasquelli Dr., Westmont, IL, 60559-5539. Telephone: (630) 887-7100 FAX: (630) 887-7417.

DEATH SEMINAR IN FLORIDA

December 7 - 11, 1998 Police/Medical Investigation of Death Seminar Dade Co. Medical Examiner Dept., Miami, FL. **CONTACT:** Cheryl Scott Training Dept. #1 Bob Hope Rd. Miami, FL 33136-1133. Telephone: (305) 545-2400 FAX: (305) 545-2446.

AAFS NO MICKEY MOUSE EVENT

February 15 - 20, 1999 American Academy of Forensic Sciences 51st Annual Meeting at Disney's Coronado Springs Resort, Orlando, FL. **CONTACT:** Brenda Papke, AAFS, P.O. Box 669 Colorado Springs, CO 80901-0669 Telephone: (719) 636-1100 FAX: (719) 636-1993 E-Mail: bpapke@aafs.org

UBELAKER TO TEACH ANTHRO. WORKSHOP IN FRANCE

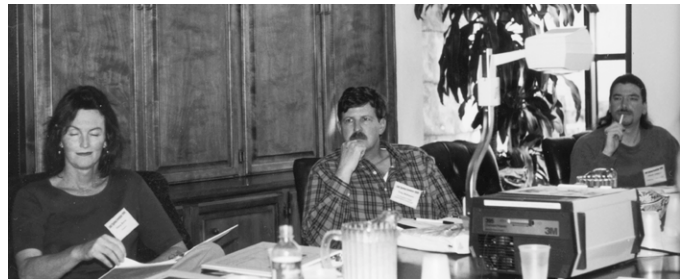
A workshop in forensic anthropology is scheduled for August 3-8, 1998 in Montpellier (South of France). The main instructor will be Doug Ubelaker from the Smithsonian Inst. (Washington DC); topics are: General osteology, ancestry, age, stature, odontology, DNA. The training material is made of 350 forensic individuals whose bones were collected during autopsies performed the past 10 years. For more information contact Pr. E. Baccino, Service de Medecine Legale, Hopital La Peyronie, 34295 Montpellier Cedex France.

DOJ LAB EXAMS SCHEDULED

The California Department of Justice—Bureau of Forensic Services is scheduling the following exams for the Fall/Winter of 1998/99: Forensic Scientist Toxicologist; Questioned Documents Examiner, Criminalist/Senior Criminalist, and Laboratory Technician. For information on these and other forensic exams, contact: Mary Howard, Associate Analyst Department of Justice Bureau of Forensic Services 4949 Broadway, Room F-104 Sacramento, CA 95820 (916) 227-3635; Fax (916) 227-3619 E-Mail: HOWARDM@hdcdojnet.ca.us

1998 Spring Seminar

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Pennie Laferty photos





Dispelling the myths of fire cause investigation was the theme at a recent session of CCI's Fire and Explosion Investigation, taught by (below right) Dr. John DeHaan (l, wearing cap) and Monty McGill (r, wearing cap). The class, hosted by Ventura County Fire Academy, attracted representatives from thirteen different public agencies and private investigators from all over California. The class included a surprise appearance by Flower, an accelerant detecting dog from Los Angeles Fire Dept. (Handled by Frank Oglesby.)



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Q & A:

Can Duct Tape be Useful Evidence?

By Jenny Smith, Missouri State Highway Patrol Crime Lab, Jefferson City, MO.

Trace evidence chemists are often asked to analyze and to compare commercial products that may associate a suspect to a victim. The value of this type of evidence is related to the variability of the product. The purpose of this paper is to show the variability of commercial duct tape between manufacturers and within manufacturers and to establish its value as evidence. Additionally, I will describe those features which are most variable and should be examined first.

Fifty-one samples of duct tape were collected from random sources (see Table 1). These fall within eight different brand names and possibly five different manufacturers: Shuford-Mills (under Manco Inc. brand name), Anchor, Nashua, Tesa Tuck and Kendall.

Duct tape consists of three components: The film backing, fabric and adhesive. These components vary between manufacturers and within manufacturers. Every company has a line of duct tape products to suit different needs as well as different budgets. Even within the same brand, same product code number, the tape can change due to differences in the suppliers, low bid components, availability of components, etc.

MACROSCOPIC EXAMS

The macroscopic exam of duct tape can yield a wealth of information and if the tapes for comparison are, in fact, different it will probably be noticeable at this level. Table 1 shows some of the initial exams. The scrim count (or yarn count) is predictive of the tape quality. The fabric of the tape is arranged in a loose (gauze) weave and has warp yarns (lengthwise or machine direction) and fill yarns (across). The scrim count is the number of warp and fill yarns in one square inch. The tape thickness can be measured by sticking the tape to a piece of glass and taking the difference between the glass and the glass and the tape. Although the roll may state a width of "50.8mm" it may be off by up to a millimeter. Some manufacturers use "calendering" process to apply molten backing to the gauze and this appears on the film surface as small uniform pockets (Kendall tape). The shade of gray (aluminum powder) in the backing will vary only slightly if at all, but the single greatest variable in the macroscopic exam of duct tape will be the color of the adhesive. This color may also give some clue as to the manufacturer of the tape. Shuford Mill is usually pale yellow-creamy white, Tesa Tuck and Anchor will be shades of light gray, Kendall may be darker gray to greenish gray etc.

ADHESIVE CHARACTERISTICS

The color of the adhesive is variable because of the adhesive's complexity. It consists of rubber (usually natural rubber), resins, fillers, extenders, flame retardants, antioxidants etc.

All of these components will vary to suit different user needs. The adhesive can be removed from a two square area of the tape with acetone or toluene and sonication. After drying, the weight of the adhesive can be the most useful physical measurement in discriminating between different tapes. The FTIR and elemental analysis of the adhesive will yield more information about the rubber and the fillers but is less discriminating. Analysis of 51 samples of tape (eight different brands, five different manufacturers) showed six different FTIR spectra and ten different elemental groups. (Table 1.)

Infrared absorption bands of common adhesive components (cm-1)

Polyterpene resins (tackifiers)	1450, 1374
Isoprene rubber	1450, 1374, 830
Synthetic polyterpene resin	1450, 1374, 1090
Aluminum silicate (China clay)	1110, 1031, 1007, 912
Titanium dioxide (broad peak)	800 - 450
Calcium sulfate	1160, 1120
Zinc Oxide (broad peak)	1250 - 1185

FILM BACKING

After separating the fabric and adhesive it is easy to check the thickness of the backing. You may see more significant differences between manufacturers than within the same manufacturer. There is usually little to be gained by doing FTIR on the film backing since it is typically polyethylene. A small piece, viewed under transmitted light may show some differences in microscopic appearance.

FABRIC

The scrim count is best done before the tape is taken apart. The fabric is variable between and within manufacturers. (Table 2) However, typically the fibers will be polyester or blends of cotton and polyester (50/50 to 65/35). Again, little will be gained with FTIR of the fibers. The fiber information in Table 2 was gained on a polarized light microscope alone. Note from this table that the fill yarn fibers show more variability than the warp yarn fibers. In addition to these features examined in Table 2, the fluorescence of the yarns can sometimes be discriminating where optical brighteners are present. Also, fill yarns may be texture-ized to give the tape bulk (Kendall products).

CONCLUSIONS

The results in Tables 1 and 2 and Figures 1 and 2 show the variability that may be expected between manufacturers and within the same manufacturer. Even among rolls of tape with the same product number differences may be found. Note tapes 38 and 39, Manco Inc. Duck brand "Professional"; there is a difference in their fill yarn as well as a difference in their adhesive color (slightly different shades of pale yellow). Note also the variability in the adhesive formulas of Kendall-Polyken tape; four different FTIR spectra and six different elemental groupings among sixteen different rolls. These observations support the conclusion that not all duct tapes are alike even when they

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have the same label. Therefore, comparison of questioned and known tapes can have a significant probative value when similar class characteristics are found. Consider that a roll of duct tape can last many years at one residence and that the construction, design, adhesive formulas and fabric of a given brand can change with each production line, possibly several times a year at any one plant. It becomes quite remote that a tape bought ten years will be similar to anything bought today!

ACKNOWLEDGMENTS

I would like to acknowledge the help I received from Roger Keagy of the FBI Lab, Washington D.C. in expanding my knowledge of this subject.

For a much more complete primer on duct tape construc-

tion and chemistry the reader is referred to the article by Mr. Hugh Snodgrass listed in the references.

REFERENCES

1. Snodgrass Hugh, Duct Tape Analysis as Trace Evidence. *Proceedings of the International Symposium on the Forensic Aspects of Trace Evidence*, FBI Academy, Quantico, VA, p.69-73, June 1991
2. Benson, J. D., Forensic Examination of Duct Tape, *Proceedings of the International Symposium on the Analysis and Identification of Polymers*, FBI Academy, Quantico VA., p.145-146, August 1984.
3. Jenkins Jr., T. L., Elemental Examination of Silver Duct Tape Using Energy Dispersive X-Ray Spectrometry, *ibid*, p.147-149.

Table 1

ct#	BRAND NAME	Scrim Count	Tape	gray film	Tape	adhesive	adhesive	EDX	FTIR
		warp X fill	Thickness	Thickness	Width	color	weight-g	group	group
		(sq. Inch)	ave.mils	ave.mils	(mm)		In 2sq.cm		
36	Manco Inc. "The Original DUCK Tape" Cleveland, OH	30 x 19	10.5	2.6	50.8	pale yellow	0.082	4	1
38	MANCO Inc. "DUCK" Brand "Professional" Westlake, OH	24 x 16	8.9	2.7	50.8	pale yellow	0.069	4	1
41	MANCO Inc "DUCK Tape" Westlake, OH 1989	24 x 16	9.4	2.6	50.8	pale yellow	0.081	4	1
10	Manco "Duck" Brand tape (Professional S-45)	24 x 15	10.1	3	49.8	pale yellow	0.068	4	1
39	MANCO "DUCK" Brand (Professional) Westlake, OH 199	24 x 15	9	2.1	50.8	pale yellow	0.075	4	1
40	Manco Inc. "DUCK" Brand, Westlake OH 1989	24 x 15	9.4	2.4	50.8	pale yellow	0.077	4	1
1	Manco "DUCK" Brand Tape (CD-10)	24 x 14	9.4	2.6	50.8	pale yellow	0.07	1	1
6	Manco "DUCK" Brand Tape (CD-10)	24 x 14	9.2	2.6	50.8	pale yellow	0.063	2	1
7	Manco "DUCK" Brand Tape (CD-10)	24 x 14	9.4	2.5	50.8	pale yellow	0.069	2	1
8	Manco "DUCK" Brand Tape (CD-10)	24 x 14	9.3	2.6	50.8	off white	0.07	4	1
5	Manco "DUCK" Brand Tape (Professional), (S-10)	24 x 14	10.1	3.8	51.2	pale yellow	0.069	4	1
13	Manco Fire Guard Duct Tape (FD-30)	24 x 14	10.1	3.3	51.2	grayish gr	0.064	4	1
47	Manco Inc. for ACE (professional)	23 x 16	9.4	2.1	50.8	pale yellow	0.076	4	1
4	Manco The "Original DUCK" Tape	22 x 16	9.8	2.3	50.8	pale yellow	0.073	2	1
37	MANCO Inc. "DUCK" Brand	18 x 9	8	2.4	50.8	grayish gr	0.087	4	1
2	Manco The Original DUCK Brand Tape (B300)	18 x 9	9.4	4.6	49.8	pale yellow	0.058	2	1
49	MANCO Inc. "DUCK" Brand Tape 1992	18 x 9		3.2	51.8	pale yellow	0.085	4	1
14	Manco Utility Duct Tape (DX-450)	18 x 9	7.4	1.9	50.8	pale yellow	0.049	2	1
12	Manco "DUCK" Brand Tape	18 x 9	8.6	2.8	51.2	pale yellow	0.058	4	1
11	Manco Inc. for ACE "Duck" (ACE 42897)	18 x 9	8.9	2.7	50.8	pale yellow	0.076	2	1
35	Manco Utility Duct Tape (DX-450)	18 x 8	9.1	2.4	50.8	pale yellow	0.068	4	1
3	3M Tartan Brand Cloth Tape, (300 MPH Club)	19 x 9	7.7	2	50.8	gray	0.037	3	2
16	3M Tartan Cloth Duct Tape Contractor Grade	19 x 9	7.6	1.9	49.8	gray	0.058	7	2
32	3M TARTAN brand Duct Tape	18 x 8	8.3	1.9	50.8	grayish gr	0.071	3	2
9	PERFORMER Duct Tape for K-Mart Corp.	17 x 9	8.6	2.3	50.8	gray	0.056	3	2
15	Anchor Continental Inc. Duct Tape Premium Grade	20 x 12	9.7	2.8	51.2	gray	0.065	3	2
23	POLYKEN Duct tape	42 x 27	13	2.7	49.8	grayish gr	0.1	10	3
19	Polyken Duct Tape (231)	41 x 19	11.6	6.2	49.8	pale yellow	0.062	9	4
20	POLYKEN Duct tape	30 x 26	12.3	6.6	49.8	pale yellow	0.062	7	4
45	POLYKEN The Kendall Co. Boston, MA	30 x 16	12.5	6.2	50.8	grayish gr	0.045	4	1
26	POLYKEN Duct tape	30 x 14	11	2.6	50.8	grayish gr	0.096	8	3
34	POLYKEN Duct tape (235)	29 x 14	12.8	2.5	51.8	grayish gr	0.109	7	1
17	POLYKEN Duct tape (227)	20 x 14	11.3	6.4	50.2	grayish gr	0.058	8	3
33	KENDALL Co. Tape	20 x 14	9.2	5.5	50.8	grayish gr	0.043	7	1
25	POLYKEN Duct tape (203)	20 x 13	9	5.6	50.8	grayish gr	0.034	8	3
18	POLYKEN Duct tape (217)	20 x 10	8.3	4.4	51.2	grayish gr	0.044	8	3
24	POLYKEN Duct tape (228)	20 x 10	10.8	2.3	50.8	grayish gr	0.092	8	3
22	POLYKEN Duct tape (223)	19 x 14	9.9	6.7	50.2	blue gray	0.054	8	3
27	POLYKEN Duct tape (229)	19 x 14	11.7	6.2	50.8	gray	0.06	8	3
28	POLYKEN Duct tape	19 x 10	8	5.9	50.2	grayish gr	0.03	8	3
21	POLYKEN Duct tape (243)	19 x 9	9.8	2.8	50.8	grayish gr	0.076	10	3
51	KENDALL-POLYKEN Duct Tape	19 x 7	7.4	2.7	49.2	blue gray	0.042	12	6
48	TUCK Tape New Rochelle, NY	24 x 18	8.6	2.2	50.8	light gray	0.065	11	1
29	TESA TUCK General Purpose (UPS label 7617821411)	22 x 9	7.7	2.4	48.8	blue gray	0.05	10	3
46	TESA TUCK Inc. TUCK Brand	19 x 9	7.2	2.4	51.8	blue gray	0.045	10	3
53	TESA TUCK Duct Tape	18 x 9		2.2	50.8	light gray	0.046	10	3
31	No Brand from Crocker, MO	19 x 11	7.3	3.9	50.8	light gray	0.041	7	1
42	L-121160 #9 Unknown	19 x 10	8.6	1.9	49.8	gray	0.069	3	2
43	L-121160 #1 Piece of Duct tape from Roll	24 x 15	9.1	2.1	51.8	pale yellow	0.073	4	1
44	L-125444#1	18 x 9	8.5	2.2	38.2	pale yellow	0.074	4	1
50	No Brand from Firearms I.D.	19 x 10		2.4	50.8	gray	0.092	11	5
52	NASHUA 398 Duct Tape	22 x 10		3.4	51.2	grayish gr	0.081	8	3

Table 2

DUCT TAPE FILL AND WARP YARN CHARACTERISTICS

ct#	BRAND NAME	Fill Yarn diameter (um)	Fill Yarn shape	Fill Yarn delustering	Fill Yarn blended w.cotten?	Warp Yarn diameter (um)	Warp Yarn shape	Warp Yarn delustering	Warp Yarn blended w.cotten?
36	Manco Inc. "The Original DUCK Tape" Cleveland, OH	13	round	moderate	yes	13	round	moderate	yes
38	MANCO Inc. "DUCK" Brand "Professional" Westlake,	18	trilobal	light	no	13	round	moderate	yes
41	MANCO Inc "DUCK Tape" Westlake, OH 1989	18	trilobal	light	no	15	irreg round	light	yes
10	Manco "Duck" brand tape (Professional S-45)	23	round	heavy	no	13	round	moderate	yes
39	MANCO "DUCK" Brand (Professional) Westlake, OH	23	round	heavy	no	13	round	moderate	yes
40	Manco Inc. "DUCK" Brand, Westlake OH 1989	25	round	heavy	no	15	irreg round	light	yes
1	Manco "DUCK" Brand Tape (CD-10)	25	trilobal	light	no	13	round	moderate	yes
6	Manco "DUCK" Brand Tape (CD-10)	23	trilobal	light	no	13	round	moderate	yes
7	Manco "DUCK" Brand Tape (CD-10)	25	round	heavy	no	13	round	moderate	yes
8	Manco "DUCK" Brand Tape (CD-10)	23	irreg.round	light	no	13	round	moderate	yes
5	Manco "DUCK" Brand Tape (Professional), (S-10)	23	round	moderate	no	13	round	moderate	yes
13	Manco Fire Guard Duct Tape (FD-30)	23	round	heavy	no	13	round	moderate	yes
47	Manco Inc. for ACE (professional)	13	round	moderate	yes	13	irreg round	light	yes
4	Manco The "Original DUCK" Tape	13	round	light	yes	13	round	light	yes
37	MANCO Inc. "DUCK" Brand	23	round	absent	no	13	round	moderate	yes
2	Manco The Original DUCK Brand Tape (B300)	25	trilobal	light	no	13	round	moderate	yes
49	MANCO Inc. "DUCK" Brand Tape 1992	20	triangular	moderate	yes	13	round	moderate	yes
14	Manco Utility Duct Tape (DX-450)	23	round	heavy	no	13	round	moderate	yes
12	Manco "DUCK" Brand Tape	23	round	heavy	no	13	round	moderate	yes
11	Manco Inc. for ACE "Duck" (ACE 42897)	23	round	heavy	no	13	round	moderate	yes
35	Manco Utility Duct Tape (DX-450)	23	round	heavy	no	13	round	moderate	yes
3	3M Tartan Brand Cloth Tape, (300 MPH Club)	13	irreg.round	moderate	yes	33	5-sided	heavy	no
16	3M Tartan Cloth Duct Tape Contractor Grade	13	irreg.round	moderate	yes	33	5-sided	heavy	no
32	3M TARTAN brand Duct Tape	13	irreg.round	moderate	yes	33	5-sided	heavy	no
9	PERFORMER Duct Tape for K-Mart Corp.	13	irreg.round	moderate	yes	33	5-sided	heavy	no
15	Anchor Continental Inc. Duct Tape Premium Grade	33	5-sided	heavy	no	13	round	moderate	yes
23	POLYKEN Duct tape	13	round	moderate	yes	13	round	moderate	yes
19	Polyken Duct Tape (231)	33	5-sided	heavy	no	13	round	moderate	yes
20	POLYKEN Duct tape	13	round	moderate	yes	13	round	moderate	yes
45	POLYKEN The Kendall Co. Boston, MA	33	5-sided	heavy	no	13	round	light	yes
26	POLYKEN Duct tape	13	round	moderate	yes	13	round	moderate	yes
34	POLYKEN Duct tape (235)	15	round	light	yes	13	round	light	yes
17	POLYKEN Duct tape (227)	33	5-sided	heavy	no	13	round	moderate	yes
33	KENDALL Co. Tape	33	5-sided	heavy	no	13	round	light	yes
25	POLYKEN Duct tape (203)	33	5-sided	heavy	no	13	round	moderate	yes
18	POLYKEN Duct tape (217)	33	5-sided	heavy	no	13	round	moderate	yes
24	POLYKEN Duct tape (228)	33	5-sided	heavy	no	13	round	moderate	yes
22	POLYKEN Duct tape (223)	33	5-sided	heavy	no	13	round	moderate	yes
27	POLYKEN Duct tape (229)	33	5-sided	heavy	no	13	round	moderate	yes
28	POLYKEN Duct tape	33	5-sided	heavy	no	13	round	moderate	yes
21	POLYKEN Duct tape (243)	33	5-sided	heavy	no	13	round	moderate	yes
51	KENDALL-POLYKEN Duct Tape	33	5-sided	heavy	no	13	round	moderate	yes
48	TUCK Tape New Rochelle, NY	15	irreg.round	light	yes	13	round	light	yes
29	TESA TUCK General Purpose (UPS label 76178214	18	round	light	yes	13	round	moderate	yes
46	TESA TUCK Inc. TUCK Brand	33	5-sided	heavy	no	13	round	moderate	yes
53	TESA TUCK Duct Tape	33	5-sided	heavy	no	13	round	moderate	yes
31	No Brand from Crocker, MO	33	5-sided	heavy	no	13	round	light	yes
42	L-121160 #9 Unknown	13	round	moderate	yes	13	irreg.round	moderate	yes
43	L-121160 #1 Piece of Duct tape from Roll	20	trilobal	light	no	13	round	moderate	yes
44	L-125444#1	23	trilobal	light	no	13	round	moderate	yes
50	No Brand from Firearms I.D.	13	irreg.round	light	yes	13	round	light	yes
52	NASHUA 398 Duct Tape	13	round	moderate	yes	10	round	moderate	yes

Fig. 1 Infrared Spectra of Groups of Duct Tape Adhesives

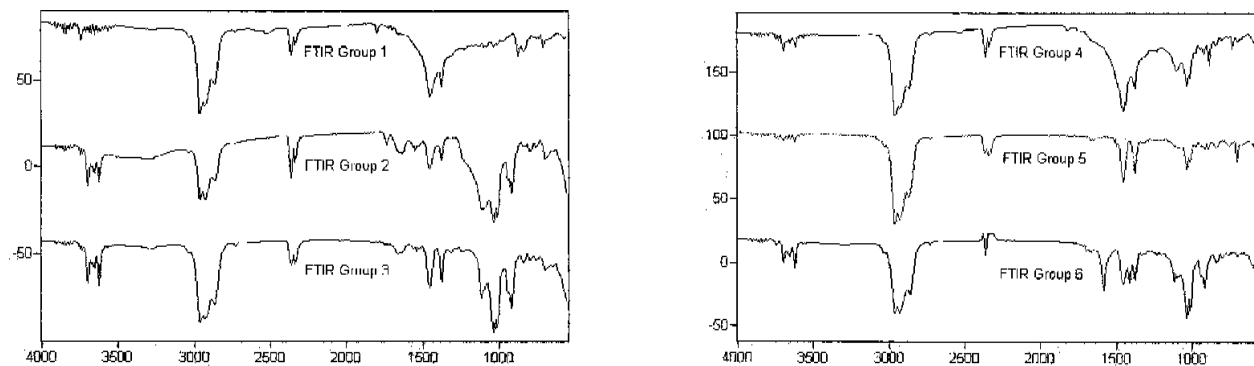
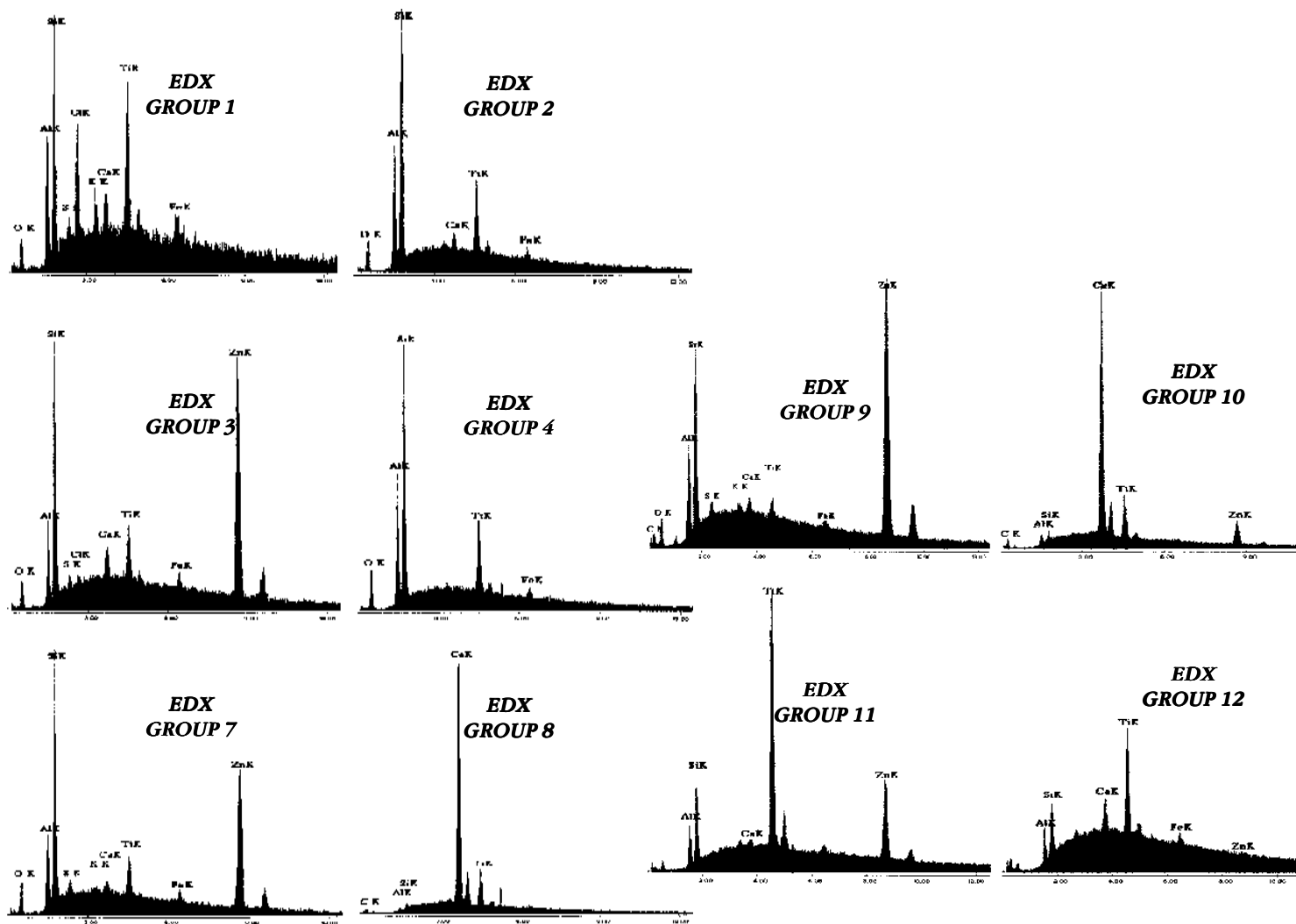


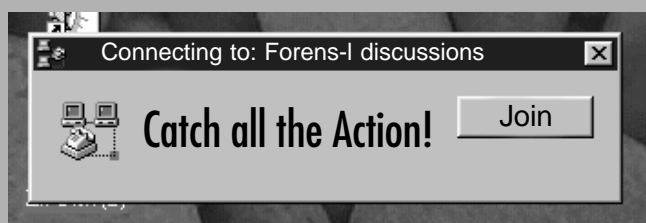
Fig. 2 Energy Dispersive X-Ray (EDX) Groups of Duct Tape Adhesives



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President's Desk

modernism. Post-modernism says that there can be no scientific certainty. Yet, that is the very thing we seek. The courtrooms seek it. The juries seek it. The very lives of arrested and charged persons hang on it. So, we find ourselves attempting to do our best to legitimize our work. We have developed certifying bodies. We have developed accreditation bodies. We continue to seek ultimate standardization across the field with Technical Working Groups. In many ways, we have built up ivory towers of technological progress which we incorporate into methodology and standard operating procedures in an effort to thwart off attempts to argue against the scientific certainty of our opinions.

In our eagerness to build these impenetrable towers, we have moved away from our roots; roots of thought, creativity and innovation. Sure, there were flaws in some of that early work but that does not mean we should have thrown out the baby with the bath water. Yet, I feel that is exactly what has happened. A colleague and friend has called it, "The tech-ing out of forensic science." We have come to recognize flaws in human logic that we try to compensate for through technology. If this trend continues, we will find ourselves in a field ruled with technology with very little room for thought, creativity and innovation.

As I have indicated before, the answer lies not in further regulation. It lies in strong leadership and mentoring. We need strong leadership not to buck against the reactionist trend of "tech-ing out" the field but rather to voice their concerns and try to re-direct some of those efforts in an attempt to re-visit our traditions of thought, creativity and innovation. We need mentoring to pass on these traditions, especially to those new forensic scientists who come from highly technically oriented schools.

Now, the question is urgency. I would argue that if we don't move now, within a generation we will see a profession which resembles nothing which we will recognize as classical criminalistics. We have people with the knowledge of our early years either through experience or through study. We need to take advantage of this bank of knowledge before they retire. The call goes out to all of you, young

and old. We all need to take part in this process and we need to do it now.

As your President I will work at beginning leadership training seminars. Not just management skills workshops, but leadership training. In addition, I will be working at establishing a mentoring program which will serve as a model for forensic laboratories. But, I will not be operating alone. There is a Board, the members of which I know have very similar concerns. There is also an Association, the CAC, who's members also have very similar concerns. We will be working on this

together. I am looking forward to the challenge. I hope you are too.

For an excellent resource which discusses the concepts of modernism and post-modernism, I would recommend a book by J. Richard Middleton and Brian J. Walsh entitled, *Truth Is Stranger than It Used to Be: Biblical Faith in a Postmodern Age*. Although set in the context of biblical faith, the authors do present a comprehensive discussion of societal trends in these two periods which are applicable in many different areas.

Ron

Mentoring: Multiplying Your Leadership Into the Generations

By Ron Nichols

In the past, I have been the recipient of many a cartoon—almost as many times as others have been recipients of one of my practical jokes. Most of these cartoons were given to me by my friends at the Contra Costa County Sheriff-Coroner Lab where I started my career. In general, these cartoons focused on three main aspects of my personality that really stood out among the rest: my grumpiness prior to 11 o'clock in the morning; my "New York attitude"; and my love for coffee. Feeling proud of all three, I would post these cartoons above my desk and enjoy them everyday.

... enthusiasm can get squelched quite readily by laboratories more concerned about their appearance than by the development of personnel.

It has been almost nine years since I left Contra Costa and I still have every single cartoon that my friends gave me, except now they do not hold such a prominent space in my cubicle. I have them in a manila envelope in my desk drawer. Every once in a while I pull them out as a reminder of the type of person that I tried to portray but now find myself desiring to put away every day.

To this day I still collect cartoons. Most are posted on a bulletin board at home. One of my favorites is a Family Circus cartoon strip by Bil Keane where the caption reads, "Centuries from today, these won't mean a thing: the house we

lived in, the money we made, the clothes we wore, or the kind of car we drove. But the world will be a better place because our children were loved." Cartoons like these serve as a reminder as well. They are a daily reminder of the type of person I want to be. The kind of person who desires to leave an impression on the people that I come into contact with whether they be in my professional or personal spheres of influence.

In my last article for the CACNews¹, I addressed the issue of leadership and how each and every one of us has a sphere of influence that places us into a position as a leader. I also discussed integrity being the key to leadership and how without it, our leadership would surely fail. In this article, I wish to address the topic of mentoring. If integrity is the key to leadership, mentoring is the key to multiplying that leadership throughout the generations.

The word mentor had an early appearance in Greek mythology. In *The Odyssey*, by Homer, Mentor was a close friend of Odysseus. Mentor cared for Telemachus for ten years while Telemachus' father, Odysseus, traveled. Mentor was actually the goddess Athena in disguise. As Mentor, she embodied the best of both the male and female personas. Some would consider her the ideal mentor, nurturing, supportive and protective while at the same time being aggressive, assertive and risk-taking. Athena played all the "roles" of a good mentor: teacher, friend, guide and protector. The American Heritage Dictionary defines mentor as a "wise and trusted counselor or teacher."

I was reminded during a recent tour of Colonial Williamsburg that from the earliest of times, artists and craftsmen would take individuals under their wing to pass on their craft. Certainly, most times it would be accompanied by a payment, an investment on the part of the apprentice. However, in return the more experienced mentor would not only teach the apprentice their craft but also house them and care for them. From the earliest days, mentoring meant more than simple teaching or guiding. Not only did the apprentice make an investment, but the mentor also made an investment, an investment into the very life of the one for whom they took responsibility.

In those early times, mentoring was vital to the survival of the craft. It is no less important in business today. Garry McDaniel, site manager for learning and development of Advanced Micro Devices, Inc., has likened companies that fail to provide mentoring programs as, "ships that have anchors weighing them down. You can have the best ship and the best crew, but if the captain doesn't say pull up the anchor, you won't get far, fast." On the other hand, McDaniel says that those companies that do have mentoring programs will find themselves, "racing out of the port—we'll be going places."² If Criminalistics is going to survive into the 21st century as something more than a class of technicians rigidly adhering to established standard operating procedures and protocols then we also need to embrace this concept of mentoring.

I recognize the need for standardization. I understand that we want some way to evaluate our personnel and our labs. As a result, we have ABC and ASCLD/LAB. But we should not count on them to bail us out and relieve us of the burden of being responsible for the performance of our own staffs. We need to be committed toward developing the best staff possible. We need to stop using these organizations as umbrellas to hide under. We need to train our staffs and train them well. The one thing worse than training people and having them leave is not to train them and have them stay.

I am discouraged by the trend that has developed from embracing these outside programs. I do not think I could put it any better than a trusted colleague did when he commented to me, "We have gone away from investigating crime scenes to analyzing pieces of evidence." In the desire to protect ourselves and our profession, we have started to move away from the very thing that made us a profes-

. . . studies have shown that the great majority of people learn from hands-on, give and take situations. They do not need a book. They need a mentor.

sion to begin with — our unique talents and abilities not only to find and analyze pieces of the puzzle but help put that puzzle together.

Could this have been avoided? Yes it could have been. Can this trend be stopped before we start saying, "I am One of Nine. We are Borg. We are One."³ Yes it can. We have not yet been assimilated. This trend can be halted the same way this whole thing could have been avoided, through solid leadership with integrity and the development of a mentoring program to carry us into future generations. Sound a little harsh? Sound like an indictment of past, and possibly present, leadership? Well, maybe it is. But if I am forced to recognize a need for standardization I am not going to ignore what caused us to get to that need.

I understand the seriousness of our work. I understand the ramifications of work done poorly. One slip of the pipette can send an innocent man away to jail for a murder or rape he did not commit. But, let us not get carried away with our own self-importance. One slip of the scalpel during an otherwise routine operation can put a young man into a grave for which he was not quite ready. Maybe we can glean from the example of the medical profession, which has some of the better mentoring programs in place.

As I have indicated so many times we need to become more proactive in our quality assurance and quality control. Developing a laboratory with a solid reputation for good work will depend much on its quality assurance and quality control program. But this program cannot start with the proficiency test designed to test a skill. It has to start with the training and development of the individual to develop the critical thinking process necessary to make the decision to even use that skill. This requires a solid mentoring program.

There are not many ingredients to such a program but each ingredient is essential and without the integration of any one of them the program is destined to fail. The first ingredient is **commitment**. All levels of management have to be committed to the incorporation and implementation of a mentoring program. Proper

mentoring takes time, time away from casework and other responsibilities. Indeed, good mentoring takes such involvement on the part of the mentor that it appears as if two people are doing the job of one. It would appear to be more efficient to allow the mentor to do the job and find something else less complicated for the apprentice to do. Such a view could not possibly be more short sighted. It takes leadership with vision to understand the implications of good mentoring beyond the bottom line of casework numbers and statistics. With commitment, the laboratory will have two people who can do an excellent job as opposed to one overworked, highly skilled employee and a second, underutilized, under appreciated, dissatisfied technician.

The second ingredient is a **mentor**. Such an individual has to be willing to devote their time and energy not only to their own casework and development, but must be willing also to invest their time and talents in developing another individual. That is not to say that the mentor will not develop professionally any further. Quite the contrary. A solid mentor will soon find themselves having a stronger reputation, upgraded skills, wider influence and more upward mobility. In addition, there will be a tremendous amount of satisfaction as the mentor sees the apprentice grow and develop as a result of their direct influence. However, these need to be allowed to come as they may. As great as these benefits are for the mentor, a mentor cannot go into a relationship with the primary motivation being gain on their part. The primary motivation needs to be the development of another individual. It has to mean sacrifice. It has to mean commitment. It has to mean a desire to want to serve. It has to mean entrusting your own reputation upon the skills and talents of another.

This area is likely where most mentoring programs fail. It is extremely difficult to find a scientist, trained in analytical techniques all their life, who is skilled at serving, skilled at sacrificing and skilled at letting go of control. I have heard far too many times, "If you want something done right, you have to do it yourself." I have not heard nearly enough, "If someone else can do the job 80% as well as you, help them to reach 100% themselves and then move on to something else." Good mentors take the initiative and look for people who want to learn and, more importantly, want to grow.

Good mentors also take the time necessary to develop their apprentice.

Certainly this is one area where most mentors balk, screaming, "I don't have the time." This is where commitment from management comes in. In addition, there are other ways in which time can be found. For instance if you are going to have lunch anyway, why not spend it with an apprentice. In addition, a good mentor serves as a model. In this field it would necessitate that the mentor model good critical thinking skills and scientific objectivity. But, in addition, a good mentor must also serve as a model of integrity, a model of humility and a model of loyalty. Each of these is something we should strive to develop in our apprentices but without modeling them, we will be nothing more than "clanging cymbals."⁴

The third ingredient is an **apprentice**. In this field this is the easiest ingredient to find. I have interviewed many people and have been influential in hiring a few. Their common ingredient was their enthusiasm and their teachability. They were excited and wanted to learn—can't ask for anything more from an apprentice. But, that enthusiasm can get squelched quite readily by laboratories more concerned about their appearance than by the development of personnel. It is possible to be concerned about reputation and still develop one's personnel, but it takes solid leadership to recognize how to do it—leadership with a vision into the future and with the capability to cast that vision among the staff.

Let's face it, it is quite natural for new personnel within laboratories to be assigned more routine functions such as drug analysis, fingerprint comparisons and blood alcohol work. Certainly not too exciting when they see others busily reconstructing crime scenes, doing firearms comparisons and analyzing serial rape cases for the crucial DNA evidence. Sadly, what also comes as naturally is for these very same laboratories to say, "You do this work first and as you have time we will develop your other skills." Informal statistics would likely show that time is rarely made for these individuals except for out of laboratory training. Time is a very precious commodity. Making time for someone sends a powerful message that their development is a priority; that they are important to the long term health, stability and reputation of the organization. Even worse, when the time does come around, they are too often handed a book or training manual and told to read. "Well, that's how I learned," is the all too familiar refrain. Frankly, I don't care how "you learned." "You" need to take some time

out and determine how this new person best learns a new task. There are many different learning styles and they stay with us through adulthood. Yes, some people do learn best this way. But studies have shown that the great majority of people learn from hands-on, give and take situations. They do not need a book. They need a mentor.

Much of this discussion regarding apprentices has come from the perspective of how management should view them. I would like to take some time to address the apprentices themselves much as Raymond Davis did in the Spring issue of the *CACNews*.⁵ It is vital that apprentices be motivated. Mentoring takes valuable time and with limited resources it is incumbent upon the apprentice that they be motivated to develop professionally. This does not mean simply that you accept all that is offered, waiting for the next feeding from the mommy bird. Mentoring is a two-way street and apprentices must put into it at least the same amount of effort as the mentor. If an apprentice is not willing to do that much, then allow someone else the opportunity. If management and a mentor have made the commitment, apprentices had better be prepared to make the same commitment.

In addition, apprentices need to be humble. They need to be aware of how much they do not know. Sometimes this admission can come readily enough, sometimes it doesn't. Much has to do with the relationship between the mentor and the apprentice. If trust does not exist, there will not be too many admissions of "I don't know." Further, and just as importantly, an apprentice must remain humble even towards the end of the mentoring process. A good mentoring relationship will develop one into a highly skilled master of their craft. This cannot go to one's head. At best, we all remain as servants no matter how much responsibility we are given.

Thirdly, apprentices need to be loyal. When an organization devotes the time to allow a mentor to work with apprentices and help develop them, they are making a commitment. They are trusting apprentices with valuable resources and energy. They are counting on their apprentices to make a difference. A measure of the character of an apprentice is how they handle that trust.

Mentoring requires three simple ingredients, each as important as the other. The first is commitment on the part of all levels of management. This is not a commitment towards developing idiot proof quality assurance and quality control pro-

grams but rather a commitment towards developing such a proficient staff that idiots don't exist. The second is finding a mentor who is so people skilled and relationship minded that their chief goal is to uplift others and put them into a position to receive all the credit due them while at the same time protecting them from needless backlash. The third is to find a willing apprentice, someone who wants to learn. Develop them properly and you will have a long-term employee, one who can now mentor others. The cycle into future generations begins.

I will be brutally honest in that early in my career, it did matter which case I worked on, how many cases I was able to do, and the press I received from doing a high profile case. Those early cartoons fitted my personality to a "T." But, I have tried to lay aside that old, selfish part of me. The Bil Keane comic strip cited earlier in this article was directed specifically at families. But I have learned that these same underlying principles transcend families and can be brought into the workplace. We need to bring them into the workplace. We need to understand that the most important thing that we can leave this profession is not our statistics and notoriety but rather how we were able to influence those around us to better reach their potential. We can do this by developing solid mentoring programs. If we want to take our leadership with integrity and multiply it into the 21st century I feel that there must be a commitment towards that mindset.

I would like to close with a quote and a call to arms if you will. Howard Hendricks has written, "Rather than being about success, mentoring is about significance. The difference is that success means reaching your goals, whereas significance involves making a difference in the lives of people. How many of us achieve our objectives, yet are still left wondering whether our lives really count for anything."⁶ Make a commitment today to a mentoring program at your laboratory. You will be the beneficiary of that commitment.

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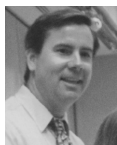
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SOUND COMMUNICATION



Richard Konieczka

As I reflect back upon the last two years, I have enjoyed a 59% increase in revenues mostly attributable to three changes I made in my way of doing business. The first change was the inauguration of this newsletter, which has enabled me to stay in touch with my clients and provide value to you.

The 2nd change was a more proactive use of client referrals, which has allowed me to spend less time marketing and more time designing and delivering quality talks and seminars. The third significant change was in the purchase of a computerized follow-up system which helps me track and call my clients more effectively. In the last year, my client base, which bounced around 425 for years, has grown to over 700, a **64% increase!**

Small, incremental improvements are no longer adequate to deal with the increasing pace of change. There are four levels of learning which include data, information, knowledge and wisdom. Data by itself is useless, such as the number 70, but when we add a qualifier like degrees Fahrenheit, it becomes information. Information we can recall or access readily is knowledge and wisdom is knowledge applied.

When you analyze the quantum leaps in your life, they often result as a consequence of events outside of your control. I flunked Latin in high school, a faux pas which directly resulted in my going to college. Getting fired from a job instigated a career change that took me across the continent to a radically improved life style. Starting a business that ultimately failed, provided experiences leading to my career as a speaker.

Recent Quantum Leaps in my business have resulted from applying knowledge I've had in my possession for years, and cost very little to implement. Why did I wait so long? How many opportunities are you leaving on the table because you haven't made the changes you already know about. Certainly there is new knowledge appearing every day, but it is not nearly as apparent as the existing knowledge we can evolve into wisdom. Resistance is always the culprit of quantum leaps and commitment their friend. How often have you grudgingly made a change only to wonder why you waited so long? Can I entice you to look at your patterns and to commit to ideas that will truly make a difference?

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A Final Word

The World According to Student Bloopers by Richard Lederer, St. Paul's School

One of the fringe benefits of being an English or History teacher is receiving the occasional jewel of a student blooper in an essay. I have pasted together the following "history" of the world from certifiably genuine student bloopers collected by teachers throughout the United States, from eighth grade through college level. Read carefully, and you will learn a lot.

The inhabitants of Egypt were called mummies. They lived in the Sarah Dessert and traveled by Camelot. The climate of the Sarah is such that the inhabitants have to live elsewhere, so certain areas of the dessert are cultivated by irritation. The Egyptians built the Pyramids in the shape of a huge triangular cube. The Pyramids are a range of mountains between France and Spain.

The Bible is full of interesting caricatures. In the first book of the Bible, Guinesses, Adam and Eve were created from an apple tree. One of their children, Cain, asked "Am I my brother's son?" God asked Abraham to sacrifice Issac on Mount Montezuma. Jacob, son of Issac, stole his brother's birthmark. Jacob was a partiarth who brought up his twelve sons to be partiarths, but they did not take to it. One of Jacob's sons, Joseph, gave refuse to the Israelites.

Pharaoh forced the Hebrew slaves to make bread without straw. Moses led them to the Red Sea, where they made unleavened bread, which is bread made without any ingredients. Afterwards, Moses went up on Mount Cyanide to get the ten commandments. David was a Hebrew king skilled at playing the liar. He fought with the Philatelists, a race of people who lived in Biblical times. Solomon, one of David's sons, had 500 wives and 500 porcupines.

Without the Greeks, we wouldn't have history. The Greeks invented three kinds of columns -Corinthian, Doric and Ionic. They also had myths. A myth is a female moth. One myth says that the mother of Achilles dipped him in the River Stynx until he became intolerable. Achilles appears in "The Illiad", by Homer. Homer also wrote the "Oddity", in which Penelope was the last hardship that Ulysses endured on his journey. Actually, Homer was not written by Homer but by another man of that name.

Socrates was a famous Greek teacher who went around giving people advice. They killed him. Socrates died from an overdose of wedlock.

In the Olympic Games, Greeks ran races, jumped, hurled the biscuits, and threw the java. The reward to the victor was a coral wreath. The government of Athen was democratic because the people took the law into their own hands. There were no wars in Greece, as the mountains were so high that they couldn't climb over to see what their neighbors were doing. When they fought the Parisians, the Greeks were outnumbered because the Persians had more men.

Eventually, the Ramons conquered the Geeks. History call people Romans because they never stayed in one place for very long. At Roman banquets, the guests wore garlic in their hair. Julius Caesar extinguished himself on the battlefields of Gaul. The Ides of March killed him because they thought he was going to be made king. Nero was a cruel tyranny who would torture his poor subjects by playing the fiddle to them.

Then came the Middle Ages. King Alfred conquered the Dames, King Arthur lived in the Age of Shivery, King Harlod mustarded his troops before the Battle of Hastings, Joan of Arc was cannonized by George Bernard Shaw, and the victims of the

Black Death grew boobs on their necks. Finally, the Magna Carta provided that no free man should be hanged twice for the same offense.

In midevil times most of the people were alliterate. The greatest writer of the time was Chaucer, who wrote many poems and verse and also wrote literature. Another tale tells of William Tell, who shot an arrow through an apple while standing on his son's head.

The Renaissance was an age in which more individuals felt the value of their human being. Martin Luther was nailed to the church door at Wittenberg for selling papal indulgences. He died a horrible death, being excommunicated by a bull. It was the painter Donatello's interest in the female nude that made him the father of the Renaissance. It was an age of great inventions and discoveries. Gutenberg invented the Bible. Sir Walter Raleigh is a historical figure because he invented cigarettes. Another important invention was the circulation of blood. Sir Francis Drake circumcised the world with a 100-foot clipper.

The government of England was a limited mockery. Henry VIII found walking difficult because he had an abness on his knee. Queen Elizabeth was the "Virgin Queen." As a queen she was a success. When Elizabeth exposed herself before her troops, they all shouted "hurrah." Then her navy went out and defeated the Spanish Armadillo.

The greatest writer of the Renaissance was William Shakespear. Shakespear never made much money and is famous only because of his plays. He lived in Windsor with his merry wives, writing tragedies, comedies and errors. In one of Shakespear's famous plays, Hamlet rations out his situation by relieving himself in a long soliloquy. In another, Lady Macbeth tries to convince Macbeth to kill the King by attacking his manhood. Romeo and Juliet are an example of a heroic couplet. Writing at the same time as Shakespear was Miquel Cervantes. He wrote "Donkey Hote". The next great author was John Milton. Milton wrote "Paradise Lost." Then his wife dies and he wrote "Paradise Regained."

During the Renaissance America began. Christopher Columbus was a great navigator who discovered America while cursing about the Atlantic. His ships were called the Nina, the Pinta, and the Santa Fe. Later the Pilgrims crossed the Ocean, and the was called the Pilgrim's Progress. When they landed at Plymouth Rock, they were greeted by Indians, who came down the hill rolling their was hoops before them. The Indian squabs carried porposies on their back. Many of the Indian heroes were killed, along with their cabooses, which proved very fatal to them. The winter of 1620 was a hard one for the settlers. Many people died and many babies were born. Captain John Smith was responsible for all this.

One of the causes of the Revolutionary Wars was the English put tacks in their tea. Also, the colonists would send their pacels through the post without stamps. During the War, Red Coats and Paul Revere was throwing balls over stone walls. The dogs were barking and the peacocks crowing. Finally, the colonists won the War and no longer had to pay for taxis.

Delegates from the original thirteen states formed the Contented Congress. Thomas Jefferson, a Virgin, and Benjamin Franklin were two singers of the Declaration of Independence. Franklin had gone to Boston carrying all his clothes in his pocket and a loaf of bread under each arm. He invented electricity by rubbing cats backwards and declared "a horse divided against itself cannot stand."

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Face Game Answers

(Top, l-r) Bill Bass, Douglas Ubelaker, T. D. Stewart; (bottom, l-r) William R. Maples, Lawernce Angel, Clyde Snow.

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