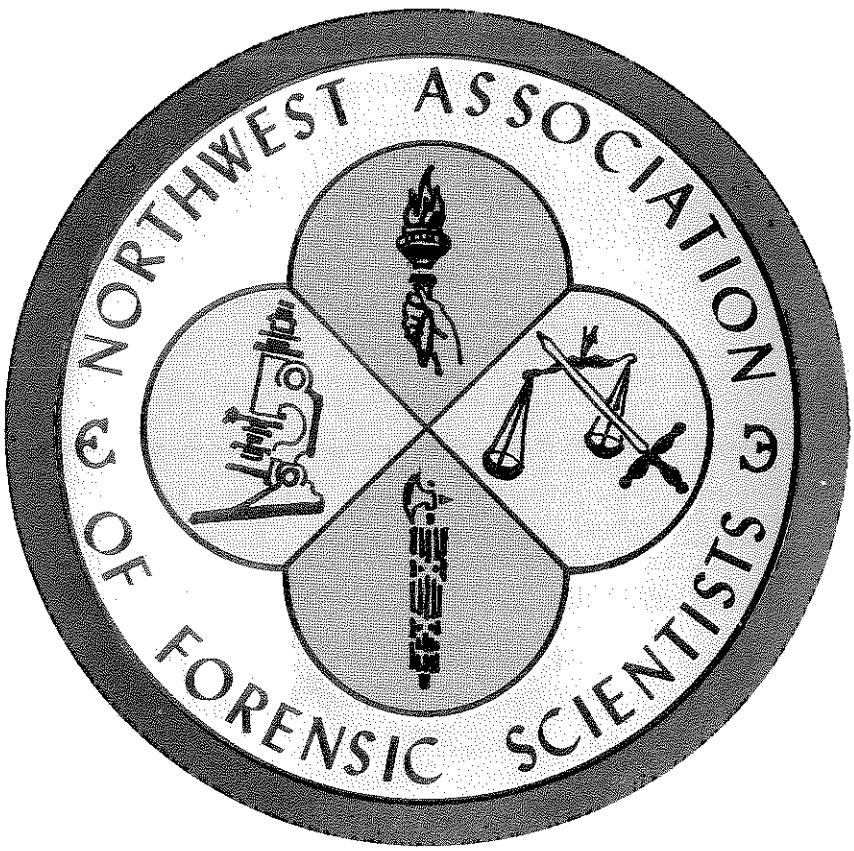
THE NEWSLETTER of



JUNE 1990 VOL. XVI, NO. 2

PRESIDENT'S MESSAGE

It is my pleasure to extend congratulations and a sincere "Thank You" to those involved in putting together a very successful NWAFS meeting May 7-11 at beautiful Jackson Hole, Wyoming. The preparation for these meetings begins one year in advance. Many hours are spent in planning and finally, the day arrives for the conferees to pick up their packets and the vendors to set up. Its a time of truth!! Pre-registration guarantees that 40+ will be there. But planning has been for 100 or more! Then too, the unknowns begin to pick at the back of your brain. Will the weather hold? Will there be plane delays? Any last minute subpoenas, or car troubles, or family demands, or health problems, or even earthquakes? The list could go on. Finally, you commit all the nagging worries to the big mass spec in the sky and hope for the best.

To Tilton Davis, meeting and program chairman, and John Jolly, exhibits and vendor chairman, congratulations - hellava job guys! Becky Russell and Judy Hanesworth applied their expertise at registration, money gathering, book selling, message giving, vendor soothing, direction giving and (most importantly) organizing dinners and dancing to the wee small hours. Thanks, Ladies!

If course, much appreciation goes to both the Wyoming Division of Criminal Investigation and the Wyoming Game and Fish for hosting the meeting and making it possible for employees in the Crime Laboratory and the Game and Fish Laboratory to not only attend, but to work their buns off throwing the meeting.

Total registered attendance was about 64 forensic scientists, 11 law enforcement officers and 7 from attorney's offices. There were 15 individuals representing 19 corporate vendors. A total of 30 attended the 4 stress management seminars given by Marilyn Tkachuk and Linda Brekke. Twenty each were in the DNA and IEF workshops given by Moses Schanfield, Dale Dykes and Shirley Miller of Analytical Genetics. Attendance at the VICAP (James Wright), Footwear and Tire Tread (William Bodziak), Product Tampering and Arson Seminars (Ronald Duncan) averaged about 15. An Introduction to DNA seminar given by Audrey Lynch was well received by law enforcement and attorneys. In general, there was good feedback on all the workshops, seminars and technical sessions. The sessions were interesting and informative and well worth attending. In some cases, the information was overwhelming and showed participants that more homework is needed. I want to make special mention of the 22 technical papers given at the conference. As far as I'm concerned, this is what the meetings are all about. Thank you to those who labored and strained to give them before your peers.

There were a number of firsts at this meeting. Getting law enforcement and attorneys involved by offering CTE and POST credits attracted a number of "the other partners of Forensic Science." The political nature of drug testing on the job, YOUR JOB, was investigated by invited speakers Bryan Finkle, Thomas Donahue and Donna Smith. Hopefully the video of these sessions will turn out and be available to those who are interested.

There are many sidelights to every NWAFS meeting. You knew right away that this was not going to be just any ordinary meeting when you found an EYEBALL in the bottom of your registration packet! There are still a few left from Tilton Davis if anyone is interested. Then there were the great views of the Tetons and the full moon from the

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hospitality room, the fishing (pretty slow for lures and flies), and even danger. Bill Adrian blew out his quads while investigating a crime scene! He is recovering nicely from surgery at home.

Of course the bottom line is whether the meeting made it financially! I am told by Tilton that after all the bills are in, it should end up in the black (just al little)! So, to you who missed this one, or having attended, can't wait until the next one, here's seeing you in Seattle!! Have a good summer!

Tommy D. Moore

LETTERS TO THE EDITOR

On behalf of myself and the other members of the Oregon State Police Crime Laboratory Bureau, I would like to express my appreciation and say "thanks for everything" to Tom Barnes.

For those of you not aware of his recent move, he is no longer a member of the OSP. As of April 1, Tom has moved on to broaden his horizons and is now employed by Pacific Environmental Laboratories in Beaverton, Oregon.

Tom has been our premier clandestine drug lab expert in the state. Tom was our serology coordinator, he was everybody's teacher and a natural leader. After having worked closely with Tom for the last 5-1/2 years I know how much I and the rest of the crew will miss that distinctive laugh. Luckily for us he is just across town, but we wanted him to know that he will be missed and that we wish him all the best in his new adventures.

Dona J. Scarpone
and the rest of the OSP Crime Lab Bureau

MEETING INFORMATION

SWAFS Announces Fall 1990 Meeting

The Southwestern Association of Forensic Scientists announces their Fall 1990 meeting will be held the week of October 23-27 at the Ramada Downtown in Tucson, Arizona. For more information, contact Registration Chair Nora E. Rankin, Tucson Police Department Crime Laboratory, PO Box 1071, Tucson, AZ 85702 (602) 791-4494.

Fall NWAFS Meeting Planned

The fall meeting of the Northwest Association of Forensic Scientists is scheduled for the week of November 5-9 at the newly remodeled Edgewater Inn in Seattle, Washington. Two workshops are in the planning at this early date: one on the use of the FT-IR microscope and the other on bombs and booby traps in clandestine drug laboratories. Suggestions for other workshops and program items are being accepted. For more information, contact Kay Sweeney, WSP Crime Lab, 610 3rd Avenue, Public Safety Building, 2nd Floor, Seattle, WA 98104-1820 (206) 464-7038.

AS I SEE IT ...

Roger A. Ely
Editor

Well, campers, another NWAFS meeting is history and all that remains is some very fond memories and several rather incriminating photographs. Unfortunately, the photographs will probably last longer than most people's memories.

This meeting was a different one for me. I was able to combine it with a little vacation before and after that was badly needed. Having flown to Bellingham, Washington I drove with British Columbia's Regional Coroner (and an Associate member of ours) Larry Campbell to Jackson through the Columbia River Gorge, Boise, Pocatello, Idaho Falls and finally over Teton Pass into some of the most beautiful country I've ever seen.

It was incredible to look at the vast expanses of land we crossed during this two week period and contrast it to the elbow to elbow craziness I call home in the Bay area. I'd be lying if I didn't admit I was very homesick for the greens of the Pacific Northwest.

The week was a weatherman's nightmare. On Tuesday, it snowed 4 inches during the day. Standing around the registration area talking with John Bowden, Larry and Lisa Caughlin we were chuckling over the planned poolside luncheon buffet scheduled for Thursday. The likelihood of such an event happening with three inches of snow accumulating on the tables around the pool seemed pretty scarce. But, when Thursday rolled around it was sunny and clear - almost too warm. Who would have thought it could happen?

One distracting factor of the meeting was a series of picture windows in the main meeting room. When the curtains were left open, I found myself marvelling at the awesome sight of the Tetons. Unless you've seen them up close and personal, photographs or video just don't do them justice. This was compounded by watching the different weather fronts deliver snow, rain, sleet and other sorts of weather. It made it difficult to concentrate on the speaker.

This spring's banquet offered something that no previous banquet had offered - a formal award to the person hanging the most spoons legally (eg. cupped portion to the flesh of the face) during the banquet. This trophy, perpetual I would imagine, was presented to two fine young ladies who are credits to the Association - Lisa Caughlin, Ventura County Sheriff's Department; and Lisa Brewer, CA DOJ DNA Lab - Berkeley. Each was able to hang four spoons on their faces (Lisa C. informed me the other day she's practicing for Seattle and is up to 5!). Honorable mention went to Becky Russell of the Wyoming Game and Fish for hanging about 12 to 15 with the help of sticky tape. There was rumors about a "Golden Earplug Award" Larry and I being nominated for, but nothing materialized.

> ***... a formal award to the person hanging the most spoons legally ... was presented to two fine young ladies who are credits to the Association ...***

Off to Alaska!!

The Spring meeting of the Association will be held in Anchorage, Alaska. George Taft, director of the Alaska DPS Crime lab proffered an invitation to the Association and it was accepted at the membership meeting. This meeting has a lot of potential in the area of wildlife forensics, possibly coordinating with our Russian counterparts, etc. I'm looking forward to seeing the program for this meeting. Hopefully, there will be a section on stalking the mighty King salmon.

Rogue Chemical Company Seized

The Internal Revenue Service and the Drug Enforcement Administration recently closed Custom Chem Lab of Livermore, California on charges of money structuring. Custom Chem Lab has long been an indiscriminate supplier of precursors, reagents and laboratory supplies to the clandestine laboratory operator. While the IRS seized business records and financial statements, the DEA seized any and all chemicals and laboratory supplies that could be used in a clandestine laboratory.

The approximate value of the seizure was placed near $1.8 million.

Among the items seized were 50 and 72 liter reaction flasks, mantles and special stands; rotary evaporators ranging in price from $1700 to $8000; a 36 inch diameter vacuum filter funnel; 55 gallons of bromobenzene; 35 gallons of hydriodic acid; 100 pounds each of lidocaine, benzocaine, procaine and nicotinamide; and an undetermined amount of funds in bank accounts. Of interest to the investigators were the four empty 55-gallon containers of hydriodic acid found at the store site.

The approximate value of the seizure was placed near $1.8 million.

While having lunch with the task force agents handling the case the other day, one happened to mention that Custom Chem Lab was back in business and had just received a 55 gallon of hydriodic acid. The owner also now has an attorney to assist him in doing business while satisfying the requirements of the IRS and the Chemical Diversion and Trafficking Act.

Wrap-up

Well, its been a rather slow news period. Sorry there isn't any controversial material or other pontification going on, but I guess the vacation really did mellow me out some. That, plus I'm getting tired of being accused of not following the "party line." Hope you have a restful summer - take some time out and have some fun!

JOB ANNOUNCEMENTS

Criminalist I: The Tucson, Arizona Police Department Crime Laboratory is seeking qualified candidates for the position of entry level criminalist. The position requires experience in scientific analysis of physical and chemical evidence materials preferably in a criminalistics laboratory. An employee of this class is responsible for the testing and analysis of evidence materials as assigned, such as drugs, blood, paint, glass, explosives, hair, clothing and other crime or misdemeanor related materials. Work includes the compilation and analysis of data, maintenance of records, preparation of reports and presenting testimony in court. The minimum qualifications for the position are some experience in the scientific analysis of organic and inorganic materials preferably in a criminalistics laboratory; Bachelor's Degree in Criminalistics, Chemistry or a natural science with at least 24 semester hours of college credits in chemistry.

Examination will be conducted when a sufficient number of applications and supplemental applications have been received.

Salary: $2138 per month

For more information, contact:
Susan Murray
Senior Personnel Analyst
City of Tucson
Human Resources Department
PO Box 27210
Tucson, AZ 85726-7210

Criminalist: The Las Vegas Metropolitan Police Department is recruiting a Criminalist for the Forensic Laboratory after July 1, 1990 with a closing date of October 1, 1990. Applicants will possess a Master's Degree in Forensic Science, Chemistry, Biology or a related field, and one year of experience in a forensic laboratory; OR applicants will possess a Bachelor's Degree in Forensic Science, Chemistry, Biology or a related field, and two years of experience in a forensic laboratory. This is a civilian, civil service position with a starting salary dependant upon education and experience.

Salary: $2917 to 3153 per month

For answers to technical inquiries, contact:
Carla Noziglia, Director
Laboratory Services
(702) 799-3932

For application materials, contact:
Katey Lavelle
LVMPD Personnel
601 Fremont Street
Las Vegas, NV 89101-5613
(702) 799-3979

Forensic Scientist Trainee: The Commonwealth of Pennsylvania is recruiting qualified persons to fill the position of Forensic Scientist Trainee. Employees in this position participate in a structured training program designed to develop competency in the analysis of chemical, physical and biological criminal evidence. Work assignments are performed under the close supervision of a professional superior. Work involves using a variety of techniques and instruments to analyze blood or other body fluids, hair and tissue samples, fibers, narcotics, poisons and other materials such as paint and glass fragments. Employees also participate in mock trials and receive instruction to establish the necessary basis for eventual qualification as a court witness. The minimum requirements include a bachelors degree from an accredited college or university with a major in chemistry or a closely related physical or natural science which includes at least one course in both quantitative and qualitative chemical analysis.

Salary: $22,396 annually

For more information, contact:
State Civil Service Commission Offices
State Office Building, Room 411
300 Liberty Avenue
Pittsburgh, PA (412) 565-7666

GEORGE MATSUDA TO RETIRE

Richard Brook
Oregon State Police
Crime Lab
Portland, OR

After working twenty-two years in forensic science in Portland, George Matsuda will retire effective July 1, 1990. A formal coffee for family and friends will be held from 2:00 PM to 3:30 PM on Friday, June 29 in the 14th floor auditorium of the Justice Building in downtown Portland.

George started in the Portland Police Bureau Crime Laboratory in 1968. In May 1975 the Oregon State Police assumed the duties previously performed by the Portland Police Lab and George became a member of the Oregon State Police. Since 1984 he has overseen the training of personnel in the seven State Police Crime Laboratories.

He has been a very active participant in the Northwest Association of Forensic Scientists and has served as Editor for the Newsletter for over three years. George was Program Chairman for the 1984 Fall conference. His countless energies in improving forensic science and the NWAFS is appreciated and will be missed.

Congratulations, George!! We all wish you well in your retirement.

AMERICAN BOARD OF CRIMINALISTICS INCORPORATED

At a general membership meeting of the American Board of Criminalistics (ABC) held on February 21, 1990 in conjunction with the American Academy of Forensic Sciences Meeting in Cincinnati, Ohio the following information was disseminated:

1. Present from the regional forensic associations participating in the ABC were Greg Matheson, CAC; Rick Tontarski, MAAFS; Susan Johns, MAFS; Al Stirton, NEAFS; and Jim Small, SAFS. From a list of nominees from other forensic groups and associations, Ron Hrynchuck, Henry Lee and Frank Schehr were selected as the three members at large.

2. A letter from SWAFS President Susan Land was read indicating SWAFS believed it to be in their best interests <u>not</u> to participate in the ABC. SWAFS joined the NWAFS as the only two forensic association not to participate in the ABC.

At a Board of Director's meeting held immediately after, the following were selected as officers of the ABC:

President:	Rick Tontarski
Vice-President:	Greg Matheson
Treasurer:	Al Stirton
Secretary:	Susan Johns

A statement of purpose of the ABC as well as a summary of a mechanism for the preparation of KSA's and examinations; as well as duty statements for the ABC Board of Directors, the credentialing committee, the examinations committee and the peer

groups was circulated and adopted by the Board.

The Council of Forensic Science Educators is interested in assisting the ABC with its mission.

The group is not operating under any by-laws at this time, it will operate under the Articles of Incorporation until such by-laws can be prepared and approved.

Member-at-large terms are to be staggered; and business may be conducted between Board Meetings via the telephone with a confirmation of vote to be made in writing.

At a Board of Directors meeting held on February 23, 1990 several more organizational plans were set in motion. One of the interesting topics to come up was a proposal by Henry Lee to consider grandfathering. His suggestion was to be placed in writing and presented to ABC by April 1.

If you have further questions concerning these meetings, or would like copies of the minutes from these meetings, contact Dale Mann at the WSP Crime Lab in Tacoma for more information.

ASTM SEEKS PARTICIPANTS FOR FORENSIC STANDARDS

ASTM standards writing Committee E-30 on Forensic Science seeks individuals interested in participating on the committee's newly-established Subcommittee E30.92 on Terminology.

The new subcommittee intends to create guidelines for terminology usage in forensic science reporting, classification or keyword hierarchy for use in forensic science, and standard terminology for forensic science. The subcommittee also plans to establish an electronic bulletin board / conferencing system to facilitate rapid communications.

The next meeting of Subcommittee E30.92 will be held during the February 1991 standards development meetings of Committee E30 in Anaheim, California. All interested parties are invited to participate. For additional information, contact E30.92 Chairman David S. Goldman, P.E., Northeastern University, Room 305SN, 360 Huntington Ave., Boston, MA 02115 (617) 437-3631; or Gloria M. Collins, ASTM, 1916 Race St., Philadelphia, PA 19103, (215) 299-5510.

Committee E-30 is one of 134 ASTM technical standards writing committees. Organized in 1898, ASTM (American Society for Testing and Materials) is one of the largest voluntary standards development systems in the world.

IDAHO SUPREME COURT RULES AGAINST DNA EVIDENCE

Condensed from the Idaho Statesman, May 6, 1990

The Idaho State Supreme court has reversed the 1988 conviction of an 24 year old man from Sandpoint. The case, one of the first in the Northwest to use DNA "fingerprinting", was a result of the rape of a woman who is legally blind without her contact lenses. This fact made it impossible for the victim to identify the suspect.

Vaginal samples taken from the victim shortly after the assault were found to contain semen, but conventional examinations proved inconclusive. Frustrated, the county prosecutor had the sample sent to Lifecodes Inc. (Valhalla, NY) for DNA typing. The genetic testing identified the suspect as the donor of the semen recovered from the victim's vaginal samples.

Facing what scientists call a test with a billion-to-one margin of error, Bonner County a deputy public defender advised his client to accept a plea bargain. He pleaded guilty on the condition that if another court found the evidence not admissible, the plea could be withdrawn. In June 1988, the defendant was sentenced to 10 years in prison.

The court ... said the evidence in question ... was not admissible in a preliminary hearing as "medical fact."

The court, in overturning the conviction, said the evidence in question, a report of the DNA test results, was not admissible in a preliminary hearing as "medical fact." Instead, the court said the results were a report of "scientific examinations of evidence," and not acceptable unless the tests were performed in a government laboratory.

"To apply this kind of hair splitting hyper-technology is an obstruction of the criminal justice process," said Idaho Solicitor General Lynn Thomas, who argued the case before the Supreme Court.

But public defenders se the ruling in a different light. They say it establishes a proper format for presenting DNA testing as evidence. Those ground-breaking measures are necessary to protect the innocent until the controversial testing becomes widely used and accepted, they say.

ESTER OF PHENYLACETIC ACID ENCOUNTERED IN DRUG LAB

Kathy Hays
Oregon State Police Crime Lab
Springfield, OR

On April 28, 1990 a search warrant was served on a house in Harrisburg, Oregon. Among the items seized were six sealed brown glass bottles containing a liquid. A check of resources by the Oregon State Police Crime Laboratory in Springfield identified the liquid as the ethyl ester of phenylacetic acid, also known as ethyl phenylacetate. This chemical is not controlled, nor is it watched. By treating it with base and then an acid, phenylacetic acid is formed.

The suspect obtained the ethyl phenylacetate along with lead acetate and methylamine from Intertech Trading Company, Ltd., of Orem, Utah in December of 1989.

NEW SOURCE OF EPHEDRINE FOUND FOR CLANDESTINE DRUG LABS

J. Thomas Abercrombie
CA DOJ Crime Lab
Riverside, CA

The red phosphorus - hydriodic acid reduction of ephedrine to methamphetamine, currently the most popular synthetic route in Southern California, is undergoing another evolutionary change.

Until approximately 18 months ago, these clandestine laboratories were using almost exclusively a white crystalline powder found to be l-ephedrine hydrochloride. On one or two occasions, clandestine labs were found in which the cook was using generic "Sudafed" or its' equivalent in the process.

With the increased difficulty in purchasing bulk l-ephedrine HCl in California and other states due to legislation, the clandestine chemist has increased substantially his use of legitimately purchased ephedrine in the form of the familiar white double-scored tablets.

... the clandestine chemist has increased substantially his use of legitimately purchased ephedrine in the form of the familiar white double-scored tablets.

These tablets, purchased in multiples of 100, 500 or 100,000 tablet containers, contain 25 mg of l-ephedrine HCl each. Initially, we found the ephedrine was being extracted and precipitated as the hydrochloride salt for use in the reaction. Now, however, we're seeing individuals simply grinding the tablets to a fine powder and using the resultant powder in their reactions without specifically isolating the ephedrine.

This is being seen in about 50% of the labs seized in the last 8 months. The use of the ephedrine containing tablets as a source for the precursor has only been seen in the HI / red phosphorus reduction route. Individuals using thionyl chloride or phosphorus pentachloride to form the chloro- intermediate are still using the pure, crystalline form of l-ephedrine HCl.

(Editor's Note: Discussions with the DEA Sacramento Clandestine Laboratory Task Force agents also indicates a higher incidence of ephedrine containing tablets being recovered at clandestine lab sites, being used as precursor materials. A recent laboratory was found to contain 40 to 50 pounds of simple white tablets without any type of scoring. The pills were packed in plastic bags weighing approximately 2 kilograms. Agents said the tablets were poorly pressed, and were very crumbly. Agents indicate the tablets are being purchased from the East Coast at a cost of $1088 per 45 pounds. Each pill weighs approximately 0.07 grams and contains 25 milligrams of l-ephedrine HCl. Forty-five pounds of tablets would contain approximately 291,000 tablets and account for about 7.3 kilograms of l-ephedrine HCl. The legitimate purchase of l-ephedrine HCl from a chemical supply is about $18 per 100 grams. Legitimate purchase of 7.3 kilograms would total $1340 versus only $1088 for an equivalent amount of ephedrine in tablets.)

FORENSIC SCIENCE FOUNDATION GRANT DEADLINE

The Board of Trustees of the Forensic Sciences Foundation has approved $2000 for the 1990-1991 Acorn Grant Program. This sum will allow the Foundation to award several small grants ($400 - 500) for research projects by members of the American Academy of Forensic Sciences. Brief proposals for projects should be sent to the Foundation Headquarters, PO Box 669, Colorado Springs, CO 80901-0669 by August 1, 1990.

Proposals should contain research objectives, research time tables, personnel resumes and budgets. Please keep the proposals concise but informative. Proposed research should yield results useful to the Forensic Sciences. Acorn Grants are not intended to improve equipment or normal operating funds for individual laboratories. Remember, funds are limited but it is a beginning. With continued support of our members, we hope that this program will grow in magnitude and results. Contact Bill Maples (904) 392-1721, Treasurer of the Foundation, if you have any questions.

MINUTES OF SPRING 1990 BUSINESS MEETING

Lionel Tucker, Jr.
Secretary

The meeting was called to order on May 11, 1990 at about 11:30 AM in Jackson Hole, Wyoming by President Tommy D. Moore. Twenty members were in attendance. The minutes from the Fall 1989 meeting were approved as published in the Association's Newsletter.

Reports:

Financial: Lionel Tucker, Jr.
As of June 1, 1990 there is $4,294.55 in the Dreyfus Account; $9,160.00 in the bank account; for a total balance of $13,454.55. The books will be audited at the upcoming meeting in Seattle. Expenses from the Spring 1990 meeting have not yet been received.

Membership: Robert Sager
There have been two resignations from the Association:
Brian Callohill
Glenn Ashmore

Two members have left the field:
Wally Baker
Thomas Barnes

In personal news about Association members, Beth Carpenter had a baby boy, Andrew, on February 6, 1990; Patricia Wakkinan recently married as is now Patricia Hawk; Lisa Brewer recently married and remains Lisa Brewer; and Wayne Jeffery recently remarried his ex-wife and remains Wayne Jeffery.

Historical: No report

Publications: Roger Ely
The assistance of Ms. Kathy Wilcox, OSP Lab in Coos Bay; and Ray Kusumi, WSP Crime Lab in Seattle; have been enlisted to help gather material for the newsletter.

Technical Advancement: Tommy Moore for Robert Thompson
Two issues were discussed. The first centered on whether the Association should charge for participation in the Proficiency Testing Program. It was decided to select a committee with Robert as chairman to evaluate the matter. Volunteers are needed for this committee.

The second issue concerned the publishing of the general results of the past year's testing program in the Newsletter. After discussion, a motion was passed to amend the by-laws Section 4(e) to add the requirement of the committee's yearly report being published in the Newsletter.

Continuing Education: Tommy Moore for Arnold Melnikoff
As has been reported numerous times before, the educational materials are available to the membership. As of now, we still have very little interest in the materials. Materials are not being utilized. The NWAFS has considerable monies invested in these materials, so please use them.

Executive Committee: Tommy Moore
Tommy attended the SWAFS meeting in Colorado this spring and reports the following:
1. SWAFS has withdrawn its support for certification.
2. SWAFS has indicated a desire for a joint meeting with us, possibly in Las Vegas during the spring of 1992. This will be discussed in Seattle and presented to the membership.

Awards: We still have not received a check for the 1989 American Academy Award. Two other awards are available, the Acorn Award from the American Academy; and the NWAFS Peer award set up last year. The criteria for the NWAFS award has been previously published.

Old Business:

Concord T-Shirts: No design has been suggested for this T-shirt to commemorate the survival of our members through the October 17th earthquake. Roger Ely will be contacting Jeff Dovci to create a design for the shirt.

Certification: At this moment, the by-laws are being drawn up. By 1992 certification is expected to be in place. If anyone desires more information please contact Dale Mann.

Dale Mann attended the Regional Society Meeting at the American Academy meeting in Cincinnati. There was some interest in setting up cross training for forensic scientists and establishing a Forensic Science Resource Catalog. However, nothing was finalized.

New Business:

The fall meeting will be held in Seattle, Washington at the Edgewater Inn during the week of November 5-9. Room rates will be $79.00. Workshops are planned, with one being a bombs and booby traps course. For more information, contact Kay Sweeney at the WSP Seattle Lab.

Spring meeting 1991: Two locations were proposed for this meeting, Anchorage and Honolulu. The winner was Anchorage. Don Chinn in Honolulu will send an official proposal to the executive committee for a future meeting in Honolulu.

Meeting adjourned at about 1:30 PM.

HEAVIEST ELEMENT DISCOVERED

Thomas G. Kyle
Los Alamos, New Mexico
in
Journal of
Irreproducible Results
Volume 35, Number 1
January / February 1990

The heaviest element known to science was recently discovered at one of the national laboratories. The element, tentatively named administratium (Ad), has no electrons or protons, thus having atomic number zero. It does, however, have one neutron, 75 associate neutrons, 125 deputy neutrons and 11 assistant deputy associate neutrons. This gives it an atomic mass of 312. The 312 particles are held together in the nucleus by a force that involves the continuous exchange of meson-like particles called memoons.

Since it has no electrons, administratium is inert. Nevertheless, it can be detected chemically because it seems to impede every reaction in which it takes part. According to Dr. M. Languor, one of the discoverers of the element, a very small amount of administratium caused one reaction that normally occurs in less than a second to require over four days to go to completion.

Administratium has a half-life of approximately 3 years, at which time it does not actually decay. Instead, it undergoes an internal reorganization in which associates to the neutron, deputy associates to the neutron and assistant deputy associates to the neutron all exchange places. A tendency has been observed for the atomic mass to actually increase during each reorganization.

ORAL CONCEPTION. IMPREGNATION VIA THE PROXIMAL GASTROINTESTINAL TRACT IN A PATIENT WITH AN APLASTIC DISTAL VAGINA. CASE REPORT

Douwe A. A. Verkuyl
British Journal of Obstetrics and Gynaecology
Volume 95, pages 933-934
September 1988
from
Journal of
Irreproducible Results
Volume 35, Number 2
March / April 1990

The patient was a 15-year-old girl employed in a local bar in Mafeteng, Lesotho. She was admitted to the hospital after a knife fight involving her, a former lover, and a new boyfriend. Who exactly stabbed the woman was not quite clear, but all three participants in the small war were admitted with knife injuries. The girl has some minor lacerations of the left hand and a single stab wound in the upper abdomen.

Precisely 278 days later the patient was admitted again to the hospital with acute, intermittent abdominal pain. Abdominal examination revealed a term pregnancy with a cephalic fetal presentation. The uterus was contracting regularly, and the fetal heart was heard. Inspection of the vulva showed no vagina; only a shallow skin dimple was present below the external urethral meatus and between the labia minora.

An emergency lower segment caesarean section was performed under spinal anaesthesia and a live male infant weighing 2800 g was born.

The whole story did not become completely clear during that day but, with some subsequent inquiries, the whole saga emerged.

The patient was well aware of the fact she had no vagina, and she had started oral experiments after disappointing attempts at conventional intercourse.

Just before she was stabbed in the abdomen she had practiced fellatio with her new boyfriend and was caught in the act by her former lover. The fight with knives ensued. She had never had a period, and there was no trace of lochia after the caesarean section. She had been worried about the increase in her abdominal size but could not believe she was pregnant, although it had crossed her mind more often as her girth increased and as people around her suggested that she was pregnant. She did recall several episodes of lower abdominal pain during the previous year. The young mother, her family and the likely father adapted themselves rapidly to the new situation, and some cattle changed hands to prove that there were no hard feelings.

A plausible explanation for this pregnancy is that spermatozoa gained access to the reproductive organs via the injured gastrointestinal tract. It is known that spermatozoa do not survive long in an environment with a low pH, but it is also known that saliva has a high pH and that a starved person does not produce acid under normal circumstances.

It is likely that the patient became pregnant with her first or nearly first ovulation. The fact the son resembles the father excludes an even more miraculous conception.

REFERENCE ABSTRACTS

The following abstracts were obtained from a variety of sources made available to the Association through the Newsletter Editor. If you would like more information on a particular abstract, or if you would like a copy of the item as it was published, please contact the Newsletter Editor.

"When Science Takes the Witness Stand"

Neufield, Peter J. and Colman, Neville; Scientific American, Volume 262, Number 5, May 1990, pp.46-53

This dissertation addresses the use and validity of scientific evidence presented in courts of law in criminal matters. Mr. Neufield is an attorney and was co-counsel in the first case to successfully challenge the use of DNA tests in a criminals matter. The focus of the paper is on the validity of DNA testing for the identification of suspected criminals.

"Recovery of Decomposed and Skeletal Human Remains in The Green River Murder Investigation"

Hagland, William D.; Reichert, David G.; and Reay, Donald T.; The American Journal of Forensic Medicine and Pathology; Volume 11, Number 1, 1990, pp 35-43

The Green River Murder investigation in King County, Washington, is currently the longest active serial murder investigation in U.S. history. During its cours, over 26 separate scenes with from one to five victims each have been processed. The experience of the authors is presented in order to acquaint other agencies with techniques of outdoor scene processing that have evolved during recovery of remains from Green River and other skeletal cases.

"Benzodiazepines - An Extensive Collection of Mass Spectra"

Zamecnik, Jiri; Ethier, Jean-Claude; and Neville, George A.; Canadian Society of Forensic Science Journal; Volume 23, Number 3, 1989, pp 233-259

An extensive collection of North American benzodiazepines including difficulty obtainable European and South American benzodiazepines (33 in total) were subjected to mass spectral examination to obtain electron impact ionization (EI), positive methane chemical ionization (PCI) and negative chemical ionization (NCI) spectra. Most substances wee amenable to gas chromatography (GC) introduction to the mass spectrometer (MS), but where thernal degradation was encountered with GC-MS analysis, mass spectra of the particular benzodiazepines were recorded using the direct

exposure probe (DEP) technique. Useful MS data for some end products and artifacts of degradation are included also. GC retention times are reported on both a retention indicies basis as well as relative to proadifen internal standard. Disclosure of the sources of specimens, provision of their generic and trade names and respective structures, Chemical Abstracts numbers and names, render this compilation of benzodiazepines GC and MS data invaluable to the forensic toxicologist.

"Clandestine Manufacture of 3,4-Methylenedioxymethylamphetamine (MDMA) by Low Pressure Reductive Amination. A Mass Spectrometric Study of Some Reaction Mixtures"

Verweij, Anthonie M.A.; Forensic Science International; Volume 45; 1990, pp 91-96

Attention is paid here to a synthesis of MDMA consisting of a low pressure reductive amination of 3,4-(methylenedioxy)phenyl-2-propanone with methylamine. The structures of several compounds present in reaction mixtures were elucidated by means of mass spectrometry.

"Publicity, Police Resources and the Effectiveness of Random Breath Testing"

McCaul, Kieran A. and McLean, A. John; The Medical Journal of Australia; Volume 152, March 19, 1990; pp 284-286

Random breath testing (RBT) of drivers by the police was introduced in South Australia in 1981 at a very low level of enforcement. As there was no lasting effect on illegal "drink driving" the resources devoted to RBT were increased in 1987. In the months after this change police doubled the number of drivers tested by RBT. Concurrent with this change in the level of enforcement of RBT was an extensive publicity campaign, which warned drinking drivers of their increased risk of detection by RBT units. A roadside breath alcohol survey conducted in metropolitan Adelaide late at night to evaluate the effect of these changes, showed a 34% reduction in the proportion of car drivers detected with a blood alcohol concentration at or above the legal limit of 0.08 g/100 ml.

"The Shroud of Turin: Blood or Artist's Pigment?"

McCrone, Walter C.; Accounts of Chemical Research; Volume 23, March 1990; pp 77-83

The scientific controversy over the Shroud of Turin in unusual in its disparity of opinions, the one-sidedness of those opinions, and its nearly dozen-year length. Although the 1988 carbon-14 date confirms a medieval origin, I reached that conclusion a decade earlier on the basis of polarized light microscopy. I hope that a review of this evidence will not only reemphasize the importance of objectivity in scientific research but also serve as a reminder of the unique capabilities of this "mature" technique. The light microscope was invented in the 1600's, and it became a useful chemical analytical tool in the 1800's. An account of the findings on the examination of tape lifts from the Shroud is presented.

"Arizona's Drug Recognition Program: A Performance Assessment"

Adler, Eugene V.; SWAFS Journal; Volume 12, Number 1, 1990; pp 12-16

In the field of forensic toxicology, it has been difficult to develop straightforward, useful correlations between drug levels and impairment, as exists for alcohol. A more practical approach to the evaluation and prosecution of DUI-drug cases was developed by the Los Angeles Police Department. Selected officers receive intensive training enabling them to become certified drug recognition technicians (DRT's). One key program objective, readily measurable, is the training of officers to first recognize if chemical impairment is present and, secondly, to determine the class(es) of drugs causing the impairment. The results of studies done by Arizona are presented.

"Report on the Drug Recognition Evaluation (DRE) Program in Harris County, Texas"

Louie, Pauline; SWAFS Journal; Volume 12, Number 1, 1990; pp 17-18

The Drug Recognition Evaluation Program in Houston and Harris County, Texas was instituted in January 1989 with the training of 25 DRE evaluators in New York. Eight of the evaluators are employed by the Houston Police Department; the remainder are composed of Harris County Sheriff's officers and Texas Department of Public Safety Troopers. Of the twenty-five evaluators, approximately nine were also trained to be instructors. This new program will eventually expand to cover a five-state area in the Southwestern region. Results of a study of situations involving the DRE evaluators is presented.

"Phenylacetone Synthesis and Clandestine Laboratories"

Ekis, Thomas R.; Dupre, Jill R.; and Courtney, Max; SWAFS Journal; Volume 12, Number 1, 1990; pp 19-23

Since the 1970's the United States has had a significant number of detected clandestine drug laboratories producing illicit amphetamine compounds. Amphetamine and methamphetamine may be prepared by numerous methods that are suitable for use in clandestine labs by persons with little scientific background. While patterns vary geographically, clandestine amphetamine and methamphetamine labs in Texas have almost exclusively featured synthesis of the drug from phenylacetone. Since the early 1980's phenylacetone has been controlled, first by Federal law and then by Texas statute. As a result, illicit labs have expanded their operations to include synthesis of the phenylacetone needed for amphetamine synthesis. This paper focuses on the labs seen in the Fort Worth and Dallas areas and on the phenylacetone synthesis, itself. Results from clandestine labs and from laboratory data are compared.

"Procedure For Volume Estimation in Clandestine Laboratory Reaction Vessels. Part II"

Courtney, Max; SWAFS Journal; Volume 12, Number 1, 1990; pp 24-30

The emergence in the late 1970's and the subsequent growth of the clandestine amphetamine laboratory phenomenon in Texas has required the dedication of vast manpower resources by law enforcement agencies. Under existing State and Federal

Statutes, prosecution and punishment of violators is tied to the quantities of controlled substances possessed, delivered or manufactured. Because of logistical considerations, the forensic chemist often finds it necessary to sample exhibits at a lab site, rather than to take possession of the often cumbersome and sometimes hazardous materials in reaction vessels and other chemical containers. One problem that has been cited by numerous chemists is lacking the ability to determine by simple, field-suited means the quantities of materials in exhibits to be sampled. A particular problem involves the ubiquitous spherical reaction flask. This paper provides a methodology for estimating volumes of liquids found in such spherical flasks.

"Field Test Kit for Explosives"

Crippin, James B.; SWAFS Journal; Volume 12, Number 1, 1990; pp 40-43

The creation of a field test kit for the examination of explosives is presented.

VENDORS EXHIBITING AT SPRING MEETING IN JACKSON HOLE, WYOMING

ANALYTICAL GENETIC TESTING CENTER, INC.

Exhibiting: A full service Forensic Serology Laboratory providing service, equipment, reagents, and instruction for DNA, Immunoglobulin Allotyping, conventional Serology, Parentage Testing, Specimen Identification, and Expert Testimony.

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(800) 225-1248
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20271 Goldenrod Lane
Germantown, MD 20876
(415) 664-3311

CETUS CORPORATION

Exhibiting: Cetus Corporation will exhibit the amplitype HLA DQ_ forensic DNA amplification and typing kit, the first forensic DNA typing kit utilizing the polymerase chain reaction (PCR) technology.

Representatives: Susanna Roe, Becky Reynolds
Forensics, PCR Division
1400 53rd Street
Emeryville, CA 94583
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(303) 938-3020

LIFECODES CORPORATION - ANIMAL IDENTITY

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Representatives: William Gergits, Dr. Nancy Casna
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(914) 784-2650

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Exhibiting: The pioneers of the DNA-PRINT test in the United States, Lifecodes Corp. operates a forensic DNA testing laboratory and supplies DNA probes, molecular weight markers, and related products for use in forensic RFLP analysis.

Representative: Ed Strobel
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(800) 543-3263

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215 Fourier Avenue
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(303) 791-7632

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Exhibiting: The Fourier Transform infrared spectrometer Model 1600 with the newly released microscope accessory will be exhibited.

Representatives: Dennis Schaff, Paul Perkins
2301 Yale Blvd., S.E.
Suite B-3
Albuquerque, NM 87106
(505) 296-9051

TRACOR NORTHERN, INC.

Exhibiting: Will demonstrate Tracor Northern's TSM Confocal Direct View Microscope. Participant samples may also be viewed.

Representative: Bart Yatchmenoff
2551 West Beltline Hwy
Middleton, WI 53562
(608) 831-6511

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Exhibiting: GeneLex Corp. supplies the DNA probe D4S139/pH30 to forensic scientists world-wide. GeneLex is also a paternity testing contractor for Washington State and performs molecular forensic research.

Representative: Howard Coleman
1000 Seneca Street
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(206) 285-3132

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ABSTRACTS OF PAPERS PRESENTED AT SPRING 1990 MEETING IN JACKSON, WYOMING

The following are abstracts of papers presented at the Spring 1990 meeting of the Northwest Association of Forensic Scientists held in Jackson Hole, Wyoming. The addresses of the authors are given so that any questions or requests for information about a particular paper may directed to the author.

"Wildlife Forensic Field Manual"

William J. Adrian, Danny Walker, Tommy Moore, and David Oates
Colorado Division of Wildlife
317 W. Prospect
Fort Collins, CO 80526

This paper will deal with the soon to be published Association of Midwest Fish and Game Law Enforcement Officers Wildlife Forensics Field Manual. The manual is designed to give the wildlife field officer a complete, easy to follow and read descriptions of what a wildlife forensic lab can do, what samples it needs and how to submit those samples. It also gives the officer up-to-date procedures on what can be done in the field (i.e., matching carcasses, determining the sex of headless carcasses, determining the sex of field dressed birds, determining time of death, characteristics of wound, age determinations of big game animals and determining species and sex using various bones.

"Simultaneous DNA Probing for RFLP's In Parentage Testing"

Dale D. Dykes, Moses S. Schanfield, and Shirley A. Miller
Analytical Genetic Testing Center, Inc.
7808 Cherry Creek South Drive, Suite 201
Denver, CO 80231

DNA phenotyping in cases of disputed parentage should utilize highly polymorphic loci to maximize results with a minimum number of probes. Stripping and reprobing membranes is often used to yield further information such as additional exclusions or to increase inclusionary estimates. However, careful selection of probes which identify non-overlapping banding patterns from different loci eliminate the expense and loss of signal associated with reprobing. For this study, which utilized non-isotopic detection of bands with biotinylated probes, we selected a series of probe combinations to be used in simultaneous hybridizations of paternity cases. In some cases two gels were run on the same paternity case, and each membrane was simultaneously hybridized with 2-3 probes. Probes were biotinylated using ONCOR labelling kits and bands were detected with ONCOR detection kits which used standard alkaline phosphatase staining methods. The probes tested were pS194, pL336, p144-D6, pL159-1, pL355-8, pL427-4, and pR365.

Using non-isotopic detection methods and simultaneous hybridization, paternity cases could be resolved in 24 hours. Minimum exclusion probabilities with two probes were 95-96%, where as using 2-3 probes on two separate membranes gave exclusion probabilities in excess of 99.9%. Multiple exclusions were identified in greater than 90% of the cases with falsely accused fathers. Inclusionary estimates (PI) were generally greater than 10,000 when four or more probes were used. Simultaneous probing and non-isotopic detection clearly reduces the cost of testing and at the same time maximizes the test results.

"The Inherent Error In Size Determination of RFLP's Using Molecular Weight Markers"

Dale D. Dykes, Shirley A. Miller, Moses S. Schanfield, Ph.D., and John Danilovs, Ph.D.
Analytical Genetic Testing Center, Inc.
7808 Cherry Creek South Drive, Suite 201
Denver, CO 80231
and
Immunological Associates
15425-E S.W. Koll Parkway
Beaverton, OR 97006

The basic premise inherent in using molecular weight (MW) standards to determine the size of RFLP bands is that a band of 1 Kb will migrate the same distance as a 1 Kb standard on the same gel regardless of the experimental conditions. Given this premise it should be possible to compare data bases between laboratories. However, a comparison of RFLP's hybridized with probe p144-D6 from two laboratories clearly demonstrated a shift in position for the same samples when compared to MW standards. Comparison of laboratory protocols indicated that gel concentration might be a major factor affecting the observed band differences. Although the initial comparisons were done using identical amounts of genomic, it was proposed that the amount of genomic might also have a significant effect upon RFLP band sizing.

Parallel experiments were performed to determine the influence of gel concentration and sample amount (µg) upon the observed RFLP size. The results indicate that both experimental parameters dramatically influence the observed band sizes. This implies that pooling data bases is not justified if gel conditions and sample amounts are not identical. Furthermore, we found that genomic samples cannot be adequately compared to a MW standard unless the standard is STABILIZED with restricted genomic DNA at a concentration similar to the genomic samples in question. This new application for sizing DNA RFLP's permits accurate and consistent measurements when comparing fragments at various gel and sample amounts.

"Design and Performance of A New Infrared Microscope"

W.D. Perkins, D.W. Schiering, and E.F. Young
The Perkin-Elmer Corporation
2305 Bering Drive
San Jose, CA 95124
and
The Perkin-Elmer Corporation
761 Main Avenue
Norwalk, CT 06859

A new infrared microscope incorporates a number of unique features. Viewing is stereoscopic and is done through a commercially available binocular microscope. The same stereoscope can be used for sample manipulation and preparation using a special sample preparation stage. High numerical aperture, low magnification, pre-aligned Cassegrain optics are used to couple energy to the sample. The lower power of the Cassegrains provides unusually large working distance while the higher power of the stereoscope allows detailed examination of the sample and precise positioning of the remote aperture blades. The microscope can be used in both transmission and reflecti and accepts either room temperature or cooled detectors. Examples of system performance using typical forensic samples will be presented.

"Sexual Assault Combing Evidence Survey Results"

Rex Riis
South Dakota Forensic Lab
500 E. Capitol
Pierre, SD 57501

This paper will address the results of a 1989 survey of the Northwest and Midwestern Associations of Forensic Scientists who are involved with combing evidence examinations.

"Confocal Microscopy: A Brief Overview"

Tracor Northern, Inc.
2551 Beltline Highway
Middleton, WI 53562

This paper will briefly cover the theory of confocal imaging and the different types of confocal microscopes commercially available. Additionally, stereo pairs, 3-D reconstruction and surface feature data obtained with a confocal microscope coupled to a digital video image analyzer will be presented.

"Biochemical Identification of Exotic Deer Species"

Peter A. Dratch
National Fish and Wildlife Forensic Laboratory
1490 East Main Street
Ashland, OR 97520

The growth of deer farming in recent years has resulted in the increase sale and transport of non-native species, both as live animals and as venison. Identifying the deer species from a blood or meat sample can be critical in determining whether a game violation has occurred.

This paper describes biochemical methods for differentiating North American elk from the closely related European red deer, which is farmed around the world. Isoelectric focusing and PAGE reveal diagnostic differences in hemoglobin and post-transferrin. European fallow deer are not farmed in several states. They can be differentiated from the endangered Mesopotamian fallow deer by a fixed allelic difference at glucose phosphate isomerase.

"Photographic Enhancement Of Footprints On A Notebook Cover"

Donna I. Shepherdson
Bureau of Forensic Services
Department of Law Enforcement
2220 Old Penitentiary Road
Boise, ID 83712

A variety of techniques were utilized in an attempt to enhance footprints on a notebook over. Several chemical enhancement and photographic techniques will be discussed in this paper, including ammonium thiocyanate and 8-hydroxyquinoline.

"Bend Over Truck, I Want To Examine Your Tires"

Donna I. Shepherdson
Bureau Of Forensic Services
Department of Law Enforcement
2220 Old Penitentiary Road
Boise, ID 83712

Making successful test impressions from tires can present the examiner with many problems. Two methods will be presented; the ink method and an easy method.

"Results From the 1989 NWAFS Flammable Liquid Proficiency Test"

Dale C. Mann
Washington State Patrol Crime Laboratory
County City Building
930 Tacoma Avenue, B-70
Tacoma, WA 98402

The compiled test results from the 1989 NWAFS Flammable Liquid Proficiency Test will be presented.

"Production of Phenyl-2-Propanone via the 1-(Phenyl)-2-Nitropropene Intermediate"

Thomas B. Netwal, M.S.
Colorado Bureau Of Investigation Laboratory
690 Kipling, Suite 4000
Lakewood, CO 80215

This paper will describe the synthesis of Phenyl-2-Propanone, P-2-P, utilizing a relatively uncommon or obscure pathway which incorporates the intermediate known as 1-(Phenyl)-2-Nitropropene. An account of the laboratory seizure, documents recovered, analytical techniques, and analytical profiles of this compound will be presented.

"A Hank of Hair, A Piece of Bone...."

Larry W. Campbell
British Columbia Coroners Service
4595 Canada Way
Burnaby, British Columbia
Canada

This paper will deal with a multi-disciplinary investigation into a police shooting in Vancouver, B.C. Ballistics, hair and fibre, forensic pathology and serology all contributed to a surprising conclusion. A review of the evidence will be presented.

"Improved Discrimination of Sheet Glass Sources"

Robert D. Koons
FBI Laboratory
FSRTC, FBI Academy
Quantico, VA 22135

Optical and physical properties have long been accepted as reliable discriminators of sheet glass sources. However, recent improvements in manufacturing quality have lessened the discriminating power of these measurements. Research into the methods of elemental analysis of glass fragments for improved discrimination of sources will be discussed.

"The Determination of Sex of Hair and Meat of Game Species in Wyoming"

Janet M. Hough
University of Wyoming
Department of Zoology and Physiology
Laramie, Wyoming 82071

This paper will address a variety of methods that were tried during the course of the grant, to attempt to sex hair and meat of game animals. Different embedding methods, and staining techniques will be demonstrated by slides. The epoxy resin embedding technique, which had success, will be the emphasis of the presentation.

"Prospects For The Individualization of Soils Evidence"

John P. Wehrenberg
Department of Geology
University of Montana
Missoula, MT 59812

It is possible to individualize soils evidence in those cases where the following conditions are met: 1) It can be shown that movements of the suspect in the time interval between the commission of the crime and when he is taken into custody are limited to a geographic region called the "universe of the crime." 2) There exists a mathematically sufficient database that contains analyses of well-defined comparative parameters of soils in a region called the "soils database region." 3) The universe of the crime is entirely located within the soils database region.

Los Angeles County, California, is used to construct a realistic quasi-database to examine the comparative parameters and their statistically significant ranges of values for soils in a restricted jurisdiction.

"What You See Is Not Always What You Get"

Julie Long and Charles Baker
Division of Forensic Science
554 W. Broadway
Missoula, MT 59801

We will report on a rare PGM race variant encountered in a sexual assault case which will stress the need to utilize both conventional and PGM subtyping techniques.

"PCR Genetic Markers of Forensic Analysis"

Randall K. Saiki, P. Sean Walsh, Shanavaz Nasarabadi, Russell G. Higuichi, and Henry A. Erlich
Department of Human genetics
Cetus Corporation
1400 Fifty-Third Street
Emeryville, CA 98608

The polymerase chain reaction (PCR) is a DNA amplification technique that is well-suited to the forensic analysis of DNA samples extracted from evidentiary material. By amplifying specific regions of human DNA that possess a high degree of sequence variation, information about the origin of a particular biological specimen can be readily obtained. The amplification of the human multi-allele gene, HLA-DQ_, and its application to individual identification will be discussed. Other polymorphic markers will also be described.

"DNA-Based Testing For The Analysis Of Wildlife Samples"

N.J. Casna, W. Gergits, S. Nawoschik, L. Lundgren, M. Baldassare, J Woska, and E. Camposano
Animal Identity Laboratory
Lifecodes Corporation
Saw Mill River Road
Valhalla, NY 10595

DNA probes can be used to generate a DNA profile that is useful for the purposes of individual identity, population/species differentiation and breeding management. DNA isolated from blood and tissue samples of various wildlife species, including: moose, big horn sheep, bald eagles, dolphins, etc. were hybridized with human derived probes. The results obtained were quantified by digitizing and computer analysis. These DNA profiles can be used to distinguish among individuals and to match blood and tissue samples as originating from the same source. Genetic differences were observed between populations of the same species. The application of these techniques to wildlife forensics and conservation will be discussed.

"Mammoth or Modern Proboscidean Ivory"

Edgard O. Espinoza, and Mary-Jacque Mann
National Fish and Wildlife Forensics Laboratory
1490 E. Main Street
Ashland, OR 97520

At issue is the importation of a carved ivory object. Was it made from banned elephant ivory or from the tusk of a long extinct mammoth? Through visual and scanning electron microscopic examinations, a non-destructive method for differentiating modern from ancient proboscidean ivory was developed. The focus of this method is the apparen angulation of an optical phenomenon known as Schreger lines. Schreger lines are a

function of the sinusoidal dentinal tubules within the tusk's dentine. The density of these tubules per unit area is greater in ancient proboscidean ivory than it is in modern elephant ivory. This density difference results in visibly acute Schreger angles in mammoths and obtuse angles in elephant ivory.

"A Scheme For The Class Characteristic Identification of Ivory and Ivory Substitutes"

Edgard O. Espinoza, Mary-Jacque Mann, and Kent A. Oakes
National Fish and Wildlife Forensics Laboratory
1490 E. Main Street
Ashland, OR 97520

There are fifteen commercially available sources of ivory and ivory substitutes. Nine of these sources are endangered species, two are unprotected animals and four are natural or synthetic ivory substitutes. The identifiable class characteristics of some of these sources were known, for others the level of usable knowledge varied from little to nothing. The recognition of endangered ivory sources necessitated the development of a systematic class characteristic identification scheme which would encompass all fifteen of these ivory sources. This scheme and its morphological, physical and instrumental components will be presented.

"Osteology and Sex Identification in Wildlife Forensics"

Danny Walker
Wyoming State Archaeologist's Office
Wyoming Recreation Commission
Department of Anthropology
University of Wyoming
Laramie, WY 82071

Osteological analyses and identification are becoming increasingly common in forensic science. Such studies were pioneered during World War II identifications of human remains. Recently, several similar techniques, some new, have been successfully applied to wildlife forensics. Various techniques used in identifications of illegal, and legal, wildlife parts are becoming known to the general public. It is also becoming increasingly common for attempts to be often made for circumvention and destruction of those specific pieces of evidence. New osteological characters for identifying sex in big game have recently been established. Some of these characters are also valid for other animal species as well.

"Non-radioactive DNA Fingerprinting in Elk"

Clay Michael Stern, Robert S. Cook
Department of Fishery and Wildlife Biology
Colorado State University
Fort Collins, Colorado 80523

This paper deals with the development and application of a non-radioactive restriction fragment length polymorphism (RFLP) assay. Individual-specific DNA banding patterns were obtained in elk (Cervus elaphus). DNA was purified from whole blood, fresh and frozen tissue, and hybridized using the bacteriophage M13mp18 as the probe. The

probe is labelled by random priming with dUTP linked to a hapten steroid and visualized by an enzyme-catalyzed color reaction. Increased stringency of the post-hybridization washes and enhanced membrane blocking has reduced the usually dense background associated with non-isotopic hybridization techniques. The resulting DNA fingerprints are adequately sensitive and polymorphic to differentiate, or match individuals. The non-radioactive nature of the technique allows it to be safely performed in any laboratory.

ABSTRACTS OF PAPERS PRESENTED AT THE SPRING 1990 CALIFORNIA ASSOCIATION OF CRIMINALISTS MEETING

The following abstract are from papers presented at the Spring 1990 California Association of Criminalists meeting held in San Mateo, California. The addresses of most authors are provided should the reader desire to contact the author for more information concerning their presentation. These abstracts were provided as a courtesy by CAC Newsletter Editor Jim Norris.

ALCOHOL ABSORPTION AND ELIMINATION - AN EMPIRICAL STUDY

Richard Watkins, Phoenix Crime Lab, 620 W. Washington, Phoenix, AZ 85003.

Alcohol absorption and elimination patterns are frequently key elements in the evaluation of DUI's and alcohol involved accidents. This study attempts to clarify those patterns under controlled conditions. Ten volunteers were dosed with bolus amounts of alcohol solution. The resultant BAC's were monitored by breath testing at approximately 8 minute intervals for approximately 4 hours. This pattern was repeated under three different eating conditions: Full stomach; empty stomach; and alcohol consume during eating. The average time required to reach max BAC was found to be 40 minutes for full stomach, 44 minutes for empty stomach and 26 minutes for the drinking during eating condition. The theoretical max BAC was determined by projecting a straight line tangent to the alcohol reduction rate line backward to time 0. The empty stomach condition produced 101% of the expected value on .100% BAC. The full stomach and during eating conditions produced 92% of the expected values. The actual max BAC reached was 80% of the theoretical for the empty stomach, 70% for full stomach and 73% for drinking during eating. The net rate of BAC reduction (burn off) was determined to be 0.02% BAC/hr. for empty stomach, 0.018% BAC/hr. full stomach and 0.016% BAC/hr. for drinking during eating. The results indicate that the time required to reach max BAC is shorter and more predictable than previously thought. The theoretical max is highly predictable and the actual maximum BAc may be estimated to a reasonable degree.

ALCOHOL ELIMINATION RATE; A FIELD STUDY

Sarah Yoshida, B.S., and Kathleen Ciula, M.S., California Department of Justice, Manteca Regional Laboratory, 2213 Blue Gum Avenue, Modesto, California 95351.

Intoxilyzer results from over 1200 subjects were used to determine an average elimination rate. Significant differences due to gender and age were found to exist. The overall average elimination rate was 0.0178%/hr, with males averaging 0.0175%/hr and females averaging 0.0203%/hr. The rate also appeared to decrease with age, with a significant decrease noted after the age of 40.

WIDMARK REVISITED
Raymond J. Davis, Quantum.

It has been my experience over the last ten years that medical professionals and university professors are called upon to provide expert testimony in the pharmacology and toxicology of alcohol. These individuals usually have no formal training or practical experience in this field but by virtue of their degrees are permitted to testify. A recent case has shown the two common errors most often made by these 'experts'. First, how many ounces of pure alcohol would have to be in the body at the time of the test, given a specific weight (A), second, what would be the impact of a alcoholic beverage on a persons blood alcohol level given a specific body weight and concentration of the beverage (Co). The correct application of the classic Widmark formula is essential to providing competent scientific testimony.

A DEATH INVESTIGATION
Raymond J. Davis, Quantum

A 26 year old woman was found by her husband, on the floor of their guest bedroom with a penetrating gunshot wound to her chest. The house was neat and orderly with signs of active housekeeping in progress. There was no sign of forced entry nor was there anything reported missing. The house was unlocked. A fully packed and opened suitcase was found on top of the guest bed with a .38 caliber Smith & Wesson revolver lying on top of the clothes. This paper will cover a number of aspects of forensic science: Crime scene investigation and reconstruction, testing and interpretation, pathology of the gunshot wound, autopsy findings and the characteristics of the handgun. Based upon the facts presented, individuals attending this presentation will be asked to determine the manner of death of this woman, through confidential ballot.

DISCRIMINATION OF FIBERS, LACQUERS AND DOCUMENTS BY MICROSCOPIC SPECTROPHOTOMETRY
Peter Baurschmidt, Ph.D., Carl Zeiss Inc., One Zeiss Dr., Thornwood, NY 10594

Microscope spectral measuring techniques have become increasingly important in forensic sciences as a modern analytical tool. The Universal Microscope Spectro Photometer system UMSP-KT is specifically designed for routine work in fiber discrimination, paint chip and document identification, and counterfeit analysis. The UMSP system provides all measuring methods, such as transmittance fluorescence, and specular and diffuse reflectance. The spectral range is from UV to NIR (240-2100nm) which greatly enhances the significance of the results in work comparing minute spectral and color differences in samples. (metametric effects) Fluorescence spectral analysis helps to identify optical brighteners in fibers and the type of ink used in documents. Dedicated software modules help to quantify and compare spectral data and to establish a data base.

LIGHT AND ELECTRON MICROSCOPY OF PAINT PYROLYSIS RESIDUE
Richard S. Brown, and Thomas J. Hopen, The McCrone Group, 1412 Oakbrook Drive, Norcross, GA, 30093, James L. Small, and John H. Kilbourn, Alabama Department of Forensic Sciences.

Polarized light microscopy (PLM) and scanning electron microscopy-energy dispersive spectroscopy (SEM-EDS) are used as complimentary techniques to characterize the inorganic fraction of some white latex paints. Analysis of standard paint by PLM and

SEM-EDS is compared to pyrolyzed paint samples and ashed paint samples. Sample preparation, examination, and problems are discussed.

THE CAC SEMINAR PRESENTATION ABSTRACTS DATABASE
Peter D. Barnett, Stephen Cooper, Pam Smith, and the CAC Training and Resource Committee.

Abstracts for presentation at CAC Semi-annual seminars for the past 10 years are now available on computer disks. Each abstract has been key-worded and indexed for retrieval using the FYI3000 test retrieval program. In addition, the index for all seminar abstracts is available on disk for searching and retrieval using FYI3000. The abstracts, index, and retrieval program are available from the CAC as a package. The retrieval program can also be used for text based information retrieval with databases that are developed by individual users. The use of FYI3000 will be demonstrated, and some applications beyond the CAC abstracts discussed.

THE EXAMINATION OF HANGING CHADS ON ELECTION BALLOTS
Peter D. Barnett, Forensic Science Associates, 3053 Research Drive, Richmond, CA 94806.

Most jurisdictions in California use the punch card ballot in elections. With this ballot, the voter must remove a small tab of paper, the "chad", to indicate his vote on each ballot item. In some instances, this chad is not completely removed and may actually be replaced in approximately its original position when the ballot is removed from the voting machine. In other instances, absentee voters, who do not use a voting machine, may incorrectly punch their ballots. In close elections, each ballot is inspected by election officials and people who contest the election and those ballots in which the chad is not completely removed become the subject of dispute. Microscopic examination of the paper fibers can sometimes, but not always, resolve the dispute. In a recent election with over 5500 votes cast, the determination of whether or not that chad had been punched out by the voter on 3 ballots meant the difference between passage and defeat of a school bond measure. The examination of the disputed ballots, and experiments conducted to determine what might happen under various conditions of marking the ballot will be described.

INTERPRETATION OF SPATTER OF MULTIPLE DROPS OF BLOOD
Jeff Ribordy-Corral, M.P.H., and John I. Thornton, D.Crim., Forensic Science Group, School of Public Health, Univ. of California, Berkeley, CA, 94720

There have been numerous studies dealing with the interpretation of bloodstains at crime scenes, and the behavior of single drops of blood is fairly well understood. In actual case situations, however, it occasionally happens that one or more drops of blood drip directly onto the first drop deposited. In this study, the patterns exhibited by multiple drops of blood were observed. Human blood was dropped onto a non-porous surface at heights up to 24 inches, with the number of drops varying from 2 to 8. The number of blood drops and the number of smaller, satellite droplets appear to show a log relationship that is statistically significant.

FORENSIC ANALYSIS FOR ANABOLIC STEROIDS AND HUMAN CHORIONIC GONADOTROPIN - A REVIEW OF CASE STUDIES

Paul Colman, Ph.D., Erin A'Hearn, B.A., Robert Taylor, B.S., and Sam Le, M.S. The Los Angeles County Sheriff's Scientific Services Bureau, Los Angeles, CA 90057

Four selected case studies are presented as examples of the following: (1) the mismarked steroid tablet; (2) the unmarked steroid tablet; (3) extraction and hydrolysis of an akly-steroid dissolved in oil; and (4) HCG detection by immunoassay. Case I - SEARLE #1401 counterfeit tablets, CHCl3 extract analyzed by FT-IR and GC/MSD confirmed the presence of 17-alpha-methyltestosterone, and not Oxandrolone. Case II - A look-a-like "minibennie" tablet, CHCl3 extract analyzed by GC/MSD confirmed the presence of both 17-alpha-methyltestosterone and methandrostenolone. Case III - Boldenone Undecylenate dissolved in vegetable oil, MeOH extract subjected to alkaline hydrolysis yields Boldenone as confirmed by GC/MSD analysis. The alkaline hydrolysis of the 17-alkyl-steroid linkage affords improved gas chromatography with reduced analysis time. Case IV - HCG, testing with rabbit antiserum to HCG by Ouchterlony double diffusion immunoassay detects 5 IU of HCG from a hypodermic solution.

AUTOMATED GC-FTIR ANALYSIS OF MIXTURES OF FORENSIC INTEREST

Forrest Weesner, Ken Kempfert, Nicolet Instrument Corporation, 5225 Verona Road, Madison, WI 53711

Infrared chromatographic detectors provide an alternative to mass spectrometry for verifying the identity of compounds responsible for chromatographic peaks. In many cases, infrared detection is preferred for identification of closely related isomers or compounds which produce molecular ions in low abundance in electron impact sources. The ability to provide unambiguous structural verification of most controlled substances is well within the capabilities of GC-IR, yet the technique seems to be under utilized in the forensic laboratories. Low samples throughput is often an objection. Automated GC-IR operation is not widely practiced but can be used to achieve acceptable sample throughput. This presentation will discuss instrumentation, software and data types pertaining to lightpipe GC-IR, with an emphasis on automated operations. Applications to mixtures of amphetamines and metabolites will be shown.

CLEAN-UP PROCEDURE FOR MICROCRYSTALLINE TESTS ON HEROIN SAMPLES USING PREP-TLC

Lansing J. Lee, Oakland Police Department, Criminalistics Laboratory, 455 Seventh Street, Room 608, Oakland, CA 94607

Often microcrystal tests on heroin samples are not possible due to interfering compounds. A clean-up procedure using prep-TLC on an ether extract from bicarbonate solution, followed by running the microcrystal tests directly on the silica gel scraped spot was investigated. Best results were obtained when approximately 1 mg of heroin was spotted (NOT streaked) on the silica gel plate, and the heroin spot (UV visualization) was carefully scraped to avoid non-heroin containing silica gel. From the single heroin spot it is possible to simultaneously run Mercuric Iodide, Mercuric Chloride, Platinum Chloride and Gold Bromide microcrystal tests and obtain characteristic crystal forms.

"CONSISTENT WITH" (STARRS' BUGBEAR): THE ESCHAR OF INDIVIDUALIZATION TERMINOLOGY. ELUCIDATION AND RECTIFICATION OF FUZZY TERMINOLOGY USED TO INFER THE POSSIBILITY OF AN INDIVIDUALIZATION

Robert Ogle, Jr., Forensic Science Consultant, 801 Jefferson St., Suite 1A, P.O. Box 3087, Fairfield, CA 94533

The terminology resorted to by criminalists and other "Forensic Scientists" when attempting to adumbrate an opinion of individualization is probed by the author. The Fundamental Unit (FU) of Individualization is elucidated and the cant exploited by the examiner to avoid presenting an opinion possessing accuracy, brevity or clarity is exposed. The process of individualization is linked to the foundational requisites of taxonomy and identification which form the scientific principles upon which any attempt at individualization must rest. Some tongue-in-cheek alternate phrases for "consistent with" are also presented for the criminalists' consideration for use.

WASHED SEMEN STAINS

Robert S. Blackett, M.F.S., Arizona Department of Public Safety Crime Laboratory, PO Box 15500, Flagstaff, AZ 86011

It is not unusual for the author to encounter stains, particularly in panty crotches, which do not give any chemical tests, but nonetheless yield spermatozoa on extraction. One possible explanation for this is that the item has been washed. Thirteen separate semen stains were prepared on different new cloth samples. The stains were halved, the half of each stain was washed in a standard washing machine and dried in a dryer. Both halves were then subjected to standard serological testing: acid phosphatase, p30, ABO, and PGM, as well as sperm extraction (1 minute vortex, 10 minutes ultrasound, Christmas Tree stained). Spermato were extracted and identified from all washed stains, although at much lower frequency than from the corresponding unwashed half. In general, chemical tests on the washed halves failed, although small spots of acid phosphatase activity were occasionally seen, and 4/13 gave detectable ABO activity. Additional results and methodology will be presented. If possible, DNA testing will also be done.

DETECTION OF SEQUENCE DIFFERENCES BETWEEN Gc VARIANTS USING THE POLYMERASE CHAIN REACTION

Rebecca Reynolds and George Sensabaugh, 140 Warren Hall, Forensic Science Group, UC Berkeley, Berkeley, CA 94720; Daniel Gregonis, PO Box 569, San Bernardino County Sheriff's Department, San Bernardino, CA 92402

We have developed a polymerase chain reaction (PCR) system for typing Gc variants. Two Gc cDNA sequences (type 1 and type 2) have been published and compared. There are 4 regions of apparent polymorphism that result in amino acid differences at codons 152, 311, 416, and 420. We used the PCR to amplify and analyze these regions. The sequence differences in codons 416 and 420 result in differences in restriction enzyme (RE) sites between type 1 and type 2 DNA. Since the differences between the 1F and 1S subtypes were not known, we isolated DNA from individuals representing the 6 possible Gc phenotypes, amplified this region using the PCR and performed RE and DNA sequencing analysis on each sample. The 6 genotypes give 6 distinct RE digestion patterns, allowing unambiguous typing of Gc by this method. In addition, this sequence information allowed us to identify the amino acid differences between the Gc subtypes in this region. We are continuing our analysis of this region and the other polymorph regions to better characterize these DNA sequence variants.

THE POLYMERASE CHAIN REACTION (PCR) IS A METHOD FOR THE ENZYMATIC AMPLIFICATION OF SPECIFIC REGIONS OF DNA

S. Walsh, et al., Department of Human Genetics, Cetus Corporation, Emeryville, CA 94608

The polymerase chain reaction (PCR) is a method for the enzymatic amplification of specific regions of DNA. PCR makes possible the analysis of genetic variation from samples containing minute quantities of DNA, or from samples containing substantially degraded DNA. This report describes the PCR based analysis of sequence polymorphism at the HLA locus DQ Alpha, as well as other PCR genetic markers. The HLA-DQ Alpha system, which is now available as a kit, detects six alleles and has a discriminating power of 0.93. Population frequency data as well as forensic casework data will be presented.

DNA PROBE D4S139/pH30: THE OCCURRENCE AND INTERPRETATION OF THREE BAND PATTERNS

Howard C. Coleman, GeneLex Corp., 1000 Seneca St., Seattle, WA 98101; John S. Waye, PhD, and Ron M. Fourney, PhD, Central Forensic Laboratory, RCMP, Ottawa, Ontario K1G 3M8, Canada

The evaluation of single, highly polymorphic DNA loci has become a standard forensic test. One commonly used VNTR locus, D4S139, contains internal restriction site polymorphisms in some individuals. This has been demonstrated by the analysis of single and double digest restriction maps. The frequency of occurrence of the site polymorphism for Hae III ranges from approximately 1% in the Caucasian population to as high as 10% in a Native American population. When calculating the expected frequency of occurrence of a DNA profile that contains a site polymorphism and hence a third band, the frequency of the site polymorphism can be used with the frequency of the most common band detected in the DNA profile.

THE INHERENT ERROR IN SIZE DETERMINATION OF RFLP'S USING MOLECULAR WEIGHT MARKERS

Dale Dykes, Shirley Miller, Moses Schanfield, PhD, Analytical Genetic Testing Center, Inc., 7808 Cherry Creek South Drive, Suite 201, Denver, Colorado 80231 and John Danilovs, PhD, Immunological Associates, 15425-E S.W. Koll Parkway, Beaverton, Oregon 97006

The basic premise inherent in using molecular weight (MW) standards to determine the size of RFLP bands is that a band of 1 Kb will migrate the same distance as a 1 Kb standard on the same gel regardless of the experimental conditions. Given this premise it should be possible to compare data bases between laboratories. However, a comparison of RFLP's hybridized with probe p144-D6 from two laboratories clearly demonstrated a shift in position for the same samples when compared to MW standards. Comparison of laboratory protocols indicated that gel concentration might be a major factor affecting the observed band differences. Although the initial comparisons were done using identical amounts of genomic, it was proposed that the amount of genomic might also have sa significant affect upon RFLP band sizing. Parallel experiments were performed to determine the influence of gel concentration and sample amount (ug) upon the observed RFLP size. The results indicate that both experimental parameters dramatically influence the observed band sizes. This implies that pooling data bases is not justified if gel conditions and sample amounts are not identical. Furthermore, we found that genomic samples cannot be adequately compared to a MW standard unless the standard is STABILIZED with restricted genomic

DNA at a concentration similar to the genomic samples in question. This new application for sizing DNA RFLP's permits accurate and consistent measurements when comparing fragments at various gel and sample amounts.

CACLD DNA BLIND TRIAL - SECOND SET

Mary H. Graves, Orange County Sheriff-Coroner, Forensic Science Services, Santa Ana, California 92701

In July 1988, CACLD sent out its second DNA Blind Trial Set to each of the three commercial laboratories: LIFECODES, Forensic Science Associates, and CELLMARK. The set of 50 samples consisted of 3 liquid bloods, 34 bloodstains and 13 semen stains, originating from 20 donors and collected by Los Angeles Sheriff's Dept., Los Angeles Police Dept., and Orange County Sheriff's Dept. Various substrates were involved. Some specimens were subjected to limited environmental stress to simulate casework material. Results reported by the three participating laboratories will be discussed.

SEAL BOMBS: TO EVERYTHING THERE IS A PORPOISE

Martin Fink, San Diego County Sheriff's Crime Laboratory, 3520 Kurtz Street, San Diego, California 92110; Albert C. Myrick, Jr. and Cheryl Glick, Southwest Fisheries Center, National Marine Fisheries Services, PO Box 271, La Jolla, California 92038

1988 amendments to the Marine Mammal Protection Act of 1972 restrict the use of seal bombs in commercial yellowfin tuna fishing to Class-C pest control devices and set an April 1, 1990 deadline to prohibit or restrict their use unless determinations were made to show that "such devices do not result in physical impairment or increased mortality of marine mammals". To check compliance with the U.S. Department of Transportation's definition of an explosive pest control device, seven types of seal bombs---two from the United States, three from Mexico, one from Panama, and one from Costa Rica---were analyzed to determine the powder charge weight, chemical composition of the powder, percentage of each powder component, and percent TNT equivalence of the powder charge.

A PROCEDURE FOR IMPROVING THE RHODIZONATE-GSR TEST ON BLOOD STAINED GARMENTS

Lucien C. Haag, Forensic Science Services, Phoenix, AZ 85019

Representative types of clothing with bullet holes surrounded by lead-containing GSR deposits were partially stained with human blood so as to mask a portion of the GSR deposits. These blood stains were "fixed" by a 3 to 4 month exposure to air and ambient temperatures that often reached 90 to 100 degrees F. Subsequent slow desorption of the blood in trays of normal saline solution at approximately 65 degrees F was found to remove the majority of the blood without measurable dissolving or diffusing the lead-containing residues. A much improved pattern of lead deposits could then be lifted and developed with the tartrate buffer/filter paper technique.

THE APPLICATION OF ANALYTICAL IMAGING TO THE RETRIEVAL OF UNSOLVED HOMICIDE MISSILES

Eugene J. Wolberg, B.S., San Diego Police Crime Lab, M.S.-725, 1401 Broadway, San Diego, CA 92101

The ability of the crime lab to examine on a routine basis, missiles from unsolved

homicides is dictated by workload, recognition of a series, and retrieval abilities. As the size of the files grow, a time efficient method must be devised. The use of current image processing technology will be discussed as to the ability to reduce bullet striations to line/area maps. These digital maps will be stored on disk and integrated with class information. With class and stria information on disk, computer searches can be made on routine submissions to the lab. An expansion of this process would be the data base linking to other crime laboratories which share gang activity. While this work is in the initial stages, it shows much promise.

THE IN-SITU PERFORMANCE OF THE 147 GRAIN 9mm SUBSONIC BULLET AND ITS CORRELATION TO 10% BALLISTIC GELATIN

Eugene J. Wolberg, B.S., San Diego Police Crime Lab, M.S.-725, 1401 Broadway, San Diego, CA 92101

Eighteen shootings are reviewed as to the terminal performance of the 147 grain subsonic bullet in living tissue. The terminal ballistic performance is the compared to the ballistic performance data in 10% ballistic gel at 4 degrees C. A close correlation was found, verifying Dr. Fackler's ballistic gel can be used a reliable predictor of ballistic performance in living tissue, in terms of expansion characteristics and expected penetration depth of test missiles. This ballistic model can be used in investigations of beyond GSR range, muzzle to target distance determinations. The Methodology is dependent on trajectory software and reduced velocity test loadings that simulate down range velocities and calculated energies at the target range.

The Newsletter of the Northwest Association of Forensic Scientists is published quarterly in the months of March, June, September and December. Deadlines for submission of material for publication in the Newsletter is the 15th of the month prior to publishing.

If you have an item you would like to submit, it is preferred to receive the material on computer disk, word processed in WordPerfect, Wordstar, Word or any other IBM compatible format word processor. Diagrams and spectral plots should be originals and in black ink. For more information on the submission of materials to the Newsletter, please contact the Editor.

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In This Issue of the Newsletter ...

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