NEWSLETTER

California Association of Criminalists

MARCH 1982

CONTENTS

This mailing includes the following items;

1. Proxy for the Spring Seminar
2. Call for Papers for the Joint CAC - Interamerican Congress of Forensic Sciences, November 1982
3. By-Laws Revisions to be considered at the Spring Seminar

CAC SPRING SEMINAR

The 1982 Spring Seminar will be held in Newport Beach, California at the Sheraton Newport on May 14, 15, & 16, 1982 (not May 7-9 as indicated in the last Newsletter). Very attractive room rates have been arranged as an encouragement to many of you to bring your family and enjoy Orange County's popular tourist attractions or to double up with a friend or co-worker to save a little money.

The usual array of informative papers is anticipated. In addition, we will elect a new President-Elect, North and South Regional Directors, Membership Secretary, and Recording Secretary.

Those of you remembering the 1976 Seminar hosted by Orange County know that they go all out to ensure an informative event and memorable time.

ASSOCIATION ACTIVITIES

Northern Section Meeting

The Northern Section met on February 26 to hear speaker/host Charles Morton discuss the role of the criminalist in assessing the work of the outside specialist.

Southern Section Meeting

A dinner meeting hosted by Rich Whalley on January 29 featured speaker Milton Silverman who presented a candid discussion of his approach to cases. A second meeting was hosted by Santa Ana Police Department on March 19. Speaker Dr. Tharp spoke on the topic of horizontal gaze nystagmous.

Study Group Meetings

1. Southern Trace Study Group. The group met March 19 to review portions of the recent McCrone courses. Topics included identification of natural fibers, extension of synthetic fiber identification beyond generic type, and explosives identification.

2. Southern Narcotics Study Group. The group met January 29 to discuss current and proposed laws regarding PCP and its analogs.

3. Southern Serology Study Group. The group met in January to discuss Lewis typing and new information on p-30. The results of the proficiency testing program on blood analysis were also discussed. The group has also initiated a study on post coital sperm survival the results of which will be considered at a later meeting.

4. Northern Trace Study Group. The group met on March 4 to discuss future activities and to observe on a single-fiber dye extraction/TLC procedure demonstrated by Terry Spear. The group resolved to obtain a set of carpet samples and to meet again at the end of March.

REQUEST FOR INFORMATION ON THE IDENTIFICATION OF FECES AND VOMIT

The recent Southwest Association newsletter contained a note from Jane Nellis of the San Antonio PD Laboratory requesting input on feces identification and a similar request from Kay Belschner from the Albuquerque PD lab regarding vomit. Both analysts currently use the methods outlined in the Metropolitan Police Biology Methods Manual: the chemical test for urobilinogen for feces and microscopic analysis supplemented with chemical tests for sugars and proteins in the case of vomit. Belschner has found it possible to do quantitative acid phosphatases and ABO typing on vomit containing semen. Both would welcome suggestions from other criminalists.

ANNOUNCEMENT TO PROVISIONAL MEMBERS: ELEVATION TO FULL MEMBER STATUS

If your name appears on the following list, you have been a Provisional Member for at least one year.

Juan Bergado
Robert Brinkman
Lawrence Buer
Dan DeFraga
Steven Dowell
Roger Fly
Joe Fabiny
Ken Fijii
Walter Jung
Henry Greenberg
Robert Keister
Jeanne Kilmer
Thomas Kotowski
Jerry Lassetti
Wayne Moorehead
Skip Palenik
Pamela Smith
David Sugiyama
Robert Thompson
Kenneth Van Cleave
Eugene Wolberg

You may be eligible for elevation to Member if you meet one or more of the following requirements:

1. In one year, you have attended one seminar and at least four local meetings (section or study group) or;
2. In three years, you have attended three seminars and delivered a scientific paper or;
3. In three years, you have attended one seminar and actively served on at least one committee.

If you meet these requirements you may petition for elevation by writing to the Membership Secretary and describing in detail your activities in the Association. If acceptable, your name will be submitted to the Board for approval. When approved, a recommendation for elevation will go to the membership at the next seminar. If you are seeking elevation at the Spring Seminar your letter should be received no later than the 5th of May.

Dorothy Northey

ANNOUNCEMENT OF VISITING SCIENTIST POSITIONS AT THE FBI FORENSIC SCIENCE RESEARCH AND TRAINING CENTER

The research coordinator of the Research and Training Center is seeking Ph.D. level research scientists who are interested in working at the Center in the biochemical, chemical, or physical sciences. Interested persons should send a letter of inquiry and a resume to Eugene W. Rieder, Unit Chief, Forensic Science Research and Training Center, FBI Academy, Quantico, VA 22135.

UPCOMING MEETINGS

Northwest Association of Forensic Scientists

28-30 April, 1982. Seattle, Washington. Contact K.M. Sweeney, Washington State Patrol Crime Laboratory System, Public Safety Building, Seattle, WA 98104, (206) 464-7074.

Southern Association of Forensic Scientists

29 April - 1 May, 1982. Savannah, Georgia. Contact Brian Bouts, Columbus Branch Crime Lab, Midland, GA 31820.

Midwestern Association of Forensic Scientists

12-14 May, 1982. St. Louis, Missouri. Contact Robert Briner, SEMO Regional Crime Lab, Cape Girardeau, MO 63701.

Mid-Atlantic Association of Forensic Scientists

Joint meeting with the Society of Forensic Toxicologists, 13-15 October, 1982. Rosslyn, Virginia. Contact Dr. Marina Stajic, Office of Chief Medical Examiner, Fairfax Hospital, 3300 Gallows Rd, Falls Church, VA 22046, (703) 560-7944 or Dr. Tony Cantu, BATF National Lab, Rockville, MD 20850, (301) 443-5213.

California Association of Criminalists - First Inter-American Congress of Forensic Sciences

1-5 November, 1982. Sacramento, California. Contact John DeHaan, Calif. Dept. of Justice Laboratory, Box 13337, Sacramento, CA 95813.

International Association of Forensic Sciences

Summer 1984. Oxford, England. Contact IAFS, c/o Forensic Science Society, P.O. Box 41, Clarke House, Harrogate, North Yorkshire, GH1 1BX, England.

EMPLOYMENT OPPORTUNITIES

Physical Science Technician / Chemist, FBI Laboratory, Quantico, VA.

Three positions are open to assist Ph. D.-level Research Chemists in forensic science research projects, equipment maintenance, and training assignments. Requires B.S. in chemical or biological science. Contact Eugene W. Rieder, Forensic Science Research and Training Center, FBI Academy, Quantico, VA 22135.

Drug Analyst, Idaho Dept. Health and Welfare, Pocatello Lab.

Solid dosage drugs, blood alcohols, instrumental and non-instrumental analytical techniques. Requires upper division course work in criminalistics, pharmacy, or related lab sciences and 1 year experience in drug analysis. Contact Judy Aitken, Dept. Health and Welfare Personnel, 450 W. State St., Boise, ID 83720, (208) 334-4077.

ETHICAL DILEMMA

A criminalist, whether retained by one side or the other in a particular case or employed by a law enforcement agency, is generally requested to examine some physical evidence, render a report, and testify in court. Often the evidence submitted for examination, or the examinations requested, do not represent all of the evidence, or examinations, available in the case. Unfortunately, in most cases it is not the criminalist but a police investigator or lawyer who obtains the physical evidence, preserves it, and requests that certain analyses be done.

There are many reasons for the selective collection and selective examination of physical evidence: Limited time, limited facilities, and limited experience all result in only a portion of the evidence being analyzed in any particular case. In certain instances, only some evidence or examinations will be relevant to the issues as determined by the person or agency submitting the evidence or requesting these examinations. For these valid reasons, in many, if not most, cases the examination of the evidence is more or less limited. Occasionally, the decision to limit the analysis is made in an attempt to insure that only useful information (eg., information beneficial to one side of a case) is developed. The role of the criminalist in making these kinds of decisions bears consideration. The case presented below describes a dilemma for the criminalist in a situation of this type.

A criminalist retained by the defense in a criminal case has done a reasonably thorough examination of the evidence, including some examination of evidence obtained, but not analyzed, by the law enforcement agency. This examination results in some new evidence being developed which is adverse to the defendant's interest. The re-examination of some of the previously examined evidence, however, results in the discovery of some errors in the original analysis. The results of the original analysis are incriminating to the defendant, but the re-examination establishes that this evidence is neutral in its impact on the factual issues in the case.

Realizing that, if he is called as a witness, he would have to testify about the adverse (to the defendant) evidence as well as the mistakes made by the law enforcement laboratory, the criminalist and the defense attorney decide to have the "incorrectly" analyzed evidence submitted to another lab for a second re-analysis. The second defense criminalist, then, could testify without any knowledge of the "adverse" aspects of the evidence.

What are the ethical responsibilities of the first defense criminalist in this case? Has he "knowingly or intentionally, assist(ed) the contestants through such tactics as will implant a false impression in the minds of the jury" (Code of Ethics III.H.).

What are the ethical responsibilities of the second defense criminalist? If he is aware of the reason he has been retained is it a violation of Code of Ethics section III.G. "to present only that evidence which supports the view of the side which employs him."

Finally, in this case, how is the attorney to present evidence to rebut the incorrect evidence which will be offered by the prosecution? The defense attorney, or the criminalist he has retained, might confront the prosecution criminalist with the apparent error. Many attorneys resist this approach because they would be forced to divulge their information prior to trial, and would give the opportunity for the prosecution criminalist to do further work which would strengthen his erroneous testimony. Especially in cases where differences of opinion are reasonable the pre-trial confrontation of a prospective expert witness is tactically unacceptable to the defense attorney.

Three correspondents responding to the last ethical dilemma felt that a violation had occurred, one correspondent felt otherwise. Art Terkelson, Arnie Bergh, and Jim Gaskill cite violations of Code of Ethics Section I A. and II. C. Terkelson says, "There is always something else that can be done, but time, equipment and common sense prohibit overkill... There are also minimum limits [of what should be done on a particular case]." Steve Schaffer takes the opposite view, stating, "careless laboratory practice perhaps, bad judgement probably, ignorance possibly, but (not) a violation of the Code of Ethics."

The first defense criminalist has violated Section _____ of the CAC Code of Ethics.

The second defense criminalist has violated Section _____ of the CAC Code of Ethics.

The defense attorney should:

Comments:

Return To: Peter Barnett
Forensic Science Associates
P. O. Box 8313
Emeryville, Calif. 94608

The Magical World of ESDA

by

Terrence H. Pascoe
Document Examiner
Department of Justice

(reprinted from DOJ tieline with permission)

The purpose of this paper is to introduce others who are in the Forensic Science discipline to the "Electrostatic Detection Apparatus" in respect to the restoration and decipherment of indented writing and erasures. The ESDA machine is a box approximately 10" by 12" by 24". This box includes a transparent fuming hood which incorporates an aerosol nozzle, a perforated brass grid, a vacuum pump, a high-voltage corona unit, a roll of polymer film and attached catch tray.

There are two methods of operation. One is a fuming process in which the transparent cover is placed in position over the document on the vacuum grid and the toner sprayed through the aerosol nozzle to coat or cover the polymer film. The second method is to cascade the toner and carrier beads over the polymer film. Both methods can be attempted without any injurious effect upon the documents in question.

It should be noted that while the document is left intact for other testing, it is desirous to make the ESDA examination before other tests (i.e. latent fingerprint processing) are attempted.

Upon the receipt of the questioned document, some effeort is generally made by the document examiner to discover if there are obvious visible indentations. This examination is also probably the same as that done by many investigators and lay people. Unfortunately, or fortunately, this is not a criteria by which to decide if future examinations by ESDA would be profitable. It has been determined that for the most part the indentations which are the least detected with the visual examination are those which react most favorably to the ESDA testing. Those indentations most visible are often not recorded through this process. Before submitting the document to testing, the document is placed in a humidifier for several minutes in order to restore the moisture content of the paper. The length of time in the humidifier can be varied to compensate for the condition of the document. It appears that a time longer than recommended by the manufacturer is beneficial. It's possible to process the document without this initial step, although better results are generally obtained with the humidifier..

Upon removing the document from the humidifier it is placed either face up or reverse on the brass vacuum grid and the vacuum pump is activated. The polymer film is stretched over the entire grid being careful to remove any wrinkles or creases. The film is then cut from the roll and the smoothing process completed.

The corona unit is then turned on and the wand is passed over the entire grid two or three times at a heigth of ½" to 1". The "Wand Corona" electrostatically activates the ions and the film becomes charged. The grid is then elevated on the right side and the toner with the small glass beads as a carrier is cascaded over the document or portion of document being tested. The beads continue across the film into the catch tray and the toner is captured by the charge in the polymer film. When the Corona is moved across the film the electrons are drawn from the polymer in direct proportions to the thickness of the questioned document. The indented areas, therefore, will store more of the charge and consequently attract more of the toner (negative). The toner can be cascaded repeatedly over the polymer film until the density is that desired by the examiner. On many occasions it is advisable to rotate the questioned document and repeat the process for further legibility. Depending on the questioned document, it may be advantageous to place the entire document (i.e. book) on the grid, cover the document with the polymer film and the fuming hood. The aerosol method then is to cloud the inside of the fuming hood allowing the toner to settle, and to repeat the process every two or three minutes allowing the toner to settle between applications. During this operation the aerosol nozzle becomes the emitter of the high-voltage electrons allowing the indented areas to collect a greater charge as noted previously.

In respect to other types of examinations by this method, the ESDA test successfully develops fresh fingerprints on many surfaces and therefore care should be taken and direct handling of the questioned document to be avoided. As noted earlier, deep impressions may not be responsive to ESDA testing. This problem and mechanical erasures are ofter overcome by administering the test to the reverse side of the questioned document. Upon completion of the testing, a permanent record of the results can be maintained by laying a sheet of transparent adhesive film over the polymer, covering and thus binding the toner between visible layers.

Foster & Freeman Ltd., "ESDA Operating Brochure".

Carney B.B., "Use of the ESDA in Developing Indented Writing".

Nemecek, J. and Clift R. E., "Technical Information on the ESDA".

BLOOD GROUPING ON MICROTITRE PLATES - A PRELIMINARY REPORT

Duane Mauzey and George Levine
DOJ, Santa Barbara

(reprinted from DOJ tieline with permission)

An inverted microscope, such as the American Optical Biostar, is not an upside down microscope as the name might imply. This type of microscope has an inverted light path. The light source and condenser are situated above the stage. The nosepiece and objectives are upside down and situated below the stage. This arrangement facilitates the examination of the contents of flasks, bottles, dishes, and microtiter plates from below. The singular advantage of this mode of viewing the subject is that one looks through glass or optical grade plastic instead of the liquid medium beneath which the cells are in languid rest. The inevitable distortion of viewing a subject through a liquid medium without a cover slip is thereby avoided. This feature is especially important when viewing cells in Microtiter Plates. As the wells in these plates are only about 0.5 cm in diameter, with a total volume of about 1/3 ml, the meniscus of a liquid in the well distorts roughly 50% of the viewing area of the well. However, when the well is viewed from underneath, the flat bottom of the well provides undistorted observation of the cells at all practical magnifications.

Davie and Lidgett in HOCRE Report No. 288, A&T Bulletin of June, 1980, report on the use of Microtiter Plates for ABO grouping of bloodstains. This method has been investigated at the Santa Barbara Lab and found to be superior to both the thread and Chisum method for doing absorption elution testing. The method follows:

1. Extract a small portion of the stain in a test tube using 5% aq. ammonia. The final color should be the straw yellow color commonly associated with the Chisum method. Prepare positive and negative controls.

2. The Microtiter Plates have 96 wells arranged in 8 rows (A through H) of 12 wells (1 through 12) each. The samples to be tested are placed into sets of three wells each: One drop for an A well, one drop for a B well, and 2 drops for an O (H) well. The Plate is then placed in a 56^{o}C oven for one to two hours to dry and fix the extract to the bottom of the wells.

3. Remove the plate from the oven. Add one drop of Anti-A to the first well of each group of three, one drop of Anti-B to the second well, and one drop of H lectin to the third well. Put the lid on the plate and place it in the refrigerator overnight.

4. Remove the plate from the refrigerator. Go the sink, take the lid off the plate, invert the plate over the sink and shake out/off the

antisera/lectin. Return the plate to its normal position and flood it with phosphate buffered saline (PBS). Invert the plate again and shake out/off the PBS. Repeat this washing step twice more.

5. After the third quick wash of the plate, again flood it with PBS. Replace the lid and set it on a rotator at 170 rpm for 30 minutes. After 30 minutes, remove the plate, remove its lid over the sink, invert the plate, shake the PBS out/off. Repeat this 30 minute wash one more time.

6. After the second long wash, blot the plate to remove excess PBS. Add A cell suspension to the A well, B cells to the B well, and O cells to the H well. Incubate at 56° to 59°C for 15 minutes (or even 20) with the lid on the plate. When the incubation is complete, remove the plate from the oven, let it cool for 15 to 30 minutes. Then observe the wells using a microscope, preferably an inverted microscope, and record the results.

The Microtiter Plates are Falcon 3040 Micro Test II Tissue Culture Plate. They are available from any vendor of plastic tissue culture ware. The plates individually packaged, sterile, with lid, in cases of 50, are about $1.50 each. The plates can be cut up into sections for small cases, or several cases can be batch run on a single plate. We are checking into bulk packaged, non-sterile, unprocessed plates and lids in cases of 100 for $75 available from Flow Laboratories (213) 641-8940.

PBS is made from 6.125g KH_2PO_4, 1.025g NaOH, 8.775g NaCl, and 0.050g NaN_3 per liter of water. This results in physiological saline buffered at physiological pH, with sodium azide as a preservative.

The polystyrene of the plate is of a special type which promotes the attachment of cell membrane material. After fixing to the well bottom, the stain extracts do not wash away. The minimum stain size is a single thread 4mm in length. The extraction can actually be performed in, say, the O well, and then appropriately portioned out between the other two wells. This method is very sensitive. Instead of the usual 1 to 10 or 20 dilution of indicator cells, we use a 1 to 50 dilution of cells in PBS with 1% BSA final concentration. Very weak stains extracted at less than the optimum straw yellow color have been successfully typed. Although the procedure is best done overnight, it can be compressed into an eight hour day. The hands-on time is very minimal. The method is very forgiving of sloppy technique.

The Microtiter Plates can also be used for the Thin-layer Immuno-assay species determination (personal communication from Amy Wong, Ventura SO Crime Lab). The TIA method is discussed in the December, 1981, Vol VII, No. 4 issue of Forensic Serology News as well as in the October, 1981, Vol 21, No. 4 issue of the Forensic Science Society Journal. N. T. Lappes is the author of both articles.

Khalap and Divall (see A&T Bullet #133, Oct. '81, p. 77) report on A_1-A_2 subtyping of bloodstains using a lectin derived from the albumin gland of the snail Helix aspersa. We in Santa Barbara are searching for a commercial source of such a lectin. The preparation of the H. aspersa lectin is far too time consuming to be done in our lab. Our hope is to find a commercial source that is not too costly, as our meager budget does not permit much latitude in developing new methods.

Eventually, we feel we can develop a method whereby the Microtiter Plates can be used as the basis for a multiple assay. The complete method would call for a species determination of extracts by TIA, followed by a chemical test of the same extract to confirm that it is blood. This would be followed by absorption-elution for A_1-A_2BO on additional amounts of the same extract. The entire test might take 1cm of thread or equivalent crust. This test could be run after electrophoresis, as reported by Divall and Khalap (see A&T Bulletin #133, Oct '81, p. 17).

We have also used the Microtiter Plates for absorption-inhibition testing with excellent results. The rows of wells neatly replace the rows of test tubes normally employed when one uses the serial dilution of antisera/lectin method for testing for inhibition.

We are also considering using the Microtiter Plates for the Lattes method. It seems probable that pieces of thread or crust could be placed in several wells to which the appropriate cells could be added. This step could be performed either just before or just after the elution step at 56°C in the oven. By the time one is ready to observe one's absorption- elution results, the Lattes results would be ready also.

It is possible, even probable, that all this work will merely be academic as far as our Bureau is concerned. Without an inverted microscope, the Microtiter Plates are difficult to read properly. I forsee a situation, a Catch-22, in which we do not use the plates because we do not have an inverted microscope, and we do not have inverted microscopes because we do not use the plates. Perhaps the more progressive, non B.F.S. labs will benefit from our work. After all, our first loyalty is to the profession. These Microtiter Plates would seem to offer a route to improved quality of work, reduced cost of materials, and increased productivity.

Calibration Hydrocarbon Standards for Gas Chromatography

by

J.D. DeHaan

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The prospects for a nationally-acceptable calibration standard for GC columns to be used for the identification of arson residues were discussed at the CAC meeting in Tahoe. Coincidental with our discussion, the ATF Lab in Rockville, Maryland has been discussing the creation of such a standard with the National Bureau of Standards. This standard reference specimen would be a mixture of normal alkanes between C_5 and C_{20} and would include several of the more common aromatics. An exemplar chromatogram is shown below. If such a specimen were to be made available on a national basis, examiners in all laboratories would be able to interchange chromatograms with the assurance that they would be able to interpret those of other laboratories run under different conditions. Your comments on the proposal for developing this standard reference material is encouraged. Contact John DeHaan, Paul Krupenie at the NBS Law Enforcement Standards Laboratory, Room 157, Building 221, Washington, DC 20234 or Dr. Phil Wineman, Bureau of Alcohol, Tobacco and Firearms, 1401 Research Blvd., Rockville, Maryland 20850.