



NEWSLETTER

California Association of Criminalists

NEWSLETTER

MARCH 1980

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PRESIDENT'S MESSAGE

The vote on certification is in. The vote, in CAC, was almost 2 - 1 against certification. There was not an area of the country where it was accepted. The national committee has been dissolved.

Whether you voted for or against certification, I think you will agree that some type of self-regulation is necessary. The examinations we perform and the decisions we render have profound impact up on the lives of others. Within the past two years, the CAC has experienced a number of uses of the Code of Ethics as a means of self-regulation.

(cont.)

PRESIDENT'S MESSAGE (CONTINUED)

A great deal of personal effort, time, and money are being expended by your Board of Directors to update the procedures that we use to enforce the Code. These procedures, once implemented, should protect:

- 1) society from unethical criminalistics processes,
- 2) the profession (reputation),
- 3) the Association (reputation and civil liability),
- 4) the accused (reputation),
- 5) YOU, from malicious or harassment charges.

Perhaps we won't have certification, but we can show the rest of the Forensic Community how to safeguard our profession through our Code of Ethics.

SPRING MEETING

The Spring seminar will be held in Santa Barbara on 8-10 May. All of you should have received announcements for the meeting, information about hotel registration, and seminar preregistration forms. Please note that the hotel registration card should be sent to the hotel, and the seminar preregistration should be sent to the Santa Barbara DOJ lab. Also note that student affiliates need pay no registration fee; the preregistration form is in error.

The tentative program is as follows:

Thursday AM - Contributed papers on biological topics.

PM - Contributed papers on biological topics, also on firearms and on the SEM.

Friday AM - Contributed papers on various topics, including the acoustic microscope, fly spots, plasma emission spectroscopy, drug analysis.

PM - Business meeting.

Saturday AM - Contributed papers, including detection of PCP in blood and HPLC.

The banquet Friday night will feature a presentation by the Brooks Institute of Photography; it promises to be a colorful and exciting display of photography.

There will be a Board Meeting Wednesday afternoon and evening at the hotel.

New officers are to be elected at this meeting; if you can not attend, please designate a proxy so that a quorum can be established at the business meeting.

NEW OFFICER NOMINATIONS

The following nominations have been made for the spring elections:

President-elect	Ed Rhodes
Secretary	John DeHaan
Membership Secretary	Dorothy Northey Mike Grubb Lance Gima
Regional Director - North	Rich Schoor
Regional Director - South	Bill Baird

The nominating committee consisted of Cecil Hider, Mary Gibbons, and John Davidson.

REGIONAL MEETING NOTESNorthern Section

The meeting on February 29, 1980, hosted by the Oakland Crime Laboratory, was at the Seawolf restaurant in Oakland. After dinner, two guest speakers addressed the group. Dr. Schmid, from the Letterman Army Institute of Research, spoke about current research in the area of blood substitutes for transfusion application. Dr. E. Branscomb, from the Lawrence Livermore Laboratory, discussed somatic mutation assays in humans involving immunologic detection of variant hemoglobins.

Southern Section

The Santa Ana Police Dept. Crime Lab hosted the February meeting, which met at Griswold's Inn in Fullerton. The speaker was Dr. Judy Suchey, who is a professor of Forensic Anthropology at Cal. State University, Fullerton. Information about the correct recovery of skeletal remains and the data which can be obtained from them was included in her presentation.

ANNOUNCEMENTS

1. Congratulations to Vince Guinn who has been awarded the George Hevesy Medal, an international award presented annually to an outstanding scientist in the field of radioanalytical chemistry. He is only the third American chemist to receive this honor since the award was first presented in 1968. The award recognizes his work in radiochemistry and in neutron activation analysis.
2. New mailing regulations require our permit mail to be sorted into packets by firm, city, and zip code. The sorting time for the 1980 mailings has more than tripled. To facilitate sorting, future mailings will be directed to lab or professional addresses rather than home addresses.

STUDY GROUP ACTIVITIESNorthern Biology Study Group

The February meeting was hosted by Jim Norris at the Santa Clara lab. Jim summarized the results of his studies comparing four methods for seminal acid phosphatase detection. There followed considerable discussion about the issue of biological evidence preservation in light of the Nation decision. It was decided to continue this discussion at the March meeting at which time an effort would be made to frame some guidelines regarding the preservation issue.

At the March meeting, hosted by Dorothy Northey at the Contra Costa lab, the discussion on preservation focused on three topics: (a) mechanisms of deterioration in biological evidence, (b) the collective experience of the group with various methods of preservation, and (c) providing guidance to law enforcement and attorneys on proper methods. A statement summarizing the discussion was prepared by George Sensabaugh and circulated for comment.

Northern Firearms Study Group

A Chronological outline of all the meetings of this study group is being made by John Murdock. When complete, the outline will be distributed to those who are interested.

No future meetings are being planned at this time, although John Murdock suggests that interested individuals could call special meetings on specific topics.

Southern Serology Group

The March meeting was a tour of the biochemical research laboratories at the City of Hope in Duarte. The director of the Biochemical Genetics Lab, Dr. Yoshida, led the tour. Jim White, of the Orange County Sheriff's Dept., was selected as the study group's new chairman.

Southern Arson/Explosives Study Group

At the February meeting, samples of charcoal lighter fluid were passed out for analysis of various characteristics.

Southern Drug Study Group

The February meeting was hosted by the Santa Ana Police Dept. Crime Lab. A discussion was led comparing the procedures various labs are using for the identification of heroin.

Microscopy/Trace Study Group

Enclosed in this mailing is a questionnaire regarding the formation of a Microscopy/Trace study group. Interested parties should fill out the questionnaire and return it to Steve Shaffer at Fresno Sheriff's Dept.

CERTIFICATION: REPORT OF THE NATIONAL BALLOT

The results of the certification ballot have been tabulated and analyzed. The following results, compiled by Jan Bashinski, indicate the sense of the criminalistics community nationwide.

A total of 1396 validated ballots were returned by the seven regional organizations represented on the CCSC. Of these, 62% voted "no" and 38% voted "yes".

VOTING BY GEOGRAPHICAL REGION

<u>Region</u>	<u>Total votes</u>	<u>% voting yes</u>	<u>% voting no</u>
Northeast	153	42%	58%
Mid-Atlantic	131	38%	62%
Southeast	236	39%	61%
Midwest	371	41%	59%
Southwest	171	32%	68%
Northwest	79	35%	65%
California	233	31%	69%
Other	13	62%	38%

VOTING BY ASSOCIATION MEMBERSHIP

<u>Association*</u>	<u>Total votes</u>	<u>% of voters checking</u>	<u>% voting yes</u>
AAFS	325	23%	48%
AFTE	106	8%	50%
ASCLD	115	8%	48%
CAC	188	13%	38%
MAAFS	117	8%	49%
MAFS	241	17%	43%
NEAFS	138	10%	50%
NWAFS	90	6%	33%
SAFS	186	13%	42%
SWAFS	111	8%	39%
Other	110	8%	45%
None	224	16%	30%

* many have multiple memberships and so are counted in this table more than once.

CERTIFICATION (CONTINUED)

VOTING BY TYPE OF EVIDENCE EXAMINED

<u>Evidence type</u> (most checked more than one category)	% examining this <u>type of evidence</u>		% examining who <u>voted yes</u>	% examining who would apply if certification <u>were implemented</u>	
	Calif (233)	Nat'l mean (1389)	Nat'l mean (1389)	Calif (233)	Nat'l mean (1389)
controlled subst	68%	59%	32%	62%	80%
serology	59%	37%	38%	66%	76%
firearms	45%	22%	35%	69%	73%
toolmarks	49%	25%	35%	59%	70%
toxicology	27%	15%	45%	41%	68%
arson	45%	32%	32%	53%	68%
explosives	30%	22%	28%	57%	70%
hairs	58%	36%	35%	53%	68%
fibers	54%	36%	35%	57%	68%
paint	56%	29%	32%	54%	63%
glass	52%	31%	33%	52%	67%
soil	41%	26%	32%	54%	61%
gunshot residue	38%	24%	30%	62%	70%

While 233 ballots were returned from the California area, only 188 were received from persons who identified themselves as members of the CAC. Our current membership is approximately 250. Therefore, an estimated 75% of our members voted on the issue of national certification. Of our members who voted, 38% were in favor of the proposal. In contrast, only 31% of the 233 persons working in the California region who returned ballots were in favor of the proposal.

The design of the ballot did not permit differentiation between "specialists" and "generalists" and, indeed, it would be difficult to construct a definition which would allow classification of every practitioner into one of these two categories. The results do show, however, a strong trend for members of the CAC, Northwest, and Southwest Associations to examine more different types of evidence than their counterparts elsewhere in the nation.

CERTIFICATION (CONTINUED)

Based on these results, the Criminalistics Certification Study Committee issued the following final report to the American Academy.

FINAL REPORT
OF THE
CRIMINALISTICS CERTIFICATION STUDY COMMITTEE (CCSC)

At the San Diego meeting in 1977 the Criminalistics Certification Study Committee (CCSC) received the charge from the Criminalistics Section of the American Academy of Forensic Sciences to study the "desirability and feasibility" of the certification of persons in the Criminalistics field. An intensive study since that time has attempted to contact as many practitioners as possible. As promised at the outset, we concluded our study by providing the profession nationwide with a certification proposal. A survey was included which took the form of a ballot.

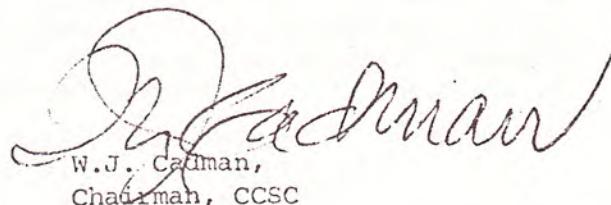
The analysis of the survey revealed that only 38% of the 1396 persons who responded approved of certification as proposed. However, a substantial number of those responding indicated they would apply for certification if it were implemented:

80% of those examining controlled substances	(649 persons)
77% of those in serology	(396 persons)
73% of those examining firearms	(227 persons)
68% of those doing toxicology	(209 persons)

On this basis we determined that certification is feasible, but because of the lack of a majority vote in favor of certification the American Board of Criminalistics (ABC) will not be incorporated at the direction of the CCSC.

A great deal of information was developed during the course of our study from questionnaires, peer group recommendations, and finally from the survey ballot itself. The CCSC believes that some form of certification would be beneficial to the profession of Criminalistics. We also believe certification will be adopted in the future. We strongly recommend that any criminalistics certification program incorporate our fundamental concepts of regional representation and peer group review.

All of the members of the CCSC wish to thank everyone who helped so much in our deliberations.



W.J. Cadman,
Chairman, CCSC

CERTIFICATION (CONCLUDED)

As a concluding comment, it should be noted that the CAC set up a committee to study certification several years ago, in advance of the national effort. This committee has been dormant while matters were progressing at the national level. It is now time for this committee to review its status. Should the results of the national ballot close the book on certification entirely? Or would a CAC sponsored certification effort be a viable alternative? Jan Bashinski, the chairman of the CAC certification committee requests that you take a moment to respond to the pink questionnaire "Whither Certification?" enclosed in this mailing to answer this question.

UPCOMING MEETINGS

1. The L.A. County Coroner's Dept. is offering a series of seminars from April 2 - June 18. A variety of topics are being presented. For further information, please contact the L.A. County Coroner's office: phone (213) 226-8041.
2. The Southern, Midwestern, Mid-Atlantic, and Northeastern Associations of Forensic Scientists are holding a joint meeting scheduled May 7 - May 10, 1980, in Louisville, Kentucky. Room reservations were due April 7, 1980. To reserve a place at the special evening program and Friday's luncheon AFTER April 7, contact:

T.A. Easterling
Central Laboratory
Kentucky State Police
1250 Louisville Road
Frankfort, Kentucky 40601
Phone: (502) 564-3874
3. The Canadian Society of Forensic Science and the Society of Forensic Toxicologists will be holding a joint meeting Sept. 30 - Oct. 3, 1980, in Toronto, Ontario. Deadline for papers is July 30, 1980. For more information, contact John Wells, Scientific Program Chairman (416) 965-9278 or Bill Robinson, Local Arrangements Chairman (416) 965-9507 or write to either at: Centre of Forensic Sciences, 25 Grosvenor Street, Toronto, Ontario, Canada M7A 2G8.
4. A Forensic Sciences Symposium is being offered June 25 - 29, 1980, at the New York University Campus in New York, N.Y. It is offered by New York University, Post Graduate Medical School, Dept. of Forensic Medicine, and the Office of Chief Medical Examiner, City of New York. For information, contact:

Registration Office
NYU Post-Graduate Medical School
550 First Avenue
New York, New York 10016
(212) 679-8745 (24 hour telephone)

GLASS MANUAL REPORT - Jim White

To date, 49 glass manuals have been distributed to members. There are 12 manuals left which are available to the first 12 people who contact Jim White; the cost is \$5 which includes postage. We are indebted to the Dept. of Justice for making it available to the CAC, to Keith Smith, Lou Maucieri, and John DeHaan of the DOJ for their contributions to the project, and to Bill Sharp for bibliographic housekeeping.

Unfortunately the association is in the red on the manual because payment has not been received from several members/agencies who signed up for one. Future projects of this sort can be undertaken only if they pay for themselves. Payment has not yet been received from the following:

Dick Renner, Las Vegas P.D.
Gilbert Chang, Honolulu P.D.
Joe Peterson, Univ. of Illinois
Peter Jones, Aerospace Corp.
Paul Cashman, Cal. State Sacramento
Frank Ishizaki, Guam DPS
Cliff Webber or W.H. Morris, Arizona DPS
Rob Stoinoff, S.A.P.D.
Eric Lawrence, Joliet, Ill.

One check was received from the D.P.S. but there was no indication whose manual it was for. If your name is on the list and your agency was to pay, please check on the situation. If you did not receive the manual or the bill, they should contact Jim White.

EMPLOYMENT EXCHANGEPositions Open - Weber State College, Ogden, Utah

Weber State College has two openings in the Laboratory of Criminalistics, which functions as the State Laboratory for Utah.

(a) Faculty/Criminalist

Teach introductory criminalistics and spend approximately 50% time on actual casework. M.S. in Forensic Science or related field required. Prefer doctorate and some crime lab experience.

(b) Criminalist

B.S. in Forensic Science or related scientific field required. Crime lab experience preferred.

For further information contact: James Gaskill, Director
Criminalistics Laboratory, #1206
Weber State College
Ogden, Utah 84408

CALIFORNIA CONFERENCE OF ARSON INVESTIGATORS - Report by John DeHaan, Dept. of Justice, Sacramento (reprinted from the DOJ TieLine)

The 1979 California Conference of Arson Investigators was held in Sacramento on June 11-12. The following report is a condensation of the presentations by the conference speakers.

Michael McCrystle, Special Agent with the FBI, provided an outline of the development of case law involving arson evidence. He touched upon a series of landmark cases in the period 1967 to 1978 which bear upon the admissibility of evidence recovered at fire scenes under a variety of circumstances. The first case cited is Camara vs. Municipal Court of San Francisco, 1967. In this case, a housing authority inspector, while conducting an annual safety inspection of a living area, was refused entry by the tenant. The California Supreme Court held that a warrant was required for entry no matter what statutory authority was present. An 'inspection warrant,' which functions as an administrative search warrant, can be issued under such circumstances. The probable cause for the issuance of such a warrant can include: elapsed time since last inspection, a preset schedule of such inspections or conditions visible from the exterior dwelling.

See vs. Seattle. A fire chief, while doing a routine fire inspection, demanded entry to a commercial warehouse. He was denied entry by the owner who claimed this was an invasion of his expected rights of privacy. The Supreme Court held that due to considerations of public safety, different standards were expected of commercial areas and that inspections prior to or commensurate with licensing or granting a permit were authorized.

Another important case was U.S. vs. Biswell in 1972, where a sporting goods/firearms dealer gave consent for a search which ultimately revealed the presence of sawed-off illegal weapons. He claimed that the consent search was not legitimate; the U.S. Supreme Court held that the firearms business is closely regulated by the Government for the purposes of public safety, and businesses conducting firearms trade must expect such inspections, and that consent in this case was submitting to a lawful authority.

A similar case was Marshall vs. Barlow where an OSHA inspector doing an inspection by statutory authority in Pocatello, Idaho was denied entry by a plant manager. The manager subsequently obtained an injunction prohibiting re-entry of the OSHA inspector on the grounds that he had certain expected standards of privacy. The Supreme Court held that a plumbing and electrical business such as his was not closely regulated by the Government and that his expected standards of privacy were higher than those for the firearms or liquor trades.

The landmark decision that was expected to have the greatest impact on arson cases is Michigan vs. Tyler, 1978. The order of events was summarized as: 2400 hours - fire in progress, 0200 hours - fire chief arrives and is given containers of suspected flammables recovered from the interior of the dwelling by the fire suppression crews, 0400 - the fire was extinguished. An attempt was made at 0400 to enter the building; however, due to heat, smoke and darkness, no suitable search could be carried out. At that time, all fire and police personnel were secured from the scene. At 0800 hours the fire chief returned with a fire inspector who examined the building with no results. At 0900 an assistant chief and a police investigative team re-examined the building and found evidence of an arson trailer. At that

time, the Michigan State Police Arson Investigation team was requested. That team arrived later than day for examination, photography and collection of evidence at the scene during several subsequent searches. The U.S. Supreme Court held that the returns to the crime scene at 0800 and 0900 were permissible since they were essentially a continuation of the examination from 0400 (which had to be discontinued due to poor conditions). The evidence gathered by the Michigan State Police Arson Team, however, was suppressed. The court held that the prosecution's contention that all rights of privacy by the owner were given up by committing a crime; i.e., the destruction of that property, was not substantiable. On the other hand, an investigation begun and continued for a reasonable amount of time for the benefit of public safety at the scene was permissible. Prior to an extended examination or repeated examinations over a long period of time, a warrant was required to notify the owner of the intended search. The definition of "reasonable period of time" is entirely flexible, depending on the type of building involved, the time and nature of suppression efforts, the complexity of the scene and the extent of emergency situations. The court reinforced the statement that it is the duty of fire officials to determine the cause of fires. The circumstances defining "a reasonable length of time" for an investigator to conduct a warrantless search must be considered by the investigator at the time of the incident. If any doubt, obtain a warrant. Agent McCrystle recommended the November - December 1978 issue of the FBI Law Enforcement Bulletin with its article on crime scene searches for further information.

Another landmark case involving reasonable period of searches was also decided in 1978 with Mincie vs. Arizona. A drug arrest/raid ended in a shootout with an agent, Mincie, girlfriend, and an associate shot. The scene was searched at that time for additional confederates. A shooting team was called in to search the crime scene since an agent and several suspects had been shot. The subsequent crime scene search lasted four days with considerable destruction of the house and its contents. The court held that evidence in plain view discovered during a search for other confederates or in similar emergency situations is admissible. Once the emergency situation ends, however, the requirement for a warrant prior to further searching resumes. Once again, the determination of "reasonable time" and "end of emergency" rests with the investigative officer and his superiors, but are open to interpretation by the courts.

Two additional points were raised in the matter of crime scene searches. If a fire official has obtained an administrative inspection warrant and is conducting a search pursuant to that warrant, criminal evidence in plain view from where the investigator has a legitimate right to be; i.e., where he is allowed to go under the protection of that inspection warrant, is admissible in criminal proceedings. It is interesting to note that an insurance investigator is considered a private citizen in the eyes of the law while working on his own, and not subject to the same Fourth Amendment proscriptions. If he is engaged by a public fire or police agent to work as an associate in an investigation, he becomes legally a deputy agent and is subject to the same laws as police and other public officials.

Other significant cases included: Romero vs. Superior Court (1968) In this case, the search of a burning building for a victim revealed weapons and dynamite. A locker suspected of containing a large quantity of ammunition was opened by the fire department. In emergency situations, Section 13875 of the California Health and Safety Code grants peace officer duties on firemen at the scene. Thereby, this search which was conducted for safety reasons was legitimate.

In 1970, Swann vs. Superior Court helped define "reasonable rights" of expected privacy. After an April 4th fire, a search conducted on April 24th of the boarded-up, burned premises was held to be illegal and evidence gained therein was suppressed because the boarding up indicated an expectation of privacy. In 1973, U.S. vs. Green allowed the submission of 29 counterfeiting plates which were discovered at the point of origin of a fire by an investigating fire marshal. The fire marshal was acting in line with his legislative authority in conducting a search for the seat of the fire which happened to be coincidental with the plates. In 1974, U.S. vs. Delgado held that a search of a desk drawer was O.K. if the evidence present might be susceptible to fire and water damage.

The next speaker was Roger Venturi of the Attorney General's Office who spoke on the matter of eavesdropping. The key points raised were that visual and aural enhancement of sights or sounds were admissible as long as the activities in question were visible to the unaided senses. The key word here being "unaided". If one uses a high powered telescope to observe activities which would not be visible to the unaided eye, then evidence revealed by that observation would not be permissible. Society has dependence on a reasonable right of privacy; i.e., members of that society can go about their business without fear of being under continual remote observation. Night vision devices such as infrared or starlight scopes are excluded unless there is public advertising of the fact that in a particular area there is an "absence of privacy" as a result of such remote monitoring. Mr. Venturi proceeded to give a series of case-work examples of monitoring situations with the legal interpretation of each situation.

Pete Cleaveland of KGO-TV in San Francisco discussed relations with the public media such as television and newspapers. He revealed that members of the recognized press have a legitimate right to entry to restricted areas such as the police boundaries around, say, a fire scene. However, they do not have the right to violate a recognized crime scene. Members of the press can be ejected from the immediate vicinity of the crime scene for the sake of preservation of evidence. Once members of the press are inside a safety perimeter, their safety is a shared responsibility, This presumably meaning they have a right to some protection by police and fire officials; however, they cannot deliberately take undue risks and expect protection from those hazardous conditions. Mr. Cleaveland warned of the hazards of dealing with the "live" mini-cam. He stressed the hazards of offering off-the-cuff descriptions of a fire scene or suspects which might later prejudice a case. He stressed that the public media could be used in a variety of ways to assist the investigative process. This assistance could take the form of circulation of composite drawings or mug shots of suspects along with requests for information from the general public. The media can also support the educational process of public safety agencies such as bring the magnitude of the arson problem to the attention of the public. Finally, the media can sometimes be of assistance in providing videotape records of crime scenes for later investigative review. He stressed that access to videotape records, films, and scripts was available only by subpoena duces tecum which specifically named the information desired from those files. Access of police agencies to press materials is limited only to material which appeared on the air (including scripts). This does not include records of the reporter such as his notebook or other private materials. If videotapes or films are to be requested, the subpoenaing agency must pay to have it duplicated. The costs of such duplication are not the responsibility of the station.

Frank Wandell, Special Agent, ATF, gave a brief description of the ATF's involvement in arson cases. He stressed that the ATF is concentrating on commercial victims whose property damage exceeds \$100,000 and whose fires indicate the use of an incendiary device. He related that the ATF is not investigating arsons per se;

they are investigating fire cases which use incendiary or explosive devices. He cited the support of the ATF laboratories and their various abilities which closely parallel the abilities of state and county laboratories, with additional expertise on explosive device identification and characterization of flammable vapor explosions. He revealed that in the first six months of 1979 the ATF laboratory at Treasure Island had conducted examination of approximately 62 arson cases. Turn-around time for most cases was around one week, and all submitted cases are finished within two to three weeks from the time of their submission.

Probably the most interesting presentation of the conference was presented by Gordon DaMant of the Department of Consumer Affairs Laboratory in Sacramento. This laboratory is charged with the analysis and characterization of consumer products and their physical and chemical properties. The laboratory does not deal with building structural components. He revealed that of the 10,000 fatal fires per year in the U.S., approximately 75% of all fatalities occur in residences. An estimated 56% of all fatal fires are related to smoking materials, 13.8% related to heaters, 7.5% are related to electrical failures, 7% related to cooking operations or utensils, and an estimated 4.2% related to arson. Due to the magnitude of the involvement of smoking materials in home furnishings in such a large number of fatal fires every year in the U.S., it was decided that studies of cigarette ignition properties of various home furnishings would be of considerable value. DaMant has been responsible for an extensive survey of cigarette products which recorded the time of burning (including the maximum, minimum and overall time of burning for a variety of atmospheric conditions), the extinguishment percentage and the temperatures produced by burning cigarettes. It was revealed that modern production cigarettes contain a complex chemistry of burning and moisture controls in the tobacco and the paper. In addition to such chemical controls, there are variations in the variety and cut of tobacco used. While measuring the maximum temperature produced by a cigarette at various times during its burning, it was discovered that the temperatures reached, as the tobacco burned to the butt end of the cigarette, could be almost 200° higher than those produced elsewhere in the cigarette. In addition to maximum temperature, the maximum heat flux peaks at the end of the cigarette burn as well. This characteristic revealed that temperatures and energies at the end of the burn are critical to the evaluation of fabric-flammability hazard. Some interesting points of reference from the accumulated data included: highest temperature produced: 1440° F (Raleigh); minimum temperature: 760° F, maximum average temperature was 1149° F (Raleigh-King) which was also the fastest burning cigarette. Of the Chesterfield-King cigarettes ignited, 60% went out when left unattended. This can be compared to Camels in which zero percent extinguished themselves when not smoked.

The typical mattress fire is a smoldering fire, started by a cigarette, which very rarely goes to flaming combustion. This can be considered an extreme household hazard since 80% of fire-related deaths in households are due to smoke inhalation. In 1974, the U.S. established flammability standards for mattresses sold in this country. This flammability standard, however, applies to cigarette resistant mattresses. Cigarette-resistant mattresses are not necessarily flame-resistant or even retardant since polyurethane foam mattresses are very resistant to cigarette smoking but are very susceptible, when treated, to flaming combustion. The coverings on upholstered furniture can provide some interesting variations on fire hazards. Some dyes used in printed fabrics can create localized hazards by rendering the fabric much more susceptible to ignition than otherwise would be the case. It should be noted that the heavier the upholstery, the higher the smoking fire risk. Many tests done by Department of Consumer Affairs involve covering a

cigarette with a single layer of paper or cloth. Even this light covering contains sufficient heat to produce burning temperatures on the order of 100° C higher than the same cigarette under the same conditions but left uncovered. According to DaMant, polyurethane is used in 95% of all furniture made in the United States. Unfortunately, there is no way to predict the time frame of smoldering versus flaming combustion in modern upholstered furniture. This time can be anywhere from one hour to as many as nine or more hours. For characterizing upholstery materials, two categories are used. The first category, cellulosic, includes cotton, rayon and linen. This class of fabric is susceptible to ready smoldering but is more resistant to flaming combustion. The second category, thermoplastic, includes nylon, polyesters, acrylics, and wools. As a general case, thermoplastics are more resistant to smoldering but tend to be more susceptible to flaming combustion. A natural fiber, wool, tends to offer the best protection against both classes of combustion.

Since 1976, all polyurethane foam used in furniture sold in California (except decorative pillows and outside furniture) is required to be fire-retardant. Several manufacturers have developed fire-retardant foams, however, they have met resistance in marketing because of their higher cost. Consumers, when offered the choice between cost and fire hazard, often trade off to save themselves that extra little bit, and manufacturers, to be competitive, use the cheaper, more hazardous, material. The fire retardants used in polyurethane may be neutral towards the smoldering properties of the material; however, some may actually make the foam more susceptible to smoldering than would otherwise be the case. Boric acid is used as a most common flame retardant in cotton batting for upholstery and cellulose insulation.

DaMant has also been involved in an extensive program for evaluating fire hazards of jail furnishing with an eye towards improving the safety and security of correctional facilities. This is a rather challenging process because the furnishing must not only be low cost but provide resistance to both smoldering; i.e., accidental ignition, as well as flaming combustion; i.e., intentional incendiary. The DCA laboratory offers extensive information resources on the flammability of various home furnishings and would be of great potential value to DOJ criminalists. Gordon DaMant can be reached at 3485 Orange Grove Avenue, North Highlands, California 95660. The phone number there is area code (916) 920-6951.

During a lunch break of the conference, an attempt was made to illustrate the hazards of Cadweld welding material. This copper-based thermite-like material has been used as an incendiary in a series of destructive structure fires in northern California. The demonstration at the conference failed to duplicate the ignitability and destructive potential revealed in earlier laboratory tests of this material. Handouts describing the product and the characteristics of its residues were distributed to all in attendance. Sufficient residue was obtained from a limited ignition to provide some exemplars for visual recognition.

Finally, Dr. Corey Clark, a psychiatrist with the Sacramento Child Guidance Center, offered a discussion of child fire-setter types and the potentials for treatment of various categories of fire-setters. He revealed that problem setters have been found to be a young as five to seven years of age and the truly psychotic or seriously neurotic child fire-setters cannot be rehabilitated with any degree of success. He outlined the seriousness of the problem and the difficulties and costs of maintaining treatment centers for the youthful arsonist.

RAPID R.I. AND DISPERSION MEASUREMENTS USING MONOCHROMATIC LIGHT

Jerry Chisum and Tom Valentine, California Dept. of Justice, Modesto

Equipment

1. Phase contrast microscope.
2. Mettler hot stage.
3. DC 710 silicone oil.
4. Leitz monochromatic interference wedge with the slit opening adjusted to 1 mm.
5. C & D & F line interference filters.
6. Standard graph paper.

Procedure

1. On graph No. 1 plot temperature (50° to 90°) v. nominal wavelength as measured by the monochromatic interference wedge (6 to 15 measurements). Draw the vertical, linear, C, D, and F lines on the graph. The lines are established by placing one of the three filters over the wedge slit and adjusting the slide until maximum illumination is observed.
2. On graph No. 2 plot temperature v. refractive index (1.50 to 1.56) of silicone oil. Draw in the linear C, D, and F lines for silicone oil.
3. Place samples in view and set the Mettler at approximately 50° C.
4. Adjust the Leitz wedge until the glass sample disappears and note the nominal wavelength measurement on graph No. 1.
5. If the glass did not disappear, (4. above) the temperature range must be adjusted. If the glass did disappear, increase the temperature by one or two degree increments and readjust the wedge until the glass sample disappears. Note the nominal wavelength on graph No. 1. and repeat as often as needed until a line can be established.
6. From the line established in No. 5 above, determine the temperature at the D line and mark that temperature on the D line of the second graph.
7. The R.I. is read directly from the y axis.
8. Duplicate the above procedure (No. 7) for the C and F lines.
9. Connecting the dispersion points establishes an identity line for R.I. comparison purposes.

DISCUSSION

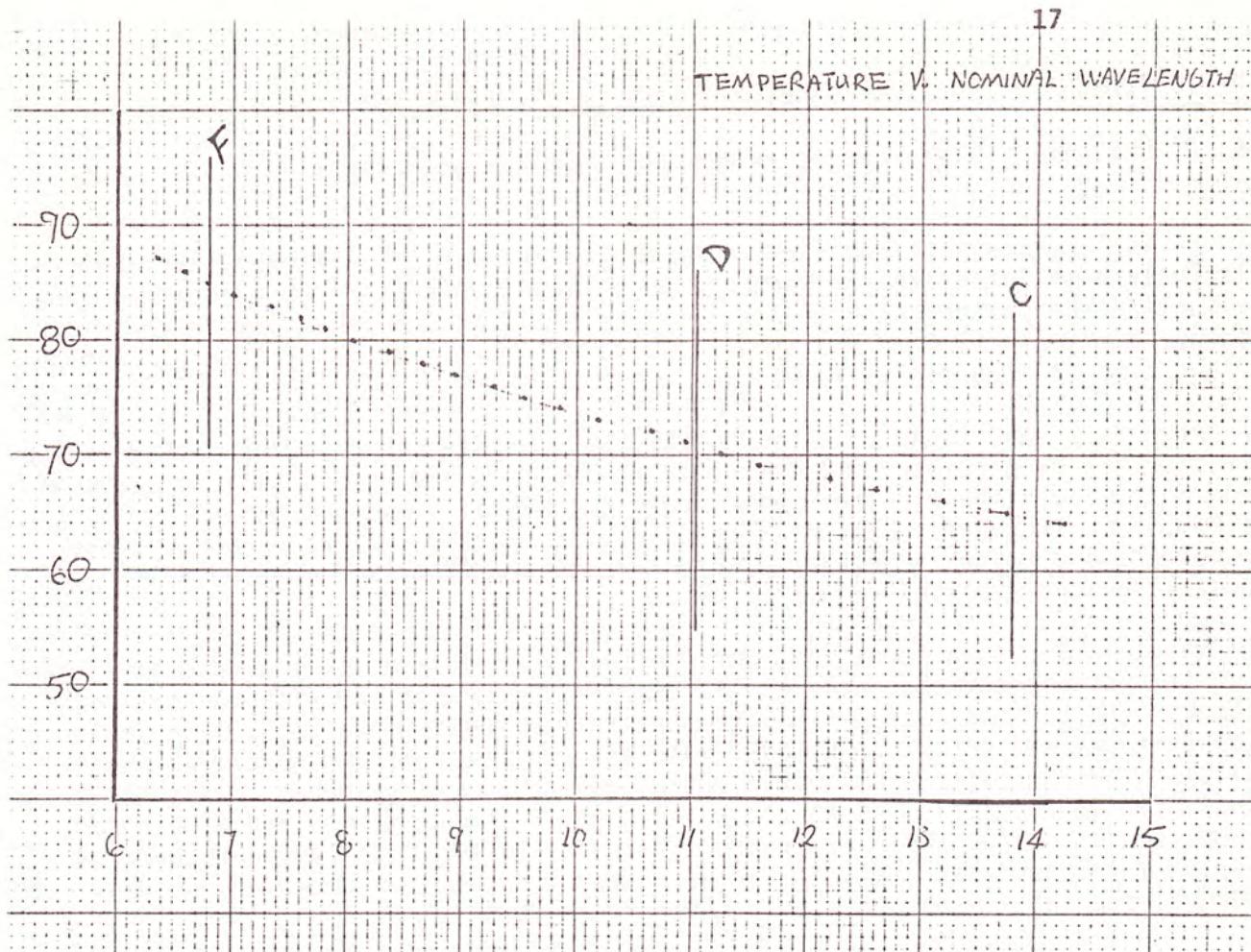
The monochromatic Leitz wedge is simply a nominal measurement of wavelength used to establish the R.I. line of a particular piece of glass in silicone oil. The R.I. of silicone oil is directly proportional to the R.I. throughout the temperature range. The two graphs are interrelated by temperature and the utilization of silicone oil.

Hints

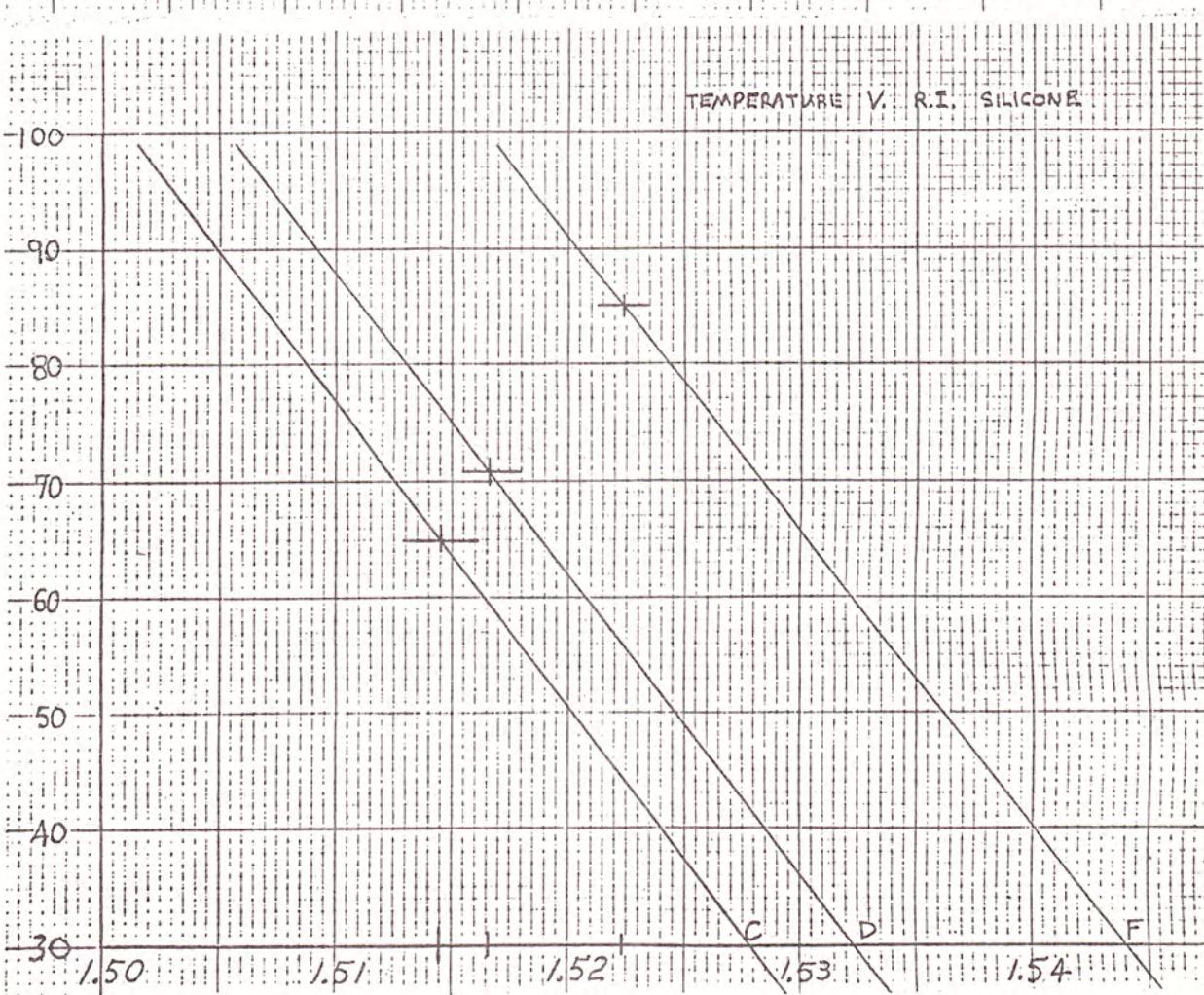
1. The sleeve from the Swift 10x phase lens is unscrewed allowing focusing.
2. Place the glass specimen in the brightest portion of the field.
3. The source intensity should be turned up in the red range allowing more resolution.
4. The establishment of the C, D, & F lines should be done periodically because the 1 mm slit in the Leitz wedge is adjustable and can change.
5. This same technique can be used for Cargille liquids over the temperature range specified on the bottle.

NBS glass sample with
D - 1.5172
C - 1.5148
F - 1.5223
was used in the following charts.

TEMPERATURE V. NOMINAL WAVELENGTH



TEMPERATURE V. R.I. SILICONE



PHOTOMICROGRAPHY AND ILLUMINATION: SOME CRITICAL FACTORS

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There is a commonly held belief among many firearms/toolmark examiners that relatively high intensity, oblique, illumination is necessary to adequately visualize and photograph individual characteristics through a comparison microscope, particularly when the subject is fired bullets or other objects bearing fine stria on a curved surface.

I personally have found that the relatively low-intensity, diffuse illumination as provided by florescent lighting to be superior for both visual comparisons and photomicrography. There are, however, several disadvantages in using florescent lights for photomicrography: the relatively long exposure times required, and color temperatures which are generally outside the normal operating specifications of color films.

To maintain the advantages and overcome the disadvantages of florescent lighting in photomicrography, a light diffuser/reflector for use with conventional lights can be constructed from inexpensive and readily available materials. The diffuser/reflector can be used with any of the tungsten and/or fiber optic illuminators supplied with modern bullet comparison microscopes to visualize individual characteristics at relatively short exposure times and with color temperatures suitable for color photography. The exposure can be reduced by one half for each reduction in f-stop number when maximum depth of field is not needed, such as is the case with caliber 22 bullets.

The following equipment has been used with good results:

1. Microscope: Leitz Comparison Microscope, with FS-TUBE (i.e., 100% image to visual or 100% to photo eyepiece): 80mm PHOTAR objectives, 6.3X photo eyepiece, and a 25 cm. eyepiece to film distance. Negative magnification about 11X.
2. Illumination:
 - (a) LEITZ, 6 volt/15 watt, tungsten lamps
 - (b) BURGESS, florescent, single 12", 8 watt (F8T5-CW)
3. Film: Polaroid 665 P/N (75 ASA) (formerly called 105 P/N); Image size: 2 7/8 x 3 3/4 in. (7.3 x 9.5 cm.); spectral sensitivity, panchromatic type B; resolution: Negative 160 - 180 lines/mm, print 20-25 lines/mm.
4. DIFFUSER/REFLECTOR, design of 5/31/79,

Further information regarding construction and use of the diffuser/reflector can be found in the October 1979 AFTE Journal (Volume 11, No. 4). This article also contains some bullet comparison photographs illustrating the effectiveness of the diffuser/reflector technique.

ETHICS: A CASE DISCUSSION

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For the past several years, there has been an increasing interest among criminalists concerning the ethical problems that criminalists face in the day to day practice of their profession. There are a number of reasons for this increasing awareness of long-existent problems. These include:

1. An increasing number of criminalists are working as consultants.
2. There are increasing opportunities for criminalists to communicate with one another (e.g., FBI courses, courses sponsored by the Forensic Science Foundation, etc.).
3. A number of situations involving particular criminalists have recently occurred.
4. The general increase in skepticism which surrounds the practice of science has led to more criminalists being questioned.

These are not the cause of ethical problems; rather they contribute to the fact that people are more aware of ethical problems than in the past.

While some people subscribe to the theory that all problems can be easily resolved by doing "what is right" or "serving the interest of justice", this approach is much too simplistic to be useful. Concepts of "right" and "justice" are constantly being revised by philosophers, legislators and courts. Recent cases, such as Nation, require criminalists to alter their approach to their jobs.

Numerous guidelines for the practice of criminalistics have been, or are being, written. These range from the very general (e.g. AAFS Code of Ethics) to the detailed (e.g. CAC Code of Ethics). Other organizations (e.g. ASTM) have guidelines for technical persons involved in litigation. It is one thing to write or read these Ethical Codes but is quite another to apply them in a given situation or to balance them against often contrary legal, moral or practical considerations.

A situation is discussed below, which presents a dilemma for which a solution is proposed. Surely the suggested solution is not the only one possible. It is hoped that this situation will elicit further discussion, additional actual case presentations, and a more thorough understanding and appreciation of similar problems.

Fact Summary:

A Criminalist is retained by the defense in a case in which the defendant is charged with attempted murder. The defendant, placed at the scene by a reliable eyewitness, is accused of firing a gun and wounding the victim in the chest. Crime scene examination reveals a spent bullet in a location which is unlikely given the trajectory from the defendant's position to the victim. The class characteristics of the spent bullet coincide with a gun of the type the defendant is known to have owned, but which is never located. A search of the defendant's house reveals ammunition of a common type and similar to the spent bullet. Thus, the physical

evidence shows a bullet from the scene, not connected by any evidence to the victim, which could have been from the ammunition in the defendant's possession and could have been fired in the defendant's gun. Remember, based on the reconstruction, if the defendant did fire the bullet there is no good explanation of how it could have wounded the victim.

The evidence is obtained by the defense for re-examination to confirm the previous findings. Also, the clothing of the victim is obtained. In examining the bullet, the criminalist retained by the defense finds a fiber embedded in the nose of the bullet which is indistinguishable from the colored synthetic fibers of the victim's shirt. For characterization and comparison, the fiber from the bullet is removed from the bullet and mounted on a microscope slide. Thus, the defense has developed the only evidence linking the bullet to the victim. The evidence is now to be returned to the investigating agency to be used at trial. What should be done with the "incriminating fiber"?

There are four possible answers:

1. Throw it away
2. The defense criminalist could retain it.
3. The slide bearing the fiber could be packaged together with the bullet and returned to the agency.
4. The incriminating fiber could be returned to its original location on the bullet, then the bullet returned.

The consideration of these alternatives requires several conflicting values to be balanced:

1. The right of the defendant to investigate the case, without fear that his investigation will be used against him.
2. The responsibility of the criminalist to preserve the evidence - which would include the responsibility to minimize the chances that the evidence would be inadvertently lost or destroyed.
3. The responsibility of the criminalist to see that the "interests of justice are served", a phrase the discussion of which would take more space than is available.

With these factors in mind, each of the four alternatives for disposition of the evidence will be considered:

1. Throw it away.

The initial reaction to this alternative is to dismiss it immediately. Every criminalist must feel that throwing away obviously significant evidence is improper. It can be argued, however, that the prosecution did not discover the evidence. Since it was discovered by the defense, it cannot be used against the defendant, and there would be no harm in discarding it. Certainly, if the evidence is discarded, it will

never again be available. The criminalist should not decide, unilaterally, that the evidence will never be needed, either by the defense or pursuant to some type of discovery by the prosecution. In California, the prosecution may well not be entitled to the evidence, but in other jurisdictions discovery laws may be different.

2. Retain it.

Assuming that the defense criminalist will not be called as a witness this alternative is tantamount to alternative 1, but avoids the problem of actually destroying the evidence. If called as a witness (and the argument of who can, cannot, should or should not call the defense expert is avoided here) the witness would probably have to admit to the existence of the fiber - especially if directly asked a question such as "Did you find any evidence linking the bullet to the victim?" To answer "Yes, but I threw it away" would be, at the least embarrassing. Therefore, retaining the fiber appears to be an attractive alternative. But, what if the prosecution laboratory were asked, at the last minute, to re-examine the bullet. They might find the fiber on the re-examination if it is there, but cannot if the fiber is retained by the defense. But, the argument can go, the prosecution already had their chance - and they do not get a second chance. But, the examination may not have been requested the first time. But, Although this argument can go back and forth, ad nauseum, the essential question is: Does the defendant have the right to keep evidence, therefore effectively preventing the prosecution from discovering the evidence?

3. Return the slide containing the mounted fiber.

This is another of the alternatives that, at first glance, appears to be a good one. A little reflection, however, leads to obvious difficulties: This alternative would surely bring the evidence to the prosecutor's attention. The defendant's investigation would, then, be used against him. This is fundamentally contrary to the tenet of our legal system that the prosecution must prove its case, and the defendant is not required to provide the ammunition for his own demise. One might argue that the proper role of the criminalist, no matter by whom he is employed, is to do whatever he can to make sure the guilty are convicted and the innocent are not. That, of course, is one definition of "justice". Justice can also be considered to be that which results from the adversary process which is governed by a set of rules ("due process") which may not, in every case, result in the conviction of the guilty and the acquittal of the innocent.

It requires only brief consideration to conclude that a defendant must be able to investigate his case with absolute assurance that the results of his investigation cannot be used against him - unless he chooses that it so be used. If this were not the case, no defendant would want to investigate on his own behalf because of the risk of developing adverse evidence. (Obviously, any witness who testifies takes an oath to tell the "whole" truth, so the decision to call a witness on his behalf includes the decision to waive any confidentiality privilege that theretofore had existed.)

It seems, therefore, that the third alternative, while initially appearing very attractive, must be rejected on the grounds that it compromises the right of the defendant to an independent investigation which cannot be used against him.

4. Replace the fiber where it was found.

This alternative runs a risk of losing the fiber in the transfer process or in subsequent handling by individuals unaware of the existence of the fiber. Further, one can argue, as a practical matter that the evidence will not be re-examined; therefore the fiber will not be found, so alternative 1 or 2 is just as reasonable. Another argument which can be made for alternatives 3 and 4 is that the discovery of the evidence by the defense makes it "their evidence", and only appropriate discovery can require the defense to produce or return the evidence. In a state which does not allow discovery of the defense's physical evidence by the prosecution, then, the defense is entitled to keep the evidence.

Resolution:

There can be no right or wrong in this situation. All of the alternatives have pros and cons which reasonable people may argue. In this particular case, alternative 4 was selected. This alternative has the advantage of not frustrating any efforts made by the prosecution to discover the evidence. This was felt to promote the general idea that while the defense should not help the prosecution, neither should it hinder the prosecution. The defense expert is probably entitled, but not required, to retain any evidence he discovers, but to do so in this case would have prevented the evidence from being discovered by the prosecution.

If the defense expert should not frustrate the prosecution, is the converse also true? What is the responsibility of the prosecution expert to cooperate with the defense attorney? What is the prosecution expert's responsibility in preserving evidence in case the defense wants to have it examined? What is the prosecution's expert's responsibility in cooperating with the defense expert?

These, and many other questions, come to mind in considering the above case. It is certain that these problems arise over and over again, and only by discussion can individual criminalists hope to make intelligent and acceptable decisions as to their response to a particular situation. It is hoped that this discussion will produce a continuing dialogue in this or other publications. The author is always willing to discuss these issues but would be more pleased to see written discussions by which the entire membership may profit.