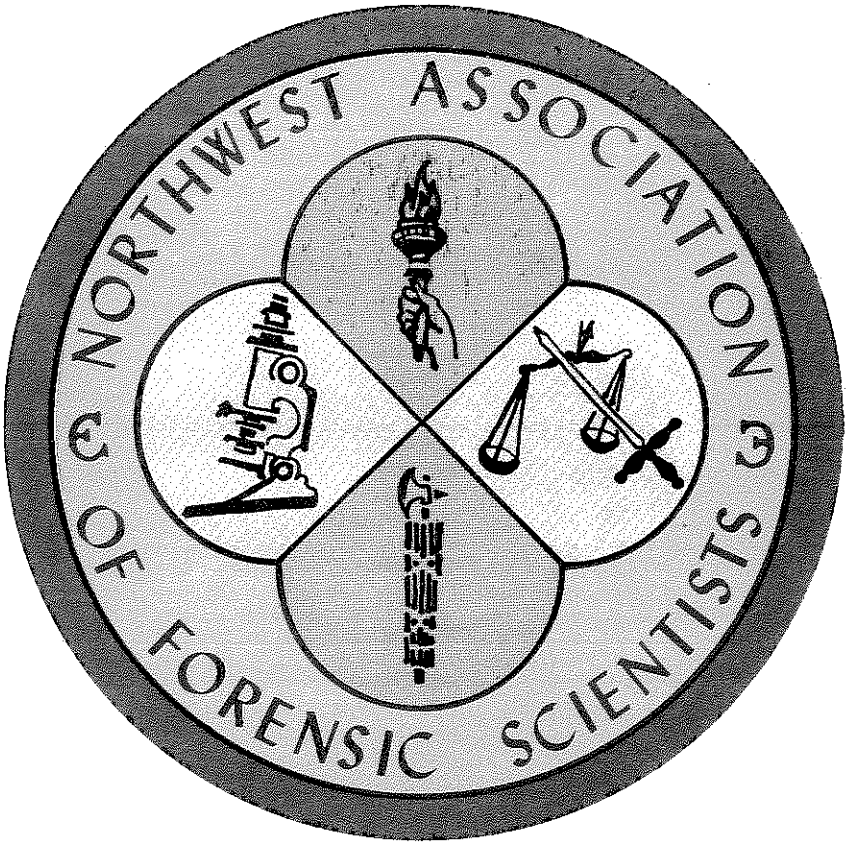
THE NEWSLETTER of



DECEMBER 1987 VOL. XIII, NO. 4

IN THIS ISSUE OF THE NEWSLETTER

VOLUME 13 NUMBER 4 DECEMBER 1987

ASSOCIATION OFFICERS

COMMITTEE CHAIRPERSONS

CONT. EDUCATION: ARNOLD MELNIKOFF
Div. of Forensic Sciences Lab
554 W. Broadway, 6th Floor
Missoula, MT 59802
(406) 728-4970

PRESIDENT'S MESSAGE

During Beth Carpenter's term as President, we had two very successful joint meetings: one with the California Association of Criminalists, and one with the International Association of Forensic Scientists. With those two meetings we are fast becoming respected as one of the **best** forensic associations. This Association owes a vote of thanks for a job well done to our now Past-President Beth Carpenter.

This increase in membership and our increasing credibility has put new work demands on our executive committee and our committee chairpersons. This Association is getting to the stage where new members are not coming forward to get involved, and we are being forced to recycle old executive and committee members. If we are to advance we need new volunteers to become involved and run our Association.

Our meetings this year are in Missoula and Portland. These are not joint meetings, so it is incumbent upon us to make them successful. I hope everyone will make an attempt to attend one or both of these meetings. If you are planning to attend, why not present a paper (it doesn't have to be world class). Arnie Melnikoff's announcement of the Spring meeting is outlined in this Newsletter. Arnie has promised me a great meeting and great skiing.

I would like to thank the membership for having confidence in my abilities to elect me President of the Association. I look forward to working with you during my term as President, and I know this year will be a productive one for our Association.

See you in Missoula,

Wayne K. Jeffery

UPCOMING MEETINGS AND WORKSHOPS

NORTHWEST ASSOCIATION OF FORENSIC SCIENTISTS SPRING 1988 MEETING

The Spring 1988 meeting of the Northwest Association of Forensic Scientists will be held March 15-18 in Missoula, Montana. Tuesday, March 15th, will be a workshop day; and the 16th and 17th will feature technical papers and the Association's business meeting. The site of the meeting will be the Sheraton Inn. Room rates will be $42 for a single and $46 for a double occupancy room.

For more information contact:

Arnold Melnikoff
Program Chairman
Div. of Forensic Sciences Lab
554 W. Broadway, 6th Floor
Missoula, MT 59802

40th ANNUAL MEETING OF THE AMERICAN ACADEMY OF FORENSIC SCIENCES

This meeting will be held at the Wyndham Franklin Plaza in Philadelphia, Pennsylvania on February 15 through 20th, 1988.

For more information, contact:

AAFS
225 So. Academy Blvd.
Colorado Springs, CO 80910
(303) 596-6006

AN INTERNATIONAL SYMPOSIUM ON THE FORENSIC ASPECTS OF CONTROLLED SUBSTANCES

An International Symposium on the forensic aspects of controlled substances will be held at the Forensic Science Research and Training Center, FBI Academy in Quantico, Virginia on March 28 through April 1, 1988.

The purpose of the symposium is targeted toward researchers and examiners, and will provide a forum for the discussion of techniques and issues relevant to the forensic aspects of controlled substances.

Individuals from police departments, forensic laboratories and academia are encouraged to submit abstracts of original research concerning new developments or applications in the areas of drug detection, identification and examination.

For more information, contact:

Forensic Science Symposium Coordinator
FBI Academy
Quantico, VA 22315

THE INTERNATIONAL CONGRESS ON FORENSIC SCIENCES

The first International Congress on Forensic Sciences will be held in Beijing, China on September 4-7, 1987.

For more information, contact:

China Express Congress Limited
1104 Doran Rd.
North Vancouver, BC Canada V7K 1M7
(604) 988-1469

SOUTHERN ASSOCIATION OF FORENSIC SCIENTISTS SPRING 1988 MEETING

The Spring meeting of the Southern Association of Forensic Scientists will be held May 5-7 at the historic Peabody Hotel in downtown Memphis, Tennessee.

Workshops planned include the topics of Solid Phase Extraction Techniques; Field Sobriety Testing - The Gaze Nystagmus Technique; Forensic Anthropology; and Oral Presentation Skills Using Effective and Inexpensive Audio-Visual Aids.

For more information, contact:

Paulette Sutton
Univ. of Tennessee Toxicology Lab
3 North Dunlop
Memphis, TN 38663
(901) 528-6355

INTERNATIONAL SOCIETY FOR FORENSIC HEMOGENETICS

A meeting of the 13th International Congress of the International Society for Forensic Hemogenetics will be held October 18-20, 1988 in New Orleans, LA.

For more information, contact:

Dr. Herbert Polesky
Memorial Blood Center Minneapolis
2304 Park Ave. So.
Minneapolis, MN 55404

CALIFORNIA ASSOCIATION OF CRIMINALISTS SPRING MEETING 1988

The Spring 1988 seminar of the California Association of Criminalists will be held May 19-21 at the Marriott Marina Hotel in Berkeley, CA.

For more information, contact:

Charles Morton
Institute of Forensic Sciences
2945 Webster Street
Oakland, CA 94609
(415) 451-0767

McCRONE MICROSCOPY COURSES IN FORENSICS TO BE OFFERED IN HAYWARD, CALIFORNIA

The McCrone Research Institute will be offering a course in Basic Forensic Microscopy and Advanced Forensic Microscopy on January 25-29 and February 8-12, respectively.
The course will be held in the training classrooms of Forensic Analytical Specialties, Inc., a Hayward, California based business specializing in forensic and industrial microscopy. The facilities of FASI are well suited for microscopy, and compliment the quality of instruction provided by MRI.

The course covers the comparison, characterization and identification of trace evidence using crystallography (morphology and optics), dispersion

staining and microchemistry. All tools and techniques will be applied to common crime lab subjects and problems: hair, other fibers, glass, explosives, drugs, paint and soils.

For more information concerning either of the classes, contact either:

Stephen A. Shaffer
Forensic Analytical Associates, Inc.
3777 Depot Rd., Suite 408
Hayward, CA 94545
(415) 887-8828

or:

Nancy Daerr
McCrone Research Institute
(312) 842-7105

KAPAK OFFERS LARGE PACKAGING PRODUCT

Kapak Corporation announces the availability of a new evidence packaging product. Tubular Rollstock in the following dimensions: 9 1/2 inches, 16 inches, and 24 inches in 250 foot lengths. The same barrier, heat sealable polyester has been used as in the traditional Kapak pouches, used extensively for containing PCP and other dangerous chemicals, as well as all types of evidence.

Kapak Law Enforcement Division officials report that the new tubular rollstock has been well accepted by serologists for the packaging of dried serological items for court presentation and property room storage, especially with the AIDS and Hepatitis specimens.

With the use of a simple hand sealing iron, available at Kapak, articles of dried clothing can be compartmentalized in a transparent odor-proof manner while still including the original paper bags for court presentation.

For more information, contact:

Kapak Corporation, Inc.
5305 Parkdale Drive
St. Louis Park, Minnesota 55416
(612) 541-0730

FORENSIC FT-IR USER'S GROUP PUBLISHES NEWSLETTER ON FT-IR METHODS AND TECHNIQUES

Ann Bradley of the Idaho State Crime Lab system has forwarded to me several copies of the Forensic FT-IR User's Group Newsletter.

The newsletter contains some very good information on the use and maintenance of the FT-IR, including such topics as:

- "A Digitized Spectral Library of Single Fibers by Infrared Microscopy"

- "Techniques in Forensic Paint Analysis"

- "Installing a New Source"

- "Index to the Latest Georgia State Drug Library"

- "Synthetic Fiber Analysis and Fiber Library Assemblage Utilizing FT-IR Spectroscopy"

If you are interested in joining the User's Group, or are interested in receiving or contributing to the User's Group Newsletter, contact:

Susan Hart Johns
Illinois Bureau of Forensic Science
1810 South Main
Morton, IL 61550
(309) 263-7491

OREGON HIT WITH INCREASE OF CLANDESTINE DRUG LABS IN 1987

by

John Amish
Oregon State Police Crime Lab
Medford, OR

1987 has been an extremely busy and challenging year for drug enforcement personnel in Southern Oregon. Over 20 clandestine methamphetamine laboratories have been seized in the area comprising Jackson, Josephine and Douglas counties. Three of these labs deserve special attention due to the nature and volumes of chemicals used and the quantity of weapons seized.

In April a large lab was seized on a rural estate in Cave Junction, Josephine county. The raid team consisted of members from the Drug Enforcement Administration, ATF, Oregon State Police and Josephine County Sheriff's Department.

The individuals involved in the manufacturing had extensive backgrounds in chemistry, with the resident having cooked for over 13 years. Six different controlled substances were being manufactured at this site including: P-2-P, methamphetamine, 2,5-dimethoxyamphetamine [DOM], 4-bromo-2,5-dimethoxyamphetamine [DOB] mescaline and THC acetate.

The P-2-P was produced via benzaldehyde, nitroethane and butylamine. The methamphetamine was produced via synthesis 5 of the DEA Clandestine Laboratory Guide, reduction with platinum oxide.

Over 150 different chemicals were located in the lab and storage including 20 gallons of butylamine and 120 gallons of nitroethane. A conservative estimatation of the chemical glassware was in excess of $10,000.

Additional drugs located at the residence included 430 grams of phony methaqualone tablets [Lemmon 714] which were positive for diazepam, LSD blotter squares, methamphetamine, cocaine, mescaline, THC acetate, psilocybin mushrooms and marijuana.

Over 50 weapons were seized, 13 of which were full automatic including a .50 caliber machine gun and four AK-47 rifles. There were also all the components necessary for producing 50 hand grenades and over a ton of ammunition. Military radio communication equipment was also found. Apparently illicit drug production had been occurring for four years with an estimated methamphetamine output of 11 to 13 pounds per month.

The second lab site was discovered by Oregon State Police personnel in September at a rural estate in Rogue River, Jackson County. The property consisted of a two story home with detached garage and workshop are and buried chemical equipment site.

Located in the house were over 80 weapons including assault shotguns, an autometic AR-15 and two AK-47 rifles. Several semi-automatic pistols and commemorative weapons were also seized. Although there was no direct evidence of illicit manufacturing occurring in the home or workshop area there was significant evidence of planned production and past production. A U-Haul truck parked in front of the residence contained large quantities of chemicals, new glassware, ventilation fans, electrical equipment and lab supplies indicating a large scale production was in the planning stages.

The lab pit was located behind a patch of blackberries and was discovered when officers initially served a search warrant. A tractor was located next to the site. The pit measured approximately eight feet wide, six to eight feet deep and 40 feet long. It had been lined with plastic with the chemicals and equipment subsequently being covered with four by eight sheets of plywood and earth. Chemicals located in the pit included 20 gallons of methylamine, four pounds of phenylacetic acid, one gallon of P-2-P, several gallons of methanol, ether and containers of mercuric chloride.

Also located were several large heating mantles, electrical equipment, vacuum pumps and accompanying lab equipment. Based on the empty acetic anhydride containers, an approximate output of 130 pounds of methamphetamine was estimated.

In October, as a result of a traffic stop and subsequent investigation, search warrants were obtained for a Medford area residence and two storage areas in White City, Jackson County. Jackson County Sheriff's Department personnel uncovered the largest methamphetamine lab ever discovered in the County. The lab was not in production, however, the walls had

painted outlines of pipes, vents and lab equipment with holes for specific tubing outlets and apparatus. The lab also had two large three by six foot viewing windows allowing onlookers to remain uncontaminated for the reactions.

The chemicals discovered included 105 gallons of acetic anhydride, 35 gallons of hydrochloric acid, 25 gallons of methylamine, 80 gallons of methanol, 110 gallons of acetone, 150 kilograms of phenylacetic acid, 50 kilograms of aluminum metal, 15 gallons of benzene and five liters of pyridine.

The lab equipment included a hydrogenator, one tank of hydrochloric gas, several 50 liter reaction vessels with heating mantles, 20 liter separatory funnels, several large reflux condensers and numerous fittings. All of the equipment appeared to be new. The estimated methamphetamine production in this case was a 20 pound batch per week from February to September, selling for $200,000 per batch.

RED PHOSPHORUS – EPHEDRINE LAB BURNS IN LAS VEGAS MOTEL ROOM

by

Randall D. Stone
Las Vegas Metropolitan Police Crime Lab
Las Vegas, Nevada

On September 22, 1987, the Las Vegas Metropolitan Police Department Clandestine Laboratory Team was called out to a suspected methamphetamine lab in a local motel. The motel security guard informed us that he had discovered the apparatus when he entered the room to inquire why the occupants had not checked out earlier in the day.

Upon entering the motel room, we found a 25 liter triple neck flask with condensers sitting in a heating mantle next to the bathtub. The heating mantle was not attached to any electrical wiring, and the flask was cool to the touch. The were water lines hooked to the condensers, but they were not attached to the water supple. The shower was running. The main condenser was attached to a plastic vacuum cleaner hose that was ventilated through the toilet. The interesting thing about this hose was that it was melted where it attached to the condenser.

When the apparatus was moved, it was obvious by the weight of the flask that it contained only residue coated on the inside of the flask. Upon removing one of the condensers from the flask, a white smoke appeared and then a flame ignited on the flask neck and at the end of the condenser. This was immediately extinguished by replacing the condenser back into the flask.

The entire apparatus was placed in a fireproof container and broken open. The residues ignited and burned for about ten minutes.

A piece of the flask with the residues was sent to the DEA Laboratory in San Francisco, and was found to contain phenyl-2-propanone and two other compounds found to be markers for the red phosphorus, hydriodic acid and ephedrine procedure.
Our proposed theory about what took place in the lab is the flask and its contents were overheated [which was evident by the melted hose] and the contents boiled dry. This extreme heat may have produced some white phosphorus which ignites upon exposure to air. When the suspects tried to disassemble the glassware, it ignited. Not knowing what to do, they left the apparatus and turned on the shower in case a fire started.

The hazards involved in this lab were not only the fire, but the burning of the phosphorus which can produce highly toxic gases.

DNA TYPING EVIDENCE TO BE USED IN WASHINGTON STATE IN SEXUAL ASSAULT CASE

by

Jean Johnston
Criminalist
Washington State Patrol Crime Lab
Tacoma, Washington

DNA typing was used in a recent sexual assault case submitted to the laboratory for examination.

The evidence was examined and the following information was provided to the investigators:

Victim: Group O secretor, PGM sub-type 1+
Suspect: Group O non-secretor, PGM sub-type 2+

A high concentration of semen was detected on the examined swab. No A, B, or H[O] blood group substances were detected, and the PGM enzyme activity observed was 2+1+. No GLO I activity was observed.

Semen was also detected in the crotch of the victim's underpants. No A, B, or H[O] blood group substances were detected, and the PGM type was 2+. No GLO I activity was observed.

Based on the typing information on the swab and the underpants, statistical data indicated that the donor of these stains would fall within approximately 1-4% of the general population.

At this point, the prosecutor's office decided to pursue DNA typing with Lifecodes Corp. Their results using three DNA probes showed a pattern match between the suspect and the swab. The frequency of occurrence of the matching pattern in the caucasian population is stated to be 1 in 3.5 million.

A court date has been set for December 2, 1987.

INFORMATION ON THE SPRING 1988 MEETING IN MISSOULA

Arnie Melnikoff, the program chairman of the Spring 1988 meeting, has passed along the following preliminary information on the meeting in Missoula, Montana.

A more detailed program will follow by way of mailings to the membership.

The meeting will be held the week of March 14 through 18 at the Missoula Sheraton, 200 South Pattee, Missoula, MT 59802 (406) 711-8550 or 1-800-325-3535. The room rates will be $42 for a single and $46 for a double room.

The plenary sessions will be held Wednesday, the 16th and Thursday the 17th. Registration fee for the meeting is $50, and includes 2 luncheons and a banquet dinner.

Three hands-on workshops are scheduled:

1) Forensic Geology - Monday, March 14, 1 to 5 pm
Tuesday, March 15, 9 to 4 pm
Dr. John Wehrenberg
University of Montana Geology Department
To be held at the University of Montana, with transportation provided
Includes collection of mineral standards and reference manuals.
Limited to 15 participants. Cost $100.00

2) FTIR/Microscope - Tuesday, March 15, 1 to 5 pm
Presented by the Montana Crime Lab and Nicolet
Limited to 20 participants. Cost $50.00

3) Isoelectric Focussing - Fri., Mar. 18, 9 to 4 pm
Dale Dykes
War Memorial Blood Bank of Minneapolis, MN
Limited to 15 participants. Cost $100.00

The Association will contribute $25.00 to the cost of any member attending these workshops.

Exhibitors are welcome, and the fee for exhibitors is $100.00.

If you are interested in presenting a paper at the plenary session on Wednesday or Thursday, contact:

Arnold Melnikoff, Program Chairman
Division of Forensic Science
Providence Building, 6th Floor
554 West Broadway
Missoula, MT 59802
(406) 728-4970

RESULT OF WORKSHOP SURVEY

If you remember back to the September issue of the Newsletter, there was a questionnaire attached which sought to determine the interests in the membership on the types of workshops they might be interested in

seeing being offered at the upcoming Spring and Fall meetings.

An overwhelming 20 people [about 10% of the membership] took the time to answer the questions and mail it back to Arnie Melnikoff. To those who took the time, thank you. To the other 90% who dodged the easy assignment, a Bronx cheer in your general direction. If you didn't answer the survey, and you don't like the topics of the workshops, go whine and snivel and pout in the corner. Try holding your breath, too ...

Anyhow, the results are presented below. The abbreviation **INT** = interested, and **NINT** = not interested:

	INT	NINT
1] Analytical Instrumentation		
A] GC/MS	10	7
B] FTIR/ Microscope	15	1
C] HPLC	3	9
D] Other		
Microspectrophotometer	1	
Urine Drug Testing	1	
2] Serology		
A] Hands on Isoelectric Focussing	9	4
B] Hands on ELISA	2	9
C] Other		
ID of game meat/blood	1	
Stats. Stolorow's Midwest Assoc. meeting presentation	1	
3] Controlled Substances		
A] Analysis of chemicals and determination of synthetic methods used in clandestine labs	11	6
B] Safety considerations at clandestine labs	10	5
C] Other		
Crystal tests	1	
4] Trace evidence		
A] Soil comparisons	6	7
B] Hair comparisons	9	6
C] Fiber comparisons	9	5
D] Paint comparisons	7	8
E] Glass comparisons	5	8
F] Other		
Physical developer for footwear comparisons	1	
Anything on footwear comparisons	1	
5] Toxicology		
A] EMIT screening	3	9
B] RIA screening	2	10
C] HPLC screening	2	10
D] TOXILAB TLC screening	5	7
E] Other		
Urine Drug Screening	1	
6] Arson		
A] Purge and trap/capillary GC accelerant ID	5	5
B] ID of accelerants by MS / specific ion methods on GC/MS	2	1
7] DUI		
A] Effects of alcohol	5	5
B] Synergistic effects of prescription drugs and alcohol on driving impairment	1	1
C] Other		
Evaluation of breath testing instruments	1	
Breath alcohol	1	
8] Firearms and toolmarks		
A] Bismuth casting	1	
9] Court room testimony		
A] How to be a good witness	0	0
B] Mock trial seminar	8	4
10] Liability concerns in forensics	13	1
11] How to handle the media seminar	9	6
12] Effective use of personal computers in crime lab management, data acquisition and retrieval	7	5
13] Retirement planning	6	6

REFERENCE ABSTRACTS

The following references were obtained from publications and newsletters received from other forensic associations.

If you are interested in receiving a copy of the references, please contact the Newsletter Editor and one will be provided for you.

SOUTHWESTERN ASSOCIATION OF FORENSIC SCIENTISTS SEPTEMBER 1987 - JOURNAL

"In-Vitro Results of Replicate Silica Gel Analysis"
Alvin Weathermon and Brian Edmiston, Texas DPS

Several countries in the world, notably the United States, Canada, Australia and Northern Ireland rely solely on breath analysis as evidence of alcohol impairment in drinking-driving cases. At present, he instrument of choice for breath analysis in the state of Texas is the Intoxilyzer 4011-AS-A. The purpose of this study is to examine the correlation of results obtained from breath testing and trapping of specimens using the Intoxilyzer 4011-AS-A for breath alcohol determinations.

"Latent Fingerprint Development: Special Techniques For Obtaining Latent Fingerprints on Duct Tape and Similar Tapes"
James H. Varnon, Ft. Worth PD

The process of freezing duct tape has been found to be advantageous in allowing the tape to be unraveled in order to obtain fingerprints from the unexposed inner layers. Wadded, tangled tape is sometimes encountered at crime scenes where victims have been bound by several layers of tape and had been a problem for the forensic investigator. Freezing the tape apparently hardens the mucilaginous glue and facilitates the unraveling process with a minimum of destruction to latent fingerprints. After the tape is unraveled, latent fingerprints are obtainable on the non-adhesive side by fuming with cyanoacrylate ester [super glue]; whereas, latent fingerprints are obtainable on the adhesive side of the tape by using rystal violet [genetian violet]. Since super glue and crystal violet are mutually destructive to the prints on the opposite surfaces, special techniques are in order.

"Gunshot Residue Analysis by Scanning Electron Microscopy"
Robert S. White, W. Virginia DPS

The experiences of the first year with the automated gunshot residue system for the scanning electron microscope will be described in this paper. Also described will be the evaluation procedures, the selection criteria and the final development of gunshot residue kits.

"Identification of Lorazepam in Adulterated Alcoholic Beverages"
Pauline Louie, Houston PD Crime Lab

Prostitutes in the Houston area have been adulterating alcoholic beverages of their clients for the purpose of burglary, theft and/or auto theft. Investigations have indicated that the drugs used range from lorazepam, triazolam and alprazolam. A simplified identification procedure for lorazepam involving utilization of the Toxi-Lab Drug Detection System, with confirmation by gas chromatography / mass spectrometry is discussed. Identification problems involving UV spectroscopy and lorazepam stability are also discussed.

"Spectral Characterization of Mixtures of Heroin and 6-Monoacetylmorphine"
Burgess J.A. Cooke, Texas DPS Crime Lab

Analysis of some street samples of Heroin encountered in West Texas gives rise to problems when analyzed using conventional shakeout procedures, namely poor quality UV and IR spectra are obtained. The most prominent feature of the IR spectra is that the carbonyl doublet is distorted, often to the point that the absorption at ca. 1660 cm-1 [due to the phenolic acetate] appears only as a shoulder on the peak at ca. 1630 cm-1 [due to the 6-acetate]. Since our on-site instrumentation does not include a GC/MS, such samples are either characterized chromatographically as mixtures of heroin and 6-monoacetylmorphine, or sent elsewhere.

In order to increase our in-house capabilities and to increase our knowledge concerning the nature of such mixtures, a study of the spectral properties of mixtures of heroin and 6-MAM was undertaken. The first phase of the project was a resolution of such mixtures using prep-TLC. The purified fractions of

heroin and 6-MAM were then incrementally remixed and the IR and UV spectra of the mixture were recorded.

"Ecgonine Methyl Ester, The Forgotten Metabolite"
Vickie Watts, Mesa PD

The identification of methylecgonine as an indicator of the abuse of cocaine is discussed.

"Extraction of Alprazolam (Xanax) and Triazolam (Halcion)"
Edwina Ard, Jackson PD Crime Lab

Methodology for the extraction of alprazolam and triazolam from tablets and capsules is presented.

"Extraction of Levorphanol"
Edwina Ard, Jackson PD Crime Lab

Methodology for the extraction of tablets and injectables containing Levo-Dromoran (Levorphanol) is presented.

"Are You a Private Professional or a Public Professional?"
Kathy Hines, Institute of Forensic Sciences, Dallas, Texas

The author suggests individuals in the field of forensic science get involved with community activities and share your specialized knowledge to educated the community in the fight against drug abuse.

"Identification of GC By Immunoblot with an Agarose Overlay"
P.R. Mills an C.G. Smetana, US Army Criminal Investigation Laboratory, Forest Park, Georgia

The use of an agarose overlay is widely established in the forensic laboratory as the final step in the detection of isoenzyme identification after electrophoresis or isoelectric focusing. The overlay is usually poured over starch, agarose or polyacrylamide gels. However, the method described below utilizes an agarose overlay following immunofixation on a nitrocellulose membrane. This procedure offers a savings of time, chemicals and, above all, tends to enhance weaker bands.

"Simultaneous Isoelectric Focusing of Phosphoglucomutase and Erythrocyte Acid Phosphatase on Thin-Layer Polyacrylamide Gels"
Ted A. Smith and Fred S. Zain, W. Virginia State Police Crime Lab, South Charleston, W. Virginia

A method is described for the simultaneous typing of erythrocyte acid phosphatase and phosphoglucomutase by isoelectric focusing on the same polyacrylamide gel. The method takes approximately three hours from sample preparation to band development and has demonstrated its reliability through six months of case work on whole blood, blood stains and secretion stains.

"A Look At The Laser Printer"
F.L. Lee, US Army Criminal Invest. Lab.
Allen L. Southmayd, Bexar Co. Regional Crime Lab

The technology behind the computer laser printer is discussed, along with some points of forensic interest concerning the identification of the printe in documents cases.

MIDWESTERN ASSOCIATION OF FORENSIC SCIENTISTS OCTOBER 1987 - NEWSLETTER

"The Laser: A Tool for Questioned Document Examination"
Ronald E. Blacklock, Indianapolis-Marion County Forensic Services Laboratory, Indianapolis, IN

The copper vapor laser, as well as other lasers, have useful applications in the field of questioned document examination. In certain cases, a laser can reveal information unattainable by conventional means.