

JFI Abstracts from 1998-2001

What Makes an Expert Latent Print Examiner?

Author(s): Boston, R.

Type: Commentary

Published: 2001, Volume 51, Issue 6, Pages 565-568

IAFIS- Two Murdered Schoolteachers and a Single Patent Print in Dust

Author(s): Krohn, G. W.

Type: Case Report

Published: 2001, Volume 51, Issue 6, Pages 569-571

Isomark Spray: A Novel Method for the Replication of Marks

Author(s): Brennan, J. S.; Davies, L.; Bramble, S. K.; Rollins, V.; Rollins, A.

Type: Technical Note

Published: 2001, Volume 51, Issue 6, Pages 572-580

Success of Hexane-based Ninhydrin Amino Acid Reagent Processing in Various Inks and Ages of Porous Evidence

Author(s): Scarborough, S.

Type: Technical Note

Published: 2001, Volume 51, Issue 6, Pages 581-586

Abstract: Porous items processed by ninhydrin in a hexane base demonstrate minimal running of inks used for signatures, background and handwriting. While the age of the paper and the type of inks used on the evidence is a factor, ninhydrin-hexane as an amino acid reagent can be very effective for all types of porous based evidence processing.

Survey of Tire Tread Design and Tre Size as Mounted on Vehicles in Central Iowa

Author(s): Bessman, C. W.; Schmeiser, A.

Type: Article

Published: 2001, Volume 51, Issue 6, Pages 587-596

Forensic Interpretation of Glass Evidence

Author(s): Maxwell, V. W.

Type: Book Review

Published: 2001, Volume 51, Issue 6, Pages 597-598

Letter to the Editor

Author(s): Cordle, M. T.; Morlan, A. J.

Type: Letters

Published: 2001, Volume 51, Issue 6, Pages 684-685

Reflections in a Mirror- II

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2001, Volume 51, Issue 6, Pages 686-697

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 6, Page 698

Abstract: The fingerprint pattern shown contains two separate loop formations and two deltas. It is therefore classified as a DOUBLE LOOP WHORL with an "outer" tracing. The right and left deltas are marked "A" and "B" respectively.

Comments on JFI 51 (3)

Author(s): Crispino, F.

Type: Commentary

Published: 2001, Volume 51, Issue 5, Pages 449-456

In Support of Fingerprint Evidence

Author(s): Bush, L.

Type: Commentary

Published: 2001, Volume 51, Issue 5, Pages 457-460

Levels of Quality and Quantity in Detail

Author(s): Vanderkolk, J.

Type: Commentary

Published: 2001, Volume 51, Issue 5, Pages 461-468

Patent/Latent Print

Author(s): May, J. L.

Type: Case Report

Published: 2001, Volume 51, Issue 5, Pages 469-471

Comparing Pattern Injuries Using Computer-based Overlays

Author(s): O'Shaughnessy, P.

Type: Case Report

Published: 2001, Volume 51, Issue 5, Pages 472-478

Abstract: A pattern injury is one in which the instrument of injury can be determined by the pattern left on the tissue. A teacher of a six-year-old boy noticed a slap mark on his face. She reported this to Child Protective Services, who in turn, contacted the local police department. Detectives interviewed the parents of the boy and they stated that the eight-year-old step-sister had slapped her brother. The Child Protective Services representative felt that the hand imprint was too large to be made by an eight-year-old.

The author was asked to attempt to compare the slap mark with handprints of each person who had access to the child during the time period that the slap mark was made. Using computer produced overlays, he ruled out all the suspects except for the eight-year old sister.

Search for a Digital Enhancement Protocol for Photoshop Software

Author(s): Crispino, F.; Touron, P.; Elkander, A. A.

Type: Technical Note

Published: 2001, Volume 51, Issue 5, Pages 479-495

Latent Print Detection on Raw Ivory of African Elephants

Author(s): Azoury, M.; Clark, B.; Geller, B.; Levin-Elad, M.; Rozen, E.

Type: Technical Note

Published: 2001, Volume 51, Issue 5, Pages 496-503

Abstract: Demand for ivory is responsible for the decline of most African elephant populations. Organized gangs use a variety of weapons, including illegal automatic firearms, to poach elephants. Tons of ivory tusks are entered into illegal trade and smuggled across international borders, sometimes with the complicity of corrupt government officials. Attempts have been made to detect latent fingerprints on raw ivory to assist wildlife law enforcement officers in collecting physical evidence against the criminals. The question of age (stability) of the latent print on the tusk is also discussed.

A Systematic Approach to Latent Fingerprint Sample Preparation for Comparative Chemical Studies

Author(s): Jones, N.; Davies, L.; Russell, C.; Brennan, J. S.; Bramble, S. K.

Type: Article

Published: 2001, Volume 51, Issue 5, Pages 504-515

Abstract: A recognized deficiency in the field of fingerprint chemistry is the lack of a control fingerprint. This is compounded by the fact that there are also no accepted standards for the production of fingerprints for experimental purposes. The guidance notes provided in this article detail some of the parameters which researchers should consider when conducting fingerprint studies, both in analytical studies of fingerprint residue and fingerprint reagent trials. It is hoped that this will form the basis of an accepted standard methodology for the future, which will allow more objective comparison of results from different research groups.

The Practical Methodology of Forensic Photography, 2nd Edition

Author(s): Richards, G.

Type: Book Review

Published: 2001, Volume 51, Issue 5, Pages 516-517

Reflections in a Mirror

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2001, Volume 51, Issue 5, Page 561

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 5, Page 562

Abstract: The fingerprint pattern shown is classified as an upthrust type TENTED ARCH. It is interesting due to the unusual formation of ridges near the center.

Courtroom Testimony for the Fingerprint Expert

Author(s): Grieve, D. L.

Type: Correction

Published: 2001, Volume 51, Issue 4, Pages 341-342

Abstract: Correction for Book Review in JFI 51 (2)

Breastworks and Arrows

Author(s): Wertheim, P.

Type: Commentary

Published: 2001, Volume 51, Issue 4, Pages 343-345

Who Held the Gun?: Decipherment of Suicide-Homicide Cases Using the PDT Reagent

Author(s): Leifer, A.; Wax, H.; Almog, J.

Type: Case Report

Published: 2001, Volume 51, Issue 4, Pages 346-360

Forensic Light Source Enhancement of Authentiprint Identification System Fingerprints

Author(s): Ohlson, J. W.; McQuay, W.

Type: Case Report

Published: 2001, Volume 51, Issue 4, Pages 361-366

Method for Examination of Fecal Material from a Crime Scene Using Plant Fragments

Author(s): Norris, D. O.; Bock, J. H.

Type: Technical Note

Published: 2001, Volume 51, Issue 4, Pages 367-377

Abstract: Microscopic examination of plant fragments in fecal samples can be used to link a suspect to a crime scene. This procedure is relatively simple and inexpensive. The basic methods for performing these analyses are described as an aid to crime scene investigators and those who process the material.

Using Adobe Photoshop's Channel Mixer as an Evidence Enhancement Tool

Author(s): Grady, D. P.

Type: Technical Note

Published: 2001, Volume 51, Issue 4, Pages 378-384

Abstract: It has long been known that using color filters in black and white photography is a simple method to enhance contrast. This method can be simulated with color photographs using the channel mixer adjustment in Adobe Photoshop.

Evaluation of a Reflected Ultraviolet Imaging System for Fingerprint Detection

Author(s): Saferstein, R.; Graf, S. L.

Type: Technical Note

Published: 2001, Volume 51, Issue 4, Pages 385-393

Forensic Osteology: Advances in the Identification of Human Remains, 2nd Edition

Author(s): Boyd, D. C.

Type: Book Review

Published: 2001, Volume 51, Issue 4, Pages 394-396

Letters to the Editor

Author(s): Stoney, D. A.

Type: Letters

Published: 2001, Volume 51, Issue 4, Pages 433-434

Going My Heart's Direction

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2001, Volume 51, Issue 4, Pages 435-445

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 4, Page 446

Abstract: The fingerprint pattern shown is from a left index finger. It is classified as a 13-count ulnar LOOP. An additional loop formation appearing below the pattern is in the second joint and has no effect on the loop above. Reference to a double loop whorl is necessary.

I Think Therefore I Probably Am

Author(s): McKasson, S.

Type: Commentary

Published: 2001, Volume 51, Issue 3, Pages 217-221

Abstract: (See Commentary by Frank Crispino in JFI 51 [5].)

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): Introduction

Author(s): McRoberts, A. L.

Type: Special Feature

Published: 2001, Volume 51, Issue 3, Pages 224-227

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): Approved Guidelines

Author(s): SWGFAST

Type: Special Feature

Published: 2001, Volume 51, Issue 3, Pages 229-244

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): Drafts for Comment

Author(s): SWGFAST

Type: Special Feature

Published: 2001, Volume 51, Issue 3, Pages 245-290

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): Bylaws

Author(s): SWGFAST

Type: Special Feature

Published: 2001, Volume 51, Issue 3, Pages 291-296

Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST): Appendices

Author(s): SWGFAST

Type: Special Feature

Published: 2001, Volume 51, Issue 3, Pages 297-299

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 3, Page 338

Abstract: The fingerprint pattern shown contains two separate loop formations and two deltas. It is therefore classified as a DOUBLE LOOP WHORL with a "meet" tracing.

A Probabilistic Approach to Fingerprint Evidence

Author(s): Champod, C.; Evett, I. W.

Type: Commentary

Published: 2001, Volume 51, Issue 2, Pages 101-122

Safe, Inexpensive Shooting Tunnel

Author(s): Touron, P.; Crispino, F.; Bouvenet, J.; Elkander, A. A.; Curran, C.

Type: Technical Note

Published: 2001, Volume 51, Issue 2, Pages 123-131

Application of Situational Sequencing Tests in the Case of Police Officers Suspected of Murder and POT Tests as "Knowledge of the Perpetrator Test"

Author(s): Jaworski, R.

Type: Case Report

Published: 2001, Volume 51, Issue 2, Pages 132-149

Applying the Scientific Method to Crime Scene Reconstruction

Author(s): Bevel, T.

Type: Article

Published: 2001, Volume 51, Issue 2, Pages 150-162

Locks, Safes, and Security: An International Police Reference

Author(s): Zeldes, I.

Type: Book Review

Published: 2001, Volume 51, Issue 2, Pages 163-165

Forensic Art and Illustration

Author(s): Paschal, R.

Type: Book Review

Published: 2001, Volume 51, Issue 2, Pages 166-167

Footwear, the Missed Evidence

Author(s): Grieve, D. L.

Type: Book Review

Published: 2001, Volume 51, Issue 2, Pages 168-169

Courtroom Testimony for the Fingerprint Expert

Author(s): Grieve, D. L.

Type: Book Review

Published: 2001, Volume 51, Issue 2, Pages 170-171

Abstract: (See Book Review Correction by David L. Grieve in JFI 51 [4].)

Crime Scene Investigation

Author(s): Grieve, D. L.

Type: Book Review

Published: 2001, Volume 51, Issue 2, Pages 172-173

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 2, Page 214

Abstract: The fingerprint pattern shown approaches the plain loop type in that it contains a sufficient recurve and a delta. Since rules state that "a white space" must intervene between the delta and the first ridge count (in this case the only possible ridge count), the pattern is classified as a TENTED ARCH and referenced to a one-count loop.

Lighting for Bitemark Photography

Author(s): Clouser, J. A.

Type: Technical Note

Published: 2001, Volume 51, Issue 1, Pages 1-8

Fluorescein Technique Performance Study on Blood Foot Trails

Author(s): Cheeseman, R.; Tomboc, R.

Type: Article

Published: 2001, Volume 51, Issue 1, Pages 16-27

Enhancement of Fingerprints in Blood — Part 2: Protein Dyes

Author(s): Sears, V. G.; Butcher, C. P.; Prizeman, T. M.

Type: Article

Published: 2001, Volume 51, Issue 1, Pages 28-38

Abstract: A systematic evaluation of a number of protein dyes for the enhancement of blood contaminated fingerprints on a range of typical surfaces found at scenes of crime was carried out. Two of these, acid violet 17 and benzoxanthene yellow, proved to be potentially valuable enhancers of blood-contaminated fingerprints. Acid violet 17 gives daylight visible enhancement and is a possible alternative to amido black (the dye currently recommended by PSDB for the enhancement of blood-contaminated fingerprints). Benzoxanthene yellow makes bloody fingerprints fluoresce and may be used on nonporous surfaces. It is especially effective on dark, non-fluorescing, nonporous surfaces where it may be difficult to visualize blood stained with amido black or acid violet 17. Further trials would be necessary before these dyes could be recommended for operational use.

Simon Says

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2001, Volume 51, Issue 1, Pages 85-97

Enhancement of Latent Prints on Metal Surfaces

Author(s): Smith, K.; Kauffman, C.

Type: Technical Note

Published: 2001, Volume 51, Issue 1, Pages 9-15

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2001, Volume 51, Issue 1, Page 98

Abstract: The fingerprint pattern shown, containing two separate loop formations and two deltas, is classified as a DOUBLE LOOP WHORL with an "outer" tracing. The left and right deltas are designated "A and "B" respectively. Since the looping ridges enter and exit the same side of the deltas, the pattern would be classified as a LATERAL POCKET LOOP whorl under the original Henry system.

Special Case in Three-dimensional Bone Reconstruction of the Human Skull

Author(s): Coy, A.; Ohlson, J. W.

Type: Case Report

Published: 2000, Volume 50, Issue 6, Pages 549-562

Identification of Horse Hoof Impressions

Author(s): Chmielewski, Z.

Type: Technical Note

Published: 2000, Volume 50, Issue 6, Pages 563-571

Development and Enhancement of Latent Prints on Firearms by Vacuum and Atmospheric Cyanoacrylate Fuming

Author(s): Klasey, D. R.; Barnum, C. A.

Type: Technical Note

Published: 2000, Volume 50, Issue 6, Pages 572-580

Use of Ninhydrin in the Recovery of Latent Prints on Evidence Involving Adhesive Surfaces Attached to Porous Surfaces

Author(s): Maceo, A. V.

Type: Article

Published: 2000, Volume 50, Issue 6, Pages 581-594

Abstract: Recovery of latent prints from evidence involving adhesive surfaces attached to porous surfaces is enhanced through an understanding of the affects of different processing techniques on the evidence. A number of factors were tested: adhesive surface, porous surface, ninhydrin solvent, separation method and sequencing technique. Different types of adhesive surfaces require different processing techniques to maximize latent print recovery. The results of this research are presented and techniques are suggested for maximizing the recovery of latent prints on adhesive surfaces attached to porous surfaces.

Techniques of Crime Scene Investigation, Sixth Edition

Author(s): Daher, R.

Type: Book Review

Published: 2000, Volume 50, Issue 6, Pages 595-596

Current Methods in Forensic Gunshot Residue Analysis

Author(s): Hodge, E. E.

Type: Book Review

Published: 2000, Volume 50, Issue 6, Pages 597-599

Aspergillus

Author(s): Masters, N. E.

Type: AfterWords

Published: 2000, Volume 50, Issue 6, Pages 603-610

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 6, Page 684

Abstract: The photographs below depict unusual friction ridge formations. The upper shows the core area of a plain whorl which resembles a target or bull's-eye, as the ridges form four concentric circles with a dot in the center. An interesting formation of symmetrical minutiae is found in the lower photograph, which is from the type line area of a whorl-like pattern.

Fingerprints on a Banana Leaf

Author(s): Shinozuka, D.

Type: Case Report

Published: 2000, Volume 50, Issue 5, Pages 441-442

Developing and Identifying a Latent Print Recovered from a Piece of Latex Glove Using Ninhhydrin-heptane Carrier (Case 1)

Author(s): Rinehart, D. J.

Type: Case Report

Published: 2000, Volume 50, Issue 5, Pages 443-446

Developing Latent Prints on Household Rubber Gloves Using Ninhhydrin-heptane Carrier after Superglue Fuming (Case 2)

Author(s): Rinehart, D. J.

Type: Case Report

Published: 2000, Volume 50, Issue 5, Pages 443-446

An Unusual Case Involving the Individualization of Fabric Impressions Made by a Sock-clad Foot

Author(s): Doller, D. W.

Type: Case Report

Published: 2000, Volume 50, Issue 5, Pages 447-454

The Search for Safe, Non-flammable Solvents: A Brief History

Author(s): Stimac, J. T.

Type: Technical Note

Published: 2000, Volume 50, Issue 5, Pages 455-461

A Comparative Study for the Evaluation of Two Solvents for Use in Ninhhydrin Processing of Latent Print Evidence

Author(s): Pertuncio, A. V.

Type: Article

Published: 2000, Volume 50, Issue 5, Pages 462-469

Abstract: A comparative study was conducted to test the overall clarity and contrast of two experimental ninhydrin formulae (HFE-7100 and HFC 4310mee) to a standard ninhydrin formula utilizing petroleum ether for the development of latent impressions on porous surfaces. In addition, an ink test was run to compare the effects of the two new formulae on various types of inks to the standard formula.

The results obtained showed that both experimental formulae were superior, and also proved to be a safer replacement to the standard formula in the ninhydrin process. In addition, the ink run test results revealed that the two new formulae had less ink run than the petroleum ether formula.

Enhancement of Fingerprints in Blood — Part 1: The Optimization of Amido Black

Author(s): Sears, V. G.; Prizeman, T. M.

Type: Article

Published: 2000, Volume 50, Issue 5, Pages 470-480

Abstract: Amido black (acid black 1) is the dye currently recommended by the UK police service for the enhancement of blood-contaminated fingerprints. Acid black 1 is a general protein stain and can be used for enhancing fingerprints in blood in either a methanol or water-based formulation to produce blue-black fingerprints. As both the water and methanol-based formulations have problems associated with their use, a program of research has been carried out to examine alternative formulations of the dye to find the most effective method for the enhancement of fingerprints in blood. After carrying out systematic evaluation on a range of typical surfaces, an alternative solvent system for amido black has been developed.

Forest and Trees

Author(s): Grieve, D. L.

Type: AfterWords

Published: 2000, Volume 50, Issue 5, Pages 538-544

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 5, Pages 545-546

Abstract: Fingerprint patterns depicting Halloween figures shown on the following page speak for themselves.

Three Holes — Four Bullets: Must Be That New Math!

Author(s): Greenspan, A. B.

Type: Case Report

Published: 2000, Volume 50, Issue 4, Pages 339-343

Abstract: A recent submission to the firearms section of the Broward County Sheriff's Office Crime Laboratory consisted of four projectiles fired from a .38/.357 caliber revolver. While the evidence itself was unremarkable, the circumstances surrounding the projectiles were odd. A visual examination of a homicide victim prior to autopsy revealed three gunshot wounds to the head. An X-ray of the deceased later disclosed an unexpected fourth projectile within the head.

Which was First — Fingerprint or Blood?

Author(s): Huss, K.; Clark, J. D.; Chisum, W. J.

Type: Technical Note

Published: 2000, Volume 50, Issue 4, Pages 344-350

Hit and Run Accident Solved by a Compilation of Evidence

Author(s): Zamir, A.; Oz, C.; Novoselski, Y.; Klein, A.

Type: Case Report

Published: 2000, Volume 50, Issue 4, Pages 351-356

Abstract: A hit and run accident involving a police officer was resolved by a combination of scientific evidence compiled from two forensic laboratories. The forensic toolmark laboratory provided evidence linking a suspected vehicle to the crime scene, and the forensic biology laboratory linked a minute quantity of biological material found on this vehicle to the victim.

Development of Latent Fingerprints on Dark Colored Sticky Surfaces Using Liqui-Drox

Author(s): Hollars, M. L.; Trozzi, T. A.; Barron, B. L.

Type: Case Report

Published: 2000, Volume 50, Issue 4, Pages 357-362

Abstract: Liqui-Drox, a solution composed of Ardrox, Liqui-Nox and water, is a fluorescent dye that can be used to detect fingerprints on the adhesive side of tape. The Ardrox in the solution readily penetrates the indentations created by the ridges of the finger coming in contact with the adhesive surface. The dye solution is easily rinsed away from the surrounding surface yet adheres to the indentations. Ardrox is highly fluorescent with long-wave ultra-violet excitation, causing this fluorescent technique to be ideal for dark colored adhesive surfaces. This study explains the need for a fluorescent technique and details the procedure as well as limitations.

A Comparison of Different Physical Developer Systems and Acid Pre-treatments and Their Effects on Developing Latent Prints

Author(s): Ramotowski, R.

Type: Article

Published: 2000, Volume 50, Issue 4, Pages 363-384

Abstract: Four commercially available physical developer reagent kits were compared to a solution of physical developer prepared from its component chemicals. The stability of each reagent and its ability to visualize latent prints was evaluated. In addition, an alternate acid prewash solution, commercially obtained distilled white vinegar, was evaluated as a potential substitute for maleic acid.

No Free Lunch

Author(s): Grieve, D. L.

Type: AfterWords

Published: 2000, Volume 50, Issue 4, Pages 426-434

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 4, Page 438

Abstract: For check cashing, a bank in Atlanta requires an individual who does not have an account with the bank to place a right index finger impression on the front of the check. An enterprising forger placed a piece of adhesive tape, possibly a small Band-aid type bandage, on the finger which caused this interesting pattern. However, the forger was not totally successful as the fingerprint ridge detail recorded is sufficient for identification.

re: "Deep Red to Near Infrared (NIR) Fluorescence of Gentian Violet-treated Latent Prints", JFI 50 (1)

Author(s): Menzel, E. R.

Type: Letters

Published: 2000, Volume 50, Issue 3, Pages 245-250

The Composite Interview

Author(s): Bright-Birnbaum, K. L.

Type: Commentary

Published: 2000, Volume 50, Issue 3, Pages 251-258

New Speed Behind Forensics

Author(s): Fisher, B.

Type: Commentary

Published: 2000, Volume 50, Issue 3, Pages 259-263

Physico-chemical Tretment for Fingerprint Identification

Author(s): Schuliar, Y.; Michaut, J. F.; Crispino, F.

Type: Technical Note

Published: 2000, Volume 50, Issue 3, Pages 264-270

Recording Fingerprints on Cartridge Cases by 3D Laser Topography

Author(s): De Kinder, J.; Nys, B.

Type: Technical Note

Published: 2000, Volume 50, Issue 3, Pages 271-275

Cloned Sheep of Roslin: Muzzle Prints

Author(s): Gill, K. W.; Lock, D.

Type: Article

Published: 2000, Volume 50, Issue 3, Pages 276-288

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 3, Page 336

Abstract: The fingerprint pattern shown consists of a tented arch formation "A", and a loop formation "B". It is therefore classified as an ACCIDENTAL WHORL with an "inner" tracing. Due to the possibility of an appendage appearing on recurve "B", the pattern is referenced to a tented arch.

Documentation of Latent Print Comparisons

Author(s): Daher, B.

Type: Technical Note

Published: 2000, Volume 50, Issue 2, Pages 119-128

Accuracy of Measuring Devices Particularly Plastic Rules

Author(s): Czarnecki, E. R.

Type: Technical Note

Published: 2000, Volume 50, Issue 2, Pages 129-131

Elbow Print Identification

Author(s): Oatess, R. T.

Type: Case Report

Published: 2000, Volume 50, Issue 2, Pages 132-137

Laterally Reversed

Author(s): Kershaw, M. H.

Type: Case Report

Published: 2000, Volume 50, Issue 2, Pages 138-140

Handwriting Identification: Facts and Fundamentals

Author(s): Williams, R. M.

Type: Book Review

Published: 2000, Volume 50, Issue 2, Pages 141-142

The Identification Process: SWGFAST and the Search for Science

Author(s): Grieve, D. L.

Type: AfterWords

Published: 2000, Volume 50, Issue 2, Pages 145-161

Getting things Right

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2000, Volume 50, Issue 2, Pages 229-241

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 2, Page 242

Abstract: The fingerprint pattern shown meets the requisites for a DOUBLE LOOP WHORL, as it contains two separate loop formations with two sets of shoulders and two deltas. The deltas are designated "A" and "B". The ridge tracing is O/M.

Schallamach Pattern on Shoe Outsole Acknowledged by Court in Footwear Identification

Author(s): Deskiewicz, K. J.

Type: Case Report

Published: 2000, Volume 50, Issue 1, Pages 1-4

Golden Years

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 2000, Volume 50, Issue 1, Pages 110-115

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 2000, Volume 50, Issue 1, Page 116

Abstract: The fingerprint pattern shown, containing two separate loop formations and two deltas, is classified as a DOUBLE LOOP WHORL with a “meet” tracing.

Obtaining Identifiable Fingerprints from Mummified Hands: Two Quick and Accurate Methods

Author(s): Saviano, J. D.

Type: Technical Note

Published: 2000, Volume 50, Issue 1, Pages 13-19

Identification of Blood Prints on Fabric Using Amido Black and Digital Enhancement

Author(s): Warrick, P.

Type: Article

Published: 2000, Volume 50, Issue 1, Pages 20-32

Abstract: Blood prints were developed on cotton fabric using amido black and digital enhancement and were ultimately identified to a suspect in a homicide case. The court trial centered on the digitally enhanced latent fingerprint and palm print used for comparison with the defendant. After the defendant was convicted for murder in the first degree, his appeal was based on the contention the trial court erred in admitting the digitally enhanced latent images after conducting a Frye hearing. The Washington State Court of Appeals reviewed the case and affirmed the conviction.

Deep Red to Near Infrared (NIR) Fluorescence of Gentian Violet-Treated Latent Prints

Author(s): Bramble, S. K.; Cantu, A. A.; Ramotowski, R. S.; Brennan, J. S.

Type: Article

Published: 2000, Volume 50, Issue 1, Pages 33-49

Abstract: Until recently, the application of gentian violet to visualize latent prints on adhesive and non-adhesive non-porous surfaces has been limited to observations in the visible region. This paper reports the first study of gentian violet fluorescence with respect to fingerprint enhancement since its deep red to near-infrared fluorescence characteristics were first reported in the mid-1980s. Fluorescence data has been used to optimize a relatively inexpensive viewing system that can display and capture the deep red to near-infrared fluorescence of gentian violet-treated latent prints. Due to the inherently superior detection limits provided by fluorogenic reagents, this system allows the visualization of not only prints on dark surfaces, but weakly developed prints on light surfaces as well. [See letter to the editor in JFI 50 (3).]

Really Making an Impression

Author(s): Hammer, R. L.

Type: Case Report

Published: 2000, Volume 50, Issue 1, Pages 5-7

Crime Science Methods of Forensic Detection

Author(s): Bibby, D. L.

Type: Book Review

Published: 2000, Volume 50, Issue 1, Pages 50-51

Improving Contrast in Photographs of Latent Fingerprints on Bottles

Author(s): Levi, J. A.; Leifer, A.

Type: Technical Note

Published: 2000, Volume 50, Issue 1, Pages 8-12

Simple Solution To Preserving Identification Marks on Evidence Processed for Latent Prints

Author(s): Snyder, M. L.

Type: Technical Note

Published: 1999, Volume 49, Issue 6, Pages 583-588

Contrast from the Past

Author(s): Barker, D. A.

Type: Technical Note

Published: 1999, Volume 49, Issue 6, Pages 589-593

Detection and Enhancement of Latent Fingerprints on Polymer Banknotes: A Preliminary Study

Author(s): Flynn, J.; Stolilovic, M.; Lennard, C.

Type: Article

Published: 1999, Volume 49, Issue 6, Pages 594-613

Abstract: Polymer banknotes were first introduced in Australia in 1988 with the release of the \$10 Bicentenary note. Since then, the Reserve Bank of Australia has continued to replace other paper-based denominations. The \$100 polymer banknote was the last to be introduced into circulation in 1996. Unfortunately, the polymer banknotes have proven to be a difficult surface on which to develop latent fingerprints. Given that the majority of banknotes present in day-to-day circulation are now polymer-based, an urgent investigation of the problem was required in order to develop more efficient fingerprint detection protocols for this substrate.

Letter to the Editor re: Fingerprint Identification Systems to Process, Search and Identify Palm Prints and Latent Print Marks in JFI 49 (1), 1999

Author(s): Romanek, J.

Type: Letters

Published: 1999, Volume 49, Issue 6, Pages 717-718

Abstract: See Fingerprint Identification Systems to Process, Search and Identify Palm Prints and Latent Print Marks in JFI 49 (1), 1999.

Rocking the Cradle

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1999, Volume 49, Issue 6, Pages 719-727

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 6, Page 723

Abstract: The fingerprint pattern shown contains a series of recurring ridges, each of which is spoiled by an appendage. Recurve "A" is free of an appendage; however, it flows out on the opposite side of the pattern from which it entered. The pattern is therefore classified as a TENTED ARCH and referenced to a plain loop with a 7/8 ridge count. The unusual "spider web" formation (B) does not affect the classification.

Things Are Looking Up for the Fingerprint Field

Author(s): Menzel, E. R.

Type: Guest Editorial

Published: 1999, Volume 49, Issue 5, Pages 465-467

Inked Major Case Prints

Author(s): Wertheim, P.

Type: Guest Editorial

Published: 1999, Volume 49, Issue 5, Pages 468-478

Abstract: "If it is worth asking me to spend hours processing all this evidence, it is worth the extra few minutes it takes to get more than just arrest prints. If you do not bring me inked major case prints of your suspect, you cut our chances of making an identification for you roughly in half!"

Magnetic Fingerprint Powder on Firearms and Metal Cartridges

Author(s): Freeman, H. N.

Type: Technical Note

Published: 1999, Volume 49, Issue 5, Pages 479-484

Abstract: There appears to be universal agreement that firearms and metal cartridges present, at best, difficult surfaces on which to develop latent fingerprints. Experience has shown that the vast majority of firearms and

cartridges from criminal elements are poorly maintained, thus are generally "dry" and free of oil. To date, the most effective method of latent print development has been with the use of direct reflected light and photography. This method should be used no matter what other method may be applied to insure a record of the latent is available in the event further processing destroys the latent.

Considering the Target Surface in Bloodstain Pattern Analysis: An Unusual Case of Blood Pooling

Author(s): Adair, T. W.

Type: Case Report

Published: 1999, Volume 49, Issue 5, Pages 485-493

Abstract: The authors report on an unusual case of blood pooling into carpet. In February of 1998, an adult female was found dead in her home. The victim had died of a heart arrhythmia but had sustained a small laceration on the back of her head as the result of a fall.

Subsequent blood flow into the carpet immediately following death, as well as movement of the victim by paramedics, resulted in larger than expected staining on the underside of the carpet.

Getting the Most from Fingerprint Powders

Author(s): Parisi, K. M.

Type: Technical Note

Published: 1999, Volume 49, Issue 5, Pages 494-498

New Sprays for the Development of Latent Fingerprints

Author(s): Ishizawa, F.; Takamura, Y.; Fukuchi, T.; Shimizu, M.; Ito, M.; Kanzaki, M.; Hasegawa, T.; Miyagi, A.

Type: Technical Note

Published: 1999, Volume 49, Issue 5, Pages 499-504

Forensic Dentistry

Author(s): Sperber, N. D., DDS

Type: Book Review

Published: 1999, Volume 49, Issue 5, Pages 505-506

Speaking as an Expert

Author(s): Sinke, M. J.

Type: Book Review

Published: 1999, Volume 49, Issue 5, Pages 507-508

Practical Fire and Arson Investigation (Second Edition)

Author(s): Thorton, J.

Type: Book Review

Published: 1999, Volume 49, Issue 5, Pages 509-510

Built by Many Hands

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1999, Volume 49, Issue 5, Pages 565-579

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 5, Page 580

Abstract: The fingerprint pattern shown is quite complex. Since the recurve "A" is spoiled by an appendage, the pattern is classified as a TENTED ARCH with reference to a six-count loop. Due to the possibility of the ridges at "B" forming a second recurve, references to whorls of the accidental and double loop type are also necessary.

Black Powder Method to Process Duct Tape

Author(s): Sneddon, N.

Type: Technical Note

Published: 1999, Volume 49, Issue 4, Pages 347-356

Abstract: The Liqui-Nox/black powder process was examined as a means of developing fingerprints on the sticky side of duct tape.

A Further Study to Investigate the Effect of Fingerprint Enhancement Techniques on the DNA Analysis of Bloodstains

Author(s): Roux, C.; Gill, K.; Sutton, J.; Lennard, C.

Type: Article

Published: 1999, Volume 49, Issue 4, Pages 357-376

Abstract: This study investigated the effect of common and well established fingerprint enhancement techniques on the subsequent DNA analysis of items potentially bearing both fingerprints and biological evidence. Bloodstains of varying ages were prepared on different surfaces and various fingerprint enhancement techniques were applied to the samples. DNA typing was performed using PCR amplification (D1S80 and CTT system). The results showed that magnetic powder, multimetal deposition (MMD) and ultraviolet (UV) radiation are not recommended for use in a sequence of analyses involving DNA typing. Strong white light, white and aluminum fingerprint powders, physical developer (PD) after 1,8-diaza-9-fluorenone (DFO), PD after ninhydrin with cadmium (Cd) salt treatment, and cyanoacrylate with gentian violet or Ardrox stains may be used successfully in a sequence of analyses involving DNA typing. Ninhydrin with secondary metal salt treatment,

DFO, amido black, diaminobenzidine (DAB), black powder, Stickyside Powder, cyanoacrylate with rhodamine stain, and luminol may be used before DNA analysis but care must be taken to ensure that sufficient DNA is extracted and analyzed.

Cyanoacrylate Fuming: Accelerating by Heat within a Vacuum

Author(s): Grady, D. P.

Type: Article

Published: 1999, Volume 49, Issue 4, Pages 377-387

Abstract: Cyanoacrylate fuming has been utilized as a means for developing fingerprints for several years. Most examiners either use heat and humidity to accelerate the development or develop within a vacuum. Both methods have their advantages. By using a heater inside a vacuum the examiner can have the advantages of each method.

An Operational Trial of Two Non-ozone Depleting Ninhydrin Formulations for Latent Fingerprint Detection

Author(s): Hewlett, D. F.; Sears, V. G.

Type: Article

Published: 1999, Volume 49, Issue 4, Pages 388-396

Abstract: A comparative trial was carried out to determine the operational effectiveness of two ninhydrin formulations for the development of latent fingerprints on porous surfaces. The formulations are based on two new liquid hydrofluorocarbons (HFCs), HFC4310mee and HFE7100.

The trial was carried out by comparing the new formulations to the CFC113-based formulation currently used by UK police services. The results presented establish that the HFE71000 is an effective, safe replacement for CFC113 in the ninhydrin process.

People v. Jennings: A Significant Case for Fingerprint Science In America

Author(s): Acree, M. A.

Type: Historical Note

Published: 1999, Volume 49, Issue 4, Pages 455-457

Abstract: This is an account of the events which prompted the first higher court ruling on fingerprints in the US. This historical note was first published in the July/August issue of The Print, the official publication of the Southern California Association of Fingerprint Officers, and is reprinted here with permission.)

From the Files of the Editor

Author(s): Bridges, B. C.

Type: Special Feature

Published: 1999, Volume 49, Issue 4, Pages 458-459

Abstract: Numerous authors have attempted to describe the phenomenon of individuality manifested in fingerprints, but few have done so with the passion of B. C. Bridges. The following is an excerpt from "Nature's Hand in Finger Prints", published in the Finger Print and Identification Magazine, 25 (12), June, 1944.)

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 4, Pages 460-462

Abstract: The pattern shown is from the interdigital area of a left palmar impression. The “face” contained therein has been dubbed “the wisecracking girl with a black eye”. Other “faces”, along with the names of their contributors, follow.

Of Cabbages and Kings...

Author(s): Hughes, G.

Type: Guest Editorial

Published: 1999, Volume 49, Issue 3, Pages 237-245

Forensic Individualization of Images Using Quality and Quantity of Information

Author(s): Vanderkolk, J. R.

Type: Guest Editorial

Published: 1999, Volume 49, Issue 3, Pages 246-256

Abstract: As a criminalist for the Indiana State Police Laboratory, I am often asked how many points I need to make an identification. My response is it depends on the quality and quantity of information in both the unknown and known images. In order to determine the source of the unknown image, or individualize the image, an understanding of the source of that image is required. An understanding of the source of the image is required to differentiate between repeatable class characteristics and unique, or random, characteristics.

As a criminalist, I visually examine images that originated from, or represent, a source. The images can be produced from a variety of sources, such as friction ridge skin, shoes, tires, guns or tools. The examination of images consists of visually observing all of the information in the unknown image, analyzing it, and comparing it to all of the information in the known image. Then the examination is a mental evaluation of all the information in both images.

Ninhydrin on Latex Gloves: An Alternative Use for an Old Technique

Author(s): Pressly, J.

Type: Technical Note

Published: 1999, Volume 49, Issue 3, Pages 257-260

Abstract: With criminals becoming ever more aware of the techniques used in their apprehension, they are also becoming more conscious about “covering their tracks” (i.e., wearing rubber gloves, cleaning up crime scenes, wiping off evidence, etc). Because some of the older methods for developing latent prints aren’t always successful, new applications of these techniques should be explored. Ninhydrin (Triketo-hydridene hydrate) has long been used for the development of latent prints on porous surfaces such as paper and cardboard. But in 1966, Howard Speaks was able to develop identifiable latent prints on rubber gloves using ninhydrin.

Direct Sensitivity Comparison of the Fluorescein and Luminol Bloodstain Enhancement Techniques

Author(s): Cheeseman, R.

Type: Article

Published: 1999, Volume 49, Issue 3, Pages 261-268

Abstract: The scope of this study is to conduct a direct sensitivity comparison between the refined Fluorescein and Luminol bloodstain enhancement techniques. This comparison will be subjective in nature and will examine bloodstain sensitivity of each bloodstain enhancement technique relative to each other on various substrates (porous and nonporous). The Fluorescein technique was obviously more sensitive, and the results were tabulated as a sensitivity multiple. The results collected were indicative of the Fluorescein technique being at least twice (2x) as sensitive, and perhaps as great as five times (5x) as sensitive as Luminol.

Appraisal of the Porphyrin Compound, (TPP)Sn(OH)2, as a Latent Fingerprint Reagent

Author(s): Murphy, K. A.; Cartner, A. M.; Henderson, W.; Kim, N. D.

Type: Article

Published: 1999, Volume 49, Issue 3, Pages 269-282

Abstract: In this paper we report the investigation of a metallo-porphyrin as a representative of a new class of fingerprint reagent. Dihydroxytetraphenyl- 1 porphyrinatotin(IV), (TPP)Sn(OH)2. has been shown to react with latent fingerprints on paper. Comparisons have been undertaken against Physical Developer on prints that have been exposed to water, and against ninhydrin and DFO for prints on thermal facsimile paper. Results show that (TPP)Sn(OH)2 is not only compatible with Physical Developer but is also simpler to use, and it could also be the reagent of choice for developing fingerprints on thermal papers.

Forerunners of Bayesianism in Early Forensic Science

Author(s): Taroni, F.; Champod, C.; Margot, P. A.

Type: AfterWords

Published: 1999, Volume 49, Issue 3, Pages 285-305

Abstract: Recent publications reveal that the trend among researchers is to adopt a Bayesian approach to the evaluation of "trace" evidence - glass, fiber and (increasingly) biological evidence. In many areas of forensic science, however, such as those involving fingerprints, tool marks, shoe prints, paint, and document examination, the Bayesian approach remains ignored or untrusted. This article argues that it is time for Bayesian methods of evaluating evidence to be generalized to all transfer traces including shoeprints and fingerprints. Such a broad use of the Bayesian perspective not only follows from the recent achievements of statistical argument in forensic science, but also from the history of its earlier and effective use, at the turn of the century, in a great variety of trace evidence cases and contexts.

New York State's Civil Identification Bureau

Author(s): Peck, J. B.

Type: Article

Published: 1999, Volume 49, Issue 3, Pages 339-343

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 3, Page 344

Abstract: The fingerprint pattern shown is very unusual. It contains a loop formation; however, a second delta is found in the lower right area. It is classified as an ACCIDENTAL WHORL, meet tracing, and referenced to a seven-count loop.

re: "Latent Print Processing by the Ruthenium Tetroxide Method", JFI 48(3)

Author(s): Mashiko, K.

Type: Letters

Published: 1999, Volume 49, Issue 2, Pages 111-112

re: "Use of Automated Fingerprint Identification Systems to Process, Search and Identify Palm Prints and Latent Palm Marks", JFI 49(1), 1999

Author(s): Leadbetter, M. J.

Type: Letters

Published: 1999, Volume 49, Issue 2, Page 113

Abstract: See Use of Automated Fingerprint Identification Systems to Process, Search and Identify Palm Prints and Latent Palm Marks", JFI 49(1).

Document Dating via the Internet

Author(s): Hill, R. M.

Type: Case Report

Published: 1999, Volume 49, Issue 2, Pages 114-116

Elmer's® Glue-All: A Low Cost Tool Mark Casting Medium

Author(s): Grodsky, M.

Type: Technical Note

Published: 1999, Volume 49, Issue 2, Pages 117-121

Abstract: In recent years I have worked with a colleague, retired FBI document expert Gary Herbertson, during which time we have conducted classes in developing countries. The courses have dealt with concepts related to physical evidence, and in time we became sensitized to the need for materials and techniques which might be more readily available and less expensive than those available from existing sources, primarily the law enforcement supply companies in the United States. While we do not take issue with the quality and convenience of the products distributed by such companies, our difficulty has been twofold and of a different nature. First, there are frequently no immediate sources for these products in the developing countries, and, second, the costs are high, particularly from the perspective of our participants. Therefore, it has become almost a hobby for us to search for cheap substitutes which would have local availability.

Technique for Processing Carbonless Documents for Latent Prints

Author(s): Marquez, H.

Type: Technical Note

Published: 1999, Volume 49, Issue 2, Pages 122-123

Controlling Depth of Field

Author(s): Oliver III, V. E.

Type: Technical Note

Published: 1999, Volume 49, Issue 2, Pages 124-126

Developing Latent Prints on the Adhesive Surface of Black Electrical Tape

Author(s): Martin, B. L.

Type: Case Report

Published: 1999, Volume 49, Issue 2, Pages 127-129

Abstract: The Sticky-side Powder method is used to process the adhesive surface or sticky-side of adhesive tape with great success. However, it yields poor results on black electrical tape due to the poor contrast. After using Sticky-side Powder from Lightning Powder Company in our laboratory, testing was conducted by our staff to see if similar results could be achieved by using white or ash gray powder instead of the Sticky-side Powder for use on black electrical tape. This simple alternative method has produced excellent results and has proven to be very useful.

To-scale Crime Scene Models: A Great Visual Aid for the Jury

Author(s): McCracken, K.

Type: Technical Note

Published: 1999, Volume 49, Issue 2, Pages 130-133

Substitute Ardrox Formula

Author(s): Gamboe, M.; O'Daniel, L.

Type: Article

Published: 1999, Volume 49, Issue 2, Pages 134-141

Abstract: Ardrox is a stain that is strongly fluorescent when illuminated with an ultra violet light. The Ardrox staining procedure for latent print development is quick, easy and effective. Ardrox is a highly viscous, yellow liquid and dilution is often recommended. Common formulas for latent print application utilize methanol or other alcohols, as well as Freon 113. Methanol, while effective, can damage certain substrates, as can alternative alcohols.

Within the author's laboratory system, Freon 113 is routinely used as a solvent, but because of the environmental hazards and the restrictions on CFC's, Freon has become increasingly more expensive and

difficult to obtain. This prompted a search for a different solvent to be used in Ardrox preparation that will produce the same, if not better, results as the Freon 113 and with relatively low health risks.

Moving Towards Consensus: The First Draft of an Evaluative Instrumental Grid to Interpret Shoe Wear Patterns

Author(s): Vernon, W.; Parry, A.; Potter, M.

Type: Article

Published: 1999, Volume 49, Issue 2, Pages 142-173

Abstract: In a first round pilot Delphi study of podiatrists' experiences of shoe wear marks, considerable lack of agreement had been noted among participating podiatrists. A second Delphi round has now been carried out. This second Delphi round showed a moderate move towards consensus among participating podiatrists in the context of overall wear interpretation. When chosen wear patterns were examined more closely, however, hidden agreements were found with regard to specific areas of wear - the focal points from which the wear was spreading. These focal points can be diagrammatically represented on a drawing of a shoe outsole with identifying numbers ascribed to each such point. When this analytical grid was used on depictions of wear patterns chosen by second round respondents, the location codes were found to be specific for the conditions to which the wear related. This preliminary grid may form the basis of the first "measuring" device capable of translating and giving meaning to shoe wear marks.

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 2, Page 234

Abstract: The fingerprint pattern shown contains a loop over a tented arch formation. It is therefore classified as an ACCIDENTAL WHORL, with reference to a double loop whorl. Although the right delta is not shown, the ridge tracing is "inner".

Origin and Formation of Prill Sulphur

Author(s): Redmond, D. R.; Swiderski, W. D.

Type: Technical Note

Published: 1999, Volume 49, Issue 1, Pages 1-6

Abstract: The accepted method of casting impressions in snow with molten sulphur has become well known to many investigators. Sulphur's ability to quickly solidify on contact with snow, capturing fine detail, is a unique property. However, the actual medium origin and industry uses may not be known. Should an investigator be required to provide a case to the courts based upon the use of a sulphur cast, the investigator would be wise to have some knowledge of the material and its formation.

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1999, Volume 49, Issue 1, Page 108

Abstract: The fingerprint pattern shown is a CENTRAL POCKET LOOP WHORL with a "meet" tracing. It is interesting in that the ridges near the center form the numeral "9".

Fluorescence Detection of Latent Fingerprints: Direct Entry to AFIS

Author(s): Pascua, C. S.; Memel, E. R.

Type: Technical Note

Published: 1999, Volume 49, Issue 1, Pages 11-17

Abstract: Latent fingerprints developed by photoluminescence techniques can be entered into AFIS directly, using the AFIS fingerprint reader. The reader's illumination sources are turned off and replaced by fingerprint illumination with a portable laser or "alternative light source", with the usual filter for fluorescence observation placed in front of the reader's computer-interfaced camera.

Colored fingerprints can be read with substantially improved contrast in the standard absorption/reflection mode as well when the reader's white light illumination is replaced by suitably chosen color illumination. No camera filter is then needed. Alternatively, white light and band-pass filters can be employed.

Use of Automated Fingerprint Identification Systems to Process, Search and Identify Palm Prints and Latent Palm Marks

Author(s): Leadbetter, M. J.

Type: Article

Published: 1999, Volume 49, Issue 1, Pages 18-36

Abstract: A totally new method for searching latent palm marks and processing inked palm prints utilizing Automated Fingerprint Identification Systems (AFIS) is described. The system, which is believed to be the only operational system in the world, has been devised by two fingerprint experts of the Cambridgeshire Constabulary. Application and usage of the system is outlined as well as a description of the method whereby the AFIS matches the palm prints of convicted criminals with those of latent palm marks recovered from crime scenes.

Four Basic Components of a Successful Footwear Examination

Author(s): Hildebrand, D. S.

Type: Article

Published: 1999, Volume 49, Issue 1, Pages 37-59

Abstract: There have been major discussions and concerns among footwear examiners from around the world as to whether there should be an established number of characteristics in order to provide a positive identification. This study addresses the possible direction of a footwear examination by the year 2000 by presenting an understanding of the four basic components of a successful examination: the anatomy of the human foot; the outsole-making process; the comparison/decision process; and the presentation of the final conclusion within a courtroom.

Mushroom Prints

Author(s): Sahs, P. T.

Type: Case Report

Published: 1999, Volume 49, Issue 1, Pages 7-10

Abstract: To a botanist, or simply to a fungi connoisseur, a mushroom print may easily be connoted as a spore printing examination commonly performed to aid in the identification of a mushroom species, a procedure which is of utmost importance in the determination of whether a particular mushroom found in the wild is edible or not. An error in the analysis of a mushroom print can be lethal. But what about an actual mushroom fingerprint?

Friction Ridge Impression in Blood on Blue Denim

Author(s): Zanner, D. R.

Type: Case Report

Published: 1998, Volume 48, Issue 6, Pages 689-691

Abstract: Finding identifiable friction ridge skin impressions on fabric is not common, and when such impressions are found, they are usually on materials with a smooth finish and fine weave. However, it is not impossible to find identifiable impressions on other types of cloth, as illustrated by the following case.

Use of X-rays in Stolen Motor Vehicle Identification

Author(s): Khoudair, S.; McKay, E.

Type: Technical Note

Published: 1998, Volume 48, Issue 6, Pages 692-703

Abstract: Vehicle theft is often facilitated when the offender(s) alter the identification number of the vehicle. In most cases the chassis or identification number is ground off and a new number is restamped over the same area. Other less common means of "re-birth" of motor vehicles are "cut and shut" and the fixing of false identification plates over the original VIN plate. Both methods will be discussed in this paper along with an assessment of the use of X-rays to detect them.

Development of Latent Fingerprints from Skin

Author(s): Fortunato, S. L.; Walton, G.

Type: Technical Note

Published: 1998, Volume 48, Issue 6, Pages 704-717

Abstract: The following research was conducted in 1986 by a college intern and a latent fingerprint examiner at the Minnesota Bureau of Criminal Apprehension. Upon completion of this research, the results were submitted as a paper to the BCA laboratory and to Gustavus Adolphus College, Biology Department. Thanks to the tenacity and recent enthusiasm of William C. Sampson, Miami, FL, this research is surfacing for publication.

Using Ammonium Thiocyanate and Potassium Thiocyanate

Author(s): Froude, J. H. Jr.

Type: Technical Note

Published: 1998, Volume 48, Issue 6, Pages 718-724

Abstract: Many techniques used for fingerprint development can be effectively applied for the detection of footwear impressions, especially on non-porous surfaces. Occasionally, however, improved visualization of a

footwear impression requires specialized examination methods. One such instance is when a white dusty footwear impression may be noted on a sheet of plywood, cardboard or brown paper but lacks sufficient contrast to reveal all the details. Chemical techniques that react with the constituents of dust are needed to darken, or provide more contrast to, the footwear impressions.

Craniofacial Identification in Forensic Medicine

Author(s): Gatliff, B. P.

Type: Book Review

Published: 1998, Volume 48, Issue 6, Pages 725-726

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 6, Page 814

Abstract: The ridge configuration in the photograph shown is very unusual, as is its origin, since it is from the proximal phalanx of a right middle finger.

Re: “Latent Print Processing by the Ruthenium Tetroxide Method”, JFI 48(3)

Author(s): Blackledge, R. D.

Type: Letters

Published: 1998, Volume 48, Issue 5, Pages 557-559

Abstract: (Refers to Latent Print Processing by the Ruthenium Tetroxide Method.)

Air Crash in the Comoros: Victim Identification and Fingerprints

Author(s): Dayan, E.; Levinson, J.

Type: Case Report

Published: 1998, Volume 48, Issue 5, Pages 560-562

Abstract: On Saturday, 23 November 1996, an Ethiopian Airlines plane with 166 passengers and 12 crew members bound from Addis Ababa to Nairobi was hijacked and ordered to fly to Australia. Several hours later fuel supplies were exhausted, and an emergency landing was made in waters 100 meters off the shore of Grand Comoro Island (between Madagascar and Mozambique). In all, there were 51 survivors; the remaining persons perished. A team of 26 Israelis was dispatched to the area to deal with the eight Israelis aboard the flight. Included in the team were a forensic anthropologist and an expert in fingerprint comparison in case it would be necessary to identify the dead.

Short-wave UV Imaging Casework Applications

Author(s): Keith, L. V.; Runion, W.

Type: Technical Note

Published: 1998, Volume 48, Issue 5, Pages 563-569

Abstract: Latent prints developed on multi-colored backgrounds such as magazine covers and photographs are difficult in themselves to visualize and photograph. The problem is worsened when the background also fluoresces under laser or alternate light. The use of a Reflective Ultraviolet Imaging System (RUVIS) allows for the real-time viewing of this type of evidence in the short-wave UV spectrum.

Latents from Pre-pubescent Children Versus Latents from Adults

Author(s): Bohanan, A. M.

Type: Technical Note

Published: 1998, Volume 48, Issue 5, Pages 570-573

Abstract: A study conducted by the Knoxville Police Department and Oak Ridge National Laboratory has revealed a significant difference between the fingerprint sweat chemical compounds of pre-pubescent children and adults.

Plastic Fingerprint Impressions: An Inked Approach

Author(s): Stimac, J. T.

Type: Technical Note

Published: 1998, Volume 48, Issue 5, Pages 574-578

Abstract: The latent print examiner is usually required to perform comparisons between a suspect's inked fingerprint card and latent prints developed either through the means of chemical and/or physical processing techniques. It is not often that plastic fingerprint impressions found on a variety of items or surfaces meet the challenge of a latent print examiner.

Examining the Need for Postmortem Footprint Exemplars of Homicide Victims: Two Case Studies

Author(s): Donnelly, D. L.

Type: Case Report

Published: 1998, Volume 48, Issue 5, Pages 580-584

Abstract: As a latent print examiner for the past sixteen years, I tend to forget that there is a down side to this profession, literally speaking, in the form of footprints. By this, I do not mean shoe impressions, but the actual ridge detail present on the soles of the feet. Whenever I testify in court, I will explain to attorneys, judges, and jurors alike where friction ridge skin is located on the human body. Yet, when latent impressions recovered from a homicide scene cannot be identified, the possibility that the impressions may be from a foot is seldom considered.

Use of Cyanoacrylate Fuming and Related Enhancement Techniques to Develop Shoe Impressions on Various Surfaces

Author(s): Paine, N.

Type: Article

Published: 1998, Volume 48, Issue 5, Pages 585-608

Abstract: It is reasonably common for forensic investigators to locate two dimensional shoe impressions within or near crime scenes. Often they are of a moist origin, such as when an offender tracks through dew soaked grass and then transfers impressions onto various substrates from the wet outsoles of his shoes. These impressions are often of a near latent nature and therefore require further enhancement.

Losing Sight of the Shore

Author(s): Hughes, G.

Type: Guest Editorial

Published: 1998, Volume 48, Issue 5, Pages 611-615

Abstract: There is unmistakable and indisputable science in fingerprints, but it has become corrupted and diffused with remarkably unscientific considerations in its application as an identification process by the unfortunate addition of years of misplaced dogma. Separating dogma from science is the problem.

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 5, Page 686

Abstract: The fingerprint pattern shown contains no ridge (free of an appendage) making a complete circuit. It is therefore classified as a PLAIN LOOP with a ridge count of 24. Reference to whorls of the plain and central pocket loop types are necessary. The pattern also exemplifies a rule in ridge counting when the core is located on a single rod that touches the innermost recurve. If the delta falls below an imaginary line at right angles to the ridge, the recurve is counted. If it falls below the line, as in this case, the innermost recurve is not counted.

Integrity Assurance: Policies and Procedures to Prevent Fabrication of Latent Print Evidence

Author(s): Wertheim, P. A.

Type: Guest Editorial

Published: 1998, Volume 48, Issue 4, Pages 431-441

Abstract: For the last few years, a scandal has been unfolding in the United States involving the fabrication of latent print evidence by several members of the New York State Police. In-depth news stories on major television networks have brought this situation to the attention of the public in general, and the defense community in particular. More detailed articles on latent print fabrication have appeared within the last year in the professional publications, including Fingerprint Whorl and the Journal of Forensic Identification. While attacks on the veracity of latent print evidence in the courts do not appear to be widespread, it is time for serious professional fingerprint examiners and police administrators to examine the causes of fingerprint fabrication, both in the area of personnel and in the ease with which such evidence can be fabricated.

Field Devices for Cyanoacrylate Fuming: A Comparative Analysis

Author(s): Geller, B.; Springer, E.; Almog, J.

Type: Technical Note

Published: 1998, Volume 48, Issue 4, Pages 442-450

Abstract: This report contains the examination of another instrument that can be used for open-air fuming. An evaluation was conducted of the Handy FumerTM, and its effectiveness was compared with the other portable instruments that are available.

Use of an Alternate Light Source to Locate Bone and Tooth Fragments

Author(s): Craig, E. A.; Vezaro, N.

Type: Technical Note

Published: 1998, Volume 48, Issue 4, Pages 451-458

Abstract: Alternate light sources have been used successfully for the location and photographic documentation of fingerprints, body fluids, and other trace evidence in a variety of situations. Bones and teeth should be included in the list of biological substances that will fluoresce strongly in the presence of specific light frequencies. Even tiny fragments of bone as well as chips of tooth enamel emit significant fluorescence.

Survival of Physical Evidence from a Scavenged Grave: A Look at a Case Study and Research from Colorado

Author(s): Adair, T. W.

Type: Technical Note

Published: 1998, Volume 48, Issue 4, Pages 459-466

Abstract: Each year, across the United States, law enforcement agencies are charged with the difficult task of locating clandestine grave sites. Investigations of this sort are infrequent to most agencies but are nonetheless challenging because they may draw enormous resources from an agency over many years. In some cases, the agency benefits from truthful cooperation from informants and witnesses, however, this scenario is hardly commonplace. In most instances, agencies must exhaust countless leads in order to obtain resolution for the case. The site characteristics (forest, desert, swamp, etc.), size of the search area and age of the grave are only a few of the factors which may influence the scope of the recovery efforts.

An Extreme Case of Fingerprint Mutilation

Author(s): Wertheim, K.

Type: Article

Published: 1998, Volume 48, Issue 4, Pages 466-477

Abstract: The mutilated fingerprints of a convicted felon are compared to his original fingerprints. Using enlarged photocopies, the mutilated prints are reconstructed as closely to their original configuration as possible. From this experiment, it is shown that triangular pieces of friction ridge skin were originally switched within each finger. The steps used in the actual mutilation procedure are then diagrammed, and some facts of this case are presented.

Recovery of Latent Fingerprint Evidence from Human Skin: Causation, Isolation and Processing Techniques by William C. Sampson, Karen L. Sampson, Frank Shonberger

Author(s): Hazen, R. J.

Type: Book Review

Published: 1998, Volume 48, Issue 4, Pages 478-479

From the Files of the Editor

Author(s): Grieve, D. L.

Type: Historical Note

Published: 1998, Volume 48, Issue 4, Pages 542-543

Abstract: The following items were printed as part of a feature "Finger Prints in the News" that appeared in Finger Print and Identification Magazine, 20 (6), December, 1938. The first contains information of some interesting historical trivia, and was taken from the New York Herald Tribune. The second, attributed to the Bronx, New York Home News, is intriguing for what it does not report.

Celebrating Revolutions

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1998, Volume 48, Issue 4, Pages 544-553

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 4, Page 554

Abstract: The fingerprint pattern in the photograph shown consists of a loop formation "A", and a tented arch "B". It is therefore classified as an ACCIDENTAL WHORL with a "meet" tracing. The left and right deltas are numbered "D-1" and "D-2", respectively.

Detection of Firearms Imprints on Hands by the Ferrotrace Spray: Profiles of Some Common Weapons

Author(s): Glattstein, B.; Nedivi, L.; Almog, J.

Type: Technical Note

Published: 1998, Volume 48, Issue 3, Pages 257-272

Abstract: We wish to report here the results of a consecutive study whose aim was to build up a library of Ferrotrace-developed imprints that are formed by common firearms. Such a library may provide the firearms expert with an idea of the weapon that had been held, by comparing the shape of the imprint on the suspect's hand against the marks in the data base.

Forensic Art Case Study: Daisy Jane Doe

Author(s): Taylor, K. T.; Gatliff, B. P.

Type: Case Report

Published: 1998, Volume 48, Issue 3, Pages 273-278

Abstract: A primary goal of the forensic art discipline from its inception was standardization of techniques with high quality and reasonable consistent results the desired intent. The case of Daisy Jane Doe, an unidentified homicide victim found in 1988 in Cherokee County, Oklahoma, provided an opportunity to test consistency of techniques for facial reconstruction from the skull. At the request of television program "America's Most Wanted", forensic artists Karen T. Taylor and Betty Pat. Gatliff agreed to perform separate and independent skull reconstruction procedures and later compare the results.

Latent Fingerprint Processing by the Ruthenium Tetroxide Method

Author(s): Mashiko, K.; Miyamoto, T.

Type: Article

Published: 1998, Volume 48, Issue 3, Pages 279-290

Abstract: The method proposed in this paper for developing latent fingerprints is based on the fact that ruthenium tetroxide (Ru04) fumes react promptly with various organic compounds, particularly fatty oils or fats contained in sebaceous contaminants in latent print residue, producing brownish black or black ruthenium dioxide (Ru02) [1, 21. Ruthenium tetroxide is a yellow, volatile crystal (melting point: 25.5°C, boiling point: 100.8°C) at room temperature. Conventional methods using RTX have been impractical due to its strong oxidizability [3] and because, in the two-liquid method [4], it is troublesome to produce the fumes when needed and in the necessary amounts. In this method, this difficulty was overcome by utilizing a saturated hydrocarbon halogenid solution of RTX [5].

Bloodstain Pattern Analysis with an Introduction to Crime Scene Reconstruction by Tom Bevel and Ross M. Gardner

Author(s): Lee, H., Dr.

Type: Book Review

Published: 1998, Volume 48, Issue 3, Pages 291-293

Baiting Laws with Stars

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1998, Volume 48, Issue 3, Pages 420-427

Abstract: Nearing the end of any century has always produced some form of stirring among those who are a few mollusks short of a clambake, and nearing the end of a millennium has already prompted a growing array of dire if sometimes amusing predictions from those who are air-in-the-cranium advantaged. The moment in which that great mythical time counter, like some cosmic odometer, will flip around to a brand new starting digit may not be the actual beginning of the next millennium, but just to contemplate being surrounded by a date composed of a two followed by three zeroes is a moment for many to ponder and others to dread. Overlooked, of course, is the fact that the concept of assigning artificial numbers to measure a poorly understood dimension is a disputed invention of man. Ignored, of course, is that the concept of a millennium is based upon a thousand revolutions of a rather obscure planet in a rather ordinary solar system in which the interpreters of time are merely a recent pest. To those who place undue significance in these matters of time, the earth still is the center of the universe, and Copernicus remains a heretic.

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 3, Page 428

Abstract: The fingerprint pattern shown is classified as a CENTRAL POCKET LOOP WHORL with an inner tracing. Due to the pointed nature of the ridges in the line OlfJlow, reference to a plain loop pattern is necessary.

Distortion Versus Dissimilarity in Friction Skin Identification

Author(s): Leo, W. F.

Type: Guest Editorial

Published: 1998, Volume 48, Issue 2, Pages 125-129

Abstract: For many years, a premise has been accepted in the field of friction skin identification that in order to have a valid identification, the print in question must be void of any dissimilarities. This information has been documented in a number of the classic texts on friction skin identification [1,2]. However, this information only partially addresses the issue of dissimilarities. The other side of the coin is that dissimilarities will not be found in prints that are the same. This important fact is rarely addressed in literature on fingerprint identification.

Additional Use for Mikrosil™ Casting Material

Author(s): Bay, A. L. Jr.

Type: Case Report

Published: 1998, Volume 48, Issue 2, Pages 130-132

Abstract: In the past I have used Mikrosil™ for casting toolmark impressions and was generally pleased with the results. Recently I was faced with an investigation involving what is often referred to as plastic or molded fingerprints. Plastic or molded fingerprints are formed when the fingers come into contact with a soft, pliable surface into which a three-dimensional impression of the skin structure is made. Plastic or molded prints may be created on items such as candles, soap, grease, or similar substances that will create an actual mold of the individual ridges and valleys.

Determining the Distance of Gunshot Wounds to the Head by Appearance and Physical Evidence

Author(s): Brunt, M. D.

Type: Case Report

Published: 1998, Volume 48, Issue 2, Pages 133-146

Abstract: Determining the distance between the shot fired and the gunshot wound is critical in a shooting investigation. In many cases, this fact is the only evidence available that can distinguish between a suicide, self defense killing, manslaughter or homicide. If a forensic pathologist is unable to make a determination between a contact wound, close, or distant shot at the time of autopsy, the criminality may be undetermined. The time and effort used in determining the distance of the shot may be grossly inaccurate if known standards are not used. If great care is not exercised and specific standards followed precisely, any attempt to rationalize or surmise the distance of the shot would be inappropriate.

Technical Working Group on Friction Ridge Analysis, Study, and Technology (TWGFAST) Guidelines

Author(s): Simons, A. A.

Type: Special Feature

Published: 1998, Volume 48, Issue 2, Pages 147-162

Abstract: Proposed TWGFAST guidelines for minimum qualifications for latent print examiner trainees, training to competency, and quality assurance were published for comment in the Journal of Forensic Identification (47 (4), 1997, pp 423-437) and presented at the 82nd International Association for Identification Educational Seminar in Danvers, Massachusetts. A number of comments were submitted to TWGFAST.

Metal Deposition for Latent Print Development

Author(s): Batey, G. W.; Copeland, J.; Donnelly, D. L.; Hill, C. L.; Laturnus, P. L.; McDiarmid, C. H.; Miller, K. J.; Misner, A. H.; Tario, A.; Yamashita, A. B.

Type: AfterWords

Published: 1998, Volume 48, Issue 2, Pages 165-175

Abstract: The deposition of thin layers of metal onto a surface has numerous applications in industry and research. One of the problems that workers in these fields must contend with, and attempt to avoid, is the unwanted appearance of their fingerprint ridge detail on an otherwise pristine metal-coated surface. However, this sensitivity of the technique to casual inadvertent contact is now being exploited to recover latent fingerprints from various crime scene exhibits.

Legends of the Fall

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1998, Volume 48, Issue 2, Pages 242-253

Abstract: The IAI's history now spans nearly 83 years, well beyond the lifetime of any its founding members and certainly one of the longest that any organization of similar intent can claim. For a professional group to possess such an extensive past is an achievement of considerable merit and this longevity offers a convincing indication that the Association has succeeded in providing at least acceptable benefits to its thousands of participants during these nine decades of existence. As a professional society created to draw strength from a collective assembly regarding matters of mutual concern, the IAI has certainly fared better than other groups which once flourished and have since faded, and certainly no worse than those others which remain.

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 2, Page 254

Abstract: The plain whorl shown below is interesting in that it contains the letters "ID" in the core area.

Re: "Collection and Preservation of Blood Evidence from Crime Scenes", George Shiro, JFI, 47(5)

Author(s): Lough, P. S.; Hofsass, P. M.

Type: Letters

Published: 1998, Volume 48, Issue 1, Pages 1-7

From the Files of the Editor

Author(s): Grieve, D. L.

Type: Special Feature

Published: 1998, Volume 48, Issue 1, Pages 109-111

Abstract: The following brief report was published in the November, 1943, issue of Finger Print and Identification Magazine, 25(5). This accounting serves as both a subject of obscure fingerprint trivia and an example of judicial consistency.

Keep Smiling, Kid

Author(s): Grieve, D. L.

Type: AfterThoughts

Published: 1998, Volume 48, Issue 1, Pages 112-121

Abstract: Arthur Conan Doyle, the creator of the world's most celebrated, albeit fictional, scientific investigator, Sherlock Holmes, devoted the final years of his life to espousing the existence of "faeries" and in trying to find a way to communicate with departed souls. During the course of his fixation with the supernatural in lieu of the logical, Doyle cavorted with a strange collection of psychics, clairvoyants, and other self-proclaimed mystics looking for that fabled avenue which would span from one world to the supposed other. Although mainly interested in liaisons with the presumably transformed identities of relatives and friends, Doyle's pursuits led him into a strange sphere of fakes and charlatans who had staked their claims along the real estate of unearthly phenomena, including those who claimed to predict what lies ahead. Doyle, with the help of that master illusionist, Harry Houdini, repeatedly exposed everyone encountered as nothing more than tricksters and scalawags, yet both men never lost their belief that some mystical bridge to the unknown could be found.

Determination of the Shape of Fingerprints with a Profilometer

Author(s): Migron, Y.; Mandler, D.

Type: Technical Note

Published: 1998, Volume 48, Issue 1, Pages 12-16

Abstract: The identification of a fingerprint is based on its unique pattern which can be transferred, visualized, and preserved due to the different height between the ridges and valleys. Nevertheless, a close inspection of an untreated fingerprint by an optical microscope (figure 1) reveals that the ridges are non-homogenous and consist of a multitude of independent drops of organic materials lying on top of a continuous stretching thin layer [1,2].

Back to Basics

Author(s): Douthit, J. D.

Type: Back to Basics

Published: 1998, Volume 48, Issue 1, Page 122

Abstract: Shown in the photograph is the sole of an athletic shoe containing a plain loop pattern, which may appear on the finger, palm or sole. Very well illustrated are the basic characteristics used to establish identification, i.e., the dot, ridge ending and bifurcation.

Recovery of Super Glue Over-fumed Fingerprints

Author(s): Geng, Q.

Type: Technical Note

Published: 1998, Volume 48, Issue 1, Pages 17-21

Abstract: Super glue fuming is a widely utilized processing method for fingerprint recovery that is not only convenient but inexpensive to use. However, optimum exposure time to super glue fumes is sometimes difficult to control. When a surface becomes over-fumed, excessive polymerization will occur between the ridges, and this build-up can obscure the overall ridge detail to such an extent that a subsequent identification is not possible.

Preliminary Findings in a Delphi Study of Shoe Wear Marks

Author(s): Vernon, W.; Parry, A.; Potter, M.

Type: Article

Published: 1998, Volume 48, Issue 1, Pages 22-38

Abstract: The value of shoe wear marks as footwear evidence has long been treated with skepticism, although podiatrists are known to interpret the meaning of such marks in clinical diagnosis. Prior to the carrying out of a major study using Delphi methodology, a first round questionnaire was devised to collate experienced podiatrists' knowledge of characteristic wear marks. The results did not appear to demonstrate the level of consensus expected. Closer examination, however, indicated that there may be agreement about the meaning of specific areas of wear in the overall wear pattern shown. Reasons for the lack of overall consensus are suggested and the need for caution in the use of wear marks is reinforced pending further investigation.

Examination of Transparent Objects Using Coherent Light for the Determination of Prior Integrity

Author(s): Bobev, K.

Type: Article

Published: 1998, Volume 48, Issue 1, Pages 39-44

Abstract: Identification of an object that has been broken by examination of the different features found at the points of division as well as on the surface of each particle is a classic method in the forensic sciences. Determination of integrated morphological characteristics on the surfaces of separate particles of transparent objects using coherent light may also serve as the basis for the identification.

The Use of Forensic Anthropology by Robert B. Pickering and David C. Bachman

Author(s): Ubelaker, D. H.

Type: Book Review

Published: 1998, Volume 48, Issue 1, Pages 45-47

Training in Transition: Obstacle or Opportunity?

Author(s): Wertheim, P. A.

Type: Guest Editorial

Published: 1998, Volume 48, Issue 1, Pages 8-11