Book Review: *Fingerprints*

The Origin of Crime Detection and the Murder Case That Launched Forensic Science

Author: Colin Beavan
Publisher: Hyperion
Publication Date: May 2001

Fingerprints is a subject near and dear to my heart. When a non-fingerprint person authors a book on this subject, I become very skeptical. When the book is published as a "popular" rather than an academic account, the skepticism intensifies. In spite of my cautious approach to reading this book, within a few pages the author captured my attention with his colorful and descriptive portrayal of a significant event in the history of fingerprints. As he wove a detailed history into the storyline of England’s first murder case involving fingerprints, I recognized the accuracy of our normally cited historical facts. Mr. Beavan captured and portrayed the history in depth, and presented not only the historical account, but the personality of key fingerprint pioneers. He brought to life the characters and pursuit of recognition which plagued Galton and Faulds. While I would describe myself as a perpetual student of the subject of fingerprints, I admit to an average familiarity with its history. This book provided not only the normal pleasures associated with reading a good book, but also a detailed study into the history of fingerprints. A graphic description of historical measures to ascertain truth in the name of justice is also outlined. The source notes, bibliography and acknowledgments illustrate Mr. Beavan’s superb journalistic research efforts.

Fingerprints should be read by every latent print examiner, AFIS technician, and anyone involved with fingerprints, however, it is also a great book for the non-technical audience. My spouse, an avid reader for the pleasure of reading, seized the book upon its arrival and found herself intrigued with the history of what she previously considered a "your thing." Normally, she tolerates my one-sided discussions about fingerprints, but during her reading of Fingerprints, she initiated the conversations.

Alan McRoberts, Editor
Southern California Association of Fingerprint Officers

Find more information about Mr. Beavan and Fingerprints at www.fingerprintbook.com
How to Etch Fingerprints on Metal

(This article is Chapter XXV from Chapel's book "Fingerprint: A Manual of Identification," 1941, pp 287-289. Thanks to Jim Edmonston, Riverside CAL-ID.)

By CHARLES EDWARD CHAPEL

The identification tags worn during the World War by officers and enlisted men of the Navy and Marine Corps saved many of the bodies of the dead from being consigned to unmarked graves and also resulted in the restoration to their families of those who lost their memories from shell shock. These tags were plates of monel metal, perforated at one end and suspended from the neck by a monel wire incased in a cotton sleeve. On one side was the etched fingerprint of the right index finger; on the other side were etched the individual’s initials and surname, the month, day and year of his enlistment or commission, expressed in numerals (e.g., 1-5-1916), and the month, day and year of birth, similarly expressed. This side also bore letters appropriate to his branch of the armed services, such as U.S.N., or U.S.M.C. The process for etching fingerprints on metal was developed by Mr. J.H. Taylor chief of the identification section, Bureau of Navigation, Navy Department, Washington, D.C., who obtained the adoption of these identification tags by the Navy. Since the same process can be used by anyone for marking metal objects with indisputable signs of his ownership, the etching method is presented here in detail.

The materials needed are: an outfit for taking fingerprints on paper, as described in the chapter about "How to Take Good Fingerprints"; a supply of printer’s ink thinned to a consistency suitable for its easy use with an ordinary steel pen (diluted with gasoline, turpentine, or other "thinner"); gilsonite, or powdered asphaltum; nitric acid, diluted with 1 part nitric acid to 2 parts water volume, and kept in a glass dish; an alcohol lamp, electric stove, gas jet, or some other heating device; and some means of holding the metal without touching the surfaces to be etched, such as a wooden clamp.

The actual process is as follows:

Step 1. Take an ordinary, rolled fingerprint on paper as a test to see if the finger is clean, the ink of the proper consistency, etc. (Use the regular, undiluted printer’s ink for this.)

Step 2. Record all the facts that are to be etched on the metal on a piece of paper for easy and quick reference during the etching process.

Step 3. Make an ordinary rolled fingerprint on the metal after inking the finger with the regular, undiluted printer’s ink. (The instructions for taking fingerprints given in the chapter entitled "How to Take Good Fingerprints" apply with full force to this step of the etching process.)

Step 4. Use the diluted printer’s ink and a clean, blunt steel pen to print or write the desired facts on the metal. Either turpentine or gasoline may be used as a thinner, but turpentine is preferred because it does not dry so quickly. The ink must be barely thin enough to write with; if it spreads on the metal it is too thin; if it does not flow from the pen easily it is too thick.

Step 5. While the ink is still fresh on the fingerprint and writing, sprinkle the surface with finely powdered asphaltum or gilsonite. This must be fine enough to pass through a sieve having 100 meshes to the square inch. Sprinkle it very thickly over the inked areas but do not neglect any of the surface. Some of the powder will mix with and adhere to the ink; the excess must be removed by tapping the edge of the metal and blowing on the powder.

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Step 6. The metal is now held with forceps over a flame or stove until the ink and asphaltum (or gilsonite) have melted together, forming sharp, glossy black lines. If not enough heat is applied to melt completely the asphaltum the action of the acid will be too powerful. The complete melting is indicated when the lines are glossy. If too much heat is applied the lines run together and are obliterated. The degree of heat which is best is slightly above the boiling point of water.

Step 7. When the metal has cooled, it is placed in a solution of 1 part nitric acid to 2 parts water by volume, and left there for about one hour, being taken out from time to time to observe the progress of the etching by the acid. If the acid action is too lively, water may be added; if the action is too slow, nitric acid may be added; to speed up the action concentrated muriatic acid in the proportion of 1 part muriatic acid to 30 parts nitric acid may be added, but this is seldom necessary. In the case of identification tags, where both sides of a monel metal disc are being etched, the name side is left up since this results in a deeper etching which will not wear off quickly. The acid solution is kept in glass, china, or enameled containers because they are impervious to the action of the acid.

Step 8. When the acid has eaten the fingerprint and lettering deeply enough into the metal, usually in about one hour, the metal is removed, rinsed thoroughly in water, and dried.

Metal spoiled in the inking process can be cleaned with gasoline, re-inked, and then etched, but if any ink is left from the previous attempt it may result in an indistinct etching. If a metal other than monel metal is etched the time required for the action of the acid may be more or less than that required for monel metal. If an object of value is to be etched and it is made of some other metal, a trial etching should be made first on a less expensive object made of the same metal.

(Ed -- In submitting this article, Jim Edmonston commented that at a previous SCAFO meeting, Bill Leo circulated a GI dog tag from WWI. Jim commented that the detail was unbelievable, the pores along the ridges jumped out, it was that clear. This article is reprinted for historical purposes and is presented with a warning against attempting to replicate this process. A thorough understanding of the chemistry and hazards involved must precede any such process.)

**Man arrested by mistake may sue city**

(This article is reprinted from the February 15, 2001 issue of the San Gabriel Valley News. Thanks to Dale Falicon, LASD.)

CITY NEWS SERVICE

**LOS ANGELES** – A mentally ill man mistakenly identified as an escaped convict from New York, arrested by Los Angeles police and jailed for two years has a right to sue the city, a federal appeals panel ruled today.

Kerry Sanders, a Los Angeles man who suffers from hallucinations and chronic schizophrenia, was arrested in October 1993 by Los Angeles Police.

They identified him as Robert Sanders, a convicted embezzler who escaped from a state prison facility in New York.

Sanders was extradited to New York and imprisoned at the Greenhaven Correctional Center for two years, where he allegedly was sexually molested by other inmates, court papers show. Prison officials did not realize their mistake until the real Robert Sanders was arrested.

U.S. District Judge Lourdes G. Baird dismissed a lawsuit filed by Sander’s mother against New York state prison officials, the city of Los Angeles, the county, four LAPD officers and the Los Angeles County public defender who represented Sanders in extradition proceedings.

The lawsuit alleges that law enforcement officials “recklessly and with deliberate indifference” identified Sanders as the escaped convict, even though he was obviously mentally disabled, and his fingerprints and physical characteristics did not match those of the fugitive.

Baird dismissed the complaint after considering evidence that Sanders told arresting officers he was Robert Sanders, because “he thought they were arresting him for shooting a hole through his cousin’s house in Arizona and he was trying ‘to avoid getting in trouble for the shooting incident.’” According to court documents.

The 9th Circuit U.S. Court of Appeals panel ruled that Baird should not have considered Sanders’ alleged statements to police because they were “subject to reasonable dispute,” according to the ruling.
Fingerprinting’s Reliability Draws Growing Court Challenges

(This article is reprinted from the April 7, 2001 New York Times. Thanks to Barry Fisher, LASD.)

By ANDY NEWMAN

In the long history of forensic science, prosecutors have found few weapons more powerful than the fingerprint. The whorls, arches, ridges and loops left on a surface by the skin’s oil have long been considered virtually unassailable evidence tying a person to a crime.

But now, the reliability of crime-scene fingerprint identification is being challenged. In courts around the nation, defense lawyers are using evidence of fingerprinting’s fallibility to try to get it declared inadmissible under standards set by the Supreme Court to keep unproven “junk science” out of courtrooms.

The accuracy of making identifications from dusted or latent prints, which are often smudged, distorted or fragmentary, has never been scientifically tested. And while fingerprint examiners are trained to testify only to "absolute certainty" about their work, defense lawyers point out that examiners do make mistakes, that training standards vary widely and that most examiners have either failed or never taken the main certification test.

Trial judges have rejected the dozen challenges filed since 1999, holding that fingerprinting, which has been accepted since 1911, has proved its reliability in the courtroom. And few prosecutors are even aware of the challenges.

But the government is taking the issue seriously enough to solicit the first studies to validate crime-scene print identification and set standard procedures for examinations.

Defense lawyers who have brought challenges said they had in some cases secured favorable plea deals or prompted prosecutors to withdraw fingerprint evidence.

Edward J. Imwinkelried, a leading expert on forensic science who has worked with prosecutors and defense lawyers, said there was a “very good possibility” that the challenges would lead judges to instruct juries that a fingerprint analyst was not a scientist offering exact conclusions but an expert giving an opinion.

That, said Mr. Imwinkelried, a law professor at the University of California at Davis, “could conceivably be an important weapon in the hands of defense counsel, because you’ve got a widespread public perception that fingerprint testimony is infallible.”

The door to scrutiny of fingerprinting was opened by two United States Supreme Court decisions that changed the rules governing expert testimony. In two product liability suits —— Daubert v. Merrell Dow Pharmaceuticals in 1993 and Kumho Tire Company v. Carmichael in 1999 —— the Supreme Court declared that federal judges must determine the reliability of expert testimony before admitting it. About two dozen state court systems have followed suit. Judges have already limited the use of handwriting analysis after reliability challenges.

In 1999, Robert Epstein, a federal public defender in Philadelphia, made the first effort to have fingerprint identification declared inadmissible under the Daubert standards. His pretrial motion, in a case involving a man accused of driving the getaway car in a robbery, was denied by Judge J. Curtis Joyner of Federal District Court. But Mr. Epstein’s tactic has nevertheless been widely imitated.

Last year, in a burglary case in Montgomery County, Md., where fingerprints were the only evidence, prosecutors offered a 6-year plea agreement on theft charges, rather than the 10 years the defendant was facing for burglary, after the public defender challenged the admissibility of fingerprinting.

“We decided that rather than go through the trouble of doing the motion we would agree to a plea,” the prosecutor, Michael Banks, said.

Law enforcement officials recognized soon after the Daubert ruling that fingerprinting could be vulnerable to challenges. In early 1999, the Justice Department’s research arm, the National Institute of Justice, started putting together a call for studies to come up with standardized, statistically tested procedures for comparing fingerprints that “produce correct results with acceptable error rates.”

In a sign of further concern, the Federal Bureau of Investigation asked the institute in September 1999 "to withhold releasing the fingerprint solicitation until after the Philadelphia trial had ended," according to institute memorandums obtained by Mr. Epstein. The F.B.I. declined to comment on the matter.

The solicitation was released in March 2000, a few weeks after Mr. Epstein’s client was convicted. The institute received four proposals but rejected all of them and will start the solicitation process over.

Despite all the publicity DNA testing has received, for now, fingerprints are more useful because they are easier to collect than DNA, forensic experts say. But critics say the profession of fingerprint analysis is not as rigorous as generally believed. On a 1995 proficiency test of 156 examiners conducted with the approval of the International...
Association of Identification, the profession’s certifying organization, one in five examiners made at least one “false positive” identification — linking a mock crime-scene print to the wrong person. Fingerprint experts point out that the error rate was lower on subsequent tests.

The challenges have also attacked the variability in training methods for examiners, pointing out that agencies like the F.B.I. have tougher standards than smaller police departments.

And while the International Association of Identification has a rigorous certifying test, about half the current or would-be examiners who take it fail, without apparent career consequences.

"There’s very few employers who will terminate an employee for not passing the test," said Ken Smith, the association’s certification chairman. Mr. Smith added that most of the 5,000 examiners in the country have never taken the test.

While fingerprint misidentifications are rarely discovered, they do happen. Richard Jackson was cleared of a murder conviction in Philadelphia in 1999 because three examiners had erroneously matched his prints to those found at the scene. A similar reversal occurred in 1983 in Minnesota. In that case, both the prosecution and defense fingerprint experts mismatched a print to the defendant.

Paul Sarmousakis, the assistant United States attorney who prosecuted Mr. Epstein’s client, said that the occasional human error did not invalidate fingerprinting. "Because a doctor misdiagnoses someone, does that make the science of medicine invalid?" Mr. Sarmousakis asked.

But Simon A. Cole, a science historian and the author of a forthcoming book on fingerprinting, said print examiners undermined their legitimacy by claiming absolute certainty, which the International Association of Identification’s bylaws require.

"If they want to go in and testify, ‘I think it’s his print and 1 percent of the time I’m wrong,’ then that would be more reasonable," Mr. Cole said.

Mr. Epstein said a test conducted by the F.B.I. in his first challenge showed the lack of rigor. After he filed the challenge but before it was heard by the court, the F.B.I. sent the defendant’s official prints and the crime-scene prints to 53 law enforcement agencies.

But 8 of the 34 laboratories that responded were unable to find a match for at least one of the two latent prints.

The bureau sent the prints out again, with bigger photographs and red dots marking where it thought the crime-scene prints matched those of the defendant. This time, all the laboratories declared the prints a match.

Mr. Epstein has moved for a new trial. However his motion fares, challenges to fingerprinting are likely to continue.

"Every time the state has a fingerprint that’s going to be used as evidence against one of my clients, I’m going to do the same thing over and over again," said B. Michael Mears, the chief public defender for capital cases in Georgia, who brought a fingerprint challenge last year. "And I am going to keep doing it until we win it."

(Editor -- Be prepared. The attacks on the credibility of fingerprints are being mounted not only in court, but also in the media. (See page 6 of this issue.) Another article similar to these appeared in the Los Angeles Times on April 8, 2001. A week later, ABC ran a like story on National TV. Ed German posted a response to the N.Y. Times article on his website, www.onin.com/fp. You can read this article or the L.A. Times article and find the link to Ed’s website from the SCAFO updates page: www.scafo.org/updates.html. Review the criticisms and, in the words from Hill Streets Blues, for those who remember my all-time favorite show, "be careful out there.")
Fact Is, Science Has Never Put Its Finger on Prints

(This article is reprinted from the May 28, 2000 issue a San Francisco newspaper.)

by MIKE WEISS

SOME WEEKS ago, the U.S. Justice Department quietly asked forensic scientists around the country to help prove there is a sound scientific basis for fingerprinting, which, when you think about it, is astonishing.

Of all things, fingerprinting. For a century, the fingerprint match has been the gotcha of criminal proceedings.

Yet the solicitation to potential researchers sounds almost plaintive: “Procedures must be tested statistically in order to demonstrate that following (them) allows analysts to produce correct results with acceptable error rates. This has not been done.”

Not been done? Since 1911, when the first American miscreant among the untold thousands to follow was convicted based on a fingerprint match, it seems that nobody has bothered to challenge two assumptions we’ve all bought into: Fingerprints offer irrefutable scientific proof, and the people who examine them can read the truth in them.

Turns out these may or may not be verities. “Latent print examiners make the claim of absolute certainty for their identifications,” says a brief in a murder case now being tried here in San Francisco. “The assumption of absolute certainty,” argues Deputy Public Defender Michael Burt, “has been maintained by a system of societal indoctrination, not reason, and has achieved such a ritualistic sanction that even mild suggestions that it should be re-examined are instantly regarded as acts of blasphemy. Whatever this may be, it is not science.”

Burt is attempting to persuade Judge Leonard Louie to throw out the fingerprint evidence in a murder-for-hire case against his client, Robert Nawi. When Nawi was arrested in 1998 on an unrelated crime, a San Francisco fingerprint examiner matched his prints to two found at an unsolved 10-year-old murder.

Burt knows that his challenge, “sounds like real trickery. I entered into it myself with skepticism. I had the Nawi case and I was wondering what the hell I’m going to do with it” when he attended a conference in Philadelphia.

There, a defense attorney delivered a talk about a bank robbery case in which he had challenged as scientifically unproven the fingerprint evidence against his client. According to Burt, in order to meet this challenge the FBI sent the prints in the Philadelphia case to 53 experts around the country, certain as only the FBI can be of the outcome.

But 23 percent of the FBI-chosen experts found there was insufficient basis for one match, and 17 percent found insufficient basis for the other. Oops. “The government’s own experiment thus demonstrated how subjective and unreliable fingerprinting can be,” Burt says.

This in turn led to new and largely unremarked-upon challenges in Illinois, Miami, Los Angeles and here. It’s as if a pillar of the criminal justice system were being eaten away by termites. And that in turn led to the Justice Department solicitation.

It now turns out -- and this is breathtaking -- there is no agreed-upon standard for how many ridges in a print must match before an examiner concludes the prints come from the same person; the FBI insists on 12, in the Nawi case the examiner decided eight were enough. In addition, the San Francisco Police Department has ignored its own requirement for annual proficiency testing for examiners.

The examiner who made the Nawi match, Wendy Chong, sounds nonchalant about her subjectivity. “Some people might see a bifurcation as a ridge ending and some might see it as vice versa. And then some people might see a short ridge as being a dot and some people will not enter that in the computer,” Chong testified at a preliminary hearing. “So, it depends on the persons looking at the fingerprint, how they interpret that fingerprint to be.”

Chong says she and other examiners rely on what she calls “poroscopy” and “ridgeology.” But Burt points out that even the man who first coined those terms has acknowledged they are pseudo-science.

A belief in the rigorous scientific basis of fingerprinting, however, seeped into the justice system in part because it was law enforcement people who were the experts, not disinterested scientists. “Few identification specialists were challenged in court. Legal counsel shied away from dwelling on a science considered exact and infallible,” Burt’s brief argues. “It is difficult to comprehend that a complete scientific review . . . has not taken place sometime in the last 100 years.”

But it hasn’t. Which is why the Justice Department is belatedly soliciting scientific studies to validate something we all believed was a sure shot.

It’s outlandish, really. Regardless of how Judge Louie eventually rules in the Nawi case, Burt will have accomplished what defense lawyers are supposed to do to keep our system strong and trustworthy -- challenged its fundamental assumptions.

“This is the kind of stuff,” says the public defender, smiling irressipently, “that’s enjoyable.”

True enough. Nothing’s more of a kick than finding out what we thought we knew was just a bunch of poroscopy after all.

You can e-mail Mike Weiss at mweiss@sfgate.com.
April Meeting Minutes

DATE: April 7, 2001
LOCATION: Hacienda La Fiesta, Knott’s Berry Farm, Buena Park
HOST: Art Coleman
SECRETARY: Ed Palma
SPEAKER: Sgt. John Aerts, Records and Identification Bureau, L.A.S.D.

PROGRAM: The Importance of Fingerprints on the Criminal Justice System

Call to Order at 1930 hours by President Bob Goss


OLD BUSINESS:
Second Reading:
Karen Ciruso, Riverside District Attorney (Active)
Gil Trujillo, Los Angeles Sheriff’s Dept. (Active)
Tom Washington, San Diego P.D (Active)
Tina L. Arevalo, Volunteer, L.A.S.D. (Assoc.)
Stefania Veneri, Intern, San Diego P.D. (Assoc.)

Motion to Accept: George Durgin
Second: Gary Jackson

Swear-Ins by Past President Clark Fogg
Nancy A. Clark -- Los Angeles Police Dept.
Ramon A. Escobedo -- Los Angeles Police Dept.
Darlene Henderson -- Los Angeles Police Dept.
Aurelio Martinez -- San Bernardino Police Dept.
Yolanda Reyes -- Los Angeles Police Dept.
Brenda Morales -- Associate
Monika Kimbrough -- Associate

NEW BUSINESS:
First Readings:
Jacqueline R. Arredondo, Student (Assoc.)
Melissa Goiiaz, Student (Assoc.)
Jennifer Hodgetts, Student (Assoc.)
Eric D. Huber, Student (Assoc.)
Chris Lowe, Student (Assoc.)
Maria L. Wright-Wilson, Student (Assoc.) recommended by Diana Castro, LAPD
Ana Aragonez, OCSD (Active)
Christine Moore, OCSD (Active) recommended by Patti Blume, OCSD
Amber Utley, SBSD (Active)
Mike Utley, SBSD (Assoc.) recommended by Mary Barrie, SBSD
Tina Griffith, self-employed (Assoc.) recommended by Elaine Sena-Brown, SMPD
Jess Baez, LAPD (Active) recommended by Amy L. Adams, LAPD
Rebecca Limon, Intern SDPD (Assoc.) recommended by Ed Palma, SDPD

ANNOUNCEMENTS:
Next Meeting: Steven’s Steak House, City of Commerce, June 2, 2001, host -- Susan Garcia

MISC: George Durgin is seeking speakers for October SCAFO Training Seminar

Attendance Drawing: Not won by Robert Webber, Patricia Garrett, or Nancy Gschwend. No Winners: cash amount now $45.00!

Door Prizes won by: 15 members in attendance

Gifts: Provided by Host

Motion to Adjourn by: Tim Golt
Seconded by: Art Coleman
Meeting Adjourned at 2130 hours.

"Every man owes a part of his time and money to the business or industry in which he is engaged. No man has a moral right to withhold his support from an organization that is striving to improve conditions within his sphere."
- President Theodore Roosevelt - 1908

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   The origin of crime detection & the murder case that launched forensic science

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3 Man arrested by mistake may sue city

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6 Fact is, science has never put its finger on prints

7 April Meeting Minutes

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--- Upcoming Events/Schools/Seminars---

April 25, 2001
   Coachella Valley Forensics Group
   Host Marvin Spreyne

April 30 - May 3, 2001
   CSDIAI 85th Annual Training Seminar
   Concord, CA

June 2, 2001
   S.C.A.F.O. Meeting
   Host Susan Garcia
   Los Angeles Sheriff’s Dept
   Steven’s Steak House, City of Commerce

June 26 - 30, 2001
   International Crime Conference
   100 Years of Fingerprints at New Scotland Yard
   London, UK

July 22 - 28, 2001
   International Association for Identification
   Miami, FL

S.C.A.F.O. Meeting
   Host Elaine Sena-Brown
   Santa Monica Police Dept

August 4 - 10, 2002
   International Association for Identification
   Las Vegas, Nevada

Call for Dates

Field Evidence Technician Course
   Center for Criminal Justice
   California State University, Long Beach
   (562) 985-4940