

# Chapter One



## *An Introduction to Forensic Science*

# Forensic science defined:



- The application of science to the criminal and civil laws that are enforced by police agencies in a criminal justice system.
- *Forensic science is an umbrella under which many professions bring skills to give aid to law enforcement officials in conducting investigation in which crime has been committed.*

# The American Academy of Forensic Science

Criminalistics, engineering science, jurisprudence (law), odontology (teeth), pathology (pathogens), biology, physical anthropology (classification), psychiatry (mind), behavioral science (mind + environment), sociology (social relations), document examination (typewriter, printer, handwriting, forgery), toxicology (drugs), fingerprinting, firearm, bullet (striation comparison), tool mark examination (knives, blades, blunt objects), computer or digital analysis, photography, glass analysis, serology (blood), microscopes, trace evidence (hair, fibers), serial number restoration, arson, explosions (bombs), chemical warfare, metals, paints, soil, polymers, organic compounds, residues, counterfeit money.....

# History and Development

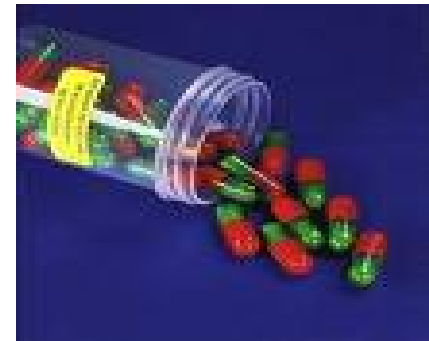
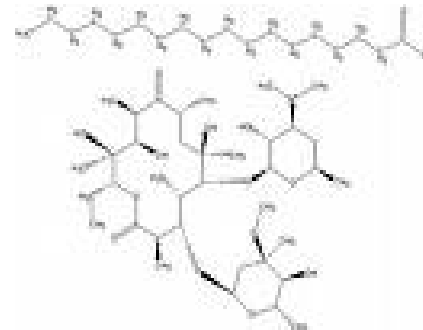
- One of the earliest records of forensic investigation was in China. “A Collection of Criminal Cases” (showed that a woman killed her husband then burned his body via ash vs no ash in his mouth, throat or lungs (pigs))
- Chinese also the first to recognize fingerprints as a means of identification.



# MATHIEU ORFILA



- Spaniard (1814)
- **FATHER OF TOXICOLOGY**
- One of the first to discover arsenic in corpse.
- Wrote first scientific journal on detection of poisons in the body and their effects.



# ALPHONSE BERTILLION



- French (1853-1914)
- Noted for the **FIRST system of personal identification** (Anthropometry) by taking a series of body measurements as a means of distinguishing one individual from another.
- *For 20 years this was the most accurate way for personal identification. In the early 1900's it was replaced by fingerprinting.*

# Bertillon's system pg 9

## RELEVÉ DU SIGNALEMENT ANTHROPOMÉTRIQUE



1. Taille. — 2. Avant-bras. — 3. Buste. —  
4. Longueur de la tête. — 5. Largeur de la tête. — 6. Oreille droite. —  
7. Pied gauche. — 8. Mésien gauche. — 9. Coude gauche.

# Best-known figure in the 1800's

- Was fictional....
- Detective **Sherlock Holmes**
- Created by Sir Arthur Conan Doyle
- Popularized forensics as we know it today.
- *A Study in Scarlet* 1887 (serology/blood)
- This is where the saying “No SH%T Sherlock!!!!” comes from...Sherlock was very, very, very smart in his abilities to solve crime.





# EDMOND LOCARD

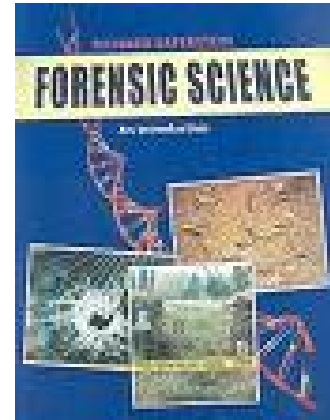


- French (1877-1966)
- Became known as the Sherlock Holmes of France
- [Locard's exchange principle](#)
- Principle states that when two objects come into contact with each other, a **CROSS-TRANSFER** of materials occurs.





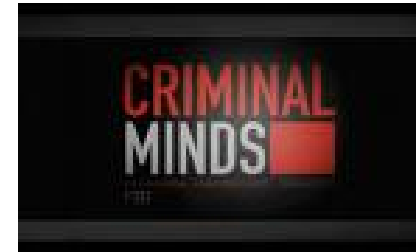
# Richard Saferstein



- About the author of your textbook...
- Retired 1991 after 21 years as the New Jersey State Police Laboratory.
- Currently teaches a course in the role of the expert witness in the courtroom at the law school of Widener University in Wilmington, Delaware.

# CRIME LABORATORIES

- FBI crime lab headquarters is in **Quantico, Virginia** (largest)





# Oldest Forensic Lab

- Los Angeles Police Department
- 1923
- 1948 University of California at Berkeley formed a school of Criminology



# The Federal Government

- Does not have one law enforcement agency or investigative agency with unlimited jurisdiction.
- FOUR major federal crime labs have been created to help state and local forces





# FOUR MAJOR LABS



1. **FBI** (Department of Justice) has largest crime lab located in Quantico, VA. This is the largest crime lab in the world.
2. **DEA** (Drug Enforcement Administration) analyzes drugs seized in violation of federal laws regulating the production, sale and transportation of drugs





# FOUR MAJOR LABS



3. **ATF**-Bureau of Alcohol, Tobacco, Firearms and Explosives (Department of Justice) Atlanta, San Francisco, Rockville, MD?



4. The **U.S. Postal Inspection Service**-maintains labs that are concerned with criminal investigations related to the postal service (ie- anthrax-laced letters)



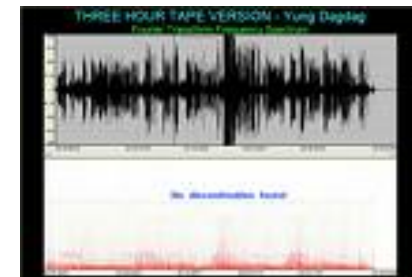
# Services of the Crime Laboratory

- **Physical science unit-** chemistry, physics, geology...paint, glass, explosives, soil
- **Biology unit-** DNA, dried bloodstains, body fluids, compare hair and fibers, wood/ plants
- **Firearms unit**
- **Document exam unit**
- **Photography unit**
- **Toxicology unit-** drug analysis



# Services of the Crime Laboratory

- Latent Fingerprint unit
- Polygraph unit
- Voiceprint analysis unit
- Crime-scene investigative unit





# OTHER Services



- Forensic psychiatry- human relationships
- Forensic odontology- teeth/ bite marks
- Forensic engineering- origins of fires or explosions
- Forensic computer/ digital analysis- cell phone trace, hacking...

