Dactylography

Dr. Avinash Pujari

Recording of Fingerprints

1. **<u>Plain or dab impression</u>** is obtained by gently pressing the inked surface of the tip of finger on paper.

2. **<u>Rolled impression</u>** is taken by rolling the inked finger from side to side

FIGURE 2.3 Skin slippage from drowning and decomposition. Skin may also slip off due to the heat. Only the skin is needed to take a fingerprint. See next photos.

FIGURE 2.4 The skin on the ends of the fingers can be removed for printing. See next photo.

FIGURE 2.5 This skin can easily be printed.

FIGURE 2.6 If necessary, the ends of the fingers or the entire hand may be removed and sent to the lab for printing.

Lockard's Principle of Exchange

- When two objects come into contact with each other, there is always some transfer of material from one to the other.

“Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness against him. Not only his fingerprints or his footprints, but his hair, the fibres from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. All of these and more, bear mute witness against him”

Development/Enhancement of Latent Fingerprints

- Latent prints mostly contain residues from sweat gland (eccrine) present on the palmer surface of hand.

- These secretions may contain-

  Salts- sodium chloride and potassium chlorides

  Organic fraction- amino acids, urea and lactic acids

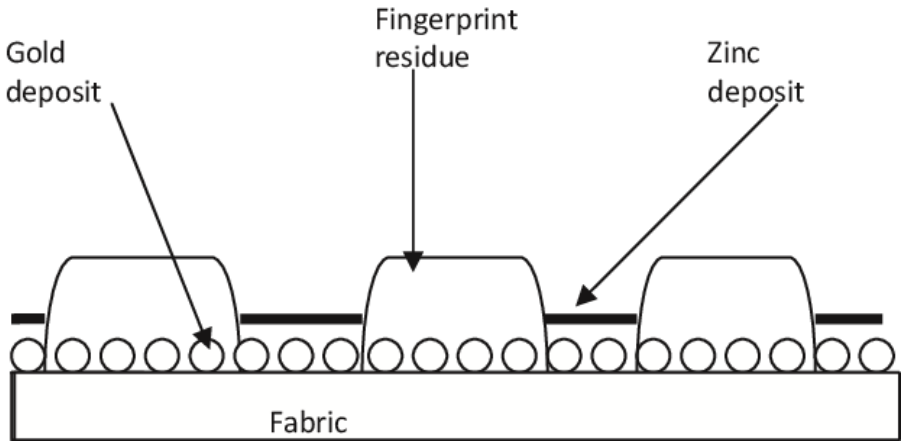
Non-Porous Surfaces

- Examples- glass, gloss-painted surfaces, metal and plastic.

1. Visual examination: Oblique illumination may reveal latent fingerprints, particularly if the surface is smooth and clean.
2. Fluorescence examination: High intensity light source or argon-ion laser or UV light may reveal latent fingerprints.

Development techniques

- Vacuum metal deposition (VMD)
- Fingerprint powders
- Superglue fuming
- Small particle reagent (SPR)
- Iodine Fuming



Porous Surfaces

- Examples- Paper, wall paper, cardboard and matt emulsion painted surfaces.

1. Visual examination: less likely to reveal fingerprints on porous surfaces.
2. Fluorescence examination: may sometimes detect fingerprints either by the rarely observed fluorescence of naturally occurring components or fluorescence of some contaminants

Development techniques

- DFO (1,8-diaza-9-fluorenone)
- Ninhydrin
- Powders
- Superglue fuming
- Physical developer

Fingerprint classification

- Sir Edward Henry devised a fingerprint-classification system that was adopted in British India. He presented it in UK in 1899.
- The modified Henry system followed in the US is used for the classification of 10-print sets, or a fingerprint card, for one individual.
- The development of computerized fingerprint storage and retrieval systems has made searching larger files for single and partial prints routine. It has also rendered classification largely unnecessary.

Automated Fingerprint Identification System (AFIS)

- AFIS is a storage, search, retrieval and exchange system for finger and palm print electronic images and demographic data (biometric data).
- This enables a fingerprint to be compared with millions of file prints within a matter of seconds.

Fingerprint reader (FINDER)

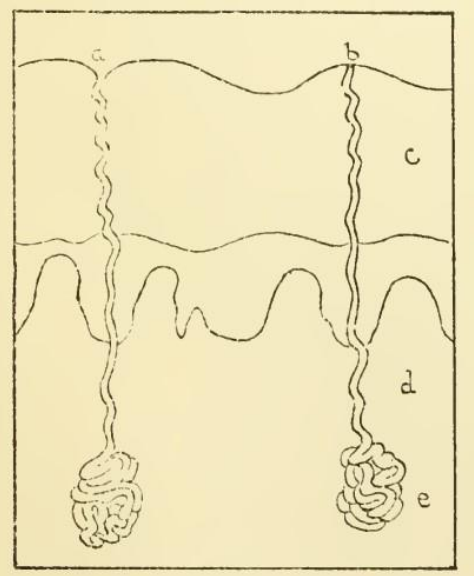
- It is a computerized automatic fingerprint-reading system
- Prints of eight fingers are recorded excluding little fingers which are then converted to digital data to be classified, codified and stored in a computer.

Medico Legal Importance

- Identification of criminals whose fingerprints were found at scene.
- Identification of fugitive through fingerprint comparison.
- Exchange of criminal identifying information with identification bureau of foreign countries in cases of mutual interest.
- Identification of unknown deceased person, persons suffering from amnesia, missing persons and unconscious patient.

- Identification in disaster work.
- Identification in case of accidental exchange of newborn infants.
- Identification of licensing procedure for automobile, firearm, aircrafts, etc.
- Problems of mistaken identity and detection of bank forgeries.

Poroscopy



SECTION OF SKIN, SHOWING SWEAT-GLANDS, DUCTS AND PORES

- Ridges on fingers and hands are studded with microscopic pores formed by mouths of ducts of thousands of subepidermal sweat glands.
- These pores are permanent and unchanged during life and vary in size, shape and width.
- This method of examining pores is called poroscopy and is useful when only fragments of fingerprints are available in which there is no specific pattern.

FIGURE 2.9 This "hand" specimen was discovered in a dumpster. Law enforcement was worried this may be part of a homicide. Notice there is only one smaller digit. See next photo.

FIGURE 2.10 Further examination of the hand and the X-ray revealed the specimen to be a bear paw. A local taxidermist threw the specimen in the dumpster.

Thank You