Fingerprinting

Forensic Science

- Even with the recent advancements made in the field of DNA analysis, the science of fingerprinting, dactylography, is still commonly used as a form of identification, whether it has been taken in the traditional way using ink and paper or scanned into a computer database.
- Fingerprint identification is based on the classification of fingerprint patterns, which can not only prove that a person was present at a crime scene, but can also be used to compare with the stored fingerprints of millions of other known criminals.

Fingerprinting History

- Sir Francis Galton was one of the first to indulge himself into the possibilities of using fingerprints as a form of identification. His work in this field inspired the creation of an early fingerprinting filing system, known as 'icnofalagometrico', developed by an Argentinian police member, Vucetich, whom had had correspondence with Sir Francis. The first fingerprinting bureau was opened by Vucetich in 1892, the same year Sir Francis released his works on fingerprinting.

The Ten Print System

- In 1896, an English fingerprint scientist by the name of Sir Henry Edward, who was a pupil of Galton, created the 'ten print' system of classification, which became the most commonly used technique until the introduction of computers in the late 20th century.
- It was first implemented in India in 1897 and had its own unique way of classification. Edward divided the patterns in fingerprints into two groups known as value patterns, which contained whorls, and the no-value patterns, which contained loops and arches.

Assigning Values to Prints

- A fingerprint that contains a whorl pattern was given a number value that depended on which finger the print came from. A thumb on the right hand containing a whorl is valued with number 16, but the little finger on the left hand containing a whorl was only given a value of 1. Edward then grouped together values from certain fingers, forming a fraction-like code for each set of ten fingerprints. Altogether, Edward created 1024 individual codes, his pioneering work ensured that any set of prints could be filed using this code. His system of fingerprint filing worked very well in identifying criminals working under aliases.

- Suspected criminals were fingerprinted and coded before being compared against known criminals stored under the same code, making it much faster searching for a match as investigators didn't have to search through the entire collection. This system did however, have some drawbacks, as a whole and complete set of ten fingerprints was required, making it difficult to identify single prints found at a crime scene. A single print identification system was later developed in the 1930's allowing the classification and filing of single prints from individual fingers.

Improvements To The System

- If the print has an unusual shape or characteristic, it is easily and quickly matched, but in most cases, fingerprints found at a crime scene are rarely fully intact and therefore influences the quality of the search. As time progressed, fingerprint collections grew and the job of searching them became more difficult and time consuming. Finally in the 1960's, computer systems were introduced and constantly improved until they were fast and efficient and able to be used for public purposes.

Comparing Prints

- The comparison of fingerprints is a time consuming procedure and requires experience and great skill. Examiners look at the shape of the ridges and compare the points where the ridges start, end, join and split. The positions of short ridges, dots and any enclosed areas are also noted. Examiners also search for points of similarity between the fingerprint mark and the print to try and decide if the two patterns match.

Computer Comparison

- The computer systems used at present are able to scan fingerprints that have been found at a crime scene and automatically find and record the ridges, whorls, arches or loops contained within. This data is then compared by the computer with information that is similar in the database and finally produces a shortlist of matches in order of likeliness. The crime scene fingerprint is compared manually by investigators with the shortlist to identify any matches.