

Fingerprints solving the unsolvable

by Sergeant Marty Wise, Fingerprint Bureau

On any given day, officers from the Queensland Police Fingerprint Bureau perform numerous functions such as maintaining criminal records, identifying unknown deceased or amnesia victims, and processing fingerprint forms for civil purposes, including visa applications.

All of these processes are vitally important, but the one process that involves the majority of a fingerprint expert's time is the identification of latent fingerprints from crime scenes. In their own right, latent fingerprints can inextricably link a person to a crime scene or exhibit and in many circumstances, provide the only positive identification evidence relating to a specific case.

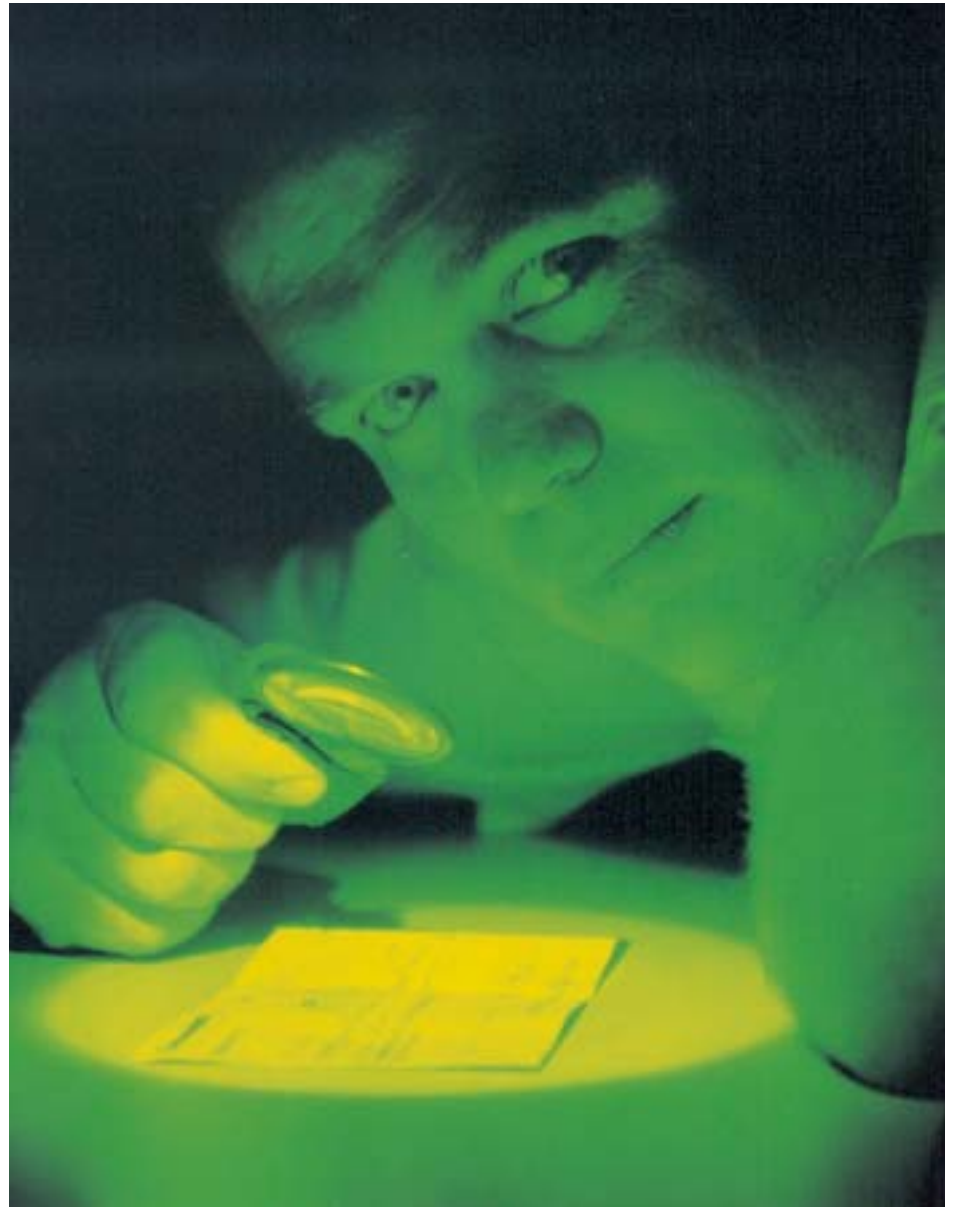
Latent fingerprints

What is a latent fingerprint? In simple scientific terms, a latent fingerprint is the residue of friction skin oils and waxes deposited on a surface upon contact with the friction ridge skin. This skin is found on fingers, palms and the soles of the feet.

The term latent means hidden and it is often the case that latent fingerprints are only visible after the application of certain techniques – the tried and true brush and powder method being the most common. The powder adheres to the



Teamwork achieves results... Officers search latent fingerprints against the Australian Fingerprint Database and then compare the prints with possible ten print matches.



Latent fingerprints are hidden from sight... Some surfaces and materials need more than the common powder and brush technique to make latent fingerprints visible.

friction ridge skin deposit, making visible the identifying ridge features of the latent fingerprint.

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In Australia every year, tens of thousands of crimes are solved by the identification of fingerprints from crime scenes. The worth of latent fingerprint identification can be enormous, it may solve one crime or it may well provide a crucial breakthrough in a series of

crimes, thus solving many linked offences.

In Queensland, all latent fingerprints of a suitable quality are searched against the Australian Fingerprint Database. In relation to serious crimes, officers are constantly reviewing unsolved cases and re-examining specific evidence. In the eyes of fingerprint experts, a serious crime, no matter when or where it occurred, is always worthy of a fresh look, and recent results have backed up this theory.

Solving the unsolved

Some people refer to old serious crimes as historical, however, at the Queensland Police Fingerprint Bureau, these crimes

are treated in very much the same way as a crime committed today would be assessed and analysed.

For example, in 1999, Operation Javelin began in Queensland. The main focus of this operation was to investigate unsolved sexual offences. Fingerprinting was one of the forensic tools used in this operation and as a result, more than 160 identifications were made from crime scenes that related to sexual and other serious offences.

Immediately prior to the operation commencing, fingerprints had identified two serial sex offenders. The first offender was identified at two rape scenes as well as a sexual assault scene. These crimes were spread over 10 years and occurred in Brisbane and Townsville. As a result of the latent fingerprint identifications in each of these cases, the offender was convicted and sentenced to 15 years imprisonment and classified as a serious violent offender.

The second offender was initially identified at a 1996 rape scene in Townsville by DNA evidence. Investigators used this form of forensic intelligence to notify the Fingerprint Bureau and ask that searches against unsolved crimes be made in relation to this offender. As a result of this action, fingerprints identified the offender at two rape scenes, four aggravated/sexual assault scenes and 12 break and enter offences. In almost every case, including the break and enters, the offender targeted dwellings which were occupied by single females. This serial offender was jailed for life for some of these crimes with the other matters still to be finalised before the courts. All of these offences were committed during the 1980s.

During Operation Javelin, other serial sex offenders were identified. Fingerprints were again used to link a sex offender to two crimes on the Gold Coast. The first case was an attempted rape from 1981 and the second case was a sexual assault on a young girl in 1988. This offender subsequently pleaded guilty.

In yet another case that showcases the value of forensic intelligence, communication and investigative dedication, fingerprints identified a suspect for the sexual assault of a Japanese student in Cairns in 1992 and five break and enter offences. Police investigators used this information to

investigate similar crimes and this inevitably led to the solving of two other rape cases involving foreign visitors, utilising DNA technology. Many other sex offenders were identified and have subsequently been convicted due to fingerprint evidence.

Although this operation has ceased, fingerprint experts and investigators regularly re-activate unsolved files in the hope that new leads will come to light. Only recently the Fingerprint Bureau identified a suspect in relation to a sexually motivated attack on a young boy. Quite literally the search never ends.

These are just a few cases that are solved each year by the magic of fingerprints. All manner of crimes are solved utilising this vital forensic tool, every day of the year.

For the victims of crime, particularly serious crime, you are never forgotten.



Re-examining specific evidence... No matter when a serious crime occurred, fingerprint experts are always ready to take a fresh look at the evidence to solve the crime.

SAGEM system

by Sergeant David Casey,
Fingerprint Bureau

Recognised more for mobile phones, SAGEM is a French group of high technology companies, which worldwide has over 54 Automated Fingerprint Identification System (AFIS) sites.

SAGEM fingerprint computers are used internationally by various police services including the United States of America's Federal Bureau of Intelligence (FBI), Interpol, Israel, Germany, and Scotland, as well as by the German immigration authorities.

All fingerprint images are stored in 256 grey scale instead of the previous binary system. This allows for actual identifications to be carried out on screen, as the images appear as they do on fingerprint forms.

Forms required from other jurisdictions can be printed directly to enable hard copy identifications to be made. This can save several weeks in the identification process by eliminating the time it takes for an original set of prints to be received from interstate.

The AFIS is capable of carrying out seven different types of search: ten print to ten print; ten print to unsolved latent; palm print to unsolved palm print; latent to ten print; latent palm to palm print; latent to unsolved latent; and latent palm to unsolved palm. Within AFIS there are separate matching processors to handle ten print, latent and palm searches.

When latent prints are scanned into the computer and prior to searching, the images may be processed using histogram modifications, a range of filters to remove noise including Friction Ridge Transformation and Exponential Histogram Transformation, and other functions to optimise the image for clarity. Images also may be inverted in colour from white to black and vice versa, and can be re-sized if the image has not been printed on a one-to-one scale.

The SAGEM system is primarily designed to be used in conjunction with inkless live scan ten print units. The New South Wales Police Service has already taken up this option which enables the charging stations to receive the results of ten print and latent searches prior to bailing an offender.