

The Birth of Fingerprinting in Modern Society

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CSI (Crime Scene Investigation) is one of the top rated shows on cable television today. This popular show demonstrates the most advanced techniques for hunting down and convicting a suspect in 2005. But how were crime scenes investigated before the breakthrough of modern technology? Interestingly, many of the crime scene methods practiced today were also popular methods in the 1890s. The 1890s represent a period when the foundations of modern investigation methods began. One monumental breakthrough in criminal investigation was the discovery of fingerprinting. Fingerprinting changed English investigation units and a fingerprint bureau was fully implemented in Scotland Yard in 1901. Prior to the revolutionary discovery of fingerprinting, detectives and other criminal investigators relied on mainly circumstantial evidence and witness testimonies. However, the Jack the Ripper murders in East London and cases of misidentification encouraged British authorities to research new methods of criminal investigation. Fingerprinting challenged previous notions of human identification and spurred new scientific technology in crime investigation, allowing police authorities to accurately identify and categorize previous criminals, lessening the number of misidentifications, and directly linking a suspect to a crime scene.

Many civilizations prior to the 1890s recognized the uniqueness of a fingerprint and its beneficial use in personal identification. The Babylonians fingerprinted on clay tablets as a form of identification on receipts and important documents to protect themselves against forgery. Also, the Chinese Tang Dynasty (618 to 906 A.D.) evidently utilized their fingerprints to seal letters and documents, and they came up with their own system of fingerprint characteristics including swirls and loops.¹ Centuries after the Tang Dynasty, the modern practice of fingerprinting can be attributed to two intellectuals, Dr. Henry Faulds and Sir William Herschel, who both came across the usefulness of a fingerprint as a means of identification around the same time, but in two different areas of the world. Studying in Japan, Faulds first became interested in fingerprints while working with a piece of pre-historic pottery that still showed a visible fingerprint. In October 1880, Faulds published the first known article in *Nature* regarding fingerprinting as a means of identification in criminal investigations.² Sir William Herschel read Faulds' article and responded to it in the next issue of *Nature*.

In the article, Herschel, a British magistrate, criticized Faulds' work as a compilation of general speculations. Because India, in 1858, had an obvious problem with "pensions from being paid out to imposters," Herschel claimed that he had been practicing fingerprinting as a practical way to secure signatures on public documents for at least twenty years prior to 1880.³ Harry Soderman, Head of the Institute of Police Science, and John O'Connell, Deputy Chief Inspector in 1936 comment: "If we

compare Hershel's work of twenty years during which he established the usefulness of fingerprints as a means of identification, and Faulds' brief work resulting only in general speculation, we must certainly regard Hershel as the pioneer of modern fingerprinting.⁴ The scholar who first developed the modern fingerprinting techniques is a matter of opinion to many investigators. While the debate rages over who deserves more recognition for their intellectual scholarship on fingerprinting, both men are acknowledged for their pivotal roles in the introduction of fingerprinting.

Faulds and Hershel's ideas on fingerprinting were ignored in Britain until 1888, when scientist Sir Francis Galton gave their work credibility. Galton, a cousin of Charles Darwin, was interested in using the ridge patterns in a fingerprint to reveal a person's mental and physical attributes.⁵ He hoped that his study of fingerprint ridges would lead him to the discovery of the best breeding characteristics in Britain.⁶ The study of eugenics was a popular topic in the late nineteenth-century, as many scholars looked for ways to reverse the process of degeneration in Victorian society. Edwin Ray Lankester, author of *Degeneration: A Chapter in Darwinism*, stated, "To us has been given the power to *know the causes of things*, and by the use of this power it is possible for us to control our destinies."⁷

However, Galton's published work inspired Sir Edward Henry, who was the Inspector-General of Police in Bengal, India, to develop a classification system for different kinds of fingerprints. Based on ridge patterns, this system made it easier for someone to sort through fingerprint collections. Once he developed a classification system, Henry was able to make Galton's theories applicable to police work.⁸ Furthermore, Henry was not the only one who recognized Galton's work, as the *New York Times* stated that "it would, no doubt, be a gain to civilization to have an infallible means of identification."⁹ Galton and Henry fulfilled society's urgency for a reliable identification system, and the combination of both these men's work became known as the Galton-Henry classification system in 1905. This classification system simplified the method of fingerprinting to be easy enough for police to use in crime investigations.

While fingerprints were emerging as a reliable method of identification, the *bertillonage* system was increasingly viewed as a time consuming and unreliable method of investigation. In 1879, Alphonse Bertillon, a clerk in the Police Department in Paris, invented the *bertillonage* system which was routinely used in crime scene investigations for two decades prior to fingerprinting. Bertillon founded his system on the works of a Belgian prison warden named Stevens in 1860, who first attempted to identify criminals by the measurements of their features and appendages. The study of anthropometry, the science of measuring the body, provided the main focus of the *bertillonage* system. Bertillon's system mainly included the tallying of "height, sitting height, length of outstretched arms, length and breadth of head, length of right ear, and other measurements."¹⁰ In its first year of practice in 1882, the *bertillonage* system helped police identify forty-nine false identities.¹¹

However, the system presented more complications than benefits. One common complication was inaccurate measurements. Also, many people were sometimes arrested only because they fit the measurements of an already registered criminal. Even with the incorporation of photography, detectives found this system too complicated to be considered efficient.¹² Investigators would photograph a crime scene

hoping to be able to come up with accurate measurements using specific geometric scales.¹³ Photographs simply served as a convenience to crime scene sketchers and served as a "permanent reconstruction" of a crime scene.¹⁴ In addition to its inefficiency, since the system was based on measurement, it could only be applied to adults twenty years or older because that was when men and women typically stopped growing. With its many faults, Bertillon found himself struggling to defend his system against the new idea of fingerprint identification.

Although the *bertillonage* system was seen as inefficient as fingerprinting emerged, not all of Bertillon's contributions to crime investigation were completely discredited. The method which Bertillon called the *portrait parle* provided the language for a witness to accurately describe and categorize a criminal. Soderman and O'Connell note that the *portrait parle* can be divided into four categories: "determination of color, morphological determinations, general determinations, [and]... descriptions of indelible marks."¹⁵ In addition to these four broad categories, there were specified sub-categories, such as peculiarities of the helix.¹⁶ However, these tedious descriptions still relied on the memory of witnesses and victims. While witnesses' memories could not always be reliable, the distinctive marks category often helped individualize suspects. These distinctive marks included moles, scars, and tattoos.¹⁷ Moles, scars, and tattoos presented individualized characteristics to witness testimonies, but the fact that these markings were oftentimes very small meant they could also be easily overlooked. Although Bertillon's methods of investigation proved to be unsuccessful, his work demonstrated the first attempts to apply scientific reasoning and thought in a crime scene.

Because of the consistent inaccuracies with the *bertillonage* system, Britain decided to investigate a new method of crime investigation, especially after the brutal Jack the Ripper murders in Whitechapel in 1888. The Whitechapel murders spurred a drastic increase in awareness toward crime. *The Times* mentioned: "Many murderous or burglarious mysteries have never been cleared up, though, like the Whitechapel murders, they created profound sensation and set the whole community on the alert."¹⁸ After hearing about its acclaimed success in India, the British government wanted to further investigate fingerprinting. The formation of the Troup Committee in 1893 included Charles Edward Troup, "an official of the Home Office" in London, Major Arthur Griffith, and Melville Macnaghten.¹⁹

The Committee had four main objectives: to learn about the common practices of identification, to study Bertillon's system and its reliability, to inquire about the new system using "finger marks", and to record the advantages of each method and how they could be implemented or substituted in crime investigation.²⁰ Over the course of a year, the Committee researched and studied every type of investigation method, but they found Galton's method the most interesting. The Committee read over Galton's book and was even sent to Galton's laboratory in South Kensington Museum to witness the system firsthand.²¹ In July 1893, *The London Times* wrote: "There seems to be thus put within our reach an almost perfect criterion of personal identity."²² Galton knew himself that the system was not yet perfected, but the Troup Committee still believed his identification system to be the most beneficial and saw great potential for it.

As a result of the multiple inquiries on identification systems, the Troup Committee concluded that *bertillonage* was too time-consuming and often resulted in

unreliable measurements. But, it did not discard the system entirely yet. The Troup Committee instead proposed that all suspects should have prints taken of all ten fingers to be kept on file; however, the classification of criminals would still be by the *bertillonage* system. The committee wanted to make sure that if it started to use the fingerprinting system that it would have fingerprints already on file, but the committee was still skeptical of the system, so it still relied on the *bertillonage* system for criminal identification.

Though fingerprinting slowly gained recognition, police and detectives still relied on their common crime investigation techniques. Including the *bertillonage* system, they mainly arrested criminals based on witness testimonies. However, this technique often resulted in misidentification, as for example in the case of Adolf Beck and William Thomas in 1896. Adolf Beck was falsely accused as a man who befriended women only to rob them their jewelry. Ten women recognized Beck as their perpetrator in a line up.²³ Charged as guilty, Beck served seven years in prison. Three years after his release, Beck was again accused of the same crime, but these crimes took place when Beck was in prison, ruling Beck out as a possible suspect. A week later, police arrested a man named William Thomas who was caught swindling two women for their jewelry.²⁴ The women admitted their mistake in identifying their perpetrator once they saw Thomas at the police station. Although Thomas eventually confessed to the crimes, this case demonstrates the unfortunate consequences of relying solely on witness testimonies and descriptions.²⁵ Beck's situation convinced police authorities of the immediate need to implement fingerprinting into their investigations to eliminate the possibility of this circumstance happening again. The police's immediate action to solve the problem of false identifications could be viewed as a dramatic shift in the fairness of the judicial system in comparison to the Dreyfus Case earlier in the decade.

Scotland Yard hesitated to implement fingerprinting prior to Beck's case in 1896 due to some classification problems that still had to be figured out. Sir Edward Henry fixed this problem by developing thirty-two classifications for fingerprints.²⁶ While the system was based on a mathematical formula, "the comparison was made by noting the characteristics...whether the general pattern is a whorl, a loop, an arch or a composite, and then by taking into consideration the number of ridges and breaks and the 'lakes' formed between the ridges."²⁷ Scotland Yard formed the Fingerprint Bureau in the Criminal Investigation Department in 1901 which used Henry's thirty-two classification system. Within a period of four years until 1905, the Bureau had accumulated ninety thousand fingerprints of former criminals. However, none of these prints were ever used in court as evidence against a criminal until 1905 because of the authorities were hesitant to use a fingerprint as a reliable source of evidence in a courtroom.²⁸

The first case in which Scotland Yard brought fingerprints into a courtroom as an influential piece of evidence was the Stratton Trial in 1905.²⁹ This murder case involved an older couple, Mr. and Mrs. Farrow, who were found by their apprentice one morning brutally murdered in their paint shop.³⁰ At the scene of the crime, Detective Collins, who was second in command of the new fingerprint branch, discovered an open, empty cash box on the floor. In addition, he found three black nylon masks left in Mr. and Mrs. Farrow's room. While there were no witnesses at

the crime scene, detectives ventured to talk to the owners of neighboring shops and collected as much information as they could about the activity around the shop that morning. They found out three young men had been lingering around the shop earlier that day, two of the men brothers. Assistant Commissioner of Scotland Yard, Melville Macnaghten arrested Alfred and Albert Stratton, while the third suspect was never found.³¹

Their primary piece of evidence to link the Stratton brothers to the scene of the crime was a thumbprint Macnaghten discovered on the cash box. Detective Collins knew enough about fingerprints to determine that the print on the cash box was a thumbprint due to its size, and that it was the right thumb by the slope of the ridges, because the right hand has a steeper slope. Sir Edward Henry and Macnaghten, who "had managed to win and keep the respect and devotion of all kinds of men in the service"³², thought this case would be the perfect opportunity to prove the reliability of fingerprinting in crime investigation.³³ However, they first had to prove that the thumbprint belonged to one of the Stratton brothers. The thumbprint did not match prints already on file, and did not match Sergeant Atkinson's print, who accidentally touched the cash box at the crime scene. Mr. and Mrs. Farrow also had their fingerprints taken, which was the first time corpses were fingerprinted.³⁴ Comparing a photograph of the fingerprint on the cash box to an imprint of Alfred Stratton's thumb, the detectives of Scotland Yard knew they had their suspects.

Although the prosecution believed in the accuracy of their main piece of evidence, they knew they faced a challenge to convince the rest of the courtroom of the validity of the thumbprint. Before the Stratton brothers were brought to trial, their "lawyer let it be known that if the case were brought to trial, he would call in two experts to the witness stand to prove that Henry's fingerprint system was undependable."³⁵ In previous trials, physical evidence was seen as too easy to manipulate.³⁶ However, Judge Channell regarded the thumb print as valid evidence in the case.³⁷ Collins convinced the Judge by presenting side by side displays of both prints, and showing their identical eleven points. While Judge Channell agreed to the validity of the thumbprint, he advised the jury to not act upon that piece of evidence alone.³⁸ The defense did not believe that one fingerprint was sufficient enough to prove the brothers' guilt. A number of doctors and scientists, including Henry Faulds, did not trust the print of one finger; rather, they believed that all ten fingers should be looked at, especially when the suspect could be hanged.³⁹ The Scotland Yard's decision to put forth the thumbprint on the cash box as a piece of evidence, and the Judge's acceptance of the print to be a part of the prosecution illustrated the growing recognition of fingerprinting at the beginning of the twentieth-century.

The final obstacle the prosecutor for the Stratton trial, Prosecutor Muir, faced was to persuade the jury of the reliability of the thumbprint. Muir had a special interest in fingerprinting, so he presented a sufficient amount of information on the uniqueness of a print. Because the print on the cash box smudged, Muir had to demonstrate in the court room that the clarity of a print depended on the amount of pressure a person applied to the object.⁴⁰ Muir's example provided the jury with the valid information that a fingerprint retains the same classification no matter how much pressure is applied. The defense tried to disprove Muir's claim that "no two fingers had identical markings" by bringing in another fingerprint expert who emphasized

the theoretical basis of fingerprint identification at Scotland Yard.⁴¹ The jury did not find the defense's argument to be stronger than Muir's and the Stratton brothers were sentenced to death. The verdict of this trial and the evidence presented forever changed the methods of crime investigation and prosecution in the court of law. The Stratton Trial represented a critical point in criminal investigation. It allowed fingerprints to be a source of valuable evidence, but more importantly, it symbolized the growing urgency to correctly identify criminals and eliminate false identities.

While Europe was enraptured with the notion of degeneration in society, fingerprinting emerged as a modern advancement in criminal investigation illustrating the positive effects of a "degenerate" society. The late nineteenth-century in Europe was looked upon as a period of decadent behavior, including a rise in drinking, drug usage, and crime. Many scholars in this period were constantly looking for an explanation to attribute to this behavior, including Francis Galton. However, instead of finding a reason behind this degeneration, the method of fingerprinting emerged, fascinating criminal investigators. Fingerprinting was welcomed by Victorian society, which was ready for a reliable and accurate method to catch criminals in response to the Whitechapel murders and other misidentification methods. Although the decade of decadence saw a drastic rise in sensual pleasure, one should not overlook the monumental advances in crime scene investigation methods that are still used today. Fingerprinting represented a significant reaction and solution to a decadent society which appeared to be spiraling out of control in the 1890s.

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ENDNOTES

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- ² *Ibid.*, 58.
- ³ *Ibid.*, 57-58.
- ⁴ *Ibid.*, 58.
- ⁵ Colin Beavan, *Fingerprints* (New York: Hyperion, 2001), 13.
- ⁶ Colin Beavan, "Interview: Colin Beavan discusses early fingerprint use," by Robert Siegal, *All Things Considered*, (9 May 2001): 1.
- ⁷ Ledger, Sally and Roger Luckhurst, *The Fin de Siecle: A Reader in Cultural History c. 1880-1900* (Great Britain: Oxford University Press, 2000): 5.
- ⁸ Beavan, 13.
- ⁹ "Identification by Finger Tips," *New York Times*, 23 August 1891.
- ¹⁰ Joe Nickell and John Fischer, *Crime Science: Methods of Forensic Detection* (Lexington, KY: University of Kentucky Press, 1999), 8.
- ¹¹ Soderman and O'Connell, 43.
- ¹² *Ibid.*, 45.
- ¹³ *Ibid.*, 45.
- ¹⁴ *Ibid.*, 92.
- ¹⁵ *Ibid.*, 45.
- ¹⁶ *Ibid.*, 48.
- ¹⁷ *Ibid.*, 50.
- ¹⁸ "A Life's Reminiscences of Scotland-Yard," *The Times*, 27 October 1890, col D.
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- ²⁰ Nigel Morland, *An Outline of Scientific Criminology*, 2nd ed. (New York: St. Martin's Press, 1971), 30.

²¹ Thorwald, 45.

²² "Dr. Galton on Finger Prints," *The Times*, 26 July 1893, col F.

²³ Beavan, 160.

²⁴ *Ibid.*, 161-163.

²⁵ *Ibid.*, 164.

²⁶ Sir Ronald Howe, *The Story of Scotland Yard* (New York: Horizon Press, 1965), 77.

²⁷ *Ibid.*, 77.

²⁸ *Ibid.*, 78.

²⁹ Beavan, 167.

³⁰ Thorwald, 75.

³¹ Beavan, 168-169.

³² Wensley, Frederick Porter, *Forty Years of Scotland Yard*, with an introduction by George Dilnot (New York: Greenwood Press): 32.

³³ *Ibid.*, 165.

³⁴ Beavan, 14.

³⁵ Thorwald, 78.

³⁶ Beavan, 18.

³⁷ Morland, 34.

³⁸ Howe, 80.

³⁹ Beavan, 18.

⁴⁰ Howe, 79.

⁴¹ *Ibid.*, 80.