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POLICE SCIENCE



SCIENTIFIC EVIDENCE IN CRIMINAL CASES

III. FINGER-PRINTS AND PALM-PRINTS*

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Finger-Prints:

The science of personal identification by means of finger-prints is based upon the fact that no two individuals have exactly the same arrangement and formation of the papillary ridges of the finger-tips. These ridges, which produce the finger-print impressions, are discernible in the early stages of fetal life, and except for a shrinkage in old age the finger-print pattern and its minute distinctive characteristics remain the same until complete decomposition after death.¹

There is usually a sufficient amount of moisture (salts, water, and fatty substances secreted by sweat glands) on a person's finger-tips so that when they come in contact with an object, such as a door knob, a window pane, a weapon, etc., an imprint is made of the papillary ridges (and sweat pores). Ordinarily such impressions are

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¹Galton, *Finger-Prints* (1892) 58. The development of the finger-tip patterns is accomplished during the third and fourth months of the embryo. Bonnevie, *Nyt. Mag. f. Naturvidsk.*, vol. 65 (1927).

visible to the naked eye of a trained observer, and may be photographed in their natural state. When they are not sufficiently clear, developing powders may be used to fully disclose these characteristic features.²

The taking of a person's finger-print (or prints) for the purpose of comparison with one or more found at the scene of a crime involves a very simple process. A thin layer of ink, of the type ordinarily used for printing purposes, is spread upon a glass or metal surface, and in this the finger-tip is rolled so that the entire surface becomes evenly coated. It is then rolled upon a sheet of white paper or smooth card-board. The resulting impression, with its characteristic features, constitutes the standard for comparison with the evidence print.

In instances where a complete single finger-print impression found at the scene of a crime is considered identical with the standard obtained from a suspect, the mathematical possibility of error—that is, of two different individuals making exactly the same print—has been estimated at approximately one in sixty-four billions.³ Where

²A number of different powders may be used, such as graphite, bone charcoal, carbonate of lead, finely ground metal particles (e. g., aluminum, bronze), etc. One authority states that the most satisfactory results are obtained with powders whose bases are the heavy metals, because owing to their density the particles of powder adhere tenaciously to the oily deposit of the ridges while this property does not make their removal from the furrows difficult. For the development of the ridge pattern he found that red lead and lead carbonate gave the best results, but that barium peroxide and barium carbonate, owing to their "balling" effect were particularly easy to use in practice; and that for the development of the pores, mercuric oxide gave the most satisfactory results, since it was amenable to the most intimate grinding and yet a powder of high density. See Rhodes, "The Development and Photography of Fingerprints," published in the Shanghai Police Gazette of March, 1934, as a reprint from the "Revue Internationale de Criminalistique."

In addition to powders, the application of iodine fumes is sometimes used to develop prints which are so latent, usually appearing on paper, that ordinary powders do not assist in bringing them out.

In this connection, mention should be made of a new method devised for the photographing of finger-prints on multi-colored objects. Detective Inspector Alan Evans of the Criminal Investigation Department of the Derbyshire Constabulary, England, found that by using anthracene powder on a multi-colored matt surface containing a finger-print impression and photographing it in ultra-violet light (using a special filter of heavy glass containing lead), the finger-print appeared without any background at all. See Evans, "Photograph of Fingerprints on Multi-Colored Objects," published October 16, 1933, by the Division of Investigation, United States Department of Justice.

³Galton, *op. cit. supra* note 1 at p. 110. Wilder and Wentworth suggest multiplying that number by itself in order to arrive at a more accurate figure. But even Galton's low estimate is four times the number of fingers in the world. See Wilder and Wentworth, *Personal Identification* (1918) 322. (There is a second printing of this book, published in 1932.) In the Division of In-

there is present more than one print or all ten finger-print impressions, the mathematical probability of error is infinitely smaller.

This probability of chance duplication of a print in nature is calculated on an assumed probable frequency of chance repetition of the separate details. No more accurate estimate is obtainable. For mathematical precision it would be necessary to compare every finger-print in the world with every other print, and obviously such research is practically impossible. Therefore, we must depend, for our assurance as to the accuracy of finger-print identification, upon the fact (1) that no two separate finger-prints have ever been located which were identical in all respects—not even in cases of identical twins;^{3a} and (2) that conservative mathematical calculations indicate the extreme improbability of an extraneous duplication.

Quite often a small portion of a single finger-print will suffice for the purpose of an identification.⁴ As to the number of points of identity (between standard and evidence prints) necessary for a positive identification in a case of this kind, it is interesting to consider the opinions of various authorities. Locard summarizes the

vestigation of the Department of Justice in Washington, D. C., there are more than four million finger-print cards (each containing ten finger-prints) on file—to be exact, there were 4,060,174 on January 2, 1934—and to date no duplicate finger-prints from two different persons have been found.

^{3a}See Newman, *Jour. of Genetics*, vol. 23 (1930). Also see Cummins, *The "Walter-Kerwin Thumb Prints," Bulletin 22, Boston Society for Psychic Research*, p. 8 et seq. (1934).

⁴In order to determine or locate a suspect by means of police files, however, it has been necessary, up until a few years ago, to find a set of all his finger-prints at the scene of the crime. Standard systems of classification were based upon all ten patterns. See Henry, *Classification and Uses of Finger-Prints* (1928). Recently, however, several single finger-print filing systems have been devised and are gradually coming into actual practice. Under this system each finger of the hands is given separate treatment and a classification attained for each digit through an analysis of the ridge formations appearing therein. After its classification, the impression of each finger (mounted or recorded on separate cards) is filed separately, and it is thus unnecessary to have all the finger-prints of both hands to effect a subsequent identification. The Division of Investigation of the United States Department of Justice installed a single finger-print system in February of 1933, and according to an announcement of January 2, 1934, there were at that time thirty-eight thousand, six hundred single finger-prints already classified and filed under this single finger-print system. For detailed information concerning the various systems see Battley, *Single Finger Prints* (1930), in which the author describes the system used very successfully in Scotland Yard at the present time; Crosskey, *Single Finger Print System* (1923); and Larson, *Single Fingerprint System* (1924). It should be remembered, however, that even in the absence of a single finger-print classification system, a criminal's identity can be, and often is traced from a single print. Suspicion is frequently narrowed down to several individuals whose recorded prints are then compared, and an identification effected in this manner. Moreover, it occasionally happens that the fortunate memory of an expert will enable him to locate the appropriate files because of his having previously become familiar with the details of the evidence print.

principles of identification in three classes, as follows: (1) Where there are more than twelve evident points and the impression clear, identification is absolute; (2) where there are eight to twelve points, identity depends upon (a) clearness of the impression, (b) rarity of the type, (c) presence of the core or of the delta in the part that is decipherable, (d) the presence of pores, (e) the perfect and evident identity of the breadth of the ridges and furrows, of the direction of the lines, and the angular value of the furrows—in which cases certainty of identification is to be established only after the discussion of the case by one or more competent experts; (3) where there are fewer points, the print, taken by itself, does not furnish positive identity but only a presumption proportional to the number and clearness of the points. Should a number of prints of the third class be available, their value is, of course, enhanced by their number.⁵

Wilder and Wentworth⁶ indicate that the authorities Galton, Fere, Balthazard, Oloriz and others appear to show that positive identity can scarcely be claimed without at least twelve homologous points of comparison. However, the said authors express the opinion that six or eight points well grouped, defining a center of exceptional form, constitutes such perfect proof of identity as to give no grounds for argument.⁷

According to Wilder and Wentworth, where a finger-print found at the scene of a crime is too incomplete to show a definite pattern, or else too fragmentary to make out even the ridge details with certainty, the sweat pores, with their individual differences, relative positions, and their persistence throughout life, afford an invaluable series of individual features. They assert that a fragment of such a print may be, and often is, identified by this method of poroscopy, if there are available for comparison prints of corresponding parts of a suspected individual; and that the same mathematical calculations regarding the possibility of a duplication in papillary ridge pattern applies with equal force.⁸

"Every human being carries with him from his cradle to his grave certain physical marks which do not change their character and by which he can always be identified—and that without shadow of doubt or question.

⁵Locard, *La Preuve Judiciaire par les Empreintes Digitales* (1914) as translated in bulletin issued on Nov. 1, 1932, by the Division of Investigation of the United States Department of Justice.

⁶Wilder and Wentworth, *Personal Identification* (1918, 1932).

⁷See bulletin issued on Nov. 1, 1932, by the Division of Investigation of the United States Department of Justice, p. 13.

⁸*Op. cit. supra* note 6 at pp. 292 *et seq.* See Locard, *La Poroscopie* archives d'anthrop. crim., No. 235 (1913).

These marks are his signature, his physiological autograph, so to speak; and this autograph cannot be counterfeited, nor can he disguise it or hide it away, nor can it become illegible by the wear of the mutations of time. This signature is each man's own—there is no duplicate of it among the swarming millions of the globe. Upon the haft of this dagger stands the assassin's metal autograph, . . . There is but one man in the whole earth whose hand can duplicate that crimson sign."⁹

There is considerable controversy concerning the origin of finger-print identification. Finger-print impressions were taken by Orientals centuries ago, but apparently only for superstitious and ceremonial purposes.¹⁰ The first definite mention of distinctive patterns on the

⁹Mark Twain made this statement in "Pudd'nhead Wilson." Twain did much to popularize the science of finger-print identification long before it was given judicial recognition.

There is a possibility of forging finger-prints by artificial reproduction (a photographic process) of a given specimen. Dr. Harold Cummins of the Department of Anatomy of Tulane University, an outstanding authority on dermatoglyphics, has conducted various experiments involving the forgery of finger-prints, and his results indicate that very accurate reproductions can be obtained—in which the forgery is not susceptible of detection. A subsequent issue of the Journal will contain a contribution from Dr. Cummins, in which he explains his technique. In this connection see 57 Am. L. Rev. 757 (1923), in which one writer denounces finger-print evidence because of the possibility of forgery. Also see Wehde and Beffel, *Finger-Prints Can Be Forged* (1924). One of the authors of the latter is an ex-convict, and their "research" is supposed to have been discredited by an investigating committee appointed by the International Association of Identification. See "Finger-print Magazine" for March, 1923, at p. 7; "The Detective" (1923), at p. 3. Wehde and Beffel's procedure is as follows: "Suppose we have before us a piece of black japanned tin and on its surface a finger-print developed with white powder. With a camera we take a photograph of this, making the negative the exact size of the original. The ridges of the finger-print will appear in opaque aspect on a perfectly clear and transparent plate. An etching is made from this negative, preferably on copper. This etching is a positive, and serves as a matrix or die, having the ridge lines etched into it sharply. Then a piece of paper—any fairly heavy correspondence paper will do—is moistened slightly and forced into the ridges by rubbing it back firmly with any hard smooth instrument. When the paper is lifted off it will be found that the portion of it which bears the finger-impression is now an exact replica of the skin-design on the finger involved. Moistening this paper-transfer by touching it to any perspiring part of the human body, or slightly greasing it with any fatty substance, tallow or oil, and then pressing it against any surface capable of holding a direct finger-print, one transplants an exact copy of the original and genuine finger-impression, including every detail and sweat pore." Wehde and Beffel, *supra* p. 127. In 81 Pa. L. Rev. 320 (1933) is to be found a brief but very interesting comment by Captain C. D. Lee of Berkeley, California, in which he took issue with the author of a previous comment in that Journal who stated that because of the possibility of forgery "the value of fingerprint evidence appears to be slight."

¹⁰Galton, *op. cit. supra* note 1 at p. 22 *et seq.* To the Chinese is attributed the chronological priority of finger-printing. There is no trace of such practices among Egyptians, Babylonians, Greeks, or Romans. Apparently Chinese immigrants into India carried with them this idea, which was later to become utilized (principally in commercial transactions) far more extensively in India than in any other country. See Laufer, "History of Finger-Print System," Annual Report, Smithsonian Institution (1912) 631 *et seq.* Also see Cummins,

tips of the fingers is said to have been made in 1686 by Marcello Malpighi, a professor of anatomy at the University of Bologna.¹¹ Not until nearly a century and a half later was there any known mention of finger-print patterns. Then, in 1823, Professor J. E. Purkinje, of the University of Breslau, delivered a treatise on the cutaneous system, in which he discussed the "wonderful arrangement" of the "minute furrows" on the tip of each finger. But Purkinje did not suggest the application of these variations in the pattern to the problem of identification.

The first published suggestion of the use of finger-prints for personal identification in criminological investigation was made by Henry Faulds, an English physician living in Japan at the time. That was in 1880. Some years previously, however, about 1858, Sir William J. Herschel, a British civil officer in India, had actually begun to use finger-prints for the purpose of identifying individuals. In a report submitted to the government by Herschel in 1877, he requested, and was denied, official permission to extend his finger-print practice to prisoners throughout all the Indian provinces. But Herschel continued to develop his system within his own territory.¹²

As a result of Herschel's official employment of a finger-print system, he is considered the founder of a feasible method for the use of finger-prints in criminal investigations. But to Sir Francis Galton is due the credit, not only for proving the individuality and permanence of finger-prints, but also for founding the present system of describing and indexing large numbers of prints, or sets of prints, in a large collection, and by this means putting the system upon a practical basis.¹³ A simplification of Galton's system, devised by Sir Edward Richard Henry, is now used, with slight modification and extension, to handle adequately the ever increasing finger-print files

"The Finger-print Carvings of Stone Age Men in Brittany," 31 Scientific Monthly 273 (1930), in which the author states that "sound evidence that the carved designs had their origin in finger-prints appears to be wanting." For a concise history of finger-print identification see excellent treatment in *State v. Kuhl*, 42 Nev. 185, 175 Pac. 190, 3 A. L. R. 1694 (1918), and also Underhill, *Criminal Evidence* (3d ed. 1923) 1113 *et seq.*

¹¹Wilder and Wentworth, *op. cit. supra* note 3 at p. 333. Unless otherwise indicated, this work is the authority for subsequent statements concerning finger-print history.

¹²See Herschel, *The Origin of Finger-Printing* (1916).

¹³The first finger-print identification of a criminal is attributed to Juan Vucetich, of Argentina. Wilder and Wentworth, *op. cit. supra* note 3 at p. 351. In connection with Vucetich's controversy with Bertillon, and with the part played by Nicolae Minovici as a pioneer in finger-print identification, see Sava, "A Page on the Past of Fingerprints," 3 *Fugitives* (U. S. Dept. of Justice pub.) No. 9 (Sept. 1, 1934).

of police departments in practically every civilized country of the world.¹⁴

Decisions

The presence upon a person or premises of articles, tools, blood stains, etc., is constantly employed as the basis for an inference that the person involved did the act with which these circumstances are associated.¹⁵ And it is upon this general principle that significance attaches to the identity of finger-prints of a suspect with those found at the scene of a crime.¹⁶

¹⁴See Henry, *Classification and Uses of Finger Prints* (1928). According to the Henry System all finger-print impressions are divided into the following types of patterns: Loops, Twinned Loops, Central Pocket Loops, Lateral Pocket Loops, Arches, Tented Arches, Whorls and Accidentals. Subject to a few exceptions wherein unusual patterns occur, by studying a definite portion of each finger-print impression, described as the pattern area, generally comprehended by the outer and inner termini, known as the deltas and cores, and by counting or tracing the individual ridges intervening between such points, it is possible to classify each of the ten fingers into a definite fixed group. The ten fingers then are considered as a unit to attain the complete classification which permits the filing of finger-print records in sequence, without reference to name, description, or crime specialty of the individual, and enables the finger-print expert in a bureau containing millions of prints to establish an identification in a few minutes. It has been necessary for the larger bureaus to amplify and extend the original Henry system in order to facilitate the searching of files although they have adhered to its basic principles. Another system, that of Juan Vucetich, has been adopted by those nations of Spanish tongue.

Although finger-print experts are spoken of frequently as Bertillon experts, Bertillon himself was not one of the important figures in the development of the science. In fact, he was in doubt as to the practical value of finger-prints, because of the difficulty of finding a practical means for classifying a large collection of them. His system of anthropometric measurements seemed more useful. He was soon convinced, however, of the efficacy and possibility of Galton's system, and he became one of its chief advocates. His mere promulgation of it, nevertheless, occasioned the general notion now prevalent throughout the United States that Bertillon himself was the inventor. See Wilder and Wentworth, *op. cit. supra* note 3 at p. 348.

For further sources of information upon the technical aspect of finger-print identification, in addition to the authorities cited elsewhere in this article, see Kuhne, *The Finger Print Instructor* (1927); Adams on Finger-prints (1933); Frankel, *Finger Print Expert* (1932). Also see Holt, *Finger Prints Simplified* (1920); Seymour, *Finger Print Classification* (1913); Brayley, *Finger Prints* (1910); Fauld, *Finger Print Identification* (1905).

¹⁵1 Wigmore, *Evidence* (2d ed. 1923) §149.

¹⁶This is merely an extension of the general notion involved when a comparison is sought between a bloody hand impression found at the scene of a crime and a similar impression made by a suspected individual. Evidence of this type, involving the similarity of such impressions, was held admissible in *State v. Miller*, 71 N. J. L. 528, 60 Atl. 202 (1905). The only difference between this and the finger-print evidence is that with finger-prints the margin of error is far less, and consequently the probative value considerably greater. See also, in this connection, *Powell v. State*, 50 Tex. Cr. Rep. 592, 99 S. W. 1005 (1907), where an impression of the defendant's hand was held admissible to show that its distinctive features—peculiar imprint made by an abnormal little finger—were also found in an impression at the scene of the crime. This

The reliability of personal identification by means of finger-prints is so well recognized that the appellate courts of England and Australia, in two of the earliest decisions upon the subject, have sustained convictions based *solely* upon the testimony of experts who were of the opinion that the finger-print impression at the scene of a crime corresponded identically with the finger-print impression of the particular defendant.¹⁷

Although for many years finger-prints played an important role in the apprehension of criminal offenders, it was not until 1911 that an appellate court in the United States passed upon the admissibility of finger-print evidence as a link in the chain of circumstances indicating the guilt of an accused individual. In that year the Supreme

more nearly approaches the finger-print situation, because each finger-print has numerous "abnormal," "peculiar," and "distinctive" features.

¹⁷*Castleton's Case*, 3 Crim. App. 74 (1909); *Parker v. The King*, 14 C. L. R. 681 (1912), 3 Br. Rul. Cas. 68 (1914). Upon the appeal of Castleton's Case the defendant contended that even though the finger-print found on a candle at the scene of the crime (burglary) might have been his, that evidence alone was not sufficient to establish his guilt. But the court said: "The suggestion has been made that these finger-prints have been put there by someone else, but that suggestion was disposed of by the jury, who decided upon the evidence before them. Our attention has been drawn to the photographs and the impression of the finger-prints. Looking at the middle finger particularly, as well as to the index finger of the right hand, we agree with the evidence of the expert at the trial." *Rex v. Bacon*, 11 Crim. App. 90 (1915) is another early English case involving finger-print evidence. The evidence was used there to identify the defendant as a recidivist with eight previous convictions under various aliases.

There are two appellate court decisions in the United States which may be considered as sustaining convictions "almost solely" upon the basis of finger-print evidence. See *State v. Connors*, 87 N. J. L. 419, 94 Atl. 812 (1915), and *Smith v. State*, 18 Pac. 2d 282 (Okla. 1932). In the Connors case, in addition to the finger-print evidence, plus the fact that the defendant declined to take the witness stand (a circumstance which can be commented upon by New Jersey courts), there was testimony to the effect that the defendant was in the community at the time of the burglary in question, but nothing more specific. Nevertheless, the Supreme Court of New Jersey sustained the conviction, saying: "The case thus presented was one of circumstantial evidence, but standing upon those facts alone, there was sufficient proof, if the jury believed it, to warrant the conviction." In the *Smith* case the defendant was convicted of robbery. The victims were unable to identify the robber, except to say that he was about the same size, etc., of the defendant. The defendant admitted that he was in the vicinity of the crime, but he contended that he was innocent of the offense, and that the finger-print evidence (prints found on door of automobile) was insufficient to sustain the verdict. The decision was affirmed.

A conviction based solely upon finger-print evidence was obtained recently in a case decided by the Pennsylvania Superior Court. See *Commonwealth v. Albright*, 101 Pa. Sup. Ct. 317 (1930), and also criticism of the case in 79 Pa. L. Rev. 642 (1931). Convictions based solely upon finger-print evidence are upheld in Norway and France. See 2 J. Crim. L. 275; 434 (1911). Also see *Sandara v. Emperor*, 125 Ind. Cas. 639, 31 Cr. L. J. 877 (India, 1930), in which it is said that "a court cannot refuse to convict a person on the evidence of a finger-print expert merely on the ground that it is unsafe to base a conviction on such evidence."

Court of Illinois, in *People v. Jennings*,¹⁸ took judicial notice of the fact that the finger-prints of any individual are so distinctive as to permit their use for the purpose of identification, and admitted expert testimony as to the similarity between the evidence print and that of the defendant—under the general common law rule that whatever tends to prove a material fact is relevant and competent.¹⁹

State v. Cerciello,²⁰ a New Jersey decision, was the next to sanction the use of finger-print evidence in a criminal proceeding. The court there said:

"In principle its admission as legal evidence is based upon the theory that the evolution in practical affairs of life, whereby the progressive and scientific tendencies of the age are manifest in every other department of human endeavor, cannot be ignored in legal procedure, but that the law, in its efforts to enforce justice by demonstrating a fact in issue, will allow evidence of those scientific processes which are the work of educated and skillful men in various departments, and apply them to the demonstration of a fact, leaving the weight and effect to be given to the effort and its results entirely to the consideration of the jury."²¹

Evidently the *Cerciello* case was not considered decisive of the finger-print problem in New Jersey, because the Court of Errors of that state was called upon again to pass upon the admissibility of such evidence in *State v. Connors*.²² The court, in reaffirming its former position, took advantage of the occasion to explain that although the circumstances differed in each case, the principle of law regarding the legal propriety of finger-print testimony was the same.²³

In 1915 the New York Court of Appeals, in *People v. Roach*,²⁴ rendered the fourth of this series of finger-print decisions. The fact

¹⁸252 Ill. 534, 96 N. E. 1077, 43 L. R. A. (N. S.) 1206 (1911). However, the first finger-print conviction in this country had been obtained in 1906, but the decision was not passed upon by an appellate court. See Laufer, "History of Finger-Print System," Annual Report, Smithsonian Institution (1912) 631.

¹⁹See discussion of this case in 10 Mich. L. Rev. 396 (1912); 15 Col. L. Rev. 714 (1915); 80 Pa. L. Rev. 887 (1932).

²⁰86 N. J. L. 309, 90 Atl. 1112, 52 L. R. A. (N. S.) 1010 (1914).

²¹*Ibid.* pp. 314; 1114; 1012.

²²87 N. J. L. 419, 94 Atl. 812 (June 22, 1915).

²³A third New Jersey decision was required to iron out all the difficulties regarding finger-prints. In *Lamble v. State*, 96 N. J. L. 231, 114 Atl. 346 (1921), photographs of finger-prints found on the door of an automobile were introduced in evidence. Objection was made to their admissibility because the door itself was not produced. But the appellate court saw little merit to this contention, and admitted the photographs unaccompanied by the real evidence itself. A similar case is *State v. Witzell*, 26 P. (2d) 1049 (Wash., 1933), where objection was made to the non-production of the original (i. e., piece of safe), and the court said that such a contention, if objectionable at all, goes only to the weight and not to the competency of the exhibits or photographs of the original.

²⁴215 N. Y. 592, 109 N. E. 618, Ann. Cas. 1917A, 410 (July 13, 1915). See note in 15 Col. L. Rev. 714 (1915).

that finger-print evidence presented a novel question was held not to exclude its admission upon common law principles. Moreover, the court was of the opinion that even granting the possibility of error in effecting identification by this means, that fact would not constitute a valid reason for the exclusion of such evidence. The court stated, by way of justification for its ruling upon this point, that mistakes frequently occur in other methods of identification, such as lay testimony regarding personal appearances, etc., and yet evidence of this character is clearly admissible.

A defendant confronted with expert testimony to the effect that his finger-prints were found at the scene of a crime for which he is being tried, may avail himself of the defense that they were placed there innocently—under circumstances not associated with the crime. Such a defense was held tenable in a Texas case, *McGarry v. State*,²⁵ in which the defendant had been convicted of burglary solely upon evidence that his finger-prints were found upon the window glass of the burglarized store. Upon appeal the judgment was reversed because of the fact that since the prints were found in a place accessible to the public it was possible for the defendant to have innocently placed his hand upon the window.²⁶

The expert witness who appears on the stand prepared to give demonstrative proof of the efficacy of the particular science in question, or as to the accuracy of its application in the instant case, or as to his own qualifications, is far more impressive and helpful to a jury than a witness who depends solely upon his ability to orally explain the scientific facts upon which his opinion is based. A recognition of this fact soon led the courts to sanction the use of photographs.²⁷ And it seems that upon the same principle rests the performance of experiments conducted for the benefit of the jury. For example, full significance is not attached by the average jurymen to the statements of an expert who testifies that every finger-tip bears distinctive characteristics, that no two finger-prints are exactly alike, and that unmistakable identification can be made in this manner. But if an

²⁵82 Tex. Cr. R. 597, 200 S. W. 527 (1918).

²⁶See also *State v. Steffen*, 210 Iowa 196, 226 N. W. 46 (1929). And see note on the *Steffen* case by Professor Wigmore in 2 Am. J. Police Sci. 272 (1931) in which he criticizes the court for its attitude regarding the treatment of the expert's testimony. The expert testified that the finger-prints were the same, and the court held that this was stating an "ultimate fact" and therefore an invasion of the province of the jury. "This general rule," says Professor Wigmore, "is an absurd and impractical one, and the present application of it goes to an extreme never before reached in any other court." Wigmore considers the argument concerning the difference between an expert using the term opinion and one stating his finding as a conclusion—a "queer quibble."

²⁷See *supra* note 23.

experiment is made in court partly demonstrating this fact, then much more consideration will be given to the evidence by the uninformed juror. Especially is this so when the facts of a case are similar to those involved in *Moon v State*,²⁸ where the defendant's finger-prints were alleged to have been found on a porcelain slab of a cash register.

Although the expert in the *Moon* case had for comparison enlarged photographs of both the evidence prints and those obtained from the defendant himself, it was realized that even under those conditions the average individual might still harbor a doubt as to the possibility of the defendant's "physiological autograph" being discernible upon a porcelain slab. Therefore, in order to take full advantage of the probative force of the finger-print evidence, the expert offered, and was permitted to conduct, an experiment in court whereby he could convince the jury that it was even possible to obtain and identify a finger-print upon a piece of blank paper.

In the absence of the expert witness, each juryman was permitted to place his finger-tips upon separate sheets of paper. After that the witness returned and obtained inked impressions of their finger-prints, and proceeded to powder the blank sheets of paper²⁹ in order to develop the prints made during his absence. He then correctly paired off the prints, to illustrate to the jury the possibility of identifying latent finger-prints on an apparently clean sheet of paper.

Upon appeal, defense counsel contended that the trial court erred in approving of the experiment, but the Supreme Court of Arizona affirmed the conviction, stating that since the methods used in effecting finger-print identification were susceptible of actual demonstration by means of a test, there appeared to be no sound reason for its exclusion. And the same view has been taken by the Supreme Courts of Arkansas,³⁰ Michigan,³¹ and Oklahoma.³²

Finger-print evidence is of such a nature that it is only natural to expect it to be used almost exclusively for the purpose of establishing guilt rather than innocence. For that reason it is interesting to note that in a Mississippi case, *Willoughby v. State*,³³ the defendant sought to introduce the testimony of a finger-print expert to prove

²⁸22 Ariz. 418, 198 Pac. 288, 16 A. L. R. 362 (1921).

²⁹See *supra* note 2.

³⁰*Hopkins v. State*, 174 Ark. 391, 295 S. W. 361 (1927). However, the case was reversed for other reasons.

³¹*People v. Chemovitz*, 237 Mich. 247, 211 N. W. 650 (1927).

³²*Stacy v. State*, *infra* note 34, *Braley v. State*, *infra* note 36, and *Smith v. State*, *infra* note 37.

³³154 Miss. 653, 122 So. 757, 63 A. L. R. 1319 (1929).

that his finger-prints were not among those on a bottle found at the scene of a crime (the bottle having been handled by the actual criminal). The court, although fully recognizing the admissibility of finger-print evidence, refused to admit the testimony offered in this instance because the defendant had not shown that all the finger-prints susceptible and capable of identification were considered as a basis for the expert's opinion.

The most recent decisions concerning finger-print evidence are *Stacy v. State*,⁸⁴ *State v. Combs*,⁸⁵ *Braley v. State*,⁸⁶ *Smith v. State*,⁸⁷ *State v. Johnson*,⁸⁸ and *State v. Witzell*.^{88a} And in the first named, the Supreme Court of Oklahoma made the following statement, which may be considered as indicative of the general judicial attitude upon the admissibility of such evidence:

"We have no doubt but that the finding of the fingerprints of the defendant on the door of the vault, with the further proof that defendant

⁸⁴292 Pac. 885 (Okla., 1930).

⁸⁵200 N. C. 671, 158 S. E. 252 (1931) ("This is apparently the first case in which this court has been called upon to decide the question as to whether testimony tending to identify a person by means of fingerprints is competent evidence for that purpose. We see no reason why such testimony, when the witness whose testimony is offered as evidence has first been found by the trial court to be an expert in the art, is not competent. The probative value of the evidence is, of course, for the jury. It has been so held by the courts of other jurisdictions").

⁸⁶18 Pac. (2d) 281 (Okla., Dec. 16, 1932).

⁸⁷18 Pac. (2d) 282 (Okla., Jan. 6, 1933).

⁸⁸21 Pac. (2d) 813 (N. M., March 28, 1933). This case presented a rather peculiar situation. The only objection concerning finger-print evidence was as follows: an expert witness was being questioned for the purpose of eliciting testimony regarding a comparison of a photographic enlargement of the defendant's finger-print, taken from the original set of defendant's finger-print impressions on file in a penitentiary, with an evidence print. In his answer, the expert referred to the photographic enlargement as a "photographic enlargement of left middle finger of the accused." And again, in referring to the original set of prints the witness designated it as "the set of finger-print impressions of the accused." The defense counsel objected to these answers, and asked to have them withdrawn upon the ground that they involved an assumption by the witness that the original impressions from which the enlargements were made were finger-prints of the accused, and that the assumption was hearsay testimony so far as the witness was concerned. A like objection was urged to the witness' designation of the original set of prints as finger-print impressions "properly identified for comparison with the subject's finger-prints." The objections were overruled and the Supreme Court of New Mexico upheld the trial court's decision, stating that if there had been any dispute regarding the genuineness of the original set of prints it would have been improper for the witness to assume this fact, but that since there was no issue upon this point, and since the original set was identified by another witness as containing original impressions of defendant's finger-prints taken by him at a penitentiary some time prior to the crime in question, there was no error in having permitted the witness to assume in his answer, for the purpose of greater clarity before the jury, what was an undisputed and unopposed fact in the case.

^{88a}*Supra* note 23.

did not have access to and had not been at the place burglarized so that the prints could be accounted for upon any hypothesis of his innocence, is a circumstance irresistibly pointing to his guilt. In conformity to the decisions of the courts in many states, we take judicial knowledge that there are no two sets of fingerprints exactly alike."³⁹

Persons suspected or accused of criminal offenses usually submit voluntarily to the taking of their finger-prints for the purpose of comparison with an evidence print. Consequently in such instances there is clearly no violation of the constitutional guarantee that no person shall be compelled in a criminal case to be a witness against himself.⁴⁰ And this is true notwithstanding the fact that the suspected or accused individual was unaware that the finger-prints would be used as evidence against him⁴¹—or even where the print is obtained from a piece of paper which had been given to him ostensibly for the purpose of writing thereon, without his knowing that at the same time he was actually giving his finger-print impression, to be used for a comparison with the one found at the scene of a crime.⁴²

Where a standard print is secured by compulsion, and testimony as to its identity with the evidence is sought to be introduced in a criminal case, then the real issue is raised regarding the constitutional privilege against self-incrimination.

*People v. Sallow*⁴³ is perhaps the outstanding appellate court decision in point. A statute was there involved which provided, among other things, that no person convicted should be sentenced until the city's finger-print records were searched "with reference to the particular defendant," for the purpose of ascertaining whether or not there had been a prior conviction. Under this provision the defendant was compelled to submit to the taking of her finger-prints, which, when checked through the files, identified her as a fourth offender—thus incurring an increased penalty. The defense objected to the introduction of this evidence and contended that by requiring the defendant to have her finger-prints taken, and by the receipt of such prints in evidence, she was thereby compelled, in violation of her constitutional rights, to be a witness against herself in a criminal case. The objection was overruled, and from the conviction in the trial court the defendant perfected an appeal.

The appellate court, in sustaining the conviction, prefaced its

³⁹*Supra* note 34 at p. 887.

⁴⁰*Moon v. State*, *supra* note 28.

⁴¹*Garcia v. State*, 26 Ariz. 597, 229 Pac. 103 (1924).

⁴²*State v. Cerciello*, *supra* note 20.

⁴³100 Misc. 447, 165 N. Y. Supp. 915 (1917). See note in 27 Yale L. J. 412 (1918).

opinion with the remark that the evidence was received "in a criminal case." It then rendered an exhaustive opinion, reviewing analogous cases, such as those in which it was held proper to compel accused persons to stand up for the purpose of identification;⁴⁴ to place their feet in a suitable position for view by the jury;⁴⁵ to make foot-marks for comparison with those found at the scene of a crime;⁴⁶ to submit to physical examination for scars or wounds;⁴⁷ to exhibit certain tattoo marks to the jury;⁴⁸ etc. The conclusion reached, and the reasons which prompted the court to so hold, are clearly stated in the following quotation from the opinion:

"Nothing further is required in fingerprinting than has been sustained heretofore by the courts in making proof of identification. The steps are to exhibit the fingers of the hands and to permit a record of their impressions to be taken. The requirement that the defendant's fingerprints be taken for the purpose of establishing identity is not objectionable in principle. There is neither torture, nor volition, nor chance of error. * * *

"No volition—that is, no act of willing—on the part of the mind of the defendant is required. Fingerprints of an unconscious person, or even of a dead person are as accurate as are those of the living. . . . By the requirement that the defendant's fingerprints be taken there is no danger that the defendant will be required to give false testimony. The witness does not testify. The physical facts speak for themselves; no fears, no hopes, no will of the prisoner to falsify or to exaggerate could produce or create a resemblance of her fingerprints or change them in one line,

⁴⁴*People v. Goldenson*, 76 Cal. 328, 19 Pac. 161 (1888); *State v. Reasby*, 100 Iowa 231, 69 N. W. 451 (1896). See *People v. Gardner*, 144 N. Y. 119, 38 N. E. 1003, and especially note in 28 L. R. A. 699 (1894).

⁴⁵*State v. Prudhomme*, 25 La. Ann. 522 (1877).

⁴⁶*State v. Graham*, 74 N. C. 646 (1876); *Magee v. State*, 92 Miss. 865, 46 So. 529 (1908). Also see *Biggs v. State*, 201 Ind. 200, 167 N. E. 129; 64 A. L. R. 1085 (1929) ("The weight of authority supports the proposition that the admission in evidence of shoes taken forcibly from the person of one under arrest for commission of a crime, or of the result of a comparison of the tracks with the shoe so obtained, for the purpose of connecting him with the person who made the tracks found near the scene of the crime, does not violate the rule against self-incrimination"). 64 A. L. R. 1093.

⁴⁷*O'Brien v. State*, 125 Ind. 38, 25 N. E. 137, 9 L. R. A. 323 (1890).

⁴⁸*State v. Ah Chuey*, 14 Nev. 79, 33 Am. Rep. 530 (1879) ("None of the many reasons urged against the rack or torture or against the rule compelling a man 'to be a witness against himself' can be urged against the act of compelling a defendant, upon a criminal trial, to bare his arm in the presence of the jury so as to enable them to discover whether or not a certain mark could be seen imprinted thereon. Such an examination could not, in the very nature of things, lead to a falsehood. In fact, its only object is to discover the truth; and it would be a sad commentary upon the wisdom of the framers of our Constitution to say that by the adoption of such a clause they have effectually closed the door of investigation tending to establish the truth." *Ibid.* pp. 83; 532.

and therefore there is no danger of error being committed or untruth told."⁴⁹

Another case, *United States v. Kelly*,⁵⁰ presents a rather interesting problem. Kelly was arrested for selling a quart of gin in violation of the National Prohibition Act, and on the day of his arrest and before arraignment, his finger-prints were taken without his consent. He then filed a petition praying for the return of the finger-prints. His counsel contended that the right to take the finger-prints did not exist because of the absence of a state or federal statute providing for it, and because finger-printing subjected "a possible misdemeanor before trial and conviction" to "unnecessary indignity." The government contended that there was no need for a statutory provision, that finger-printing was necessary to ascertain whether a defendant had been previously convicted so as to plead the prior conviction provision of the Prohibition Act, and that finger-printing was not an infringement of constitutional rights. The district court sustained the contention of the petitioner and ordered the return of petitioner's finger-prints. Upon appeal, however, this order was reversed by the circuit court of appeals, with the following remarks:

"We find no ground in reason or authority for interfering with a method of identifying persons charged with crime which has now become widely known and frequently practiced both in jurisdictions where there are statutory provisions regulating it and where it has no sanction other than the common law.

"The appellee argues that many of the statutes and the decisions in common law states have allowed fingerprinting only in case of felonies. But, as a means of identification, it is just as useful and important where the offense is a misdemeanor, and we can see no valid basis for a differentiation. In neither case does the interference with the person seem sufficient to warrant a court in holding fingerprinting unjustifiable. . . . Fingerprinting is used in numerous branches of business and of civil service, and is not in itself a badge of crime. As a physical invasion it amounts to almost nothing, and as a humiliation it can never amount to as much as that caused by the publicity attending a sensational indictment to which innocent men may have to submit.

"Fingerprinting may also be justified in prohibition cases as a means of ascertaining whether a defendant has been previously convicted, so that the prior conviction can be pleaded as required in . . . the National Prohibition Act. Where a statute imposes a duty, it carries by implication

⁴⁹165 N. Y. Supp. 924. The Judiciary Appeal Court of Edinburgh, Scotland, recently held that the taking of an untried prisoner's finger-prints without his consent is permissible and does not constitute an unlawful violation of his liberty. See note on this decision in "Finger Print Taking by Force," 176 *The Law Times* 25 (1933). The author of the comment stated that this point was likely to arise very soon in England.

⁵⁰55 Fed. (2d) 67 (1932).

every reasonable means necessary to effectuate the desired end. . . . We prefer, however, to rest our decision upon the general right of the authorities charged with the enforcement of the criminal law to employ finger-printing as an appropriate means to identify criminals and detect crime."⁵¹

Although the appellate courts of only a few states have considered and squarely held finger-print evidence admissible, there seems to be no longer any doubt as to the propriety of the use of such evidence in criminal cases.⁵²

Palm-Prints:

Identification may be made as accurately from palm-prints—or even sole-prints—as from finger-prints. The difference in application to criminal investigation rests in the fact that for a long time police records of this general nature consisted almost exclusively of finger-prints. But, if there are available palm-prints of corresponding portions of the suspected individual's hand, then their identification is based upon exactly the same principle, and is just as dependable as finger-print comparisons.⁵³

Decisions

State v. Kuhl,⁵⁴ a Nevada case, involved the admissibility of a bloody impression made by the palm of a person's hand, taken from an envelope found at the scene of a murder. The appellate court prefaced its opinion with the remark that although there was no doubt as to the admissibility of finger-print evidence, due consideration had to be given to the defendant's contention that the science of palm-prints had not developed sufficiently to bear out the conclusion of an expert on the subject.

In an excellent opinion, in which a thorough survey was made of the literature upon the subject of finger-prints and palm-prints, the court decided that the circumstantial evidence derived from both was equally reliable and therefore in this case expert testimony was

⁵¹*Ibid.* p. 70. To the same effect see *dicta* in the recent case of *People v. Les*, 255 N. W. 407 (Mich., 1934).

⁵²The appellate court of several jurisdictions other than those previously discussed have impliedly approved of such evidence. In addition to those already cited see *Duree v. United States*, 297 Fed. 70 (C. C. A. 8th, 1924); *People v. Van Cleave*, 208 Cal. 295, 280 Pac. 983 (1929); and *State v. Chin Lung*, 106 Conn. 701, 139 Atl. 91 (1927). Also see *Leonard v. State*, 18 Ala. App. 427, 93 So. 56 (1922).

⁵³See Wilder & Wentworth, *op. cit. supra* note 3 at p. 159 *et seq.*

⁵⁴42 Nev. 185, 175 Pac. 190, 3 A. L. R. 1694 (1918). The use of a projectoscope was approved in this case.

properly admitted for the purpose of establishing the guilt of an accused individual having identical palm-prints.

State v. Lapan,⁵⁵ a Vermont case, is another in which palm-print evidence was held admissible. And the Supreme Court of Michigan, in a very recent decision, *People v. Les*,⁵⁶ sanctioned the use of palm-prints, with the following remarks:

"We are satisfied that finger-prints and palm-prints are a more certain and exact method of identification than a comparison of hair and eyes, height, weight, and even physical defects. Their use affords more protection to the innocent man than do the more usual and accepted modes of identification, and there is no reason why the police, in their unending war on crime, should be deprived of the use of well-tested scientific means as aids in the detection and apprehension of criminals."⁵⁷

In view of the fact that the science of palm-print identification is fundamentally the same as that of finger-prints, there should be no doubt any longer as to its admissibility as evidence in a criminal proceeding.

⁵⁵101 Vt. 124, 141 Atl. 686 (1928).

⁵⁶255 N. W. 407 (Mich., 1934).

⁵⁷And there are at least two other cases impliedly approving of palm-print evidence. See *State v. Dunn*, 161 La. 532, 109 So. 56 (1926), and *State v. Reding*, 13 Pac. (2d) 253 (Idaho, 1932).