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POLICE SCIENCE LEGAL ABSTRACTS AND NOTES

Donald A. Gillies*

Scientific Evidence in the Sheppard Case.—At the trial of Dr. Samuel H. Sheppard in Cuyahoga County, Ohio, on a charge of murdering his wife on July 4, 1954, the state proceeded on the theory that the defendant, and he alone, killed his wife by bludgeoning her over the head with some blunt instrument. The defendant contended that a third person, or third persons, committed the crime. Following his conviction, Dr. Sheppard appealed, and among the many grounds urged for a reversal were several relating to the scientific evidence offered by the prosecution. One such assignment of error related to the projection of color slides disclosing the nature and extent of the victim's head wounds. The defendant claimed that the projections "exaggerated the size of the wounds and unfairly emphasized the evidence of the cause of death." The Ohio Court of Appeals disposed of this objection rather summarily by stating that the fact of enlargement alone did not affect the admissibility of a photograph that was otherwise proper for the jury's consideration.

The defendant's attorneys had unsuccessfully sought a trial court ruling to require the coroner to produce the work sheets of his technical staff. The appellate court held that such papers were not "public records" and, consequently, unavailable to the defense.

Another point raised by the defendant concerned a lie-detector (polygraph) test which was given to another person, an acquaintance of the Sheppards and the mayor of the small town in which the murder occurred. Part of Dr. Sheppard's defense attempted to cast suspicion on the mayor as being involved in the killing. While the mayor was testifying for the prosecution, the prosecutor asked him whether he had taken a lie-detector test, to which question he replied "Yes." The only

comment the appellate court made to the defendant's objection regarding this testimony was: "The results of the test were not inquired about, and the simple fact that a test was made by agreement of the witness under the circumstances could not prejudice the defendant's case." (The appellate court's opinion regarding the above issues appears in *State v. Sheppard*, 128 N.E. 2d 471 (Ohio 1955).

In addition to appealing the case because of the alleged errors during the trial, the defendant took an additional and separate appeal based upon the contention that the trial court erred in overruling his motion for a new trial on the ground of "newly-discovered evidence." One of the affidavits which were submitted in support of the motion for a new trial was that of the brothers of the defendant who stated that in February of 1955, after the defendant's trial, they removed "two blood spots from the wardrobe or closet door on the east wall of the bedroom" where the killing occurred and that the blood thus removed was placed in containers and forwarded to Dr. Paul Kirk of the University of California. Another affidavit was that of Dr. Kirk himself. It comprised "thirty-three typewritten pages and incorporates by reference sixteen supplemental pages, classified as appendices, . . . and forty-six photographs, taken and developed by Dr. Kirk." Following are excerpts from the lengthy opinion of the Ohio Court of Appeals (in *State v. Sheppard*, 128 N.E. 2d 504) dealing with Dr. Kirk's affidavit:

"In its total aspect, it is a most extraordinary and unusual document when related to the purposes to be served by it. The sole purpose of an affidavit offered to support a motion for a new trial on the ground of newly discovered evidence is to inform the trial court of the substance of the evidence claimed to be newly discovered which will be presented at a new trial if one is granted. It is never intended as a method to reconsider the evidence introduced

* Senior Law Student, Northwestern University School of Law.

at the trial of the case for the purpose of impugning the soundness of the verdict brought by the jury. If the courts permitted such practices, the inherent certainty of a trial by jury would soon wane and such function in our system of jurisprudence ultimately disintegrate and disappear. Yet a major part of Dr. Kirk's affidavit deals with evidence presented at the trial and ventures his opinion and conclusion with respect to it together with a criticism of the methods of investigation and technical evidence presented by the prosecution. This, of course, was entirely beyond the scope of this instrument and the trial court had the indisputable right to totally disregard every particle of it, which it did. The affiant states in his affidavit that 'no instructions or suggestions were made to him as to what to find or what not to find by the attorney representing the defendant.' We believe that Dr. Kirk could have spared himself much effort and time had he been told by the attorney for the defendant the narrow scope allowed him under the law for further investigation. Certainly much that is extraneous and redundant might thereby have been left out of this affidavit.

"The appendixes describe various experiments carried on by Dr. Kirk to supplement and fortify his theories in connection with many elements of this case. All of them except one deal with 'blood.'

"A' is labeled *Blood on Watch Band*. In this experiment he daubed an expansible metal watch band liberally with freshly shed blood in two separate experiments—in one, after twenty minutes, the band was dipped in fresh water and moved slowly back and forth and in the second, the blood was allowed to dry for one and one quarter hours and treated similarly. The time required to dissolve the blood was noted.

"B' is labeled *Time of Drying of Blood*. In this experiment the same watch band illustrated in 'A' was daubed liberally with fresh blood from a punctured finger. The time of drying on smooth surfaces and in the recesses of the individual bars was noted. Blood also was smeared over the back of the band and the time for drying noted.

"C' labeled *Blood Trails* and gives his opinion as to the significance of the blood spots found throughout the house, particularly with reference to the steps.

"D' is labeled *Shedding of Blood from Clothing*. Experiments were made with five series of cloths, cotton, wools, rayon, and silk. These were suspended and liquid human blood thrown against them by means of a brush dipped in blood and the time taken when the blood was applied and measured until the last drop fell spontaneously from the garments.

"E' is labeled *Spots from Weapon*. Two series of experiments were performed with a variety of objects which would illustrate effects similar to some common weapons. They were: [a large bread knife; a large monkey wrench; a brass bar; a bar of soft wood; and a small ball peen hammer.]

"The first experiments involved dipping these objects in liquid blood, removing them and holding them over paper, recording the time necessary for all blood to drain or drop from the object. This was supplemented by a similar timing while the object was swinging at a moderate rate in the hand.

"Then a similar set of experiments was made with [the knife, wrench, and brass bar], in which the dripping weapon was carried over long strips of paper at ordinary quick walking speeds, and the distance measured to the last drop that fell.

"F' is labeled *Transport of Blood by Shoes*. This experiment was performed by stepping repeatedly in a region of heavy blood spots on a floor until the shoe soles were thoroughly blood-smearred and then having a person walk normally along a strip of wrapping paper until no more blood was visually apparent on the paper. The last visible trace of blood was then measured.

"G' is labeled *Blood Removal from Shoes*. The experiment consisted of daubing a shoe with leather sole and stitching with about two dozen spots of freshly shed human blood. Most of it was placed along the stitching but various spots were placed at random on the leather of the sole. The shoe stood for thirty-five minutes to allow complete soaking of the blood into the leather and complete drying. It was then immersed in water and forced back and forth in the water to simulate the washing action of water movement for five minutes. The condition of the shoe as to blood spots was then noted and any spots still remaining were rubbed vigorously with paper toweling until no actual spots could be seen, this to simulate the action caused by walking. The shoe thereafter was immersed in fresh water for five minutes and removed and allowed to dry. The tenacity with which blood adheres to such surfaces was thus shown.

"H" is labeled *Amount of Blood Spatter on Clothing*. This appendix discloses the spatter of blood on the set of coveralls worn during the entire series of experiments. It also was determinative of any dripping of blood from the garment.

"I" is labeled *Nature of Blood Spots from Different Origins*. In this experiment a wooden block was taken as approximating the hardness of a skull. A layer of sponge rubber $\frac{1}{8}$ " thick was placed over it, this being about the thickness of the subcutaneous layer of the forehead and scalp. Then a sheet of polyethylene plastic, to simulate the skin, was placed over the sponge rubber. The arrangement so prepared was placed on a stool on wrapping paper to collect blood spatter. Around the region was built a rectangular wall carrying removable paper strips to collect all flying blood on the sides and in front of the swings of the object used as a weapon. Paper strips to collect blood flying upwards were placed over the top. Only on the operator's side was the structure open, the operator collecting the blood that traveled backward. The objects used as weapons included a small ball peen hammer; a metal two-cell flashlight with a flared rim; an inch steel bar, 15 inches long; a brass rod 20 inches long, bent at right angles on the end; a brass bar, $\frac{3}{8}$ inches in diameter and 2 feet long. Blood was puddled on the top of the plastic cover and heavy blows were dealt that at least with one object, the plastic sheet and rubber sponge were cut through to the wood. The paper strips were removed from the walls after each series of blows of a certain type and object and photographed. The characteristics of the spattered blood from impact as well as the throw-off blood on the fore and back strokes were noted from the standpoint of direction and velocity and the size of the drop.

"J" is labeled *Breaking of Teeth*. Experiments were carried on with seven incisor teeth chosen from some 15 to 20 incisor teeth obtained from dentists who had extracted them. To anchor the roots of the teeth solidly as in a jaw, holes were drilled in a heavy brass bar. A hole was filled with molten "Woods" metal, an antimony alloy that melts below the boiling point of water, the root was held in the liquid metal until the alloy was solid and all teeth so mounted could not be moved until the metal was remelted. The method of breaking the teeth varied but usually consisted of pulling steadily on them by means of a hooked notch cut in a brass bar. Tests were also made attempting to break an unmounted tooth with the bare hands. The manner of fracture was then

studied and compared to the teeth fragments found in Marilyn Sheppard's bed.

"These experiments were devised by Dr. Kirk after an inspection of the Sheppard premises and a view of all the exhibits in the hands of the Prosecuting Attorney. There is no reason that we can see that would have prevented him from carrying out the same program before or during the trial of this case in the exercise of due diligence.

"Aside from the question of due diligence, these experiments, in our opinion, could not have been admitted in evidence in the trial of this murder case. Experiments, to be admissible as evidence, must be performed with identical or substantially similar equipment and under conditions closely approximating those existing at the time of the occurrence being investigated. None of the material used for these experiments was the same as that existing at the time of the murder. The most important, the head of the victim, was attempted to be simulated by a contraption conjured up by Dr. Kirk without any scientific correlation to the original body whatever. The weapons used were selected on the basis of pure speculation. The teeth were not related to those of the deceased for strength or hardness. Furthermore, the coagulation of blood differs with different persons and is affected by the factors—the temperature and the humidity. The temperature and humidity in the bedroom at the time of the murder are unknown and the coagulation time of Marilyn's blood as well as the blood used in the experiments are unknown. How would it be possible under these unknown factors as to both material and conditions to conduct experiments acceptable in a court of law? It must be said that they are interesting and no doubt would be of value in a textbook on the subject but clearly they would have no probative value in the trial of this cause.

"Dr. Kirk, in his affidavit, under the title *Technical Evidence of the Prosecutor* discusses *Water under defendant's wrist watch Crystal; Loss of T-shirt; The claimed drying of blood on Mrs. Sheppard's wrist before her watch was removed; and Drying of blood on defendant's watch before it was inserted in the green bag.*

"Under the title *Blood Trails*, he discusses *Clothing; Weapon; Skin of hands* (or face, etc.); and *Shoes* and then discusses *Green Bag and Contents*; and *Blood on Defendant's Clothing*. His opinion as to each of the indicated subjects is based upon experiments described in Appendixes A, B, C, D, E, F, G, and H. They amount to mere criticism of the manner in which the prosecution's evidence was gathered, doubt as to its evidence having any bearing at all on the guilt or innocence of the defendant and his personal opinion as to its significance. In no sense can this be interpreted as newly discovered evidence.

"The next division in the affidavit is entitled, *The Murder Scene*, and the main discussion comes under the heading *Blood Distribution*. He here describes the distribution of blood on the walls, defendant's bed and the radiator. By determining the point of origin, he gives the opinion that the head of the victim was essentially in the same position during all of the blows from which blood was spattered on the defendant's bed; that her head was on the sheet during most, if not all of the beating that led to the blood spots; that probably all of the blood drops on the east wall were thrown there by the back swing of the weapon used; that the blows on the victim's head came from swings of the weapon 'which started low in a left hand swing, rising through an arc, and striking the victim a sidewise angular blow rather than one brought downward vertically.' He then explains the *Cause of Distribution* and comes to the conclusion based on his experiments as described in Appendix I and his observation of the blood distribution in the bedroom that the blows were struck by a left-handed person. He then proceeds to explain the impact spatter, and the throw-off drops of certain weapons and decides that the blood spots on the doors of the bedroom were drops made by the back-throw of the lethal weapon, and that a very large spot on the wardrobe door could not have come from the back-throw of the weapon. This spot measured about one inch in diameter. He then expostulates that 'this spot could not have come from impact spatter. It is highly improbable that it could

have been thrown off a weapon' and that 'it almost certainly came from a bleeding hand.—The bleeding hand could only have belonged to the attacker.'

"We read this portion of Dr. Kirk's affidavit with much interest for it displayed high qualities of originality and imagination, blended with a wide range of knowledge of the subject discussed. However, none of it is newly discovered evidence, as contemplated by the law and has no juridicial value in this case because:

- 1) it includes matter that could have been offered at the trial had due diligence been exercised;
- 2) most of the facts involved had been given to the jury at the trial;
- 3) the conclusion that the assailant was a left-handed person was argued to the jury at the trial and besides was not a subject for opinion evidence since it was a conclusion for the jury alone to draw in the exercise of its common sense and ordinary knowledge from the facts and circumstances as shown by the evidence;
- 4) the opinion that the large spot could not have come from the murder weapon was guesswork since the weapon itself is unknown;
- 5) the statement that the large blood spot came from the bleeding hand of the assailant is sheer supposition;
- 6) the impossibility of performing experiments to approximate the fact and circumstances of the occurrence involved.

"The wounds on Marilyn Sheppard's face and head show a vicious attack with great force directed to vital spots. Because of their character, number, and location, the jury may well have concluded that the wielder of the weapon, being impelled by consuming rage and sudden animosity, had a definite purpose to kill and further that a person so motivated would strike from any direction necessary to accomplish his purpose.

"In view of these circumstances, the deductions of Dr. Kirk that the pattern of blood spatter, the position, and direction of the victim's head and the assumed position of the assailant is only consistent with the hypothesis that the murderer was a left-handed person is, in our opinion, highly speculative and fallacious.

"The next division of Dr. Kirk's affidavit is titled *Blood Groups and Individuality*. He states that the grouping of the large spot of blood found on the wardrobe door was performed simultaneously with the same sera and cells and in identical manner as the known blood of Marilyn Sheppard removed from the mattress and the second large spot ($\frac{1}{2}$ " in diameter) removed from the wardrobe. The latter was used for a control test and dissolved readily in distilled water and gave no sign of delayed agglutination, as was true of the known blood of the victim, but the large spot 'was definitely less soluble than that from the smaller spot, or from controls from the mattress' and 'in running the agglutination tests, in every instance and with tests for both A and B factors, agglutination was much slower and less certain than the controls. The fact that delayed agglutination occurred indicated clearly that this blood was also O group, but its behavior was so different as to be striking. These differences are considered to constitute confirmatory evidence that the blood of the large spot had a different individual origin from most of the blood in the bedroom.'

"The balance of Dr. Kirk's affidavit deals with *Tooth Fragments, Blood-stained Bedding, The Weapon and Miscellaneous Items* (1) *Victim's Slacks*; (2) *Top sheet of Victim's Bed*; (3) *Pillow*; (4) *Nail Polish Fragments* and (5) *Leather Fragment*. All of these matters were covered in detail in the trial of the case and under no circumstances can be called newly discovered evidence. Nevertheless, he undertakes to state his own ideas concerning them and advances his personal theories as to their significance in the case. We know of no rule of law permitting a re-evaluation of a decided case by a person versed in criminalistics with the purpose in mind of laying the groundwork for a new trial.

"The final subject of the affidavit is styled—*Reconstruction* with the sub-title—*Defendant's Account*. In this discussion, the affiant gives his own version of the murder from the standpoint of his interpretation of the physical facts and then adroitly fits in the defendant's story to conform to the same. It is inconceivable

that such testimony could be given to a jury at a retrial of this cause. It would be usurping the function of the jury.

"Dr. Kirk's opinion as to the large blood spot, discussed above, requires further consideration on our part.

"Dr. Roger W. Marsters, a recognized authority on blood, deals entirely with this claim of Dr. Kirk's in his affidavit. He states that 'Under ideal conditions * * * variability occurs in the routine performance of blood grouping * * *. These variables are almost always quantitative differences rather than qualitative ones. * * * Dr. Kirk is postulating different qualities of type O blood characteristic. Even under ideal conditions of fresh blood reactions, sub-groups of type O are unknown. Therefore, to assume the existence of another quality of type O and especially another individual source on the basis of some quantitative difference in reaction and solubility employing an admittedly complex technique cannot be justified.'

"Dr. Kirk in his rebuttal affidavit questions the qualifications of Dr. Marsters in absorption grouping of dried blood. He admits 'differences in regular blood grouping do occur * * *,' and that 'much greater differences occur in grouping dried blood because of variation in the conditions under which blood is stored, admixture with foreign substances * * *,' but says 'these conditions * * * do not apply to the present case.' He further says that variations in behavior of different types of blood are due to minor variations in technique or conditions and that these are extremely small when run by experienced persons, that samples of blood of two different persons, even though of the same group * * * will often behave differently; and that any variation in them of a magnitude greater than small experimental variation, when treated identically, must be significant. He claims that the two spots in this case 'were deposited on the same paint, on the same panel of the same door and close together. They appeared normal, were free of contaminating substances and that there was no indication of any accidental or uncontrolled variation between the two spots that could account for the differ-

ences claimed.' He says 'No postulate was made by me of different qualities of type O blood characteristic, nor of any hypothetical 'sub-groups.' Rather the claim concerns different qualities of blood, both of which happen to be of type O' and cites Lattes 'Individuality of the Blood' as authority 'that wide differences do occur in Group O bloods.' He further states:

'Solubility differences claimed do not rest on different times necessary to dissolve different size of samples. The samples used were of closely the same size, and the difference in solubility rather was so great as to be many times that which could be caused by different size of sample.

'It is well known that agglutination of cells in the presence of blood from a pregnant woman is more rapid than for non-pregnant persons (See Lattes 'Individuality of the Blood'). Agglutination in presence of known blood from the bed on which the victim died was even more rapid than was that of the controls, which was found also with the lower spot from the wardrobe door. Both were in very marked contrast to the very slow speed of agglutination of the identical serum-cell system containing extract of the large spot. All were determined simultaneously with the same serum, cells, and equipment and all were repeated for verification with the same results.'

"At the very outset of the consideration of this controversy of the experts, one fact stands out crystal clear. Each of the three blood spots involved in the dispute has been typed as Group O, which is Marilyn's blood grouping. Dr. Kirk, though, maintains that the slow speed of agglutination of the large spot as compared to the same reaction with respect to the known blood of Marilyn Sheppard and the smaller control spot, confirm the presence of some other person than Marilyn Sheppard and the defendant during the murder. He refers to a book by Leone Lattes titled "Individuality of the Blood" to uphold his position in the matter. Now this author does say on page 67 that:

'The numerous individuals who belong to one and the same group do not all of them show exactly the same behavior with regard to iso-agglutination.'

but he also says on page 70:

'Some writers (Baecchi) have suggested that these quantitative differences in agglutinins might be used for individual sero-diagnosis. But we now know that these variations are generally contingent and accidental, and do not depend upon individual constitutional factors.'

and on page 261:

'The existence of the blood groups as a fixed and constitutional individual characteristic is now definitely established * * *.

'Moreover, the most recent investigations have explained in a very satisfactory manner the reason why the workers who first investigated blood-stains met with so many discrepancies and exceptions. We must first of all take into account the actual state of the blood in the stains, and endeavour to realize in what way and up to what point this is likely to affect the reactions used to demonstrate the individuality of fresh blood. * * *

'In these stains the blood is dry and more or less old. In some cases it has been subjected to the detrimental action of physical (heat, light) or chemical (oxidation, various chemical substances) agents. * * *

"From a careful consideration of the affidavits on this subject, as well as the authorities we find:

1) that Dr. Kirk's contention rests on the difference in time in the appearance of agglutination of the large spot when compared to the same reaction of known blood of Marilyn and the smaller spot used as a control;

2) that Dr. Kirk believes that this difference confirms the presence of a person at the murder scene other than the victim and the defendant;

3) that experts contra say that such differences are not unusual even with known samples of the same blood and at most is a quantitative and not a qualitative difference;

4) that all three blood samples were of the same blood Group, known as O;

5) that the samples tested, being dried blood exposed for some eight months in a room subjected to much activities by many persons, who examined and tested various parts of the room, were exposed to contamination of many sorts: bacteria, fingerprint dusting powder, hand or body oils and perspiration, dust and other substances;

6) that in the removal of the stain from the wardrobe door, paint, soap and detergents may have been scraped off;

7) that experts agree that tests conducted on dried blood are not as reliable as those made on fresh blood;

8) and that no court, to our knowledge, has accepted such findings as proof of blood from different persons.

"We conclude from all the foregoing that the opinion of Dr. Kirk that 'These differences are considered to constitute confirming evidence that the blood of the large spot had a different individual origin from most of the blood in the bedroom,' even though such blood had the same blood grouping as that of Marilyn Sheppard's, is based on claims so theoretical and speculative in view of Dr. Marsters' affidavit, the statements of authority referred to by Dr. Kirk and his own writings on the subject as to have no probative value in support of defendant's claim of newly discovered evidence."

(An appeal from this Decision of the Court of Appeals is now pending in the Ohio Supreme Court.)

Short Course for Prosecuting Attorneys—
The Eleventh Annual Short Course for Prosecuting Attorneys, conducted by Northwestern University School of Law, will be held during the five day period from July 30 through August 3, 1956. The course has a three-fold objective:

To offer instruction regarding the preparation and trial of criminal cases.

To acquaint prosecutors with the possibilities of scientific methods in criminal investigations and prosecutions.

To provide a forum for the mutual exchange of information by the attending prosecutors.

Well qualified authorities will discuss such subjects as the selection of jurors, opening statements, the examination and cross examination of witnesses, closing arguments, preparation for trial, the effective use of medical evidence, the prosecution of drunk driving cases, extradition and habeas corpus problems, the law on confessions, homicide investigation, handwriting and typewriting identification, alcoholic intoxication tests, common sense techniques for the interrogation of criminal suspects, the lie-detector technique, the taking and signing of written confessions, the self-incrimination privilege and other matters of importance to prosecuting attorneys.

The attendance fee is \$75.00, payable on July 30th. Attendance is restricted to attorneys holding federal, state or municipal office as prosecutor or assistant prosecutor. The complete expenses of most of the previous course attendants were defrayed by the counties or states they represented.

A copy of the complete program for the course will be available on June 1st. However, prosecutors who wish to register now, or who desire any further information at this time should write to: Professor Fred E. Inbau, Northwestern University School of Law, Lake Shore Drive and Chicago Avenue, Chicago 11, Illinois.