

SEGMENTS OF HISTORY

THE LITERATURE OF BLOODSTAIN PATTERN INTERPRETATION

SEGMENT 02: LITERATURE FROM 1911 THROUGH 1920

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History #2

This is the third installment in a series of Segments of History in the Documentation of Bloodstain Pattern Interpretation. The period of time covered in this segment is the that of the second decade of the twentieth century, 1911 - 1920. The previous segment covered literature in this field from 1901 through 1910.

1911 - AINSWORTH C. MITCHELL¹: Mitchell reported various methods for the differentiation of human blood from blood of other animals based upon the size of the red corpuscles. He also noted that the shape of the human blood corpuscles, as well as the shape of most other mammalia, appear as double concave circular discs and that their concentration varied between animal species. Reference is made to chemical tests performed during that period which, at best, were highly subjective. He quotes Taylor's **Forensic Medicine**, but does not identify the source further, as follows: "Taylor, writing in 1844 upon this point [chemical testing of blood], observes: 'Some French medical jurists state that by mixing fresh blood with a certain portion of sulphuric acid and agitating the mixture with a glass rod a peculiar odour is evolved which differs in the blood of man, and also of the two sexes. This odour, it is said, resembles that of the cutaneous exhalation of the animal, the blood of which is the subject of experiment. They have hereby pretended to determine whether any given specimen of blood had belonged to a man, a woman, a horse, sheep, or fish. Others pretend that they have been able to identify the blood of frogs and fleas!'" The article continued, "As Taylor pertinently observes of this: 'There is probably not one individual among a thousand whose sense of smelling would be so acute as to allow him to state with undeniable certainty, from what kind of animal the unknown blood had really been taken. Any evidence short of this would not be received in an English court of law.'" As a former Professor of Chemistry I must agree. I found that very few of my organic chemistry students were able to distinguish the odors of more than a dozen organic solvents even though they anticipated this challenge as part of their final laboratory examination.

Mitchell discusses several very early cases in which the identification of blood was highly significant and, undoubtedly, justice was not always achieved. These cases suggest novel means for the determination of suicide. In the 1679 trial of Robert Green for the murder of Sir Edmund Godfrey, "who had been waylaid and apparently strangled" the defendants were convicted and executed. It was later contended by the defense that Sir. Edmund Godfrey had not been strangled at all, but had committed suicide. A hearing was held and, "In the words of the prosecuting counsel for the prisoners - 'they say that if a man or any other creature be strangled or hanged and the body cold and the blood settled in the veins (as he must be if your evidence be true, meaning the evidence of the said Miles Praunce). Run twenty swords through such a body not one drop of blood will come out; but on the contrary, his body when found was full of blood. So that they do aver that the wound that he received by the sword must be the cause of death.'" The final result was that the witnesses were found guilty of "traducing the justice of the nation and two of them were sentences to stand for an hour in the pillory and pay a fine of £100 each, while the third escaped with the fine only." Such was the punishment in 1682 for the giving of false testimony.

According to Mitchell, who, unfortunately, did not list a source of his information as footnotes or bibliography, "the first occasion upon which scientific evidence as to the difference between the blood of man and of [other] animals was given in a criminal trial the remarks made by the judge (Lord Chief Justice Cockburn) to the jury showed that he was skeptical as to the powers claimed by the chemical witness of distinguishing between different kinds of blood.

"In this case, which was tried at the Taunton Assizes, in 1857, a man had been found with his throat cut, and collateral evidence pointed to a man named Nation being the murderer. When he was arrested he was found to have a knife upon him on which were stains that appeared to be blood, but the prisoner accounted for these by saying that he had recently been cutting raw beef with the knife. "The chemical evidence, however, went to prove that coagulation of the blood had not occurred until after it had come into contact with the knife, or, in other words, that the blade had been plunged into living blood.

"Moreover it was stated by this witness that the blood could not have been that of an ox, pig or sheep, since the corpuscles were smaller than those of human blood, whereas the corpuscles of the blood upon the knife were of the same dimensions as those of human blood. The relative sizes of human corpuscles compared with those of the animals mentioned were stated to be as fifty-three to thirty-four in the case of the ox; as fifty-two to thirty-four in sheep's blood; and as forty-five to thirty-four in pig's blood. "The judge, in his summing up, made the following comments upon the evidence: 'The witness had said that the blood upon the knife could not be the blood of an animal as stated by the prisoner, and took upon himself to say it could not be the blood of a dead animal; that it was living blood and that it was human blood; and he had shown them the marvelous powers of the modern microscope. At the same time, admitting the great advantages of science, they were coming to great niceties indeed, when they speculated upon things almost beyond perception, and he would advise the jury not to convict on this scientific speculation alone.' "The jury found the prisoner guilty upon evidence other than this 'scientific speculation,' the novelty of which probably prevented the judge from accepting it as a demonstration of facts which might be verified or disproved."

1911 - POLZER²: This reference is available but has not yet been translated into English.

1912 - R. A. REISS³: A series of lectures given by Reiss during the summer of 1911 were compiled by S.N. Tregubov and published in 1912. Reiss suggested that the shape of bloodstains was very important and used illustrations to demonstrate the appearance of a bloodstain as a result of the movement of a body, the effect of distance fallen on the spattering of blood, the significance of

surface porosity and even considered arterial spurting. Some of his original illustrations are shown in Figure 1.



Figure 1. BLOOD STAIN SHAPES:

- 1) Blood that fell from a stationery body.
- 2) Blood that fell onto a pine floor.
- 3) Blood that fell from a moving body.
- 4) Blood that fell from a fast moving body.
- 5) Blood splashed from a drop that fell 15 cm.
- 6) Blood stains on a non-absorbent wall.
- 7) Blood from a cut artery.

1912 - FRITZ ZANGGER⁴: This is a very detailed report of the death of Helene Jursche but, unfortunately, this reference has not yet been translated into English. It will be reoprted later.

1912 - WM. L. CLARK AND WM. L. MARSHALL⁵: This reference is included as something of a comic relief rather than as a serious contribution to the history of bloodstain pattern interpretation. The subject title "Cooling of Blood" is not inaccurate, however, it could be interpreted to infer that a scene investigator use a thermometer to probe a pool of blood in an effort to estimate the time that had passed since blood was released from a victim. At least that is what I initially thought might be the case. I could not have been more incorrect in what the authors actually were addressing! Perhaps the best manner to present the content of Clark and Marshall's information is to simply quote it and hope that those who were also misled by the title "Cooling of Blood" will enjoy the humor of misconception. There is really nothing of

forensic value in their article. They wrote, "Not only must the provocation have been of such a nature as might reasonably excite passion and overthrow reason, but the homicide must have been committed before the passion subsided and the blood cooled, and before the lapse of a reasonable time for cooling." They continue, "If the blood of the accused actually did cool before he gave the fatal blow, it is clearly a case of murder, however short the time interval between the provocation and the blow." This statement is actually taken from the legal citation of East which held, "If, from any circumstance whatever, it appears that the party reflected, deliberated, or cooled any time before the fatal stroke given, or if, in legal presumption, there was time or opportunity for cooling, the killing will amount to murder."⁶

In a later section labeled "Reasonable Time for Cooling" Clark and Marshall added, "The reasonable time for cooling is the time within which an ordinary man would cool under the circumstances."⁷ There is much more on the "cooling" of blood in this reference but, as was previously stated, this subject is not of forensic interest and has been included only as a brief topic wherein, I hope, the reader's blood has cooled just a bit.

1913 - JOHN HENRY WIGMORE⁸: This is an interesting report of a train accident that occurred on 19 DEC. 1891. Bloodstains on a piling base established a point of impact for the head of a train brakeman who fell from a caboose. The absence of blood in his cap, or on any part of the spout of a watering tank, was considered evidence that the man was not killed by striking this spout at a level below where it should have been. Further, blood was not found on the top of the caboose. Some blood, or what appeared to be blood, was reported to have been on the side of the caboose. If it were blood, and the directionality had been noted it would have been very elementary to have established whether the impact was from the ground or from falling blood.

1914 - ERNST ZIEMKE⁹: Dr. Ziemke wrote that "Blood traces belong to the most important traces, which may remain evident after a crime." He pointed out how such traces frequently were decisive in the conviction of offenders. Like many others, Ziemke found that, "It is thoroughly erroneous to think, that the offender must have been heavily blood spoiled [sic], when he afflicted the victim severe wounds with opening of arteries. In our experience we had two cases of murder by cutting the throat and the main carotids of the victim, where no blood spoiling [sic] whatsoever was on the offender's clothing." Dr. Ziemke was an advocate of making first a rough crime scene sketch, then a detailed drawing using transparent paper and finally a photograph. He also suggested photographs be taken of bloodstains at a crime scene and gave very detailed directions as to how best they should be taken, including a ruler or other scale of reference.

"Bottleneck-shaped" blood traces resulting from spatter are noted as are arterial gushing variations. Consistent with most of these early researchers, Ziemke noted the difference in bloodspatter as a function of distance fallen rather than the texture of the surface upon which the drop impacts. Surprisingly, this error seems to have been repeated by the majority of those who reported on experiments of this type. The shape of bloodstains on a wall was described as "exclamation marks" while the unique term "thorn-apple like" was used to describe short spines on one side of a bloodstain. Cast-off patterns, resulting when blood is flung from the hand, were also noted to produce the "thorn-apple like" patterns. Several illustrations are included in Dr. Ziemke's chapter that are typical of classic bloodstain patterns. "Brushing traces" are mentioned, however, it was felt that patterns of this type would have limited application "because they seldom have characteristic shapes.." Today, we are aware of several significant wipe and swipe patterns.

A case is cited where the blood traces were reported to be on the outside of a subject's trousers who claimed the stains resulted from a wound to his leg. This was proven to be false since the stains originated on the outside, not the inside, of his trousers. Another case related how the height of bloodstains at the top of a cellar staircase proved how a woman was struck while standing and then fell down the stairs. Ziemke commented on the age of blood as a function of the color of the bloodstain and noted that solubility of dried blood is also a function of age. Interestingly, Dr. Paul L. Kirk discussed the solubility of dried blood at the scene of the Sheppard murder in 1955 as a means of differentiating between blood of two different persons.

This chapter written by Dr. Ernst Ziemke in 1914 must be considered a major contribution to the literature of bloodstain pattern interpretation.

1914 - H. HABERDA¹⁰: This short report discusses angle of impact and the shape of individual blood spatters as a function thereof.

1914 - MEYER¹¹: The question is whether the death was a murder or a suicide? The 3 March 1911 death has not been resolved, however, an English translation has not been obtained either. This will be reported in more detail after this reference has been translated.

1919 - H. MARX¹²: Methods for the determination of the age of a bloodstain are discussed. Early chemical methods for the identification of blood are evaluated.

1920 - H.L. ADAM¹³: This story deals with direct transfer of blood. The perpetrator dipped his finger into a pool of blood (from the victim's chest wound) and wrote the words "at last" on the wall. The amount of blood on the perpetrator's finger thinned

out as he wrote and the period at the end of the last letter appeared only as a faint mark, clearly displaying the ridges of the finger. The letters of the words were too thick to show any prints.

REFERENCES

1. Mitchell, C. Ainsworth, *Science and the Criminal*, London, Pitman & Sons, Ltd., 1911, p. 154-161.
2. Polzer, Wilhelm, *Form und Farbveränderungen des Blutropfens*, *Archiv für Kriminal-Anthropologie und Kriminalistik*, 1914, p. 326-329.
3. Reiss, R.A., *Scientific Techniques of Criminal Investigations*, St. Petersburg Senate Publishing House, St. Petersburg (Russia) 1912, p. 40.
4. Zangger, Fritz, *Der Mord an Helene Jursche*, *Archive für Kriminalistik*, 1912, p. 32-65.
5. Clark, Wm. L., and Wm. L. Marshall, *Law of Crimes*, 2nd Ed., Herschel Boulton Lazell, Ed., Chicago, 1912, p. 366-368.
6. East, P. C. 252.
7. *State v. McCants*, 1 Speers (S.C.) 381.
8. Wigmore, John Henry, *The Principles of Judicial Proof*, Boston, Little, Brown and Company, 1913, p. 173-176.
9. Ziemke, Ernst, *Die Untersuchung von Blutspuren*, in Th. Lochte, *Gerichtsärztliche und Polizerärztliche Technik*, Weisbaden, Bergman 1914, p. 152-165.
10. Haberda, H., *Eine Besondere Form von Blutspritzern*, *Ajschr. Gerichtl. Med.*, v. 47, 1914, p. 380.
11. Meyer, *Mord oder Selbstmord*, *Archiv für Kriminal-Anthropologie und Kriminalistik*, Hans Gross, Ed., F.C.W. Vogel, Leipzig 1914, p.193-203.
12. Marx, H., *Practicum der Gerichtlichen Medizin*, Hirschwald, Berlin, 1919.
13. Adam, H. L., *C.I.D. Behind the Scenes at Scotland Yard*, Sampson Low, Marston, London, 1920, p. 120-128.