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TONELINE BITE MARK PHOTOGRAPHY

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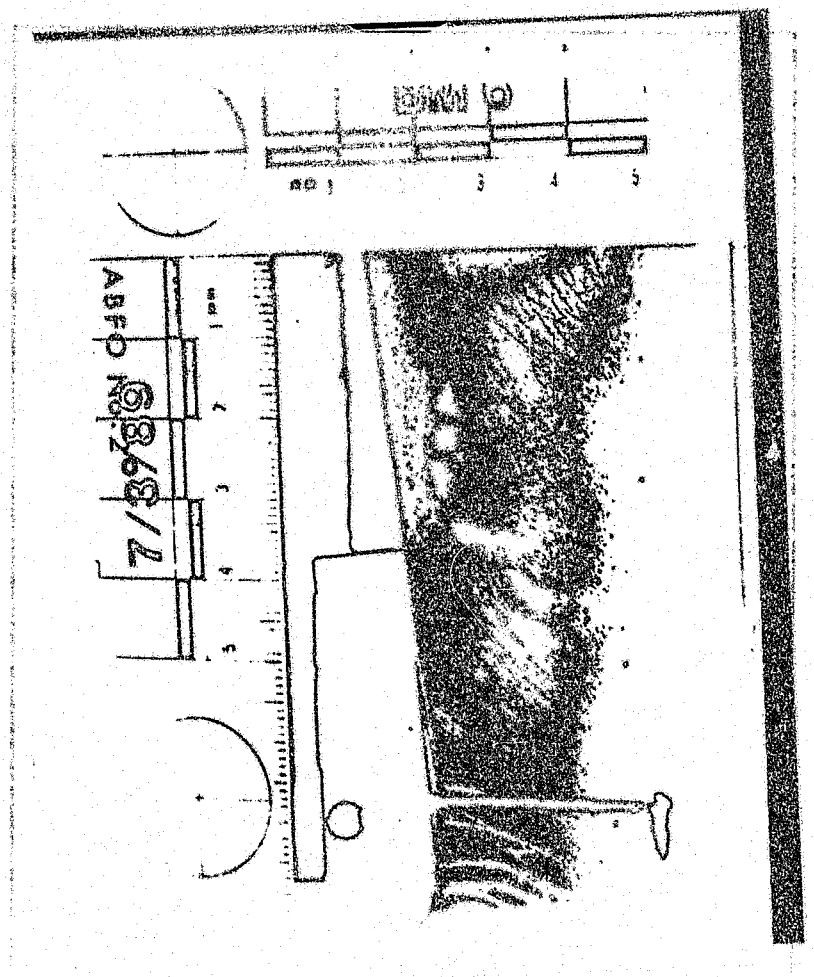

TONELINE FILM POSITIVE

TONELINE BITE MARK PHOTOGRAPHY

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Abstract

In bite mark analyses, the initial photograph is critical for the collection and presentation of evidence. A high contrast film technique previously primarily used in the graphic art field, has been refined and applied to forensic odontology. The process, called *toneline*, reduces the interpretational bias of the investigator and yields a transparent overlay with a photographic outline of the bite mark that can be directly compared with models of the suspect's teeth.

Introduction

From the onset of human hostility man has used his teeth as a weapon to bite his victims. Teeth have also been used as a means of defense. It has long been recognized that bite marks are unique and can be attributed to specific individuals. Although unverified by the British Dental Association, it is believed that William the Conqueror was aware of the distinctiveness of his malaligned teeth and used them to mark the wax of the official seal of England [1].

A recent study has established dental uniqueness beyond a reasonable doubt [2]. Another investigation has concluded that even the dentition of identical twins is not identical [3].

A *bite mark* is defined as the mark created by teeth, either alone or in combination with other oral structures [4]. We observe bite marks on victims of assault, rape, child abuse, and homicide. They are found on virtually all areas of the body, with more than one bite occuring in 40% of the instances [5]. Female victims are most commonly bitten on the breasts, arms, and legs. Male victims are generally bitten on the arms and shoulders, suggesting a significant proportion of these injuries are the result of homosexual encounters [5].

The first use of bite mark evidence in the conviction of a wrongdoer occurred in 1906 in England and involved a mark left in a piece of cheese during a burglary. A match between the burglar's teeth and the mark in the cheese was convincingly demonstrated [1]. The earliest bite mark evidence in the United States for which we have a legal citation was in Doyle vs. State of Texas. Again the bite mark involved cheese [6].

Bite marks are now accepted as evidence in courts of law. Life and death decisions can hinge upon the accuracy with which such evidence is interpreted. Courts have admitted bite mark evidence in several different types of cases, "No reported case has rejected bite mark

evidence. Indeed, its acceptance is so well established that the New York Court of appeals has held that its validity need not be proved in every case." [7].

At present there are several methods of analyzing bite marks. Photographing, tracing, or making models are the most common methods of examination and study. Regardless of the method of analysis used, photographs of the bite mark are always included, enlarged to life-size dimensions for comparison with models of the suspect's teeth. Much current research has centered on investigation of the suspect's teeth. We undertook the present study to find a method of isolating useful photographic information while initially recording evidence.

Current photographic methods involve continuous tone (black-and-white or color) prints or slides [8]. Reference scales, rulers, or an ABFO #2 [9, 10] are frequently included in the photographic exhibit to show size and proportion. By selectively controlling photography of the original image, we hope to improve the contrast between bite mark discoloration and surrounding tissues. The resultant high contrast negatives can be used to generate graphic toneline images of the bite mark perimeter.

Toneline (sometimes called a line print) is a relatively common, high contrast technique which yields a thin black outline of the photographed subject, often resembling a pen-and-ink sketch [11]. It is a method which can prove useful to photographers and odontologists in documenting and analyzing the evidence in unbiased fashion. We believe that the technique can be applied to any injury, mark, or pattern resulting in skin discoloration.

Accordingly, our investigation concentrated on the search for the optimum negatives for enlarging onto lithographic film in order to achieve a black "pen-and-ink" line around the bite mark. We also wanted to demonstrate the subjective qualities of currently accepted examination methodology.

Methods

Our research involved fourteen (14) bite marks. Five (5) were self-inflicted by a researcher due to a lack of timely coroner's cases. Nine (9) were present on four (4) decedents.

All fourteen bite marks were initially recorded in conventional fashion on 35 mm. Kodak Vericolor III Professional film. 1 : 1 enlargements on 5 x 7 inch Kodak Ektacolor Plus paper were made of each injury.

Methodology devoted exclusively to refining toneline technique for bitemark application was complex and evolved as our findings confirmed or negated our approach. To be kept in mind is the fact that a toneline film overlay is the result of a film positive and a negative [11] and contains qualities present in both. Therefore it is technically neither positive nor negative. Since the product of the film positive and negative is in our desired overlay format, and since an intermediate negative is required to make a toneline print, we will use the nomenclature *toneline film positive* to describe the resultant film image which has a black outline on a transparent background.

It is further necessary to understand that a toneline film positive is the result of a continuous-tone film negative, a lithographic film positive , and a lithographic film negative (***Figure 1***). Accordingly, refining the toneline technique required investigation and controls at two of four involved steps:

1. The initial panchromatic film negative, and
2. The toneline film positive.

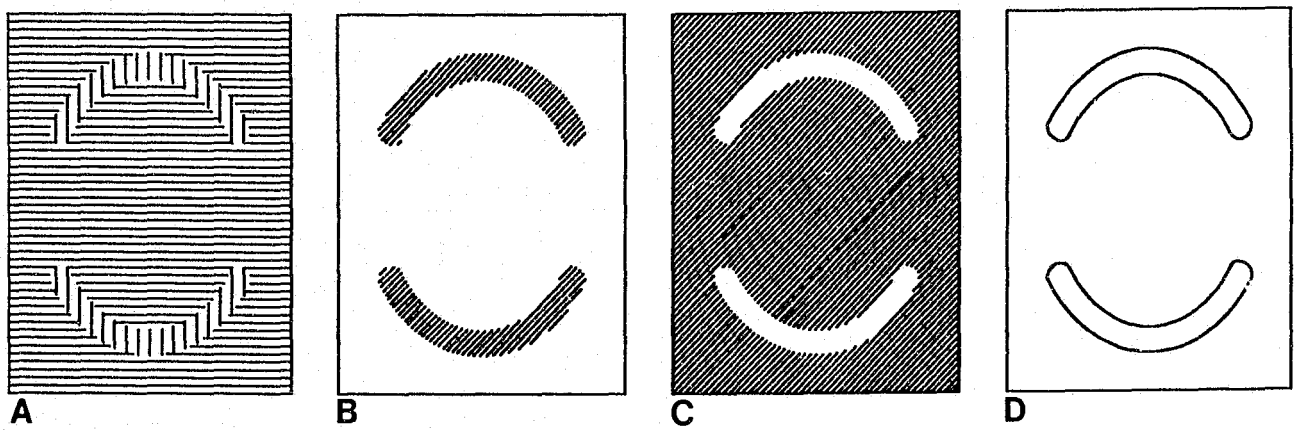


Figure 1. *Illustration depicting steps necessary to produce a toneline film positive. A. represents a continuous tone film negative, B. is a Kodalith film positive, C. a Kodalith film negative, and D. is the resultant toneline film positive.*

All of our photographic supplies (film, paper, developer, filters, etc.) manufactured by the Eastman Kodak Company. We chose Kodak materials because of their widespread availability, the amount of published documentation regarding them, the excellent technical support provided by the company, and the consistency of emulsion quality.

The equipment necessary for our methodology is straightforward, minimal and easily available to any law enforcement agency with access to a darkroom (***Figure 2***). Due to the relatively small exposure latitude of Kodak Kodalith Ortho Film 2556, Type 3 [12] used extensively in this project, we used a digital darkroom timer accurate to .1 second. We believe the technique can be repeated with a less precise timer.

When an original continuous-tone negative is enlarged onto lithographic film (in our project, Kodalith), properties within the film convert all intermediate gray tones present on the negative into either white (clear) or black [11]. The point at which one gray becomes black while another becomes white is called the *tonal break* (***Figure 3***). By varying exposure and development times, we have limited control over the point at which tonal breaks occur.

Unfortunately, lithographic film is very easily over- or underexposed, and controlling tonal breaks is difficult. Our efforts, therefore, were concentrated on separating the gray middle tones on the original continuous-tone negative. Continuous-tone films have significantly reduced compression of tones, and image contrast can be more easily controlled by varying film exposure, developer, development time, and selective filtration of incoming light [13, 14]. Characteristic curves (or H&D curves) [14] demonstrating lithographic (Kodalith) and continuous-tone (PLUS-X) film's differing responses to exposure and development are illustrated in ***Figure 4***..

To begin our research, bite mark #1 (BM1) was photo-

Technical Pan Negative

1. SLR CAMERA BODY (Nikon F3)
2. 105 mm. LENS (Nikon Micro NIKKOR 105 mm. *f*/ 4)
3. CAMERA MOUNTED ELECTRONIC FLASH (Vivitar 285 HV Auto Electronic Flash. Flash was used on manual setting at full power, 100 ASA, and head set at 0 degrees)
4. EXTERNAL BATTERY PACK (Vivitar HPV-1 High Voltage Battery Pack. Optional)
5. KODAK WRATTEN #58 GREEN TRI-COLOR FILTER

Kodalith Positive

1. ENLARGER (Leitz/Wetzlar FOCOMAT IIc condenser-type enlarger with a 95 mm. FOCOTAR *f*/ 4.5 lens)
2. 4 x 5 INCH FILM EASEL

Kodalith Negative

1. LIGHT SOURCE (Leitz enlarger above with a 60 mm. lens)
2. CONTACT PRINT FRAME

Kodalith Toneline Film Positive

1. LIGHT SOURCE (200 watt bulb)
2. CONTACT PRINT FRAME

Figure 2. *Equipment list. Equipment specifically used at Cuyahoga County Coroner's Office appears inside the parentheses. Power pack for flash is not necessary.*

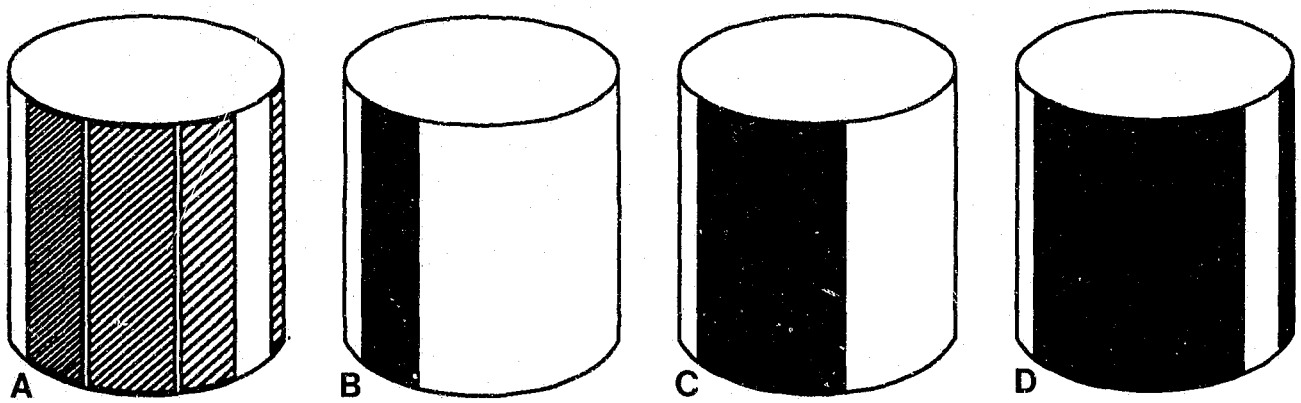


Figure 3. *Hypothetical tonal breaks of a continuous tone image (A.). Depending on exposure and development, several possible resultant high contrast images are possible (B.,C., and D.).*

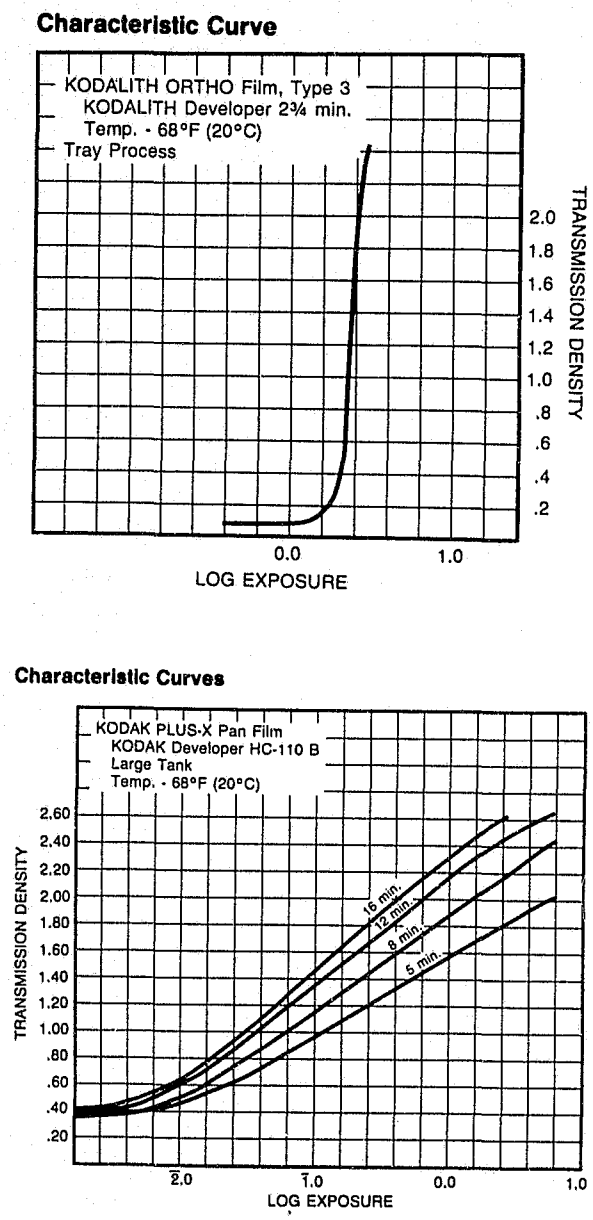


Figure 4. Characteristic curves of Kodalith Ortho type 3 lith film (top) and PLUS-X Pan film (bottom). Dramatic differences in exposure response are clearly visible. Both graphs are from Kodak Publication M-1, "COPYING and DUPLICATING in Black-and-White and Color". © Eastman Kodak Company 1984

graphed with twenty-four (24) rolls of film. There were four rolls of each of the following continuous-tone film types; T-MAX 100, T-MAX 400, TRI-X Pan, PLUS-X Pan, PANATOMIC-X, and Technical Pan. The focusing ring on the camera lens was taped so that subject-to-image distance was constant at two feet. Each roll of film was exposed identically with consideration given to flash recharge time [13].

The four rolls of each film type were processed in four different developers (D-19, Technidol LC, T-MAX, and HC-110 (dil. B)) at the manufacturer's recommended developing times at 68° F.. In some cases film/developer combinations were not specified, so development times were extrapolated.

Film/developer methodology for BM2 was identical to that of BM1. We altered exposures based on results obtained from BM1. We also switched from a 55 mm. to a 105 mm. lens in order to increase the size of the bite mark image on the 35 mm. negatives. We again secured the focusing scale at two feet.

BM3 was simply photographed with T-MAX 100 and processed in D-19 developer. BM3 explored the use of contrast control filters. Since the ultimate goal was to isolate the red and magenta skin discoloration associated with bite marks, #47 Blue Tricolor and #58 Green Tricolor Wratten filters were selected for testing [11, 15]. BM3 was photographed with and without filters in order to determine best image contrast and the most useful exposure compensation factor for each filter [16].

BM4 was photographed using four rolls of PANATOMIC-X, T-MAX 100, and Technical Pan at varying (bracketed) exposures with and without a #58 filter. Again, each roll of similar film was exposed identically. Due to low image contrast on PLUS-X, T-MAX 400, and TRI-X we excluded them from further study. T-MAX and Technidol LC developers were also discontinued because they failed to improve image contrast to a useful degree. Two rolls of each film were processed in D-19 and HC-110. At this point, development time for one roll of each film type was increased 15% (pushing) to investigate the effect on image contrast [11, 13, 17].

Bite marks BM5A, BM5B, BM5C, AND BM5D (four different bite marks on the same decedant) were bracketed with and without a #58 filter. While we were able to produce reasonable image contrast on PANATOMIC-X film negatives, this contrast did not yield a usable image when enlarged onto Kodalith film so PANATOMIC-X was dropped from the study. Development time for the pushed film was increased an additional 5%.

Bite marks BM6A, BM6B, BM7, BM8, BM9A, and BM9B were each photographed and processed identically in order to confirm our findings and establish repeat capability of the technique. Unexpectedly, the investigators were absent when BM9A and BM9B presented, and they were photographed by an independent forensic photographer using the written prescribed technique. His results were consistent with our findings.

Throughout the film and developer investigation, negatives were visually inspected, contact printed, and enlarged 1:1 onto 4 x 5 inch Kodalith film. Kodalith film positives at a variety of exposures were examined, and

those clearly isolating the bite mark from the surrounding skin were contact printed (emulsion-to-emulsion) onto another sheet of Kodalith . All Kodalith film was processed in Kodalith developer (1:3) at 70° F. for 2 3/4 minutes. Once a dry Kodalith positive and negative were obtained, they were carefully registered and taped together with silver mylar photographic tape (base-to-base). When viewed from perpendicular to the film plane no light should pass through. Finally, second contact prints were made at varying exposures. During exposure the film must be rotated uniformly so that light passes through all of the tonal breaks (***Figure 5***). Expos-

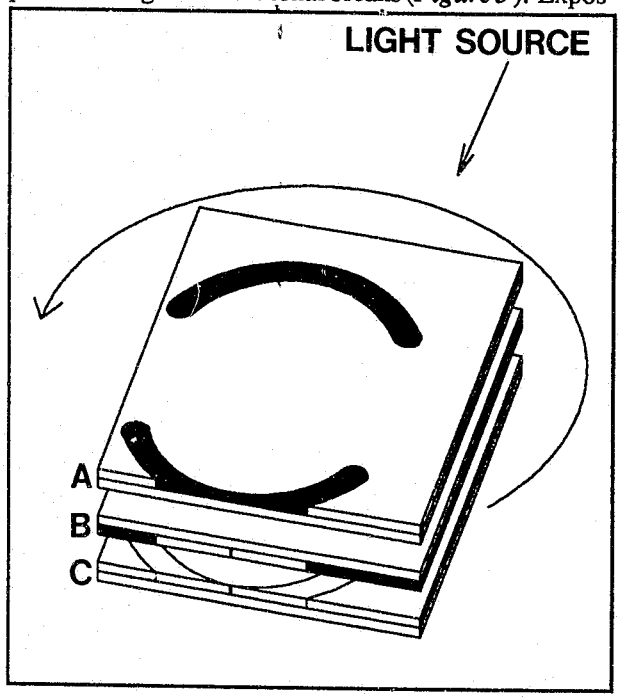


Figure 5. *Illustration demonstrating the Kodalith "sandwich". A. is the Kodalith film positive image (emulsion side up). B. is the Kodalith negative (emulsion side down). C. is the toneline film positive (emulsion side up).*

ing the film is best done with a point light source. For economy and availability we used a 200 watt bulb. Variations in the angle of bulb placement were explored and we found our results most useful when the bulb was placed six feet from the film at a 45° angle above the film plane. Our exposure times varied from 10 to 40 seconds depending on film densities.

After processing the last sheet of Kodalith, we now had a toneline film positive of the photographed bite mark. We later used these with models of the suspect's teeth for direct comparison.

In order to demonstrate examiner bias, color prints of four bitemarks were given to four different individuals for tracing. For our purposes, we chose people of different occupations (secretary, police officer, artist, and dentist). They were each given the same photographs, four sheets of ortho tracing acetate, and a #2 pencil. They were instructed only to carefully trace the perimeter of each bite mark. No time limit was specified. The tracings were later compared with photographs and with one another.

Results

Our research produced 716 panchromatic film negatives (51 per bite mark), 463 orthographic film positives (33 per bite mark), 67 orthographic film negatives (5 per bite mark), and 23 toneline film positives (2 per bite mark). We met our goal of establishing a repeatable combination of film, developer, development time, exposure, and filtration for toneline examination of bite marks. We also were able to successfully demonstrate examiner bias in the currently accepted methods used routinely by forensic odontologists.

We found the film of choice to be Kodak Technical Pan panchomatic film. When processed in D-19 developer it exhibited excellent separation of tones in and around the bite mark. We found it best to increase

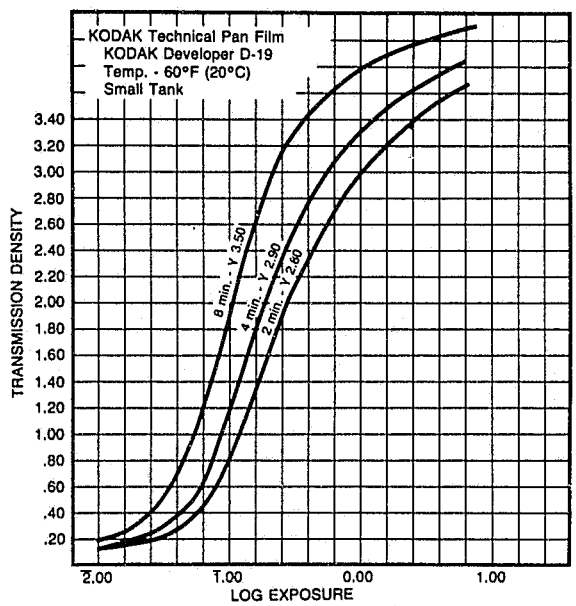


Figure 6. *Manufacturer's characteristic curves for Technical Pan film processed in D-19 developer at 60 degrees F.. Manufacturers specifications from Kodak Publication M-1, "COPYING and DUPLICATING in Black-and-White and Color".*

FILM	EXPOSURE WITHOUT # 58					EXPOSURE WITH #58					DEVELOPER	DEVELOPMENT TIME	TEMP.
	f/32		22		16	16		11		8			
TECH	X	X	X	X	X	X	X	X	X	X	D-19	5 minutes	68
TECH	X	X	X	X	X	X	X	X	X	X	HC-110	7.25 minutes	68
T-MAX	X	X	X	X	X	X	X	X	X	X	D-19	5.75 minutes	68
T-MAX	X	X	X	X	X	X	X	X	X	X	HC-110	8.5 minutes	68

A. Expose Tecnical Pan film using exposures listed above (abbreviated as *TECH*). Process negatives at recommended development time in D-19.

B. Enlarge image from Technical Pan film onto Kodalith at 1 : 1 (exposure times vary from .5 to 6 seconds at f /4.5 with a 95 mm. lens. Process on Kodalith (1 : 3) developer for 2.75 minutes at 70 degrees F..

C. Contact print Kodalith positive onto another sheet of Kodalith film (emulsion-to-emulsion).

D. Contact print registered Kodalith positive and negative (base-to-base) onto a third sheet of Kodalith, rotating film during exposure.

Figure 7. *Procedure for producing toneline film positives. All Kodalith should be processed as described in B.. All necessary equipment is described in* ***Figure 2.***

development time approximately 20% in the D-19 (***Figure 6***). We have also found that at times T-MAX 100 worked reasonably well as a film substitute and HC-110 (dil. B) can be used in place of D-19 if D-19 cannot be obtained. We call attention to the fact that T-MAX 100 and HC-110 are *not as effective* and should be used *only* if Technical Pan or D-19 are not available.

Figure 7 is our recommended procedure for photographing and processing a bite mark. We offer four different developer/film combinations, with our strongest recommendations first and the other combinations following in order of decreasing effectiveness (combinations in the gray area of the chart). As seen in ***Figure 7***, we recommend a minimum of ten exposures (five with and five without a #58 filter). We had hoped to develop a two or three exposure procedure but found the differences in skin tonality of decedents dictated a wider bracketed range. Because of differences in the equipment of the Cuyahoga County Coroner's Office and that of other darkrooms, further bracketing may be initially required.

Our results varied as to whether or not to use a contrast control filter. In some cases there were no significant differences in tone separation, in others it was quite noticeable. We concluded that for our purposes the #58 Green Tricolor was best suited for isolating the red discoloration associated with bite marks from the surrounding intact skin.

We found that when enlarging onto Kodalith film, our times were between .5 and 6 seconds at *f* /4.5. Contact printing times were approximately 6 seconds, and the contact printing times for generating a toneline film

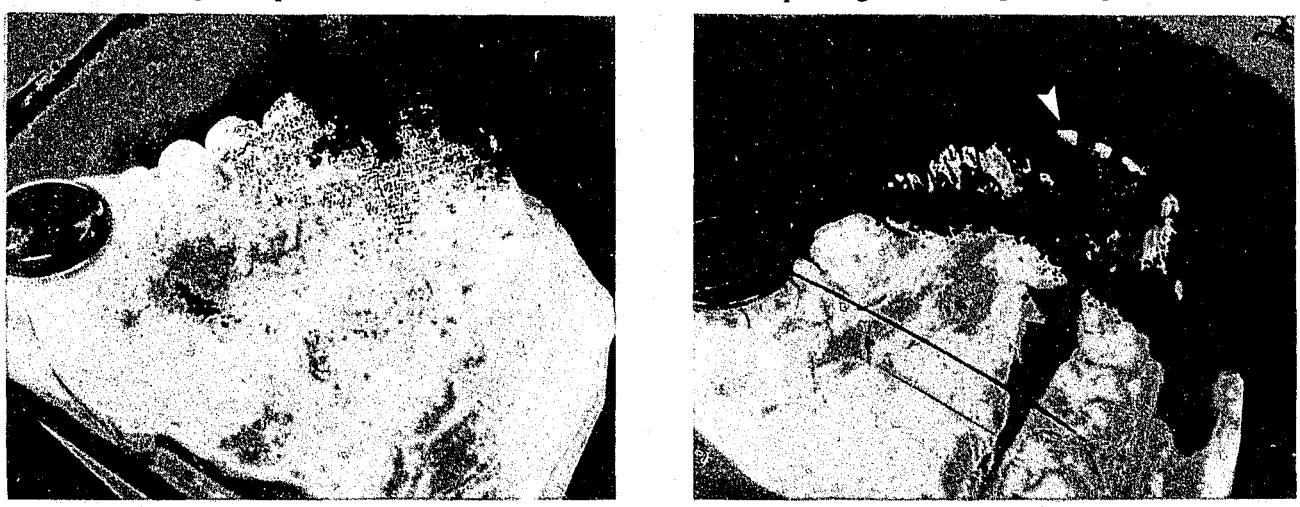


Figure 8. *Toneline film positives of bite marks from two different Coroner's cases {#204824 (BM9B) and #204129 (BM6A)} atop models of corresponding suspects teeth. The arrow indicates an unusual "T" shaped mark produced by tooth 23. The "T" mark was also able to be duplicated in wax from impressions of the model. The dime serves as a reference scale.*

positive were between 10 and 40 seconds depending on film density.

Our final six bite marks on four coroner's cases were photographed using our previously recommended procedure. Of those, five (83%) yielded useful toneline overlays. "Useful toneline overlays" varied from bite mark to bite mark. ***Figure 8*** shows bite marks from two different coroner's cases. Although quality and clarity differ, they are equally effective. When the toneline procedure fails, it does so totally, providing no usable visual information.

Our procedure seems to work better on black skin than white skin although our only bite marks on whites were on living "victims" inasmuch as we had no non-black coroner's cases.

The portion of our study dedicated to demonstrating the subjectivity of current dental examination methods is quite convincing. The tracings made by our four volunteers were compared with one another, a toneline film positive, and a photograph of the traced bite mark (***Figure 9***). All four tracings were relatively accurate, and a general outline of the teeth was drawn by each observer.

Evaluation was based on detail, shape, size, and the selection of marks that were traced. In all four bite marks the most accurate tracings were produced by the artist who was best able to look at the photographs and record minute subtleties in a mark. The dentist was also able to trace the bite marks accurately, yet his drawings lacked the details present on the artist's renderings and on the toneline film positives. The retired police officer recorded only basic shapes while the secretary sometimes missed basic shapes entirely.

When the four tracings were superimposed, an excellent impression of the mark materialized. Differences in tracings appeared as well. Methods of identifying a tooth varied from simply drawing a square to sketching three independent circles. These subtleties in a mark can be crucial. All four participants drew various teeth at dissimilar angles. Alone, this factor of the alignment of the teeth in the arch could exclude a prime suspect or include an otherwise innocent individual.

The significance is not the *degree* of disparity between tracings. The fact that there *are* differences, regardless of the extent, is sufficient to illustrate examiner bias. Conversely, toneline film positives *photographically* document tonal breaks. Artistic ability, knowledge of dental anatomy, and personal bias do not influence the result.

Discussion

From the outset it is important to point out that we wanted to develop a method that was portable and inexpensive, thus permitting any facility with a camera and a darkroom the opportunity to use this technique. Although we suspect that better results are possible with studio lighting, we utilized a camera-mounted flash to increase use. Furthermore, we wished to eliminate or minimize the human element. More convincing and better results are possible by using manipulative techniques such as "dodging" and "burning"; however, such manipulation would reintroduce subjective interpretation that we wanted to eliminate.

Throughout the course of our investigation, we encountered two situations that mandated departure from stated research intent. The first was abandoning the notion of an apparatus exclusively dedicated to generating a toneline film positive. The reasons for this decision were threefold: 1. The need of a machine for duplicating our results ran contrary to our desire to make this technique widely available.

2. Our research demonstrated minor changes in line weight on the toneline film positive when the angle of incidence of the light source with the film plane was varied. We strongly recommend against using angles of 75° - 90°. At these steep angles, the relative opacity of the registered Kodalith positive and negative tends to break up the continuous lines associated with the perimeter of marks.

3. Our research showed widely varying exposure times but all exposures were greater than 10 seconds. We feel that exposure time accuracy of .1 second and equipment constructed for that purpose create an unnecessary expense.

Our second departure from written intent was the decision to generate toneline film positives on film in overlay format. The reasoning is that a print would reintroduce tracing and examiner bias.

We believe both of these decisions are significant in that they result in the development a technique that is simple, easily duplicated, affordable, and immediately accessible.

As one of many methods of comparison, we found the film overlay worked very well (***Figure 10***). In analyzing bite marks, we have data which tell us that no two sets of teeth are alike, thanks to differences in amount of eruption, wear, degree of overjet, and anatomy [18]. We also have studies in 1984 by Rawson which indicate bite marks by the human dentition are unique [2]. The next problem in analysis is whether the bruising or impression on the skin match the assailant's dentition.

Furness states that the use of photographs in forensic studies on bite marks is a satisfactory means of recording the characteristics of a bite, and that it has been used by many forensic odontologists in making comparisons [19, 20]. Whittaker used photographs and study models and

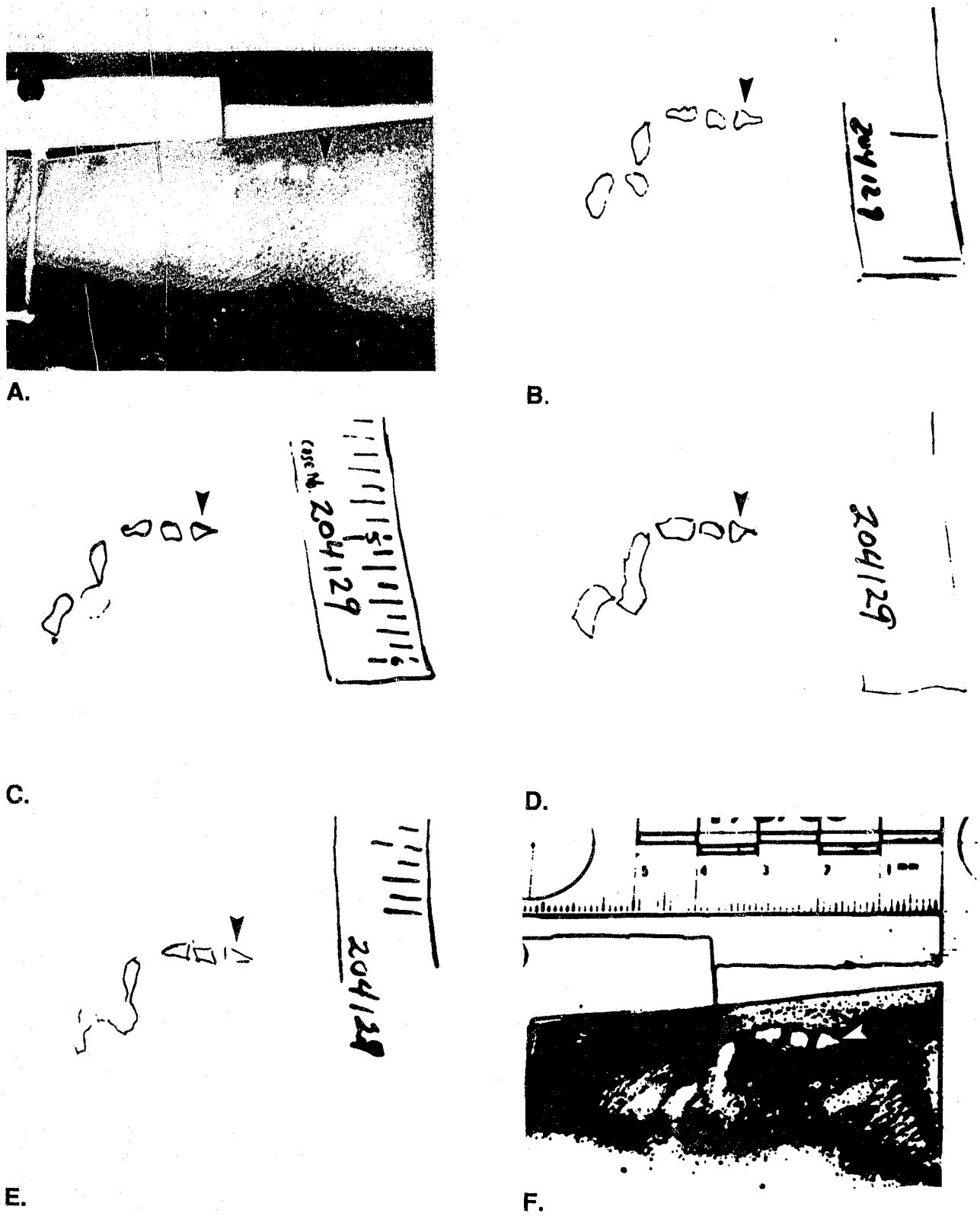
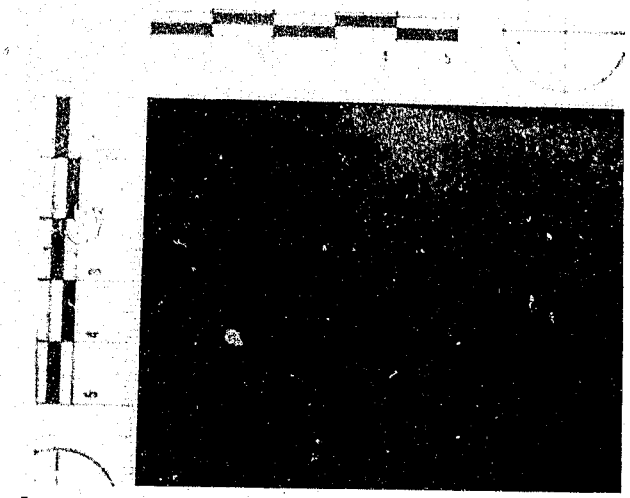


Figure 9. A direct comparison of a photograph (A.), tracings (B. - E.), and a toneline film positive (F.) of BM6A (Cuyahoga County Coroner's Office Case #204129). The arrows identify the "T" mark discussed in **Figure 8.** *Note the differences between the tracings. B. was traced by the artist, C. by the dentist, D. by the retired police officer, and E. by the secretary.*



A.

B.

C.

Figure 10. *A photograph (A.) of BM9A (Case #204824) and a toneline film positive (B.)compared. Notice the alignment of teeth 23 and 27 (arrows) on the toneline film positive (B.) and on the model (C.).*

compared them to marks made in wax and on pig skin [21]. Bites in wax can be useful but present problems of how hard to press the wax down on the model. Moreover, the mental state of the suspect biting into human flesh cannot be replicated.

Havel started with color slide film from which he made prints, intermediate negatives, and overlays. He later pressed models of the teeth on articulating paper into soft dental wax. Toneline photographs of the depressions in the wax were then placed on photographs of the bite mark [22]. This methodology certainly has possibilities. However, there is still the problem as to how hard one should press the model into the wax. The wax is inanimate and the model has no emotions. If a tooth doesn't register, does it mean it couldn't have made the mark, or does one simply try again, pushing harder on subsequent attempts? We found that starting with Technical Pan film negatives of the bite mark, we could make use of black-and-white film's versatility, generate prints when necessary and make transparencies. We were able to photographically outline what we observed on the body, and place a toneline film positive directly on models of the suspect's teeth for comparison.

Dr. David used a scanning electron microscope to analyze bite marks [23]. This technique can prove most useful when *depth* is present, but in the majority of our cases there has been abrasions without real depth involvement. Moreover, not every coroner's office has an SEM available. Our technique can still be used.

Our technique does not resolve all the problems, but it does make the analysis unbiased since the bite mark itself, as recorded by the camera, is placed over the model, allowing one to peer at the teeth that could have made the mark.

Suggestions

With our study completed, we have discovered four areas that require further consideration:

1. The first is concerned with alternative lighting. We believe that by using a studio arrangement with more than one flash, better results are possible. One of our technical problems is that because of the greatly increased contrast and near axial lighting, shadows become very dark. At times, the shadows occurring on the body obscured portions of the bite mark. There is a relationship between the partial loss of the bite mark and the differences in radii of bitten surfaces. A bite mark on a child's ankle suffered greater image loss than a bite mark on an adult's neck. We did not focus our attention

on this variable because of time constraints and because it generally conflicted with our desires to develop a portable method.

2. A second area deserving attention is evaluating the Ultraviolet spectral response of various films. West has been able to photograph bite marks 59 days after the time of infliction [24]. Perhaps the combination of his research and our toneline technique might yield toneline film positives of bite marks 1 $^1/_2$ to 2 months old.

3. A third, less promising suggestion for future work would be exploring the use of Agfa's Agfacontour film [25]. The emulsion of Agfacontour film is partly solarized and exposure to a normal subject produces an

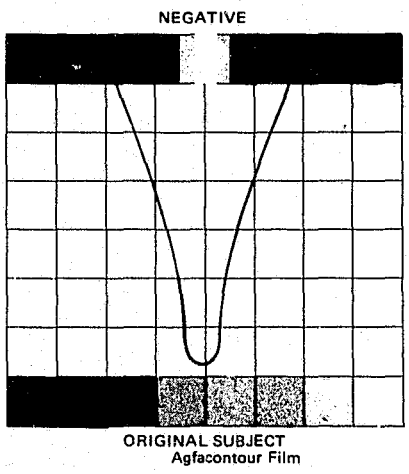


Figure 11. Characteristic curve of Agfa's Agfacontour film. Graph is from "Photographic Lab Handbook". © American Photographic Book Publishing Co., Inc. 1978.

outline of areas of equal density (***Figure 11***). Due to the lack of availability of this film in the Cleveland area, we were not able to explore its possible application. This film does not generate a sharp line but rather a band of equal densities. The film also has high base fog, slow speed, and lacks the exposure latitude of Technical Pan film. If, however, these characteristics can be tolerated or overcome, it may save several steps currently utilized in our procedure.

4. A fourth and most interesting area to us for future study would be the combination of the toneline technique and descriptive geometry. We believe it is possible to import a toneline drawing into AutoCAD® computer-aided design software and use drafting knowledge and technology to correct for distortions created when the three dimensional bitemark is transferred to the two dimensional plane of the film. While we found Havel's ABFO#2 [22] very useful in establishing scale and the angle at which the bitemark is photographed, it does nothing to correct for the curvature of the flesh on which it rests. CAD software will allow for the electronic *unwrapping* of the bite mark so that it appears on the surface of a plane rather than that of a cylinder, sphere, or cone.

Conclusion

Our studies have shown that toneline photography can outline a bite mark. Moreover, the procedure is inexpensive. It has already proven itself to be a valuable tool in a child abuse case where it has been accepted in evidence (Leonard Bradley Sr. vs. State of Ohio). The toneline photograph along with the already accepted procedure of drawing the mark on an acetate overlay allowed the judge to come to the decision that the defendent had made the bites. However, there are problems with it inasmuch as there is a loss of detail in shadows and the technique doesn't always work. It *is* a powerful tool which can be easily duplicated by following our procedure. Its value lies in its ease of implementation as well as its aid to a judge and/or a jury.

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4-4-89

Boy dies; prosecutor to get charges

A 14-month-old boy, Leonard Block Jr., died yesterday of massive head trauma at MetroHealth Medical Center, hospital officials said.

The infant's father, 22, and mother, 19, have been in City Jail since Leonard and his sister, 2, were hospitalized Friday evening.

Homicide detectives said Leonard was beaten by his father.

Charges in the infant's death are expected to be presented today to the Cleveland prosecutor's office, according to homicide detectives.

Leonard, who was flown to MetroHealth from St. Alexis Hospital Medical Center, also suffered injuries to his chest and leg. When police went to the E. 94th St. house to investigate Leonard's injuries, they found his sister also had suffered bruises.

She was in fair condition at MetroHealth.

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PD/RICHARD T. CONWAY

Bail set in child-murder case

Leonard Bradley of E. 94th St. bites his lip as Municipal Court Judge Shirley Saffold sets his bail at $125,000 yesterday. Bradley is accused of murder in the death of his 14-month-old son, Leonard Block Jr., and child endangering in the wounding of Leonard's 2-year-old sister. With Bradley is his wife, Belinda Block, 19, who is charged with two counts of child endangering. Her bail was set at $5,000. Leonard died Monday at MetroHealth Medical Center of massive head injuries caused by a fist, according to the county coroner's office. There also were human teeth marks and cigarette burns on the body, coroner's officials said. His sister was in satisfactory condition yesterday at MetroHealth with bruises and bite marks.

Man guilty of manslaughter in son's death

A 23-year-old Cleveland man who reportedly was abused as a child was found guilty yesterday of involuntary manslaughter in the abuse death of his 14-month-old son.

Leonard Bradley, of E. 94th St., was sentenced to 10 to 25 years in prison by Cuyahoga County Common Pleas Judge Carolyn B. Friedland, who tried Bradley without a jury. Bradley had been indicted for aggravated murder in the death March 31 of Leonard Bradley Jr.

Bradley sobbed as Friedland said she was finding him not guilty of murder. Friedland described his actions in the death as "despicable, aberrant behavior."

"You were reportedly abused and lived to be an abuser," the judge said.

Bradley thanked the judge for not convicting him of murder and said he was sorry.

Belinda Block, 19, Bradley's wife, pleaded guilty earlier this year to child endangering. She was sentenced to 1½ years in prison by Judge John E. Corrigan.

Bradley's lawyers, Gordon S. Friedman and Jeffrey Kelleher, told Friedland that Bradley had not intended to kill his son when he threw the child onto a mattress, said to be four feet away, because he was crying.

Kelleher said it was tragic that "someone did not discover Leonard's being abused and intercede when he was a kid. Perhaps this would not have happened."

Assistant County Prosecutors Michael Nolan and Jay Gallagher presented the state's case. Nolan said the sentence was "richly deserved."