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54/07/26 (last entry) Cuyahoga County Coroner's Laboratories Trace Evidence Report

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CUYAHOGA COUNTY CORONER'S LABORATORIES
Trace Evidence Department

in re: MARILYN SHEPPARD

Case # 76629

Autopsy M 7280

Scrapings from underneath fingernails of Marilyn Sheppard (M 7280)

Received 7-5-54 at 9:20 AM from Dr. Adelson. Specimens from each finger in separate packets of folded filter paper; specimens from right and left hands in separate petri dishes sealed with scotch tape.

Microscopic examinations:

Right hand:

Thumb: Blood. One red wool fiber. (This was found to be identical in appearance to a red wool fiber recovered from matted fibers adhering to the foot of a sock worn by Dr. Samuel Sheppard and also to a red wool fiber removed from the right side pocket of trousers worn by him.)

Index: Blood

Middle: Blood. 1. fine fiber (appears to be blue cotton).

Ring and Little: Blood

Left Hand:

Specimens from thumb, index, middle and ring fingers reveal only brown crusted blood.

Little finger: Blood. 1 short brown fiber which was compared with fiber from trousers worn by Dr. Samuel Sheppard; no similarity noted.
Further study indicated plant origin.

Hairs found on left hand of Marilyn Sheppard (M 7280) received in envelope from Dr. Adelson at 9:20 AM, 7-5-54. Envelope contained two hairs:

#1 Hair has a slight curl, is light brown in color and measures approximately 2 1/2 inches in length
Scale count: 18.4 scales/ 160 micra Diameter: average 72 micra
No medulla is visible.

#2 Hair is apparently straight, light brown in color, measures 1 1/2 inches in length. Scale count: 20.3 scales/ 160 micra Diameter: average 86 micra.
No medulla is visible.

Hairs plucked from head of Marilyn Sheppard (M 7280) received in a sealed envelope from Dr. Adelson at 9:20 AM, 7-5-54.

Hair is light brown in color. Some hairs show a slight curl, others appear to be straight. Mean length of 26 hairs was 2 inches, measurements varying from 1/2 inch to 3 1/2 inches. Microscopic examination fails to reveal a medulla in most hairs; a few hairs show an interrupted medulla.

Scale count: average of six hairs (60 readings): 19.5 scales/ 160 micra
Diameter: Average of 25 hairs (250 measurements): 77 micra
Minimal average diameter of single hairs: 58 micra
Maximal average diameter of single hair: 94 micra

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Hairs found on mattress received in two separate envelopes from R. Keefe at about 9:30 AM, 7-5-54.

Hairs are light brown in color, measure from 2 to 3 inches in length. Most hairs show a slight curl. Interrupted medulla.

Scale count: 18.2 scales/ 160 micra Diameter: average 82 micra.

Comparison of hairs submitted from the above described sources:

A study of the gross and microscopic characteristics of these hairs demonstrates such similarity as would be compatible with hairs from a common source.

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Blood Group of Victim- (M-7280): " O Rh-negative, type MS, Kell negative, Duffy positive".

The specimen of blood was received in a specimen bottle which was enclosed in an envelope. The autopsy number 7280, the date 7-4-54, the initials LA (Lester Adelson) and MEC (Mary E. Cowan) appear on the envelope in Dr. Adelson's handwriting.

Dr. Adelson handed this envelope with the specimen in it to me at 11:15 AM, 7-5-54, identifying the specimen as blood taken from Marilyn Sheppard at the autopsy. Blood grouping determinations performed at 1:00 PM, 7-5-54 revealed no agglutination of the cells of this blood by anti-A, anti-B or anti-AB sera, thereby demonstrating this blood to be Group O. Testing sera used was obtained from Certified Blood Donor service had been kept under refrigeration and checked frequently against cells of known blood groups. Lot numbers were as follows: Anti-A 3126, anti-B 3226, anti-AB 3029. This blood grouping was confirmed by testing the plasma of the blood specimen (M-7280) with known A, B, and O cells obtained from University Hospital's Blood Bank on 7-8-54. The plasma of the blood of Marilyn Sheppard agglutinated the cells of Group A and Group B cells but did not agglutinate the cells of Group O. A titer of the agglutinins of this plasma revealed agglutinating activity at a dilution of 1:32 (A cells 1 plus-2 plus, B cells 1 plus). The diluted plasma was allowed to stand at room temperature overnight in the locked laboratory. The titer was determined again and found to have been reduced to 1 plus at 1:8 dilution; after standing another 24 hours the titer was once more determined and found to be the same as on the previous day (1 plus at 1:8 dilution).

The blood specimen was kept in a locked cupboard in the refrigerator room on the second floor. On Wednesday 7-7-54 at 8:30 AM the blood specimen in the bottle within the envelope as originally submitted was taken by me to Dr. Roger Marsters in the laboratory of MacDonald House, University Hospitals. At 8:40 AM, 7-7-54 Dr. Marsters, using a sterilized pipette, withdrew 5 ml. of this blood and transferred it to a clean dry test tube which he immediately labeled and sealed. This procedure was witnessed by Dr. Marster's secretary, Mrs. Dorothy Free and myself. Dr. Marster's findings in an extensive blood typing are summarized from his written report as follows: "Mrs. Sheppard is a type O Rh negative, type MS, Kell Negative, and Duffy positive."

Sheet:

On 7-6-54 at 3:45 PM, in the presence of Raymond E. Keefe, I examined a bloodstained sheet which Mr. Keefe identified as the lower sheet from the bed on which Marilyn Sheppard was found dead. This sheet is marked with a woven name tag: MARILYN REESE sewn on at the narrow hem. With Mr. Keefe witnessing, I cut out the following specimens: (1) An unstained portion measuring 1/2 x 4 1/2" which was immediately placed in a clean white paper which was folded, closed and marked to identify; (2) A stained portion approximately 3/4 x 7", which was immediately placed in a clean white paper which was folded, closed and marked to identify. A third portion, unstained, was cut from the sheet which Mr. Keefe identified as the top sheet from Marilyn Sheppard's bed, placed in clean white paper, folded, and marked to identify.

On 7-16-54 approximately half of the stained and unstained portions of the sheets were given to Dr. Marsters. Dr. Marsters and I working independently in separate laboratories performed tests to determine the blood group of the stain.

The technic used was as follows: A specimen measuring one-eighth inch x three-fourths inch from each of the stained and unstained portions of sheets was placed in separate test tubes and 0.5 ml. of saline added to each. After standing for approximately one and a half hours, three drops of extract from each tube was transferred to three paraffin ringed circles on a glass slide (one drop to each circle). To the first circle in

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each instance a single drop of saline suspension of Group A cells was added, to the second circle a single drop of Group B cells, and to the third, a single drop of saline suspension of Group O cells. Sources of the testing cells were: Group A, myself; Group B, Dr. Marsters; Group O, Valentin Mersol. All cells were obtained just prior to the last step described above.

Results: With the extract of the stained portion of the sheet there was agglutination of both Group A and Group B cells. There was no agglutination of the Group O cells. Extract of the unstained sheets failed to agglutinate any of the testing cells. These results were witnessed by Dr. Marsters. The technic used by Dr. Marsters was essentially the same, varying only in the use of tubes in place of the paraffin ringed slides. The results were identical and were observed by me.

Interpretation: Bloodstain - Group "O".

Trousers:

On Monday morning, July 5th at 9:30 AM, Mr. Raymond E. Keefe in the presence of Dr. Gerber submitted to me a pair of brown and white synthetic cord trousers which Mr. Keefe and Dr. Gerber identified as belonging to Dr. Sam Sheppard and worn by him on the night of July 3rd and early morning of July 4th. A brown alligator belt (Paris size 34) was inside the belt loops. These trousers were placed in the locked vault and kept on the second floor of the Coroner's Office building.

Examination of these trousers on July 6th, 1954 at 8:50 AM revealed the following: A yellow dry cleaner tag bearing the identification N 6384 stapled on the right side pocket. A tear along the seam on the right side extending from the bottom edge of the pocket for a distance of about 3 1/2 inches toward the bottom of the trousers. The following stains or discolorations were noted:

- I. The right side pocket has a slightly brownish discoloration at the front edge. One and five-eighths inches anterior to the edge of the pocket and three inches from the top of the trousers there is a horizontal brownish streak stain approximately 1/2 inch in length. One inch above the lower edge of the pocket and five and five-eighths inches anteriorly there is a reddish-brown stain measuring three-eighths inch x one-fourth inch.
- II. One inch below the bottom edge of the right side pocket and two and one-fourth inches anteriorly there is another slight brown stain 1/2 inch in length in a diagonal pattern, the lower edge being 2 1/2 inches from the torn edge.
- III. Three and one fourth inches anterior and on a horizontal plane from the lower edge of the above stain (II) there is another stained area three-fourths inch in length. This is a diagonal streak with the upper edge on a line with the lower edge of the pocket and five and a half inches anterior to this edge.
- IV. One half inch below the stain described above (III) there is a stain one-fourth inch in length which is most visible on one white stripe.
- V. There is a diffuse stained or soiled area approximately eight and three-fourths inches long and six inches wide in the widest part on the front of the right trouser leg.

None of the above stains can be seen on the reverse surface.

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VI. Five and one-half inches below the back pocket on the right side is a greyish soiled area five inches long, its terminal edges corresponding to the lateral edge of the back pocket. Two and one-half inches from the anterior edge of this stain and approximately three-eighths of an inch above it are two reddish-brown streaks measuring about one-fourth inch in length and separated from each other by a space of approximately one-half inch. Area around upper edge and cord lining of the right back pocket presents a diffuse purplish stain.

Left Front

VII. Four and three-eighths inches from the top of the trousers and two and one-half inches from the left side pocket edge there is a blue diagonal stain about one-half inch in length. The upper edge of the stain is four inches from the top of the trousers. The lower edge terminates at the pleat edge.

VIII. One and three-eighths inches from the edge of the left side pocket, five and three-eighths inches from the top of the trousers is a diagonal greyish stain approximately one-half inch long. The lower edge is five and five-eighths inches from the top of the trousers. Along the edge of the side pocket is a greyish discoloration.

IX. Seven inches from the top of the trousers and four inches from the edge of the fly is a semi-circular brownish stain approximately one inch in diameter.

X. Approximately two and one-fourth inches from this stain (IX) is another semi-circular stain about eight and one-half inches from the top of the trousers and two and three-fourths inches from the side seam. Diameter of stain is approximately one inch.

XI. One and a half inches from the lower edge of the side pocket at the side seam is another elliptical brownish stain.

*XII. A reddish brown stain measuring approximately six inches in length and six and one-fourth inches in width is present on the left leg of the trouser. The upper edge of this stain is situated about eighteen inches from the top of the trousers and about twenty-four inches from the bottom of the trousers. Within this stained area between the crease and the side seam there is an area about three inches in diameter in which the stain appears more concentrated, i.e., the color is deeper and a slight stiffness can be detected. The outer margin of this area is about one inch from the left side seam. The top of this area is about twenty inches from the top of the trousers, ten inches from the middle of the crotch and twenty-two inches from the bottom of the trousers. This stain can be seen on the reverse side of the material.

(Measurement from the floor to the top of the mattress on the bed on which the victim was found was 24 inches)

XIII. At the inside seam of the left trouser leg, fifteen inches from the mid-crotch is a brownish stained area three inches long and one and one-half inches wide at its maximum width. This stain is also lightly visible on the reverse side of the material. In this stained area is a darker brownish streak stain approximately one and one-fourth inches long and one-eighth inch wide.

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XIV. Two and one-half inches from the top of the trousers, extending from the side seam at the upper edge of the side pocket for two inches and in an area about three-fourths inches wide there are brownish smudge stains (Approximately seven).

Left back:

XV. The inside of the left back pocket presents a pinkish or peach colored discoloration. On the outside of the trouser leg in the region of the left back pocket (four inches below the bound edge of the pocket) there is a peach colored stain. This stain appears to have a rectangular outline measuring four inches wide by five inches long.

XVI. (a) At approximately twenty-five inches from the top of the trousers and about three and one-half inches from the inside seam of the left trouser leg there is a faint reddish-brown diagonal streak one inch in length and one twenty-fifth of an inch in width. The lower edge is twenty-five and three-fourths inches from the top of the trousers.

(b) and (c) There is an area one-half inch in width, twenty-eight inches from the top are two more similar diagonal streaks measuring in length two inches and one and three-fourths inches respectively. The lower edge of the upper streak (b), and the upper edge of the lower streak (c), are on nearly the same plane and are separated by a half-inch space.

(d) Three inches below the lower edge of stain (c) described above there is a similar streak three and one-half inches long, roughly parallel to the stains (a) and (b).

Cuffs

The cuff of the right trouser leg presents a brownish discoloration at the bottom edge. At the mid-back this stain widens out with a diffuse area one and one-fourth inches long and one-half inch wide at its maximum width.
Bottom edge of left cuff shows slight brownish discoloration.

Sand recovered from the left rear pocket weighed approximately 51 mg.

Sand recovered from the trouser cuffs weighed approximately 300 mg.

Trousers were returned to vault at 11:20 AM, 7-6-54 and the vault was locked.

*Stain from left trouser leg:

On Thursday, July 8th at 10:30 AM, I removed the above described trousers from the locked vault and procured portions of the stained and unstained areas as follows:

Unstained portion measuring nine-sixteenths of an inch by three-sixteenths of an inch was cut from the left leg of the trousers at a spot three-fourths of an inch from the inside seam and three-fourths inch from the top of the cuff.

Stained portion was taken from stain denoted and described above (XII). A portion of this stain, one-fourth inch x three-eighths inch was cut from the left trouser leg at a spot twenty-three and one-half inches from the top of the trousers and one and three-fourth inches from the side seam.

Each portion was placed in a clean, dry precipitin tube measuring about one-fourth inch x one and seven-eighths inches. To each test tube 15 drops of sterilized distilled water

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was added.

A new package of Hyland anti-human serum (dehydrated) lot # 2504, diluent # 8701 and lot # 2550 normal rabbit serum was opened. Using a sterile 2 ml. syringe and new clean dry sterilized hypodermic needle, 1 ml. of diluent was added to the ampoule containing the dehydrated anti-human serum, 0.2 ml. diluent was added to the normal rabbit serum. Using sterile syringe and new hypodermic needle the anti-human serum was withdrawn from the ampoule and 0.3 ml. added to each of three clean dry precipitin tubes. Using another syringe and needle, the normal rabbit serum was withdrawn from its ampoule and about 0.1 ml. added to each of two clean dry precipitin tubes. The set-up of the test and the results are summarized as follows:

Tube A: To the first tube containing anti-human serum 5 drops of extract of the stain on the trousers was added using a capillary pipette to layer the extract on top of the serum.

Tube B: To the second tube containing anti-human serum 5 drops of extract of the unstained portion of the trousers was added in the same manner using another capillary pipette.

Tube C: To the third tube containing anti-human serum 5 drops of a 1-2500 dilution of blood of autopsy M-7280 was added in the same manner.

Tube D: To the first tube containing normal rabbit serum, 5 drops of the extract of the stained portion of the trousers was added in the same manner.

Tube E: To the second tube containing normal rabbit serum, 5 drops of the 1-2500 dilution of blood of autopsy M-7280 was added in the same manner.

Results: (Observations at 15 minute intervals for a period of 2 hours)

Tube A: Extract of stain and anti-human serum: Precipitate at interface.

Tube B: Extract of unstained portion and anti-human serum: No precipitate at interface.

Tube C: Human Blood (1-2500 dilution) and anti-human serum: Precipitate at interface.

Tube D: Extract of stain and normal rabbit serum: No precipitate.

Tube E: Human Blood (1-2500 dilution) and normal rabbit serum: No precipitate.

This test established that the stain was of human origin.

The above tests were repeated on September 7th using anti-human sera from two other sources, Wiener Serum Laboratory Lot #14 and Michigan State Health Laboratories Lot #27A. An added control on this date was normal dog blood diluted 1:200, 1:400, 1:800 and 1:1600. Extract of the stain produced precipitate at interfaces with these sera. The unstained portion failed to yield precipitate. The normal dog blood in

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dilutions 1:200 and 1:400 produced a haze at the interface when tested against the sera from Wiener Serum Lab. and the Hyland Laboratories. The interface remained clear in all dilutions of dog blood and the serum from the Michigan State Health Laboratories,

These tests confirmed the human origin of the stain.

At 5:20 PM, 7-8-54, trousers were removed from locked vault and stained and unstained portions removed as follows:

Unstained portion one-eighth inch x three fourths inch from a region and one inch from the inner seam one inch above the top of the cuff, left leg.

Stained portion one-eighth inch x three-fourths inch from the left leg in stained area twenty-two and one-half inches from the top and one and three-fourths inches from the side seam.

Each of these specimens was cut in half and each of the four specimens were placed in clean dry precipitin tubes which were marked. Absorption technic of typing was set up as follows:

Ten drops of 1:20 dilution of anti-B serum was added to one tube containing the portion of the unstained material and an equal amount to a tube containing the stained material.

Ten drops of 1:20 dilution of anti-A serum was added to the second tube containing the unstained material and an equal amount to the second tube containing the stained material.

All tubes were sealed and allowed to stand overnight in the locked laboratory.

Starting at 9:15 AM on Friday, 7-9-54, one drop from each tube was transferred to each of three paraffin-ringed circles in a row on a glass slide. In each series a fresh saline suspension of Group A cells was added to the first circle, a fresh saline suspension of Group B cells was added to the second circle and a fresh saline suspension to Group O cells was added to the third circle. All cell suspensions were made from blood obtained from Dr. Marsters. In all instances there was agglutination of the Group A cells by anti-A serum, Group B cells by the anti-B serum and no agglutination of the Group A cells by anti-B serum or Group B cells by the anti-A serum, nor of the Group O cells in any instance. Control using the diluted sera alone and the Group A and B cells was completely satisfactory, Group A cells being agglutinated by the anti-A serum, Group B cells agglutinated by the anti-B serum.

No absorption of anti-A or anti-B substance was demonstrated.

Chemical tests for blood: (Leucomalachite green, benzidine and phenolphthalin) were performed on remaining portions of extracts of stained and unstained portions of trouser and on equal amounts of human blood diluted 1:25. (1:25-0)

The extract of the stain and the diluted human blood gave positive tests with all three reagents. Extract of the unstained portion yielded negative results with all three reagents. The reagents were made up as follows, immediately prior to performing the tests.

Benzidine reagent: 0.1 gm benzidine and 0.2 gm sodium perborate were added to 10 ml. glacial acetic acid.

Leucomalachite green: 0.1 gm of 4,4'-tetramethyldiaminotriphenylmethane (Leucomalachite green) and 0.32 gm of sodium perborate dissolved in

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10 ml of acetic acid previously diluted with distilled water (2 parts of glacial acetic acid: 1 part water).

Phenolphthalin: 0.14 grams of sodium perborate added to 10 ml. of stock solution phenolphthalin previously prepared by boiling under reflux condenser 1 gram of phenolphthalein in 100 ml. of 20% sodium hydroxide and 1 gram of zinc dust. Stock solution was stored in glass stoppered bottle containing zinc dust.

Interpretations: Leucomalachite green, benzidine and phenolphthalin tests on extracts of stains yielded positive reactions typical for blood. Similar tests on control specimens were negative.

Examination of hairs and fibers removed from trouser pockets:

Left side pocket (front): (sand present)

Matted fibers of white (synthetic), red, blue and brown (synthetic), one light blue and one chartreuse green fiber. A grass flower "head" included in matted fibers. Four light brown hairs with irregular, annular (Moritz Type VII) scales compatible with human hair. The following measurements of these hairs represent the average of measurements made at intervals from one end to the other:

Hair #1. Scale count: average 19.5 scales/ 160 micra deviation plus 0.5.
Diameter: average 34 micra, range. 29-36

Hair # 2. Scale count: average 19.8 scales/ 160 micra
Diameter: average 74 micra range: 62-79

Hair # 3. Scale count: average 20.3 scales/ 160 micra
Diameter: average 48 micra range: 46-48

Hair # 4. (broken) Scale count unsatisfactory
Diameter: average 33 micra range: 19-42

One black hair of animal origin.

Right rear pocket: (sand present)

Contains brown and white fibers and four light brown hairs with irregular annular (Moritz Type VII) scales compatible with human hair. The following measurements represent the average of measurements made at intervals along the length of each hair:

Hair # 1 Scale count: Average 17.8 scales/ 160 micra range: 15-21.
Diameter: Average 51 micra Range: 50-53

Hair # 2. Scale count: Average 18.9 scales/ 160 micra range: 17-22
Diameter: Average 71 micra range: 64-78

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Hair # 3. Scale count: Average 21.9 scales/ 160 micra range: 17-26
Diameter: Average 32 micra range: 29-38

Hair # 4. Scale count: (One satisfactory reading): 21 scales/ 160 micra
Diameter: Average 41 micra Range: 40-48

Right side pocket (front): White coarse thread, red fiber (wool?), sand present.

Left rear pocket: No fibers recovered. Sand Present.

Measurements of hairs from head of Marilyn Sheppard yielded the following values:

Scale count: Average of 6 hairs, 60 readings: 19.5 scales/ 160 micra
Diameter: Average of 25 hairs, 250 measurements: 77 micra
Minimal average diameter of single hair: 58 micra
Maximal average diameter of single hair: 94 micra

Watches:

On Monday, July 5th, on or about 9:30 AM, Raymond E. Keefe submitted to me a stationery box (Hallmark) which contained the following items:

1 Man's yellow metal wrist watch, Universal, Geneve, automatic with yellow metal wrist band. (The band is separated on the side opposite the stem between the eighth and ninth "link" from the top side of the watch, i.e., the same side as the numeral II.) Numerous reddish brown stains on watch and band are noted.

1 yellow metal chain with knife, football charm, metal tag initialed S.S., 1 charm (LA County General Hospital, Unit No. 2) back engraved S. H. Sheppard '48-'49, 1 charm (Greek letters, Sigma Alpha), 5 keys (1 marked Challenger, 1 marked on face: National Lock Co., Rockford, Illinois NL.L. 1812 Rockford, on the other face: the Berger Mfg. Co.; 1 key H H M Safe Co. on one face, 1104 on other side; 1 key Curtis Key Co., Cleveland, O. on opposite side marked S4; 1 key with no visible identifying mark.

1 Fraternity ring, yellow metal with metal crest superimposed on black stone. Stone has a diagonal crack from right edge of crest to edge of stone and three small chips at right edge, two larger chips at base of stone and one smaller chip at left edge.

1 dark green cloth bag.

Dr. Gerber was present and identified this property as belonging to Dr. Samuel Sheppard. This property was immediately placed in the vault on the second floor of the Coroner's Office.

On Tuesday, July 6th, at 10:50 AM, Dr. Gerber submitted to me a lady's yellow metal wrist watch (Hamilton) contained in a plastic vial. Reddish brown crusted stains were noted. Dr. Gerber identified this watch as belonging to Marilyn Sheppard. This watch was immediately placed in the vault on the second floor of the Coroner's Office.

On Wednesday, July 7th, at 2:00 PM, the vault was unlocked and the watches removed.

Some of the reddish brown stains from the man's watch described above were

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absorbed onto clean bibulous paper which had been dampened with distilled water. Freshly prepared benzidine reagent applied to the stained paper instantly turned dark blue. Negative and positive controls were satisfactory; i.e., identical paper similarly treated with distilled water failed to develop any color while identical paper similarly treated and applied to known blood stain developed a dark blue color immediately.

Result:

Benzidine test: positive reaction typical for test for blood.

Some of the crusted stain was removed and placed on three portions of a glass slide. To each portion was added a light saline suspension of cells of known blood group. To one portion Group A cells were added; to another Group B cells and to the third, Group O cells.

Blood specimens for the cell suspensions were received from Dr. Marsters at 11:40 AM, July 7th. Cell suspensions were checked against anti-A and Anti-B sera diluted 1:20 with satisfactory results. Results of the blood grouping test of the stain from the watch ~~was~~ inconclusive. Slide with stain and cell suspensions was placed in a wet cell and left in locked cabinet overnight in refrigerator room on the second floor. When re-examined at 8:30 AM, 7-8-54, there was some clumping of the Group A cells and the Group B cells which did not occur with the Group O cells but results were still considered inconclusive.

All stages of the testing were witnessed by Valentin Mersol.

The same technic was used on the stains from the lady's watch with the same results.

On Friday, July 16th, Dr. Marsters and I working together performed tests to determine M or N factor in the stains on the watches. Stain crusts lifted from the watches were introduced into anti-M and anti-N sera suitably diluted with saline as determined by titer studies conducted 7-16-54 at 9:00 AM to 12:30 PM. Dr. Marsters furnished the anti-M and anti-N sera and the cell suspensions of Group O, type M, and Group O, type N. Dilution of sera was performed by Dr. Marsters; stain crusts were lifted from the watches and added to sera by me; all results read by both Dr. Marsters and me.

Absorption tests were set up as follows:

Stage I.

- Tube #1. Anti-M serum (diluted 1:6) and stain from man's yellow metal wristwatch, property of Dr. Samuel Sheppard.
- Tube #2. Anti-M serum (diluted 1:6) (control - nothing added in Stage 1.)
- Tube #3. Anti-M serum (diluted 1:6) and crusted stain removed from lady's yellow metal wristwatch, property of Marilyn Sheppard.
- Tube #4. Anti-M serum (diluted 1:6) placed on back at stem end of man's wristwatch (property of Dr. Samuel Sheppard), allowed to stand 15 minutes, and then recovered with capillary pipette and placed in marked tube.
- Tube #5. Anti-N serum (diluted 1:2) placed on back opposite stem end of man's watch (property of Dr. Samuel Sheppard), allowed to stand 15 minutes and then recovered with capillary pipette and transferred to marked tube.
- Tube #6. Anti-N serum (diluted 1:2) and stain crust from man's wristwatch (property of Dr. Samuel Sheppard).
- Tube #7. Anti-N serum (diluted 1:2) (control --nothing added in Step 1)

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Tube #8. Anti-N serum (diluted 1:2) and crusted stain removed from lady's wristwatch (property of Marilyn Sheppard)

Stage II.

At 4:15 PM, 7-16-54, one and a half hours after completion of Stage I, described above, one drop of a saline suspension of type M cells was added to Tubes #1, #2, #3, and #4. One drop of a saline suspension of type N cells was added to Tubes #5, #6, #7, and #8.

Stage III.

All tubes were centrifuged and observed for agglutination. No agglutination occurred in tubes #1, or #3. Agglutination occurred in tubes #2, #4, #5, #6, #7, and #8.

Stage IV.

All tubes were refrigerated overnight. The following morning the cells were resuspended, refrigerated again for 15 minutes, centrifuged and reread with no change in results noted.

Stage V.

To confirm these results another drop of saline suspension of type M cells was added to Tubes #1, #2, #3, and #4. Another drop of saline suspension of type N cells was added to Tubes #5, #6, #7, and #8. All tubes were refrigerated for forty minutes then centrifuged and reread in the tube. Results appeared unchanged. Content of each tube was poured out of tube carefully into individual circles on paraffin ringed glass slide one at a time and observed under the microscope. Results of microscopic examinations confirmed those observed grossly in the tube tests.

Interpretation: Crusted stains on both watches were type M blood.

On Saturday, July 17th at 8:40 AM, some of the stains on the man's wristwatch (property of Dr. Samuel Sheppard) were lifted and placed in a clean dry precipitin tube. Ten drops of distilled water were added. A new package of anti-human serum (Hyland Laboratories, Lot # 381B1) and normal rabbit serum (Hyland Laboratories, Lot # 382B2) was opened and reconstituted as prescribed. Four clean, dry precipitin tubes were set up and reactions observed as follows:

Tube #1 0.3 ml anti-human serum and human blood diluted 1:1000.

Result: Precipitate formed at interface.

Tube #2. 0.3 ml anti-human serum and extract of stain from watch.

Result: Precipitate formed at interface.

Tube #3. 0.3 ml anti-human serum and distilled water -- no reaction indicated.

Tube #4. 0.2 normal rabbit serum and extract of stain from watch --
no reaction indicated.

Interpretation: Stains were of human origin.

The above procedures were all performed by me, and witnessed by Valentin Mersol. Observations were made at 15 minute intervals for three hours. Results were witnessed by Dr. Marsters.

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On Monday, July 19th, accompanied by Patrolman Deutschlander of Bay Village Police Department, I took the watches to Mr. Carl Bee, at the H. W. Beattie Co., for examination.

Canvas Gloves

At 5:00 PM on 7-7-54, Dr. Gerber submitted to me one pair of canvas gloves with light blue knit wrists. The gloves are generally soiled. The left glove has some reddish stains on the fingers. The right glove has numerous splatter crust stains across the back and larger stains which appear to have soaked into the material are found on and near the thumb and on the back of the third(middle) finger near the tip. *Some of the crusted stains were removed and tested with fresh benzidine reagent. The blue color characteristic of a positive reaction for blood developed immediately. The larger stains were tested by applying a clean bibulous paper wet with distilled water and absorbing some of the stain onto it and then applying the benzidine reagent to the paper. Characteristic positive results developed immediately. Negative and positive controls were satisfactory.

* On September 5th, portions of the stain from the back of the middle finger and portion of an apparently unstained area at the side of the middle finger put to soak in separate tubes with ten drops of saline. Precipitin tests were performed as follows:

Extract of stain from canvas glove and anti-human serum (Michigan State Health Laboratories Lot 27A). Result: Positive

Extract of stain from canvas glove and anti-human serum (Wiener Serum Laboratories, Lot # 14). Result: Positive

Leucomalachite green and phenolphthalin tests performed on portions of the remainder of the extract of the stain yielded positive results.

Extract of unstained portion of canvas glove and anti-human serum (Michigan State Health Laboratories, Lot 27A). Result: negative.

Extract of unstained portion of canvas glove and anti-human serum (Wiener Serum Laboratories, Lot 14). Result: negative.

Leucomalachite green and phenolphthalein tests performed on portions of the remainder of the extract of the unstained portion of the glove yielded negative results.

Interpretation: Stains on right hand canvas glove give positive tests for human blood.

Examination of stains at 28924 West Lake Road, Bay Village, Ohio.

On Sunday, July 11th, at about 4:15 PM, I arrived at the Sheppard home, 28924 West Lake Road, Bay Village, Ohio, and performed tests on the following stairs. All tests were witnessed by Dr. Gerber, Sgt. Huback and Patrolman Drenkham.:

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1. Stain on porch floor under screen door:

Brownish stain about one-eighth inch in diameter, enclosing a slight amount of crusted material. Tested by absorption on clean bibulous paper to which fresh benzidine reagent was then applied. Blue color developed immediately. Crusted material was lifted and examined microscopically on 7-12-54. No insect parts were detected, only brown material compatible with blood. Preparation viewed by Dr. Adelson also.

2. Stains on porch floor in front of door leading from porch to dining room.

Five thin brown stains, average size about one-fourth inch in diameter. Stains absorbed onto clean bibulous paper using distilled water. Tested with freshly prepared benzidine reagent and with freshly prepared leucomalachite green reagent. All tests yielded positive results.

Stain on lock (receiver for bolt) of door onto screened porch. (One small streak stain on top): Distilled water applied with a clean dropper. Benzidine tests on this extract were negative.

Stain on left door frame at west end of living room (a brown streak):

Clean bibulous paper moistened with distilled water applied to stain. Benzidine reaction was negative. Test repeated with same results.

3&4. Stains on stairs leading from kitchen to first landing of stairway to the

second floor: One reddish-brown stain about one-fourth inch in diameter on riser between top step and landing, at left side going downstairs. One crusted stain about three-sixteenths inch in diameter on metal edge of top step at the side near the stove (left side when going downstairs). Clean bibulous paper wet with distilled water applied to each stain separately. When benzidine reagent was applied to these papers an intense blue color developed immediately only in the areas which had been applied to the stain.

5&6. Stains on fifth and sixth steps from the top of basement stairs at left side

when going downstairs. (Each one-fourth inch in diameter): Clean bibulous paper wet with distilled water applied to each stain separately. When leucomalachite green reagent was applied to these papers the green color characteristic of a positive reaction for blood developed only in the areas which had been applied to the stain.

Witnessed the removal by Sgt. Huback of a red fiber from the bottom edge at the right side of the desk in the den. I examined this fiber in the laboratory and found it was apparently mercerized cotton.

On Friday, August 6th, I accompanied members of the Scientific Unit of the Cleveland Police Department (Henry Dombrowski, Elmer Roubal, and Jerry Poelking) to 28924 West Lake Road, Bay Village, Ohio. Together we reviewed the suspected blood stains which had been located by the Scientific Unit, and I made the following tests:

On the strip of green carpeting which was in the hallway between the den and

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kitchen, three spots circled with chalk marks in the area between the den and the living room were tested by applying clean bibulous paper wet with distilled water. All three spots produced positive leucomalachite green and phenolphthalein tests. Control tests were made by applying clean bibulous paper wet with distilled water to other portions of the carpeting. Leucomalachite green and phenolphthalein tests were negative on these controls.

Of the numerous spots circled with chalk extending from the foot of the stairway through the living room, in front of the desk and near the dining table, five spots were tested in the manner described above with leucomalachite green. All five spots produced positive results. Control tests from areas close to each spot failed to produce any color with the reagent and were satisfactory negative controls. The five spots chosen for testing were (1) near the foot of the stairs, (2) approximately five feet in a northerly direction from the foot of the stairs, (3) approximately eight feet in a northerly direction from the foot of the stairs, (4) in front of desk and (5) near the dining table.

Leucomalachite green and phenolphthalein tests were applied to extracts obtained in the manner described above from two spots circled with chalk on the rag rug on the landing between the kitchen and living room. The rug was removed to the Coroner's laboratories where similar tests produced identical results. All tests were positive. Controls satisfactory.

Basement Stairs: (Numbered from top to bottom):

All stains described below were tested in the manner described above with leucomalachite green and phenolphthalein. All produced positive results. Other areas on the same steps failed to yield positive results with the same tests.

- Basement Step #1: One stain approximately 1/4 inch in diameter located nine inches from east edge, five inches from outer edge.
- Basement Step #2: No suspicious stains noted.
- Basement Step #3: One stain approximately three-sixteenths inch in diameter located eighteen and one-fourth inches from east edge and four and one half inches from outer edge. *
- One stain eight and seven-eighths inches from east edge located four and one-half inches from the outer edge.
- Basement Step #4: No suspicious stains noted.
- Basement Step #5: One stain approximately three-sixteenths inch in diameter located approximately seventeen inches from the east edge and two and one-half inches from the outer edge.
- Basement Step #6: One stain approximately one-fourth inch in diameter located approximately twelve and one-half inches from the east edge and four and one-half inches from edge of step *
- One stain approximately one-fourth inch in diameter located thirteen inches from the east edge and five inches from the outer edge.
- Basement Step #7: One stain approximately eighteen and one-half inches from east edge, four and three-fourth inches from outer edge.
- One stain approximately twenty and one-fourth inches from east edge, six inches from outer edge.

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Basement Step #8: One stain approximately one-fourth inch in diameter located about eight inches from the east edge and one inch from outer edge.

* These stains were removed on August 9th by me for further testing.

In addition, several spots on the cement landing and on the basement floor were tested with unsatisfactory results since ~~atypical~~ reactions were obtained with control tests from areas apparently unstained.

Stains on stairs between first and second floor: (Numbered from second floor to landing).

On August 9th, I accompanied the members of the Scientific Unit listed above to 28924 West Lake Road and tested the stains on the stairs leading from the first to second floors with leucomalachite green and phenolphthalin reagents in the manner previously described in this report. All stains listed below produced positive results. Control tests from adjacent areas failed to produce reactions and were satisfactory negative controls.

Stair Step # I.

Stain #1. On the tread twelve and three-fourths inches from the baseboard at the east wall (i.e., to left looking down the stairway) and seven and three-fourths inches from the outer edge of the tread, a circular brown stain about one-eighth inch in diameter.

Stain #2. On the tread, about sixteen inches from the baseboard at the east wall and nine inches from the outer edge of the tread -- another circular brown stain about one-eighth inch in diameter.

Stain #3. On the vertical edge of tread board, fourteen and one-half inches from the east baseboard about three-eighths inch from top edge -- an oval thin brown stain three-eighths inch in length, one eighth inch at top and five-sixteenths inch at bottom, stain is darker in color at the bottom edge.

Stair Step #II

Stain # 4. Five inches from the baseboard at the east wall and five inches from the outer edge of the tread -- an oval brown stain about three-eighths inch vertically x one-half inch ~~horizontally~~.

Stain # 5. Four and three-fourths inch from the baseboard at the east wall at the outer edge of the tread is a brown stain measuring one-fourth inch vertically x one-half inch ~~horizontally~~.

Stain #6. Immediately below Stain #5 described above, on the vertical edge of the tread board is a tear-drop shaped brown stain four and five-eighths inches from the baseboard at the east wall, one-fourth inch from the top edge measuring about three-sixteenths inch at maximum width.

Stain # 7. At the edge of the tread, one-fourth inch from the baseboard at the east wall there is a circular stain about three-sixteenths inch in diameter.

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Stain # 8. On the baseboard nine-sixteenths inch up from the edge of tread are six streak stains in a diagonal pattern. Each stain measures approximately one-sixteenth inch in width, the longer streaks measure three-sixteenths and five-sixteenths inch.

Stain # 9. * On the riser between the first and second step, fifteen and one-half inches from the baseboard at the east wall and six inches up from the tread of the second step is the upper edge of a stain which extends down two inches. This stain has a design similar to an exclamation point.

Stair Step # III.

Stain #10 On the tread of the third step, six inches from the baseboard at the east wall and two and three-fourths inches from the outer edge of the tread is a brown stain measuring three-eighth inch vertically and five-sixteenth inch horizontally. *

Stain #11. On the tread, six inches from the baseboard at the east wall and seven inches from the outer edge of the tread is a circular brown stain about three-eighth inch in diameter.

Stain# 12. On the tread, six and one-eighths inches from the baseboard at the east wall and eight and one-fourths inches from the outer edge is a circular brown stain about three-sixteenth inch in diameter.

Stain #13. On the tread, six and one-fourth inches from the baseboard at the east wall and eight and three-fourth inches from the outer edge of the tread is a circular brown stain about one-eighth inch in diameter.

No suspicious stains were noted on the riser between treads II and III.

Stair Step # IV.

No suspicious stains were noted on either the tread or on the riser between treads III and IV.

Stain Step # V.

Stain # 14. Three and thirteen-sixteenths inches from the baseboard at the east wall and eight inches from the outer edge of the tread is a circular brown stain on the tread.

Stain # 15. On the east wall nine inches above the tread edge there is a circular brown stain.

Stain # 16. On the vertical edge of the tread twenty-four inches from the east wall there is a stain measuring one-fourth inch vertically and one-eighth inch horizontally.

No suspicious stains noted on riser between treads IV and V.

Stair Step # VI.

Stain #17. On the tread of the sixth step, eight and one-half inches from the baseboard at the east wall and five and one-half inches from the outer edge is a circular brown stain measuring five-sixteenths inch vertically

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and one-fourth inch horizontally.

Stain # 18. On the riser between treads V and VI, twenty-four inches from the baseboard at the east wall and three and one-half inches up from the sixth step, directly below the stain on the edge of tread # V (described above as stain # 16), there are two droplet stains extending down for about one inch. The stains measure one-sixteenth inch at maximum width.

Stain # 19. On the vertical edge of tread VI, eleven and seven-eighths inches from the baseboard at the east wall there is a thin circular brown stain about three-sixteenths inch in diameter.

Stair Step # VII.

Stain # 20. On the vertical edge of the tread of the seventh step eleven and one-half inches from the baseboard of the east wall is a thin circular brown stain about three-sixteenth inch in diameter.

Stain # 21. On the riser between treads VI and VII, fifteen and three-fourths inches from the baseboard on the east wall and two inches up from tread #VII there is a heavy brown stain approximately one-half inch in length and one-eighth inch in diameter. This stain has a design similar to an exclamation mark.

Stair Step # VIII.

No suspicious stains were noted on tread VIII or on riser between treads VII and VIII.

Stain # 22. On the baseboard five and one-half to six inches above the tread edge there is a diagonal streak stain.

Stain # 23. On the wall, ten inches above the tread edge there is a diagonal stain measuring three-sixteenth inch at maximum width.

Stair Step # IX.

No suspicious stains noted on tread # IX.

Stain #24. On the riser between treads VIII and IX, twenty-one and one-half inches from the baseboard at the east wall and two inches up from tread # IX, there is a thin brown vertical streak stain measuring about one-eighth inch in length and about one-thirty-secondth inch in width.

Stair Step # X.

No suspicious stains noted on tread # X.

Stain # 25. On the riser between treads # IX and X is a brown stain located twenty and one-half inches from the baseboard at the east wall and about four and three-fourths inches up from tread # X. The stain measures about three-eighths inch in length and about one-fourth inch in width.

No suspicious stains noted on riser between the tread # X and the landing.

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Kitchen (Steps from landing to kitchen numbered from landing down):

Kitchen Stair Step #I.

Stain #26. On metal edge of tread #1, two and one-half inches from the board at the north side of the steps is a crusted stain about three-sixteenths inch in diameter. (This stain tested with benzidine by me 7-11-54.)

Kitchen Stair Step #II.

Stain #27. Nine and one-fourth inches from the north end and four and one-half inches up from the tread of the bottom step (tread II) there is a streak of brown stain measuring about three-fourth inches vertically.

Stain #28. Thirteen and one-half inches from the board at the north side of the steps and four and one-fourth inches up from tread II, there is a stain measuring three-sixteenths inches in width and one-fourth inch in length.

Stain #29. Five and one-half inches from the board at the north side of the steps is a vertical brown streak stain measuring three-fourth inch in length and one-thirty-second inch in width.

Stain #30. On the metal strip at edge of tread II, four inches from the north there is a brown stain at the bottom edge measuring about one-fourth inch in diameter.

Stain #31. On the riser between tread #II and kitchen floor, sixteen and one-half inches from the board at the north side and two and one-half inches from the kitchen floor is a stain one-fourth inch in diameter.

Stain #32. Thirteen and one-half inches from the board at the north side of the steps and two and one-half inches from the floor is a stain three-fourth inch long and three-sixteenth inch wide.

Stain #33. On the carpet molding strip, seven inches from the north side of the step is a crusted brown stain about one-fourth inch long.

After testing the stains as described above on 8-9-54, I removed the following specimens for further testing at the Coroner's Laboratories:

- #1. Stain from sixth step of basement stairs located at twelve and one-half inches from east side and four and one-half inches from outer edge. Stain covered with distilled water for about five minutes, extract recovered with dropper and placed in test tube, sealed and placed in marked envelope, sealed.
- #2. Control obtained by application of distilled water to an area twelve inches from east side and four and one-half inches from outer edge. After five minute period water was recovered with clean dropper and placed in test tube, sealed and placed in marked envelope which was sealed.
- #3. A stained section of the third step of the basement stair three-sixteenth

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inch x one-eighth inch was cut out at a location eighteen and one-fourth inch from the east side of the step and four inches from the edge of the step. A clean razor blade was used. Placed in envelope and marked and sealed.

- #4. An apparently unstained portion of the third step to the basement measuring approximately three-sixteenth inch x one-eighth inch was removed in the same manner, placed in envelope and marked and sealed.
- #5. A stained portion taken from the riser between the first step from landing to kitchen, measuring one fourth inch x one-eighth inch, was cut out with clean razor blade, placed in envelope, sealed and marked.
- #6. An apparently unstained portion taken from the same riser in the same manner was placed in an envelope which was sealed and marked.
- #7. A portion of the stain from tread III of stairs leading from second to first floor, at a spot two and three-eighth inches from the edge of the tread (described as stain #10), was lifted with a clean razor blade and placed in an envelope which was sealed and marked.
- #8. A control specimen was taken by scraping an area on tread III four and one-half inches from the east wall, two and one-half inches from the edge.
- #9. A portion of the stain on the riser between treads #I and #II of stairway from second floor (described as stain #9) was cut out with a clean razor blade, placed in envelope and sealed and marked. Specimen measures three-sixteenths x one-fourth inch.
- #10. A portion of paint approximately one-fourth inch x one-eighth inch was cut from riser between tread I and II.

On August 10th, I performed tests for presence of human blood, using specimens #1, #2, #7, and #8. A new package of Hyland anti-human serum (Lot 381B1) and normal rabbit serum (Lot 382B2) was opened and reconstituted in the prescribed manner which has been described elsewhere in this report. The test was set up in twelve tubes as follows:-

- #1. Extract of control on tread III (upstairs) and anti-human serum:
Result---- negative.
- #2. Extract of stain on tread III (upstairs) and anti-human serum:
Result----positive.
- #3. Extract of stain from basement step #6 and anti-human serum:
Result:----negative (Concentrated by evaporation due to standing; retested 9/10/54 with Michigan State Health Laboratories anti-human serum Lot # 27A; Result:--positive.)
- #4. Extract of control from basement step #6 and anti-human serum:
Result:----negative (retested 9/10/54 with Michigan State Health Laboratories anti-human serum Lot 27A:--Result:- negative)
- #5. Dog blood (diluted 1-100) and anti-human serum:-
Result-----a typical precipitate at interface.
- #6. Human blood (autopsy M 7353 diluted 1-1000) and anti-human serum:
Result----typical positive.

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- #7. Dog blood (diluted 1-100) and normal rabbit serum:
Result - - - negative.
- #8. Extract of stain from tread III (upstairs) and normal rabbit serum:
Result - - - negative.
- #9. Extract of stain from basement step #6 and normal rabbit serum:
Result - - - negative.
- #10. Human blood (diluted 1-1000) and normal rabbit serum:
Result - - - negative
- #11. Distilled water and normal rabbit serum.
- #12. Distilled water and anti-human serum.

The above tests were viewed by Drs. Gerber, Adelson, and Chamberlin, and all concurred on the results cited above.

On September 7th, Dr. Marsters and I set up duplicate precipitin tests using (A) anti-human serum obtained from the Michigan State Health Laboratories (Lot #27A), and (B) anti-human serum obtained from Wiener Serum Laboratories (Lot #14) and the following extracts:

- #1. Extract of portion of stain from riser between treads I and II upstairs.
Result: positive with anti-human serum (A) and (B) negative with normal rabbit serum.
- #2. Extract from control from riser between treads I and II (upstairs):
Result: negative with anti-human sera (A) and (B).
- #3. Extract of stain on third step of basement stairs:
Result: positive with anti-human sera (A) and (B); negative with normal rabbit serum.
- #4. Extract of control on third step of basement stairs:
Result: negative with anti-human sera (A) and (B); negative with normal rabbit serum.
- #5. Extract of stain from kitchen stairway from riser between first step and landing:
Result: Positive with anti-human sera (A) and (B); negative with normal rabbit serum.
- #6. Extract of control from kitchen stairway from riser between first step and landing:
Result: negative with anti-human sera (A) and (B).

On September 10th, I set up precipitin tests with anti-human sera (A) Michigan State Health Laboratories (Lot #27A), (B) Wiener Serum Laboratories (Lot # 14), and (C) Hyland Laboratories (Lot 381B1), and the following dilutions of dog blood obtained from the Surgical Research Laboratories of Western Reserve University:

Dog blood (1:200 dilution;) gave atypical weakly positive results with anti-human sera B and C but was completely negative with anti-human serum (A).

Dog blood (1:400 dilution) produced a slight fuzzy cloudiness at the interface with anti-

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human sera B & C but was completely negative with anti-human serum (A).

Slower in reaction than human blood.

Dog blood in dilutions 1-800 and 1-1600 was negative with anti-human sera from all three sources.

Further test established that anti-human sera from all three sources produced satisfactory positive reactions with human blood diluted 1-8000.

Extracts of stains and controls were tested with freshly prepared benzidine, leucomalachite green and phenolphthalin reagents. Tests on extracts of stains produced positive results in each instance and tests on extracts of control areas were negative in every instance.

On August 16th, in the presence of R. Keefe at the Coroner's Office, I examined the mat removed from under the desk chair in Dr. Sheppard's den. Clean white bibulous papers wet with distilled water applied to spots circled with ~~chalk~~, leucomalachite green and phenolphthalin tests yielded positive results. However, when ~~distilled~~ water was applied to an area midway between the narrow strip and the top edge and taken up with bibulous paper which was tested with leucomalachite green small flecks of material produced the characteristic green color.

On the same date also repeated in the same manner leucomalachite green and phenolphthalin tests on the circular rag rug removed from the Sheppard home from the stairway landing between the kitchen and living room. Test yielded positive results. Distilled water was applied to these same spots with clean medicine droppers and recovered with droppers. Adjacent areas treated with distilled water in the same manner. Preciptin tests with anti-human serum failed to produce any reaction with any of these "extracts".

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REPORT OF STUDIES ON ACTION OF MOVING WATCH THROUGH WATER, FACE DOWN.

Fountain watch, Shock-proof, serial # 40148, obtained from unclaimed property at the Coroner's Office. This watch was received from John Blocher at 10:45 A.M., 8-5-54.

Experiment #1:

Blood obtained from fingerprick of self was smeared directly on watch crystal and band. Drying time measured with stop watch varied from 5 1/2 minutes for thinner film up to 20 minutes for thickest smears. Drying was without aid of fanning or noticeable movement of air currents. Temperature of room was 27 degrees Centigrade (about 80 degrees Fahrenheit). Approximately 3 minutes after drying, watch was dipped in and out of water in wash bowl in a pendulum fashion, temperature of water: 27.5 degrees Centigrade (about 80.5 degrees Fahrenheit) Rate: 102 times in 4 minutes.

Result: Only blood remaining visible after treatment are remnants of two heaviest drops on the crystal and blood which ran between the crystal and case. Apparently dry in 6 minutes.

Experiment #2.

Blood of autopsy M-7353 removed from refrigerator (temperature of blood; 14 degrees Centigrade (about 57 degrees Fahrenheit). Temperature of room: 27 degrees Centigrade (about 80 degrees Fahrenheit). Thinnest film dries in 5 1/2 minutes, heaviest dry in 25 minutes. Approximately 4 minutes after drying watch was dipped in water in fashion similar to above. Temperature of water: 27.5 degrees Centigrade (about 80.5 degrees Fahrenheit). Rate: 204 times in 4 minutes.

Result: Only small flecks left to mark where blood was heaviest on watch crystal and three small spots on band where blood is visible grossly. Blood remaining on watch crystal was dry in about 10 minutes.

Experiment #3.

More blood of autopsy M-7353 was placed on watch with a heavy coating on crystal and thinner on watch band. Approximately 3 hours after blood was dry, watch was dipped in and out of water in pendulum fashion as above. Temperature of water: 26.5 degrees Centigrade (about 79 degrees Fahrenheit).

Result: Slight amount of blood visible in two spots on watchband and one spot at heaviest part of stain remains on watch crystal. (When watch was first dipped in water two heavy flakes dropped off).

Experiment #4.

More blood of autopsy M-7353 was placed on watch, in the same manner as above. Approximately 30 minutes after blood was dry watch was dipped in and out of water in the same pendulum fashion as described above. Temperature of water: 20 degrees Centigrade (approximately 68 degrees Fahrenheit). Rate: 200 times in 4 minutes.

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Result: All blood washed off the watch crystal; some slightly visible on band on three links.

Experiment #5

More blood of autopsy M 7353 was placed on the watch in the same manner as in Experiment #3 and 4. Approximately 1 hour after blood was dry, watch was dipped in and out of water in the same fashion as described above. Temperature of water: 20 degrees centigrade (approximately 68 degrees fahrenheit).

Rate: 204 times in 4 minutes. (Performed in Dr. Gerber's presence).

Result: One stain remains visible on crystal of watch and one small fleck on watch band.

Note: All tests above performed with tap water drawn into washbowl in lavatory.

Experiment #6.

Blood obtained from fingerpick of self was smeared directly on crystal and band of Universal Geneva watch obtained from unclaimed property at Coroner's Office received from John Blocher. Serial numbers on back of watch case: 934713/21030. Lake water obtained from lake while at premises of 28924 West Lake Road by Jerry Poelking of Cleveland Police Department on August 6, 1954, was poured into a porcelain evaporating dish 9 1/4" in diameter, depth of water about 1 1/4". One hour after blood was apparently dry, it was held face up, inserting four fingers inside the watch band, above the water edge and water was dipped over the watch and band. Temperature of water: 26.5 degrees centigrade (approximately 79 degrees fahrenheit).

Rate: 200 times in 4 minutes.

Result: All blood except that which was caked at edge of crystal in crevice at edge of case washed off completely.

Experiment #7.

Blood obtained from fingerprick of self smeared directly on crystal and band of watch used in experiment #6. Twenty minutes after applying blood, one larger spot on crystal was not completely dry. At this time the watch was treated in a manner similar to that described above in experiment #6. Temperature of water: 26.5 degrees centigrade (approximately 79 degrees fahrenheit).

Rate: 300 times in 5 minutes.

Result: Blood on wristband washed off immediately. Small amount of blood remained on crystal at lower edge at outer perimeter of spot where blood was smeared on thickest.

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In re: MARILYN SHEPPARD

Case # 76629

Autopsy M 7280

The following additional items were submitted for examination for blood:

7-9-54 - 11:30 A.M.

Removed from drawer in Dr. Gerber's desk at his instruction by phone:

A paper (Part of a statement - Cleveland Osteopathic Hospital), which had a brown stain on the edge of the paper. Portions of stained and unstained paper extracted in distilled water. Benzidine test on extracts was negative. Control with blood diluted (1-2500) was satisfactory.

Quirt: No blood stains apparent on stereomicroscopic examination. Brownish material scraped from metal surface and placed in distilled water. Benzidine test on extract was negative. Control with blood diluted (1-2500) satisfactory.

Tire Iron: Stereomicroscopic examination failed to reveal anything suspicious.

7-12-54 - 8:23 A.M.

Received from Dr. Gerber, one box containing clothing belonging to Horace Hudson (tree trimmer).

- 1 blue short-sleeved shirt, acetate and nylon, pennleigh, bloodstained, tagged; Horace Hudson.
- 2 pair trousers, cotton (1 gray, 1 green).
- 1 plaid shirt.
- 1 blue striped shirt.
- 1 pair shorts, red, blue and white stripe.
- 1 cotton towel.
- 2 undershirts.
- 1 file, miscellaneous pills and capsules.

Typing of blood of stain on blue acetate and nylon shirt by absorption technic failed to demonstrate any agglutinogens. Blood could be type "O".

Stain on gray trousers (right leg, below knee): water applied to stain and absorbed onto bibulous paper - benzidine test negative.

Positive control satisfactory. Stain appears to be insoluble in water but slightly soluble in acetone.

Stain on gray trousers (inside left leg above knee): water applied to stain and absorbed onto bibulous paper - benzidine test negative.

No suspicious stains noted on other items submitted. All red-brown stains appear to be rust.

7-12-54 - 2:30 P.M.

Received from Detectives Weitzel and Yettra Clothing belonging to Dr. Crowe:

- 2 pairs of tan wool slacks.
- 1 Glen plaid suit.
- 1 white jacket.
- ties (6).

Fresh benzidine reagent made up and checked with negative and positive controls. Reagent found to be satisfactory.

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1 pair tan slacks with ~~sites~~ of suspected stains previously removed by dry cleaner marked with safety pins. Three such sites tested by leeching stained area with distilled water onto clean bibulous paper. All tests with benzidine reagent applied to these papers were negative.

1 pair tan slacks presented a stain under the flap of the left rear pocket. Distilled water applied to this stain and absorbed onto clean white bibulous paper. Benzidine test applied to this paper was negative.

Glen plaid trousers. Stain at bottom of cuff at inside seam leached with distilled water onto clean white bibulous paper. Benzidine test applied to this paper was negative.

Glen plaid coat: Stain on right hand pocket leached with distilled water absorbed onto clean white bibulous paper. Benzidine test applied to this paper was negative.

7-13-54 - 1:50 P.M.

Towels identified by Dr. Gerber and Detectives Yettra and Rossbach as having been found in Dr. Sam Sheppard's jeep were removed from the property room of the Coroner's Office and taken to the laboratory for examination. Stain cut from edge of towel and soaked in distilled water. Supernatant fluid tested with benzidine with ~~negative~~ results. Stains appear to be paint.

Green bag submitted 7-5-54 with man's wrist watch, keychain and fraternity ring. On 7-13-54 a portion of the bag which presented a brownish discoloration and a portion which appeared free of any discoloration were cut out and placed in separate test tubes to which distilled water was added. The dye of the cloth leached out to some extent imparting a bluish color to the extract. Benzidine reagent and reduced phenolphthalein reagent apparently were not affected by this extract. No color change was noted in either the extract from the discolored or normal portions.

7-14-54

Received from Raymond E. Keefe one file wrapped in newspaper (West Short Post 7-8-54). Yellow paper accompanying the package identifies the file as "found by James Thomas in his yard 305 Canterbury Rd., Bay Village, Ohio. Bro't to station 7-12-54". Shiny areas of reddish stain under stereomicroscopic examination appear to be varnish, soluble in methyl alcohol and in acetone. A slight yellow color is imparted to aqueous extracts of this material. Benzidine test on extract is negative. One fragment of newsprint adhered to flat surface at edge near blunt end. Following letters can be made out: arco. Varnish underneath is sticky. The portion of newsprint can not be related to paper in which file was received.

7-13-54 - 1:15 P.M.

Received from Dr. Gerber a length of pipe inside diameter 3/4", outside diameter 7/8". Examined 11:00 A.M., 7-14-54. Nothing suspicious noted.

7-14-54 - 1:20 P.M.

Received from Patrolman Howard S. Smith of Bay Village Police Department:

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One T-shirt, label at neckline: Jockey T-shirt, Cooper, large 42-44. The T-shirt is generally gray with some area in the back which is white. There are several orange colored stains suggestive of rust stains. The ribbed banding at the neck is slightly damp. There is considerable amount of sand embedded in the shirt. The left side of the T-shirt is torn completely up the side, around the sleeve seam and just back of the shoulder seam up through the neckband. The right side of the T-shirt presents a tear through the sleeve at the underarm seam and down the side of the shirt to about 9 1/2" from the bottom of the shirt. There is a moderate sized hole in the back which presents some ravelling of the stitches - "runs" - suggesting that this may not be recent. There are numerous other small holes whose appearance suggests that they may have been more recently incurred. Portion 1" x 1/4" was soaked in distilled water for approximately 25 minutes. Tests with fresh benzidine reagent were negative. Three other portions were cut from different locations on the shirt. The portions measured: 2 3/4 x 3/8", 3 x 3", 5 1/2 x 2". Each was soaked in 15 cc. distilled water for approximately 17 hours. Each supernatant extract was divided into three parts and the following tests for blood applied. Benzidine, Phenolphthalein, and Leucomalachite green. All were negative. Negative control from unstained area similarly treated for the same time was satisfactory. A titer of sensitivity of the reagents was conducted on diluted human blood. Benzidine reagent was positive when blood was diluted 1:20,000, indefinite at 1:40,000; the phenolphthalein gave a definite positive at 1:31,125,000 dilution of blood, and the leucomalachite green gave a definite positive at 1:25,000 dilution of blood. All of these reagents are known to be more sensitive on aged blood stains.

7-16-54 - 11:15 A.M.

Received from David Berger of the Cleveland Press in lobby of Coroner's Office: 1 pair lady's hose enclosed in Cleveland Press envelope. These hose reputed to have been found in or about the Sheppard home, 28924 West Lake Road, Bay Village, Ohio. Mr. Berger stated that he received these hose from Bill Tanner, of the Cleveland Press, at approximately 10:15 A.M. 7-16-54.

Examination of the hose revealed that they were stuck together with burrs. Hose mottled light and dark tan in color (from weathering?). Label: Talora Full Fashioned First Quality Knit of DuPont Nylon 45 Gauge 30 Denier Run Proof. 9 1/2-31. One hose mended at toe, foot and top; other hose mended at top and has a hole in the back of the top. A portion 3 1/2 inches x 3 3/4 inches was cut from top of one stocking at a darker tan area and placed in 5 ml. distilled water at 11:45 A.M., 7-16-54. Test was negative for presence of blood. Controls on reagent were satisfactory.

7-19-54 - 12:50 P.M.

Received from Patrolman G. H. Deutschlander of Bay Village Police Department: One Savage over and under shotgun; 22 long rifle over proof tested .410 bore - - 3 inch chamber shotgun. Model 24 Patent 2259397. This gun "broken" apart and examined by Dr. S. R. Gerber in my presence at 5:00 P.M., 7-19-54. This gun is reputed to belong to Dr. Richard Sheppard.

7-19-54 - 12:50 P.M.

Received from Patrolman G. H. Deutschlander of Bay Village Police Department: One wringer roll reputed to have been found "on bank in Bay Village". Nothing suspicious noted on visual examination.

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Autopsy M 7280

7-19-54

Received in morning mail: Package wrapped in one thickness of brown paper which appears to have been from a paper bag. Address written in ink: Coroner's Office, 2121 Adelbert City. In upper left hand corner the word IMPORTANT is printed. No return address. Mrs. Phalsgraff opened the package and found it to be a white box containing a T-shirt. Impression of writing on bottom of box: To Mary This slip is for you Thanks for our stay and please come to Aliquippa some weekend. Frances. Note on torn piece of white paper found inside of box: This T-shirt was found on City Dump. It may or may not have bearing in Sheppard case. Worth a check up. Shirt is as found.

Since the manner in which this was received casts doubt on its value as evidence, and since it did not appear suspicious, it was filed in the vault without more than a superficial examination.

7-22-54 - 2:45 P.M.

Received from Richard Patton, 5601 Detroit Avenue, Cleveland Ohio: 1 golf club, #8 niblick, Wilson Reg. no. 2755. Alex Smith, Westchester, Biltmore. This club was found by Mr. Patton according to his statement in Metropolitan Park, off Riveredge entrance, about 400 feet from the road on edge of brush at about 3:30 P.M., 7-21-54.

Stereomicroscopic examination of club fails to reveal any fibers of apparent significance. Various reddish brown small spots when covered with bibulous paper dampened with distilled water failed to demonstrate presence of blood when benzidine test was applied. Controls on reagent were satisfactory. Dirt in grooves can be removed easily as if there was oil present.

7-26-54 - 8:55 A.M.

Received from Dr. Gerber: 1 white porcelain soap bowl from bathroom at 28924 West Lake Road, Bay Village, Ohio. Two areas of brownish discolored material absorbed separately onto clean white bibulous paper. Freshly prepared benzidine reagent applied to this paper failed to show any reaction. Positive control using blood diluted about 1:5000 was satisfactory.