

THEREUPON, the defendant, further to maintain the issues on his part to be maintained, called as a witness DR. PAUL L. KIRK, who, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION OF DR. PAUL L. KIRK

By Mr. Bailey:

Q Sir, will you state your name?

A Paul L. Kirk, K-i-r-k.

Q Where do you live?

A 1064 Creston Road, Berkeley, California.

Q What is your occupation?

A I am Professor of Criminalistics, School of Criminology, University of California, Berkeley.

I am also a private consultant in matters concerning both civil and criminal cases.

Q And how long have you held your teaching position?

A I have taught at the University of California since 1925, in various capacities. I taught previously to that as a teaching assistant only at the University of Pittsburgh in 1924 and '25. At the University of California I was made instructor in 1929; I was an associate prior to that, and teaching assistant.

I was made assistant professor in 1933. I was made

associate professor in 1939. I was made a full professor in 1945. This was all in biochemistry.

In 1949 or '50 -- '49, I believe, I was made associate full professor of biochemistry and criminalistics. And in 1954 I gave up the biochemistry work and went into criminalistics as full professor criminalistics, full time.

Q What does criminalistics involve, doctor?

A Criminalistics is the subject that is concerned with physical evidence, that is, the examination and identification, individualization, and interpretation of physical evidence of all types.

Q Doctor, would you give us a resume of your educational background other than that which you just described?

A I first went to Ohio State University in Columbus for four years; following graduation from Randolph Macon Academy, Macon, Virginia. I took the Bachelor of Science degree in chemistry.

I went from there to the University of Pittsburgh where I took the Masters degree in chemistry.

I went from there to the University of Berkeley where I took the Doctors degree in biochemistry, PHD, in the Biochemistry Department.

Q Now, how long have you been working as distinguished from teaching, on the subject of criminalistics, that is, physical evidence?

A The first case I worked on was in 1935, and I have been doing it ever since then. Of course, I had to interrupt it for three years during the war, from 1942 to '45, because I was on the Manhattan Project at that time. That interrupted both teaching and investigative work.

Q When your work at the Manhattan Project was concluded did you return to criminalistics, both teaching and actually doing the work?

A I did, yes.

Q Have you been involved in legal cases prior to this one?

A I have been involved in over two thousand.

Q Civil and criminal?

A Civil and criminal, prosecution and defense, and plaintiff and defense. I worked for both sides, on both civil and criminal matters.

Q Doctor, have you authored any written material in the various fields in which you have taught and been educated?

A I have published about 240 publications of one type or another, which includes four books. It includes four encyclopedia articles. Most of it is the reports of original research.

There are, of course, a few things like book reviews, and so forth, included in that list.

Q Doctor, we learned from a prior witness that the Cleveland Police Department has a book called Criminal Investigation, by Paul Kirk, in its library; are you the author of that book?

A I am.

Q Doctor, do you belong to any --

A Pardon me. It is Crime Investigation, rather than Criminal Investigation.

Q I am sorry, Crime Investigation. When was that book initially published?

A It was published in 1950. It is being revised at the present time to make two volumes.

Q Do you belong to any professional organizations or societies?

A I do, yes. I belong to the American Chemical Society, of course, since 1923.

I am a member of the American Association for the Advancement of Science; the American Society of Biological Chemists; the American Society of Criminology.

I am a founding member and president-elect of the California Association of Criminalists. I am a member of the British Forensic Science Society.

I am a fellow of the American Institute of Chemists. I am a fellow of the New York Academy of Science.

I am a fellow of the Belgian Royal Academy. I am a



member of the International Association of Forensic Toxicologists, and the newly formed International Association of Forensic Sciences. We just had it in Copenhagen a few months ago. There are still a few others.

Q Let's have them all, please.

A I am trying to think of all of them. Association of Consulting Chemists and Consulting Engineers. That is one of them.

I can't think of any others at the moment, other than honor societies.

Q Doctor, other than the teaching you have done at the University of Pittsburgh and the University of California in Berkeley, have you had occasion to lecture?

A I have lectured all over the United States, actually.

Q And of the many civil and criminal cases that you indicate you have been involved in in the past, are these all cases that arose in California?

A No. As a matter of fact, they have arisen pretty much all over the world. There have been two originated in Okinawa, and I have testified in Okinawa.

I have testified more than once in --

MR. SPELLACY: I object. There is no question before the witness.

Q Tell us the jurisdictions in which you have testified?

A Well, I have testified in New York, New Jersey,

Louisiana, Idaho, Washington, Oregon, California, Nevada, Arizona, and Okinawa.

I have investigated in addition in some additional places. I have one case currently from Jamaica. I have had cases from England. I have had several from Canada. I have them from Hawaii, from Alaska.

I think that is probably the geographical distribution completely.

Q Have you ever done any studies or experiments with dry blood?

A I have.

Q How long have you been working with dry blood?

A I would estimate since about 1937.

Q And have you published any papers on the subject of dry blood?

A I have published a number of papers in that general area, yes.

Q Do you know Mary Cowan?

A I do.

Q When did you first meet her?

A I am not quite sure. I met her several years ago and I have know her quite well in recent times.

Q Doctor, whether or not in late 1954 or early 1955 you had some occasion to have something to do with the case of the State of Ohio against Samuel H. Sheppard?

A I did, yes.

Q By whom were you first contacted in this case?

A William Corrigan.

Q Had you had some conversation with him initially?

A Yes, I was called by him by phone.

Q As a result of that conversation did you do something?

A Yes. I came to Cleveland.

Q And when you got to Cleveland whom did you meet?

A I met Mr. Corrigan.

THE COURT: Fix the time, counselor,  
please.

Q When did you arrive in Cleveland?

A I arrived on January 22, 1955.

Q You were met as you arrived in Cleveland by Mr.  
Corrigan?

A I met Mr. Corrigan in the hotel, the old Hollenden  
Hotel.

Q And did you see anyone else connected with the Sheppard  
case while you were in Cleveland on that first occasion?

A I did, yes.

Q Who?

A Well, of course, I saw the two Sheppard brothers,  
Richard and Stephen. I saw their families, of course, as  
well.

I saw Mr. Parrino, especially, one of the prosecutors, at that time. I believe he is a judge at the present time. He made available to me for inspection the evidence held by the district attorney at that time.

I don't know offhand exactly who else I met. I met a number of other people, but I think the connection with the Sheppard case was probably somewhat remote.

Q Did you meet this fellow right here (indicating)?

A Yes, I did.

Q Where did you see him?

A In Cleveland jail.

Q Did you have some conversation with him?

A I did.

Q Did you do anything beside talk with him?

A Yes, I did.

Q What did you do?

A I obtained from him some blood.

Q How did you do that?

A I took with me a bottle, which I have today, and a lancet, and I allowed him to stick the lancet into his own finger and let the blood flow or drip into the bottle.

Q After you obtained this sample of blood did you at some later time group it?

A Yes.

Q In what group did you find Doctor Sam Sheppard to be?

A He belongs to A group.

Q Any sub-factors of importance?

A He was a weak A, and therefore probably an A-2. But I didn't determine specifically that he was an A-2. In those days means for doing so were very primitive as compared to the present.

Q Between 1955 when you entered this case and 1966 have there been any notable advances in the field of blood grouping?

A Oh, yes, a great many.

Q Doctor, we have been told that there are four basic groups of blood, A, B, O, and A-B.

Are you able to tell us from your experience or scientific knowledge generally the breakdown by percentage, that is, the likelihood that any given person will fall into a certain group?

A In the American Caucasian population, the percentage is about 43 percent for O. This is the most common group; in other words, almost half of the population.

It is 40 percent for A. So that A and O together constitute most of the population.

14 percent for B; and 3 percent for A-B. It is a little higher in the colored race, it is about 6 percent for A-B, in the colored race.

Q Doctor, within a group of blood, whether it be O, A, B,



or A-B, what sub-factors are available for determination in order to distinguish one type of A blood, for instance, from another?

A There are, of course, the A-1 and A-2 groups; and there is also A-1-B and A-2-B, corresponding to this.

And, of course, if you get into the genotype as well as the phenotypes, that is, the genetic constitution in back of the groups, there are a total of ten genetic combinations concerned with the four groups, that is, ten genotypes, but there are only four main phenotypes.

Q We heard some testimony about M factors and S factors, and the like; will you tell us what those are, just briefly, doctor?

A M factor, M-N, and S are concerned with another type of antigen, that is, they are a different system of blood grouping and they have not been utilized medically the same as the A-B-O, and therefore they are less known.

They are utilized in this field of investigation much more commonly than they are in any other field, except paternity testing. Paternity testing is always done involving the M-N-S system.

There are three groups in the M-N-S system. One group has the genotype M-N. We call that the M-group, which is about 25 percent of the population. Then the M-N phenotype, which is also about 25 percent, roughly, of the

population.

And the M-N which is the hybrid is about 50 percent of the population.

So that the M factor alone will exist in about 75 or a little bit better than 75 percent of all persons.

Q Doctor, is there a feature of blood known as the Rh factor?

A There is, yes, there is -- this is another type of grouping, it is another system of grouping, different kind of antigen, controlled by different genes.

Q How are Rh factors distinguished or determined?

A Well, Rh factors break down entirely differently. There are five established Rh factors, that is, the genetic factors, or the antigenic factors, I should say, and there should be a sixth one, but it has not yet been isolated.

These are generally following the race classification given as the CDE large, and c and d small.

Q Now, in examination of dry blood is it possible to group such blood?

A The Rh factor has in general been difficult to identify in dry blood, and up until fairly recently most of the laboratories would not even try it, because it is almost uniformly unsuccessful.

There have been claims made back about as far as, I would say, certainly since 1960, but still not extremely

recent, of Rh factors being identified in dry blood.

But at the present time --

MR. SPELLACY: May I object to this answer? I do not believe it is responsive to the question.

THE COURT: Objection sustained.

MR. BAILEY: I will put another question.

Q As to the four basic groups, is it possible to group blood after it has been dried?

A Yes.

Q And is it possible to pick up the M-N factors?

A Yes. It is possible to pick up M quite easily.

MR. SPELLACY: Objection, again.

A It is not so easy to pick up N, although it can be in plant life.

Q Now, in addition to the various features that you have described, such as M and N factors, and Rh factor, are there other bases of distinguishing two different bloods within a single group, one from the other, as to their origin?

A There are quite a number of methods, yes.

Q Would you tell us just some of the bases by means of which you are able to tell, say, blood of the A type group in two samples came from two different people as against

one person?

A Well, the methods by which this can be done at the present time are rather manifold, that is, we can use serum grouping, which is another quite new thing, and it has not so far been employed in crime laboratories to any great extent, although it has been shown that serum groups can be detected in dry blood in some instances.

The serum groups are based on difference genetically controlled, heterogeneity, the proteins of the serum, and some of these proteins being enzymes, some of them being concerned with the gamma globulins which form the antibodies.

Then in addition to the serum grouping which is now available there are several physical factors which can be utilized.

For example, we have found ourselves that density of dry blood is quite variable as between individuals, and that two samples at the same time in a clean condition can be distinguished by the density grading method.

Q You said density grading?

A Density grading.

Q What do you mean by that?

A The density grading method is one in which we prepare a tube containing a heavy liquid at the bottom, that is, one of high density, in which the density drops off progressively

toward the top of the two, made by layering liquids of different density.

In the case of use for blood, this had to be a material which tends not to dissolve in the blood, especially not dissolve fat. Most are made up of solvents which would dissolve fats.

So that the density grading as it is used for blood is made with a zinc chloride solution. That is a strong zinc chloride at the bottom and getting progressively more diluted at the top.

The dry blood powder is simply dropped in, and it forms a layer, not a sharp layer, but a zone, an area zone, within the grading, and the height of this zone will differ with different persons.

This is one method which has been developed, which has great discriminating power.

Q Doctor, what about the general solubility of blood in water, is there any basis for distinguishing bloods of the same group according to their solubility?

A Yes, there is. In the first place, the blood, as it gets older, becomes progressively more insoluble, and when I say insoluble I have to qualify what I mean, because there are many constituents in blood, and they do not have the same solubility; that is, one constituent will not have the same solubility in any solvent as other constituents



in the same blood.

So we refer generally to solubility of blood with respect to the hemoglobin, because hemoglobin is what you see in blood; and the hemoglobin progressively becomes more insoluble with age, so that it decomposes, actually, to form hemin, and the hemin is not soluble in water.

There is also the fact that blood of the same age, will exhibit quite large differences in solubility. In fact, we have run studies on this matter on several hundreds, and we find quite large differences in blood of the same age as based on the hemoglobin insolubility.

Q Doctor, what about agglutination, will you tell us what agglutination is?

A Agglutination is a fancy word that means clumping.

Q Pumping?

A Clumping. When cells are agglutinated they are clumped; that is, they are drawn together and formed in groups, like a chestnut burr, for example.

THE COURT: Do they unite, doctor?

A They just come together, in contact.

THE COURT: Do they adhere to each other?

A They adhere to each other very strongly, in fact. They do not shake off easily once they are agglutinated.

Q How is this clumping caused?

A Clumping is generally a result of an immune reaction, that is, a reaction of an antibody with an antigen.

And in this instance, referring to the blood groupings, for example, the antigen is carried on the stroma of the red blood cell, and the combination with the antibody which is put in from an antiserum which may be obtained from either humans or animals, and if the antibody and the antigen are analogous, that is, the antibody is an antibody to this antigen, then there will be a combination, and this combination leads to the clumping.

Now, the physical result, physical factor that causes the actual clumping, and we do not know a great deal about why the cells clump, except when the proper antibody meets the antigen, the cells will clump.

This is a regular phenomenon, analogous to a precipitation reaction in which the materials come out of solution and form a solid phase.

Q Doctor, is there any significance to the rate of agglutination once the process is begun, as far as distinguishing blood is concerned?

A Certainly there are large differences in the agglutination rates that one observes, and these differences may or may not be significant, depending on many conditions.

Now, in the first place, you will get different rates of agglutination if you work under different conditions.

And such things as a concentration of the antiserum, temperature, the amount of stirring, things of this type, will influence the rate of agglutination, and this is why it can be stated quite truthfully by anybody that rates of agglutination, different rates of agglutination are commonly known in the laboratory, and this is true, they are.

On the other hand --

MR. SPELLACY: I am going to object, Judge. I don't think there is a question before this witness.

THE COURT: Sustained. Please put a question, Counselor.

Q You indicated that where there is some factor of interference, that is, a difference in conditions, the rate of agglutination may change and not be significant?

A Right.

Q Now, in a case where two blood samples have had exactly the same history in the same area and been given identical treatment, and are tested at about the same time, is there any significance if a difference in the rate of agglutination between those two samples appears?

A In my opinion there is, very definite difference, very definite significance to it.

Q Doctor, after you had met the various people involved in the Sheppard case, where did you go besides to the

prosecutor's office to examine physical evidence?

A Well, the first day that I investigated was the 23rd of January. I went to the home of the defendant. Well, first, I didn't go to the home immediately. I went to the home of Doctor Richard Sheppard first, and Doctor Stephen Sheppard was there at that time.

Doctor Richard and Doctor Steve went with me to Doctor Sam's, the defendant's, home, and let me in.

I spent some time in discussion with them at that time of how the house was arranged, things of this kind. I was shown through it.

I looked through all of the upper story and the main story. I did not go to the basement immediately. I did that later.

I went out to the lake side, the front of the house, I went down to the lake, down the long flights of steps and landings.

I didn't spend time at that time in the garage or the room over the garage, but I did become familiar with the house in general, and made sketches of the house, for the lower floor and the upper floor and for the room in which the murder had occurred, which was the northwest bedroom.

I am supposed -- I am asked to tell you all that I did out there?

Q No, I think the question has been answered for the

moment.

Doctor, this occurred after you examined the physical evidence with Mr. Parrino, or before?

A No, that occurred before. That was the last thing I did was examine the evidence in the prosecutor's office.

Q Now, can you tell us just from your recollection what items you saw or inspected in the prosecutor's office, prior to your departure?

A Well, there were about forty exhibits, and so I couldn't recall every individual one. I did see the sheets of the bed, the pillow case, the pad underneath, the quilt, and I saw -- I saw a quilt, I saw a pad, this was from the bed alone.

I saw in addition to that the personal effects of the defendant which had been accumulated in a green bag. I saw the bag. I saw two watches, one of which was taken from the bag. One was a lady's watch. I saw a ring.

I saw a key chain or a chain with a ring of keys. Let's see, what were the other items? Oh yes, I saw the clothing of the defendant, consisting of a pair of pants, a belt, and some loafers, and some underwear, that is, underpants.

I saw also two garments which had been on the victim's body, pajama tops or shirt top, and some slacks, bottoms.

I saw, also, a couple of pairs of her shoes. I re-



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member a rubber soled slipper or something, of the type, I don't know exactly what it is called, I think I saw two pairs of shoes.

I saw various other miscellaneous items. I have a list of them but I can't recall now.

Q All right, your recollection is good enough for the moment.

Doctor, did you when you were in the Sheppard home remove any articles of physical evidence that were there when you arrived?

A Yes, I did.

Q Would you tell us what you took out of Sam Sheppard's house?

A I took off the top cover clipping of the mattress, I cut it out with a razor blade around the perforated mattress, and removed that.

It showed also a large blood stain which had soaked through; so I took it.

I also swept the floor around the bed with a vacuum sweeper containing a special filter to remove all materials from the rug before they reach the main bag in the vacuum sweeper. Those sweepings were taken away.

I took, of course, the sample of blood which was obtained from the defendant in Cleveland Jail.

I took one nylon stocking, with which nothing was ever

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done, and I have forgotten now why I took it, but I did take it.

I took the pillow case and the sheet from the adjacent bed, that is, the bed adjacent to the one on which the victim's body was found. It was liberally blood spattered, so I took it.

Q Did you take any nail polish?

A I didn't take nail polish, no, but I did receive nail polish later by mail.

Q Did you take anything in connection with nail polish?

A Well, I had material in the sweepings that could be taken for nail polish, lacquer.

Q What about cotton batting, did you take any of that out?

A That was sent in the mail later. I have it.

Q Did you observe any while you were in the house?

A No, it had been picked up earlier.

Q Now, prior to the time that you cut the mattress cover with a razor blade in order to remove a sample, and prior to the time that you removed the sheet and pillow case from the adjacent bed, the one next to the one in which the decedent was found, did you take some photographs?

A I did, yes.

Q Prior to taking the photographs, doctor, did you make a visual inspection with respect specifically to the blood

spatter?

A I did, yes.

Q Is this the first case in which you have been involved where blood spatter was one of the factors in reconstructing a crime?

A No, it is not the first, nor the last. I have been involved in a great many in which blood spatters have been very significant evidence.

MR. SPELLACY: May I object to the last part of that statement?

THE COURT: Objection is sustained. The jury is instructed to disregard the response. The witness is instructed to answer the question and not volunteer information beyond that which the question calls for.

Please proceed, Counselor.

MR. BAILEY: May the response remain except for the last three words?

THE COURT: The response may remain except for the last three words.

Q Doctor, as an experienced criminalist, is the pattern of blood spray in any room where a crime of violence has occurred, useful or important in reconstructing a crime itself?

A It very definitely is useful and important.

Q Now, what were your initial observations with respect to the room generally insofar as blood is concerned?

A Well, initially, I was impressed by the fact that blood had traveled rather widely in the room.

I found blood on all four walls, and, of course, the bed obviously had been very bloody, so I was impressed by the wide distribution.

Q Had you been given some information as to what the police found when they first came up and observed the body on the morning of July 4th, that is to say, its condition, and what the autopsy disclosed?

A Yes, I had.

Q What sources of information did you have about the facts of the crime as had already transpired prior to and during the trial?

A I had access to all of the reports that I believe were ever used. I had a complete transcript of the testimony of the first trial of this case.

And I had the Coroner's report, the Coroner's microscopic examination report. I had various transcriptions of interviews with the defendant, taken in the Sheriff's office, and at the autopsy.

I had a great -- a quite complete record of the proceedings, trial and the events leading up to it.

Q Had you viewed or inspected a copy of the autopsy

5 report or the testimony of Deputy Coroner Adelson?

A I don't think that I had read Doctor Adelson's testimony at the time of the inspection. I think I read that later.

Q I show you State's Exhibit 28 and ask you if you have ever seen that photograph or a comparable photograph before?

A Yes, I have.

Q Did you see any photographs of the deceased reflecting the wounds which were evident after the body was cleaned up?

A Yes, I saw, I believe I saw all of the photographs that were used by the prosecution.

Q In other words, those photographs that were marked in evidence during the first trial you inspected?

A I did, yes.

MR. BAILEY: Excuse me, your Honor, did you wish to take a recess at this time?

THE COURT: Do you care to?

MR. BAILEY: Well, this is as convenient a place as any to interrupt.

THE COURT: Ladies and gentlemen of the jury, we will have our morning recess, which is customarily due at this time.

While you are away on your morning recess, you will bear in mind the instructions given you on



each occasion when you leave this room. You shall not discuss this case or what you have heard of it among yourselves. You shall not permit anyone else to discuss it with you, nor shall you permit yourselves to overhear anything that relates to this case by any means or media of communication.

We will stand recessed for our morning recess.

(Thereupon a recess was had.)

By Mr. Bailey:

Q Doctor Kirk, in addition to photographing the northwest bedroom, that is to say, the murder room as we shall refer to it, did you take some measurements and make some notes?

A Yes, I did.

Q Did you measure generally the dimensions of the room and the placement of the furniture that was found within it?

A Yes.

Q I wonder if you could, to better illustrate the testimony, sketch the floor plan of the room with the principal items of furniture as you found them when you made your investigation?

A Yes. (Witness goes to blackboard.)

Q Doctor, did you notice a radiator in the room when you examined it?

A Yes.

Q Are you able to tell us the distance between the side of Marilyn Sheppard's bed closet to the entry door, and the east wall of the room?

A (Witness draws on blackboard.)

Q Are you able to tell us the distance from the place where Marilyn's head was found, as indicated by the photographs, to the west wall of the room, do you have some notes on that?

A I don't have it in these notes. I believe the distance was something in excess of ten feet, I know that.

Q Doctor, would you just --

A About ten feet.

Q Just indicate, so we can place it in the record, which is the east wall of the room?

A (Witness indicates.)

MR. BAILEY: May the record show that that is the wall closest to the bed in which Marilyn Sheppard was found?

THE COURT: The record may so show.

MR. BAILEY: May the record further show that the witness has indicated a dimension on the west wall of ten feet, and a dimension on the south wall, including the door opening, of sixteen feet.

THE COURT: The record may so

indicate.

Q Is that correct, doctor, sixteen feet?

A Yes.

Q Now, would you indicate for the jury the areas where you found blood spatter in any amount?

A The major blood spatter was in the region of the east wall. My door here is not quite properly placed; I would like to change this a little.

The wardrobe door is down past the hall door. I indicate the wardrobe door on the east wall, and the hall door, showing the open position, blood spatter, but primarily from a region just a little to the north of the edge of the wardrobe door, through to the margin of the hall door.

In other words, this was the heaviest spatter, in this region.

Then there was spatter over the bed. I don't know exactly how to indicate this. Perhaps if I --

Q If you will just indicate orally for the moment; it isn't necessary to draw it in.

A There was blood spatter along the south wall, over the heads of the beds and particularly between the two beds and over the head of the one on the east, on which the victim was found.

There was spatter on top of the radiator. There were some spots on the window blind over the window in the west

wall.

There were approximately ten spots in the region here. I will put a 10 here.

And there were about ten spots in this region. There were no spots between the north margin of the heavy spotting indicated on the east wall, and the position on the north wall, such as I have shown.

This is not to scale, and my dimensions may be a little off, I mean, as I have drawn it.

But the basic facts are correct.

Q You are able to say definitely that no blood spatter appeared on any section of the northeast corner?

A Between the positions indicated there was no blood spatter, correct.

Q Can you tell us, doctor, what you are able to adduce or tell from examining a spatter or spot of blood from its shape?

A From its shape you can tell a great deal about its velocity, and its direction as to how it struck.

Q Could you indicate just by sketching what a blood spot looks like that has traveled with some velocity and struck at other than at a 90-degree angle to the surface on which it was found?

A It looks very much like a tenpin. Generally, an elongation with a little extra blood at the end, very commonly.

Q Have you conducted experiments yourself where you observed spattered blood on various surfaces?

A Many experiments, yes.

Q Where you see an elongation, what does that indicate as to the direction?

A It means that the blood spot struck at an angle such as I am indicating, because the first drop that strikes is stopped at the surface. The top of the drop continues on and forms this elongation.

If it strikes very very rapidly you do not get this kind of a spot. If it strikes it at very high velocity it does what we call fishtailing, that is, it comes out into something like this, a fishtail.

And the length of the elongation is indicative of the angle, combined with the velocity. You have to consider both together, always.

Q Doctor, from your experiments and experience, can you tell us whether or not there is a limitation on the size of a drop of blood that will travel as a unit when thrown or spattered and strike a surface, how big?

A You cannot move a drop that will make a spot larger than about a half inch, if it flies for any distance?

Q Now, as to spots which strike at a relatively sharp angle, that is to say, approach 90 degrees, or perpendicular



to the surface being struck, can you tell something about the velocity from the shape of those drops?

A Yes, I can.

Q Would you first indicate by drawing a low velocity blood spot?

A (Witness draws on blackboard.)

Q For the record, you have indicated a small circle with regular edges?

A It was intended to be a circle with regular edges, at low velocity.

Q As the velocity increases, what changes take place in the blood spot?

A You still get the circle but now you get a series of little thickened area spatters, stellate spattering out to the sides.

It is due to the oscillation of the blood as it impacts; it oscillates and throws out these little droplets around it.

Q Referring your attention back to the folded entry door and the wardrobe door, were you able to tell, first of all, the position of the entry door in the bedroom at the time the blood was flying in the room?

A Yes.

Q Tell the jury how you can tell?

A You can tell it was open because the blood was spattered on the side facing the west. It was not spattered on the

inside.

Q Was the pattern that appeared on the entry door continued to any other surface?

A Yes.

Q What surface?

A It continued across the wardrobe door and just a little beyond the wardrobe door.

Q Was the area behind the entry door clear?

A That was free of blood, yes.

Q Did you photograph this area, by the way?

A I did.

Q Is there anything about the blood spots on the area that we have just discussed on the east wall that was different than the rest of the blood spatter in the room?

A Yes.

Q Would you tell us what that was?

A The blood spots on these walls did not have the consistent pattern as shown by the other blood spots, and the drop size was a little larger than any except close by the area of the actual beating.

Q With respect to the blood spots in the rest of the room, can you tell us anything about the velocity of those spots which appeared on the east wall or the probable velocity when they hit?

A On the east wall the velocity was low, and they did not

have a large amount of angularity or of the stellate spatter. This was in some cases lacking entirely, and in other cases just a little. But in general they were traveling at relatively low velocity.

Q Now, have you ever made experiments with various kinds of objects which might be used as weapons in order to test the throwoff pattern with blood as the weapon was swung through an arc?

A I have.

Q And from that do you have an opinion as to the limitation in size --

A Yes.

Q -- as to any single drop that any weapon, whatever it may be, could throw off?

A I have never been able to get one bigger than a half inch.

MR. SPELLACY: Objection. It is not responsive to the question.

Q Just do you have an opinion?

A Yes, I have an opinion. I am sorry.

Q Did you find any drops on the east wall which in your opinion were too large to have come from the throwoff of the weapon?

A Yes.

Q How many?

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A One.

Q Did you make some tests on that spot?

A I did.

Q By the way, had you typed at any time Marilyn Sheppard's blood yourself or grouped it?

A Yes.

Q Where did you get the sample that you used?

A I got the sample from the mattress cover which I removed to California, from the blood on the mattress cover.

Q And did you take any other pieces or clumps of blood from the murder room which turned out to be the same as the blood of Marilyn's?

A Yes, I did.

Q And where did you take those samples?

A I took one from the wardrobe door, and one was studied from the lower panel of the left wardrobe -- I beg your pardon -- from the lower panel of the wardrobe door.

Q And from that door did you type any blood spots which were not those of Marilyn Sheppard?

A I found one that I did not believe to be Marilyn Sheppard's, yes.

Q Are you still of that opinion?

A I am still of that opinion.

Q Now, whether or not that was the same spot that was too large to have come from the weapon?

A It was.

Q Now, from your examination of the entire room, were you able to reconstruct the arc of the weapon that was swung against the skull of Marilyn Sheppard?

A Yes.

Q And could you also help us as to where the killer swinging the weapon was positioned with respect to her bed at the time the blows were struck?

A Yes.

Q Would you show us the area where in your opinion the killer was positioned?

A The killer was positioned at the lower end of the bed on the east side, the northeast corner of that bed, where he was standing, in the region which is delineated by the absence of blood; the head being in a position something like I am indicating, slightly to the west side of the bed and down about half way. And this, used as a center, would place the person who intercepted all the blood flying in one direction, because there was no blood in this region. This is the only place in the room he could have stood.

Q Doctor, assuming that a woman was beaten to death with blows struck on the skull by some human being with a weapon, what would be the sources of flying blood that would cause the spatter such as you found in Marilyn Sheppard's bedroom in your examination?



MR. SPELLACY: Objection.

THE COURT: What is the assumption predicated on, Counselor?

MR. BAILEY: The assumption is predicated on the State's evidence.

THE COURT: Sustained in its present form.

Q I want you to assume, doctor, that the body of Marilyn Sheppard was found as has been indicated in Exhibit 28, a photograph, showing her lying on the bed; I want you to assume that while she was in that position she was beaten about the head with some instrument, and that blood flowed freely while the beating was taking place.

I want you to further assume that the instrument was manipulated by some human being.

Now, can you tell us from your examination of the room and from your experience and experiments what the sources of the flying blood would probably be?

A Yes.

Q Would you do so?

A In the first place, a source of the blood -- the room, the walls of the room, was largely the radial spatter from impact; that is, when the weapon or some object hits a bloody head, the blood flies out like the spokes of a wheel, radially, in all directions.

In general the experiments show that if there is any angularity to the blow, it flies out primarily to the front of the blow.

And there were spots on the north wall which centered like this, the arcs of which centered at the position of the head, as shown in Exhibit 28, I believe it was.

This was likewise true of spots on the radiator. There was one drop which had skipped across this radiator for a distance of 15-3/4ths inches, contacting the radiator, contacted it as it glanced along the top like a stone skipping on water, and that was aimed precisely at the position of the victim's head as shown in the photograph, Exhibit 28.

There were literally hundreds of little spots on the adjacent bed and these did not all show elongation. Many of them had been in a high enough arc to land, formed round spots, and these were particularly common on the east side of the bed, the ledge nearest the bed on which the victim was beaten. But the further away, the more of them showed the elongation.

And there were elongated spots over the entire bed, on the pillow, which was in a position on the south, on the bed, and across the turned-back covers where it stopped abruptly where it was turned back, and on the lower feet which was exposed. These spots all centered exactly on the position shown for the head.

So we have a radial pattern showing on the south wall, the radiator, and the north wall, and to some, unquestionably, some of those spots on the east wall were likewise spattered. But in general most of them were not.

The bed and the radiator and the north wall were the best ones, because these were all to be traced to the same center. The radial pattern is the one that comes from impact.

Q Doctor, we mentioned experiments a while ago. Did you ever conduct any experiments wherein a surface comparable to that of a human head was soaked in blood and then struck with an object in order to test impact spatter?

A Yes, I did.

Q Do you have some photographs with you?

A I have photographs with me showing that.

MR. SPELLACY: Objection, your Honor.

THE COURT: Sustained.

Q You found some blood then that in your opinion came from impact spatter as you described?

A Yes.

Q Did you find some blood that did not come from impact spatter?

A Yes.

Q All right.

A The blood on the east side of the room, on primarily on

the two doors, came almost entirely from weapon throwoff. This was the larger drops traveling at low velocity, and it was too far away for any low velocity drops to travel from the bed in any event. But these very little sprinkling on these doors were in the larger size drops, the quarter inch for the most part, eighth inch, and in that neighborhood, with many many smaller ones. There was only one spot I believe that was greater than a quarter of an inch; there was one half inch. These were very characteristic of weapon throwoff, and the pattern was so consistent and so detailed that one could deduce very readily the arc through which the weapon had been traveling.

Of course, it is a series of arcs, by that I mean, the region in which the arc existed.

Q Were there any blood spots on the ceiling?

A No, I found none on the ceiling. I found none on -- beg your pardon.

Q Were there any high up on the south wall behind the bed?

A No, none on the south wall high up. In fact, the only place they were high up were on the wardrobe door, I mean, on the hall door.

Q Doctor, you spoke of weapon throwoff. Assuming a bloody instrument being swung in an arc, can you tell us what

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you mean by weapon throwoff, and what causes it?

A I mean simply that if a weapon is impacting any bloody surface, it will become bloody itself, and as it is retracted preparatory to the next blow, it will be swung back somehow to the rear, and as the direction of the weapon is changed, starting the next blow, it jerks off the blood or some of the blood that is on the surface of the weapon, and this continues to travel backwards from the weapon. It is very easily demonstrated.

Q As the weapon is brought forward --

A Just at the moment it changes direction, the weapon is moved backward first and then forward, and as it changes direction is when the blood leaves it.

Q After this occurs and the larger clumps of blood leave the weapon at the reverse end of the swing, and then the weapon is brought forward and the velocity increases before the impact is made, is there any additional throwoff?

A There often is, yes.

Q Did you find evidence of such throwoff in this case?

A Yes.

Q Will you tell us where you found it?

A Primarily the blood on the south wall and between and over the two beds.

Q With reference to the apparent velocity, is the velocity of the throwoff which occurs as the weapon is brought forward,



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greater or less than that which is shown by the blood which falls off when the weapon changes direction as you have indicated?

A It is much greater.

Q And did you find indication of higher velocity on the south wall?

A Yes.

Q From your observations of the south wall, and such blood as you found there that did not come from impact spatter, but came from some other source, were you able to recreate within general limits the probable arc of the weapon that was swung and repeatedly struck on the head of Marilyn Sheppard?

A Yes.

Q Now, from your examination of the wardrobe door, doctor, do you have an opinion due to the velocity that you observed to be evidenced there, as to how far that blood could have traveled from the place where it was thrown off the weapon to the surface of the door?

A How far it could have traveled? It could not have traveled very far.

Q All right, when you say not very far are you talking inches or feet or what?

A I am talking the order of one or two feet.

Q Now, was there any other area of the room where you

found large low velocity drops other than the wardrobe door?

A Other than the bed itself.

Q Well, all right, other than Marilyn Sheppard's bed?

A That's right, Marilyn Sheppard's bed.

Q Were there any large low velocity drops, for instance, on the north wall?

A There were no velocity drops at all on the north wall. The drops were medium in size, about an eighth inch or less.

Q What about the bed adjacent to Marilyn, we will call it Sam's bed?

A There were some slightly larger drops. But for the most part these were all small drops. And you can't be sure about the size of drops when they strike at an absorbent surface like a sheet, because the blood spreads in the sheet, and inevitably what you see is a larger spot than you would get on a solid surface.

Q You have indicated a diagonal line here on the bed adjacent to the one in which Marilyn was found. I recall you said that the sheet was folded back?

A Yes, sir, the covers were folded back, at this line here. And the blood, it delineated the line very clearly. It covered the lower sheet up to this position, and it covered the top sheet from that position on. But nothing other than that.

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Q What about the pillow?

A The pillow was well spattered.

Q And the area underneath it?

A Nothing.

Q Now, having in mind the place where you have positioned the assailant, whoever that might have been, having in mind the evidence you have found and described relating to the kinds of blood, spatter and throwoff, and the position especially of the large low velocity blood spots, do you have an opinion as to whether or not the murder weapon, swung by a human being, was swung with a right or left hand?

A Yes, I have an opinion.

Q What is that opinion?

A It was definitely swung with the left hand.

Q Doctor, supposing the assailant was in this area as you have described, could the weapon have been swung by the right hand with backhanded blows?

A No, sir, under no circumstances could it have been.

Q Will you tell us why, how you are able to determine that?

A <sup>B</sup>Because -- I haven't shown how I know precisely what that arc was, and it depends on that.

Q All right; then tell us what the arc was?

A The arc was one in which started rather low on the left, and rose through an arc something like a baseball swing.

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The reason -- may I give the reasons for this?

A Yes.

Q I will have to make another sketch. Two rectangular objects here. This is the hall door here, on the inside, and this is the wardrobe door. The blood spot distribution on these two doors was heavy at the low level on both, that is, in the lower half.

But on the hall door it arose with less blood spots high than were low, but nevertheless quite a few high.

And on the wardrobe door itself the spots fell off on a diagonal. So that you could see a diagonal line right up to the edge of your body, above which there were almost no spots. And this would correspond with the throwoff from the left hand through that arc.

Now, you asked me why I know it was not a right hand, using backhand blows; and the reason is simply that the only way you can do this is to raise the arm over the shoulder to get any force, and this gives you -- this gives you an angle of throwoff which is exactly crosswise, diagonally, to the one shown. In other words, it would be the other half of an X. And so the angle here, if it were back-thrown, it would be this way, tilting to the right, as the drawing shows, and not from the left as it was.

Q Having in mind, again, the position of the assailant swinging the weapon, and the fact that a righthanded back swing



motion is limited by contact to the body, do you have an opinion as to whether or not the low velocity --

MR. SPELLACY:           Objection.

THE COURT:            Objection sustained,  
Counselor. That is not the testimony.

MR. BAILEY:           May I finish my question,  
your Honor?

THE COURT:            Your question already  
is improperly put, Counselor. Please restate it.

Q     Doctor, when you use your right arm backhanded, is there some limitation as to how far back you can bring your arm, physical limitation?

A     There certainly is.

Q     Will you demonstrate that?

A     When you make a backhand motion with the right hand you either impact the left side of the body about the position of the left arm, or you carry the hand up over the shoulder. You cannot readily get any other position. Only with rotation of the body you could get further. But even then the body intervenes to a considerable extent no matter how you do it.

Q     Now, having in mind a person in this area swinging a weapon with the right hand, but backhanded through the arc that you found, and having in mind the possible position of the change of direction which you have described as being the cause of the large droplets being thrown off, do you have



an opinion as to whether or not the droplets that you found on these doors depicted in your other sketch as well, and their velocity as disclosed by their size, was consistent with a travel of the distance necessary if that had been the case?

A I have an opinion, yes.

Q What is it?

A It is not consistent.

Q Okay.

A You would have to throw about four feet, and a distance more --

MR. SPELLACY: Objection. He has answered the question, your Honor.

Q Doctor, would you resume the stand.

(Witness resumes witness chair.)

Q Doctor, did you conduct any experiments to determine whether or not the person who was beating on the bloody head with a weapon of any description, would necessarily get some blood on himself?

A I did.

Q Do you have an opinion as to whether or not it would be possible to stand by the edge of the bed and beat Marilyn Sheppard to death, as the pictures indicate she was beaten, without getting any blood on him?

MR. SPELLACY: Objection.

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A I have an opinion.

THE COURT: Sustained. The opinion  
will not be permitted.

MR. BAILEY: All right.

Q Would you describe the experiments that you conducted?

A I placed myself in a pair of white coveralls, and I  
beat --

MR. CORRIGAN: I object to this,  
your Honor, unless it is shown that the experiment  
is exactly the same as that which occurred in that  
bedroom.

THE COURT: Sustained.

MR. BAILEY: My brother has asked  
me to show that the conditions were the same,  
which I am willing to do, with the doctor's  
testimony, in answer to the last question.

THE COURT: Doctor, did you per-  
form an experiment in this room, in the murder room?

THE WITNESS: Not in the murder  
room, no.

THE COURT: Objection sustained.

Q Does the shape of the room in which the impact is  
occurring have anything whatsoever to do with the factor of  
spatter on the assailant?

A Absolutely nothing.

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THE COURT: Objection sustained.

MR. BAILEY: I didn't hear an objection.

THE COURT: The objection to the former question is sustained, Counselor. The opinion right now you are reaching to elicit will not be permitted.

MR. BAILEY: All right; my rights are saved on the record.

THE COURT: You don't need to save them. They are saved automatically under our procedure here in Ohio.

MR. BAILEY: I understand that, your Honor.

Q Doctor, would you examine these photographs, and as you do so, have reference, please, for the sake of the record, to the exhibit numbers which have been affixed on the back by Mr. Romito, and as you go through them tell us what they represent, and when they were made?

A Exhibit B represents the one very large blood spot, which I mentioned earlier in the testimony. It was taken on January 23rd or the 24th, I am not sure which date, probably the 24th.

Exhibit A -- this is out of order -- represents the largest blood spots which I had reason to believe came from

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the back of a weapon. It was just under half an inch in diameter.

Exhibit D represents the west side -- no, not the west side -- it represents the door lying to the north, the wardrobe door. It represents the wardrobe panel of that door, and it is the one which contains the two spots in Exhibit A and B, respectively.

This photograph is closer up than the others; also taken at the same time, same day.

Exhibit M shows the two doorways, the hall door and the wardrobe door. It also is taken with a line made across the approximate diagonal, which I indicated in the exhibit just a moment ago, and a tapeline indicating the height.

MR. BAILEY: All right, would you stop at this point, please. You have described Defense Exhibits B, A, D, and M, and I will at this time offer these.

MR. CORRIGAN: No objection.

THE COURT: They are received,

B, A, D, and M.

Q Doctor, would you put the others aside for the moment. You have identified Exhibit M as a photograph of the wardrobe door and the folded-back entry door.

Now, holding that up, would you point out to the jury the location of the two large spots which appear in Exhibits A

and B?

A The largest spot, the one that is about an inch in diameter, was on the position I am indicating on the lower panel of the wardrobe door, actually nine inches in from the edge, and sixteen inches from the floor.

The second spot which was shown in Exhibit A is the smaller one, but the largest one that I attributed to weapon throwoff, which is just below it, on the same panel of the same wardrobe door.

Q Now, on Exhibit D would you point out those same two spots again, this being an enlargement or closeup of a portion of Exhibit M?

A Two spots are shown at the left side of the photograph. The largest one toward, just about the middle of the left side of the photograph; that was Exhibit B, showed the enlargement of that particular spot; and the spot shown in Exhibit A, the smaller one, is shown further down in the photograph toward the lower left corner.

Q Now, referring your attention to Exhibit B, the blowup of the largest spot which you found on that door, do you have an opinion as to whether or not that could have come from the weapon?

A I do.

Q And what is that opinion?

A My opinion is it could not have come from a weapon.



Q Will you tell us why?

A In the first place, that is a much larger drop than one ever gets from a weapon. It is much larger than any of the other drops also in this room. It was a very low velocity drop. It shows no spatter around the margins at all, and a drop that size will not fly any distance from a point of impact or throwoff.

MR. BAILEY: May I, your Honor,  
pass these exhibits to the jury at this time?

THE COURT: You may.

Q Doctor, while the jury is examining those photos, would you put the others in the most convenient order for further testimony.

THE COURT: Ladies and gentlemen  
of the jury, we have reached the luncheon recess hour. Before sending you to lunch, you should know that tomorrow is a legal holiday, and most of this building will be closed. The Court has made arrangements and conferred with counselors, and necessary court personnel, to operate this building so that this room will be in session tomorrow; and you can count on us being in trial tomorrow, should trial be required.

While you are away on your luncheon recess, you will bear in mind the instructions given you

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on each occasion when you leave the room. You shall not discuss this case or what you have heard of it amongst yourselves; you shall not permit anyone else to discuss it with you, nor permit yourselves to overhear anything that relates to this case by any means of communication.

We will stand recessed for lunch until 1:30.

(Thereupon an adjournment was taken to 1:30 p.m., Thursday, November 10, 1966, at which time the following proceedings were had:)

Thursday Afternoon Session. 1:30 p.m., November 10, 1966

THEREUPON, the witness DR. PAUL L. KIRK resumed the witness stand and was further examined and testified as follows:

THE COURT: Counselor Bailey, will you please proceed?

MR. BAILEY: Yes, sir.

DIRECT EXAMINATION OF DR. PAUL L. KIRK (Resumed)

By Mr. Bailey:

Q Doctor, let me have these photographs, if you will. I show you Defense Exhibit Q and ask you what it represents?

A Exhibit Q is a drawing of the bedroom which I have prepared and photographed.

Q Is it to scale?

A It is to scale.

Q Have you had experience in making such drawings in other cases?

A Yes, I have.

Q Is there anything there beside a simple line drawing of the bedroom and the furniture, the two beds?

A Yes, there is an indication on the bed on which the victim was found of the extent of the blood spotting, or, the blood pool.

There is also an indication on the adjacent bed of the

spotting with flying blood, blood traveling through the air.

Q And the sketch of the blood on the bed, how did you make that?

Q I had the mattress cover which was a good guide and I also had photographs of the appearance of the sheet, and I simply traced it in as nearly as I could the same shape and density.

Q Did you take the mattress cover with you, doctor, back to California?

A I did.

Q The specks that are represented on the adjacent bed, how did you put those -- by what method did you determine where those should be placed?

A There was no effort made to place them as individual spots because there were literally hundreds of them. All I could do was indicate the pattern that was observed.

Q Does the drawing as you described it fairly and accurately portray what it purports to represent?

A Yes, it does.

MR. CORRIGAN: No objection.

THE COURT: Is it being offered,  
Counselor?

MR. BAILEY: Yes.

THE COURT: Received.

Q Doctor, I would like to run through these others. I have

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here Defendant's Exhibit C; can you tell us what that is?

A Exhibit C is a photograph of the left edge of the wardrobe door and it includes some spots on the wall past the edge of the wardrobe door to the north.

Q I show you Defendant's Exhibit E, and ask you what that represents?

A Defendant's Exhibit E shows the left side or the north edge of the hall door as well as the south portion of the wardrobe door, taken at rather low level.

Q Defense Exhibit L, will you tell us what that depicts?

A Exhibit L shows the spotting that was north of the wardrobe door on the east wall, and includes a little of the edge of the wardrobe door on the right side of the photograph.

MR. BAILEY: For the record, your Honor, may it reflect that all the exhibits I am offering now are photographs.

THE COURT: The record may so show.

Q Defense Exhibit K, doctor, what is that?

A Exhibit K is some blood spots that were found on the north wall of the room. These were taken I believe to the east of the window.

Q Defense Exhibit SS, what does that represent?

A Exhibit SS is a photograph of the top of the bed showing



the general blood spots or blood pool on the bed and it was made with triangulating strings leading to the edge of the blood spotting, in the region of the northeast corner of the room.

Q Now, with reference to the area in Exhibit SS, that is encompassed by the two ends of the string shown running from the mattress to the walls, was there any blood in that area?

A No. The strings are not placed past the last drop. They are placed approximately.

THE COURT: Counselor, forgive me, is that F, as in Frank?

MR. BAILEY: No. SS, sugar. SS.

Q Exhibit RR, Roger Roger, what does that depict?

A Exhibit RR is a somewhat closer photograph taken of the same area as Exhibit SS, with the addition of a tapeline at the edge of the bed in order that the distances can be obtained from the photograph.

Q I show you Defense Exhibit QQ and ask you what that represents?

A Exhibit QQ is a triangulation of the adjacent bed in which three tapes have been laid on the bed, each one in line with the elongated droplets that were present in the particular area.

Therefore, the band shape region indicates that at all points the direction of the flying of the blood.

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Q Exhibit J, Doctor Kirk, what is that?

A Exhibit J is a closeup of the end of the pillow nearest to the opposite bed, that is, the pillow on the adjacent bed, the one on the west, and it shows many of the elongated spots.

It also shows the tapeline which was likewise seen lying across the pillow in Exhibit QQ.

Q Now, Exhibit I, will you tell us what that photograph represents?

A Exhibit I is another photograph of the same arrangement as in Exhibit RR and SS, but this one is taken closer up on the side of the adjacent bed nearest to the bed in which the murder occurred.

Q Doctor, handing you Exhibit PP, will you tell us what that represents?

A Exhibit PP is the mattress cover, which I cut out, and took to California, and this was photographed in California after I took it back.

Q Showing you Exhibit Z, I will ask you what that depicts?

A Defendant's Exhibit Z shows spatter droplets --

Q Excuse me, is that a photograph not taken in the bedroom?

A That is right.

Q All right, I will withdraw that, then.

MR. BAILEY:

I think that concludes

our offering at this time, your Honor, of these photographs. The photographs, as indicated, are offered in evidence.

MR. CORRIGAN: No objection, your Honor.

THE COURT: They may be received. Exhibit Z is not being offered?

MR. BAILEY: No, your Honor. I withdraw Exhibit Z.

THE COURT: Just so the record may indicate, my notes reflect those that have been received in this last grouping, PP, QQ, RR, and SS, are now received. Prior you had A, B, D, and M.

MR. BAILEY: Your Honor, Exhibit Q is just offered and received now. A, B, D, and M were offered and received before the recess. The only double letters that appear are SS, RR, QQ, and PP.

THE COURT: Thank you.

Q Doctor Kirk, did you make some observations or examinations of the mattress cover itself?

A Yes, I did. I examined it, I didn't do anything greatly with it except use it for a source of blood.

Q Were you able to tell from your examination whether or not any of the blood, the residue of blood showing on the

mattress cover, was hemolized?

A On the mattress cover there was no hemolized blood, no.

Q How about the mattress itself?

A The mattress did not show any hemolized blood.

MR. BAILEY: May we have State's  
Exhibit 28?

Q Showing you State's Exhibit 28, doctor, which reflects the bed before the body was removed, I call your attention to what appears to be a stain appearing in the center of the picture along the edge on the side of the bed nearest the east wall, and ask you to examine that photograph, and at the same time tell us whether or not you ever examined the sheet on which Marilyn was found?

A Yes, I did examine the sheet in the prosecutor's office.

Q And at the time did you observe any areas of hemolized blood on the sheet?

A I did.

Q What is hemolized blood, just quickly?

A Hemolized blood is blood in which the red corpuscles have been broken up through osmotic effects due generally to dilution of what we term hypotonic solution, that is, like water. Water will hemolyze the corpuscles. The corpuscles will take up the water until it swells up and bursts and turns loose the hemoglobin inside.

Q So the spot that I have just indicated to you, then,

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contained diluted blood or water-soaked blood, is that right?

A That's right.

Q Now, is there any way from examining that spot to determine which of the two fluids was on the sheet first, the blood or the water?

A There is one way, yes. If the blood is on the sheet first, when the water contacts it it will flow the blood laterally, and it will still leave a residue, a ring where the blood originally was.

Q Therefore, doctor, if the blood is on the sheet, and water or a wet cloth or water from some source is applied, where will the concentration of blood remain after it has been hemolized?

A It will be primarily in two regions. It will be around the margins of the drops of blood that were originally present, and will also concentrate at the outside of the overall distance through which the water moves.

Q From your examination not only of that photograph but of the sheet itself, when you looked at it in the prosecutor's office, do you have an opinion in this particular case, and reference to Marilyn Sheppard's sheet, as to whether or not the hemolized blood which you observed was present in the sheet before the application of any water?

A I have such an opinion.



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Q And what is it?

A My opinion is that the blood was very definitely on the sheet before it was hemolized.

Q Now, doctor, did you examine Sam Sheppard's pants?

A I did.

Q Did you observe an area on one knee of hemolized blood?

A I did.

Q I hand you now these trousers, and are those the same, Exhibit 33 for the State, the same pants that you examined in 1955?

A These are the same ones.

Q From examining the stain of hemolized blood on the left knee, is there any indication that enables you to form an opinion as to whether the blood was in the trousers before or after they got wet?

A There is.

Q And what is your opinion?

A My opinion was that there was not any blood on the trousers before they got wet.

Q All right; would you explain to the jury how you are able to arrive at that conclusion?

A There are no indications of any spotting of blood prior to the hemolysis on these pants. There is on the sheet.

Q Under any circumstances, will you expect to find a ring or outline of a bloodstain on the hemolized spot?

A Yes.

Q Under what circumstances will you find an outer perimeter or ring around the hemolized stain?

A Whenever water is flowing through a cloth, it carries the blood along with it in the leading layer, that is, that is the most concentrated region.

Now, some of the blood remains behind. But later advancing carries the blood in the most concentrated state, and when it dries it also leaves it in the most concentrated state, because here is where your drying starts from.

Q Do you regard the absence of any apparent perimeter or ring around that bloodstain as significant in arriving at your conclusion?

A I can see a perimeter here. You can see the margins, and I am quite sure it would be a little heavier at that edge.

Q Is what you see consistent with your opinion that the blood got on the trousers after they were wet?

A Yes.

Q Did you examine this pillow, by the way, Exhibit 35?

A I did.

Q Did you examine the defendant's jacket, Exhibit 1?

A I did.

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Q Did you examine the belt that the defendant was alleged to have been wearing on the morning of July 4th, Exhibit 43?

A I did.

Q And did you examine some shoes?

A I did.

Q Exhibit 31, and 30. Did you examine a man's wallet with police badge, Exhibit Number 32?

A Yes, I am quite sure I examined that, also.

Q Now, what other items did you examine by way of physical evidence that did not come from the prosecutor's office, that came from some other source?

You mentioned this morning some cotton batting?

A Oh yes, yes, I examined, or, I looked at, I didn't make any chemical examinations of it, but I inspected some cotton which appears to have dissolved nail polish in it.

Q Do you have that with you, doctor?

A I do.

Q May I see it?

A Yes.

Q Do you know where this cotton came from?

A It was sent to me by Doctor Richard Sheppard.

Q And do you know where this is supposed to have come from?

A Yes.

Q Where?

A It was supposed to have come from the dining room table.

Q You made no chemical examination of this?

A I made nochemical examination of this, that is correct.

Q Now, doctor, did you find any physical evidence in the murder room beside blood with your vacuum sweepings and filter?

A I did.

Q Describe what you found.

A I found among the sweepings at least six fragments of what appeared to be nail polish, and mixed in with the fibers and dirt which was picked up by the vacuum cleaner.

Q Did you make any examination and evaluation of what appeared to be nail polish?

A I did.

Q What did you do?

A I first tested it with acetone to see if it was of the right type of material to be nail polish, and it was, it dissolved in acetone as nail polish does.

And I inspected it microscopically and visually without the microscope. It had the general color of nail polish. It was red, as were most nail polishes at that time. And I noted it seemed to be somewhat thicker than you usually see

in nail polish, although nail polish obviously can be of different thicknesses, depending on how much is laid on.

I placed it under the microscope, using transmittal illumination, and I noted that it was totally opaque, that is, no light came through it. Under the microscope the light from below, it looked black. It didn't look red.

And I placed nail polish under the microscope also with transmittal illumination and it looked very red, because it is translucent, some of the light can go through it.

And I checked on many nail polishes and I didn't find any nail polish that did not transmit red light. This material did not transmit red light. It transmitted no light.

Q Did you examine any actual samples of nail polish from the bottle?

A I did, I had two bottles which I examined.

Q Do you know whose they were?

A They were allegedly those of the victim of the murder.

Q Marilyn Sheppard?

A Marilyn Sheppard.

Q What do you say with respect to the comparison that you found in the bottles, and the chemical analysis of the flaked chips that were picked up from the floor?

A With respect to chemical analysis?



Q Well, any comparison, scientific comparison, you were able to make, tell us whether or not there was a difference or whether they were the same?

A They were not the same. They were not the same either in color. They didn't match colorwise with the two samples of nail polish that I had, and have, and they also were not the same material, that is, this one was not nail polish.

Q I take it that the flakes you examined were lacquer of some kind?

A They were a commercial lacquer, they compared with commercial lacquer, and they behaved exactly the same way.

MR. SPELLACY: I object now. It is leading in nature, the question.

MR. BAILEY: I apologize for leading.

Q What did you say with respect to commercial lacquers?

A I used Testers airplane dope, which is a commercial lacquer, red, and found it to be totally opaque, as was the material from the floor. And I found no nail polishes that were opaque. They were all translucent.

Q Now, doctor, how much blood in quantity is necessary in order to perform a blood grouping test?

A Now or at the time of the murder?

A Well, first at the present time, and then in 1954, or 1955 when you made your examination?

A At the present time I can group microscopic fragments,

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pieces that you would not note with the eye.

Q At the time of the murder how much blood was necessary in order to make a reliable grouping test?

A A single test in the A-B-O system could be run at that time with approximately the amount of, say, two pin-heads, one for A, and one for B, because you check for two factors, A factor and B factor.

Q Then two separate tests are necessary?

A One normally runs more than one set of the results, yes.

Q Now, you described some tests you made which enabled you to group the blood on the mattress or from somewhere on the bed?

A Yes.

Q And you found some spots around the room which you also tested and which I believe you said were consistent with that kind of blood?

A That's right.

Q Now tell us where the spots came from that matched the blood that was on the mattress cover?

A The spots that matched the blood on the mattress cover was the lower spot which is shown in Exhibit A.

Q All right. You personally performed the blood grouping tests on Exhibit A?

A Yes.

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Q And did you personally perform the grouping tests on Exhibit B?

A Yes.

Q Now, first of all, do you have an opinion as to whether or not the blood in Exhibit B could or could not be the blood of Doctor Sam Sheppard?

A In my opinion it could not be the blood of Doctor Sam Sheppard.

Q Tell us why.

A Because it is O group, and Doctor Sam is A group.

Q The blood in Exhibit A, that is, the smaller of the two, was O group, was it not?

A That is right.

Q And this was O group, as well, you say?

A That's correct.

Q Did you find any bases for distinguishing or for arriving at an opinion that these two spots of blood have different human origin?

MR. SPELLACY: Objection. He didn't testify to that.

MR. BAILEY: What is that?

MR. SPELLACY: He didn't testify to that.

MR. BAILEY: Yes, he has.

THE COURT: Overruled.

A Will you repeat the question, please?

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Q Did you find bases for concluding that these two spots of blood, reflected by Exhibits A and B, came from different human beings?

A I did.

Q Would you tell the jury what test you made, what observations you made, and the bases of your conclusions?

A The first tests that were made were in connection with the grouping, and in fact these were the two major things that were done.

In order to group dry blood, one first has to put it in solution. It does not, you cannot -- at that time we did not group directly on solids. Today we do.

But at that time we had to dissolve it. The blood from the two spots represented in Exhibits A and B were treated simultaneously, and the same amount of each, in the same way, with the same reagents throughout.

First, the material was placed in small tubes, then distilled water was placed thereon, the same amount in both tubes, and they were shaken to dissolve the blood.

Immediately there was a very notable difference apparent, because the blood from the lower spot, which is shown in Exhibit A, went into solution and colored the solution red immediately; just with two or three shakes of the tube that solution became red.

The other solution never became as red as this.

The hemoglobin was not soluble to anything like the same degree, and shaking it even for prolonged period did not show any color.

It was finally, both of them were placed in the refrigerator overnight, which is a standard procedure, and the next morning you can see a trace of color in the large spot which is represented in Exhibit B, full color. It looked almost as dark as blood, in the little bit of -- from the spot represented in Exhibit A.

The solution then is evaporated down on the slides, and the antiserum is added, and the test cells are added, and the grouping was carried out in duplicate, in the same manner, the same material, the same dilution of antiserum from the same bottle made at the same time, actually from the same tube of antiserum; and the observations were made with respect to agglutination which results with O blood with both the A and the B factor tests.

Again, there was a very marked striking difference. The cells added to the sample which contained the blood from the lower spot, or the extract from the lower spot, agglutinated almost immediately.

This is very very rapid agglutination, even a little faster than our controls which contained no extract.

The other spot barely agglutinated in twenty minutes. So that there was very drastic difference in the rate of



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agglutination, and this was true with both the A test and the B test.

We used anti A serum, plus A cells, for the indicator system, and we used anti B serum and B cells for the indicator system for B.

These two differences were noticeable, were very marked, and instantly noticed just in connection with the grouping of blood.

There was later on another test run. This was some months later, and it had to be done with just the residue of blood of which there was a very very small amount, in connection with the electrophoretic test, which was capable of distinguishing between a good many bloods, which was in the early days of electrophoresis applied in this way, and the test was run with what little blood was left.

There were in my opinion differences. They were not so marked, nor were they quite so reliable. We do not do blood testing by this particular technique of electrophoresis today. And at that time it was capable of distinguishing between a lot of bloods but not as well as we can now. There were, however, differences noted.

Q You indicate that electrophoresis is now a more sophisticated method of blood distinction than it was at the time you made these tests?

A Very definitely.

Q You said tests were made later. Can you tell us approximately when the electrophoretic tests were made?

A It would have been about May or June of 1955.

Q Some months after, is that right?

A Some months after, yes.

Q Doctor, you indicated the blood which came from spot A, which you have told us came from Marilyn Sheppard was rapidly soluble in water, that is, it covered the water very quickly?

A It went into solution immediately, instantaneously; and in fact it was soluble for a long time after that, too.

Q Now, as blood dries up, that is, as it ages, speaking of dried blood, does anything happen to it with respect to its solubility?

A Yes.

Q What?

A The hemoglobin breaks down. It breaks down into an insoluble product, hemin, which carries the color, although the color of hemin is brown rather than red, and the hemin is not soluble in water or saline, and therefore as the blood progressively deteriorates with respect to its hemoglobin it becomes more and more insoluble.

This was the basis, all these bloods were some six months old when I received them.

Q Your first tests were run late in January or early in

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February?

A In February.

Q In February?

A Yes.

Q This was seven or eight months after the death had occurred?

A Within about seven months after, yes, or more, perhaps.

Q Now, you say at that time you noticed a marked difference in the solubility of the two samples?

A Yes.

Q How much later after that did you last make a test on the solubility of Marilyn Sheppard's blood?

A It would have been at least two years later.

Q And whether or not it was at that time still soluble?

A It was still abnormally soluble. The difference really was in Marilyn Sheppard's blood. It remained abnormally soluble for a long time.

Q By way of comparison between the B spot, the large spot, and the tests in February in 1955, and the solubility you noted then, that is, the rate and the degree, and the latest solubility test on the A spot, Marilyn's blood, whether or not the A spot even after two years was still more soluble, if you can say?

A Well, the A spot -- I may have misled you in my answer.

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Q Straighten it out.

A The A spot was not tested two years later. It was blood from the mattress cover.

Q But it was blood which had been drying just as long as the A spot?

A Yes, the same length of time. It was simply in storage.

Q Now, you made an examination of a green bag with some jewelry in it in the prosecutor's office, did you?

A I did, yes.

Q Yesterday, doctor, were you shown some slides of watches, male and female?

A I was.

MR. BAILEY: May the record show that the witness was shown State's Exhibit 42, 69, and 70, by projection on the screen.

THE COURT: Agreed, counselors?

MR. SPELLACY: Agreed.

THE COURT: The record may so show.

Q Have you ever prior to yesterday been able to examine the watches as they appeared prior to the time that the blood was taken off?

A No.

Q When you first saw the watches did they have any blood, to speak of?

A Virtually no visible blood. You could see the blood, or, that something had been present, that had been removed, but there was nothing that you could positively identify as blood by looking.

Q I wonder if we may have the screen and the Exhibit 42, the man's watch? May we have the screen, Mr. Bailiff?

MR. BAILEY: While that is being set up, your Honor, may I pass to the jury those exhibits which have been received and not passed as yet?

THE COURT: Yes, you may.

MR. BAILEY: If it please the Court, we have some different apparatus here which perhaps counsel can set up during the recess, and I will cover other matters at the moment.

THE COURT: Please proceed.

Q Doctor Kirk, I hand you State's Exhibit 34, some broken teeth, fragments of teeth; have you ever seen those before?

A Yes, I have.

Q When did you first see them?

A I saw them on January 25th, 1955.

Q Did you examine them at that time?

A Visually.

Q And did you have any information as to where they had come from, whether they had been matched up to anyone's set



of teeth?

A Yes, I had.

Q Where did they come from?

A They were stated to have come from the victim's mouth, Marilyn Sheppard's.

Q Doctor, is it possible by examination of tooth fragments such as is evidenced there, and I refer to the larger of the three fragments in there, to determine the direction of force that caused the fracture of the tooth, that is, from the outside or the inside?

A It is possible in most cases. It is not always possible.

Q Have you ever been able to determine from your examination of this large fragment the direction of force that caused it to break off?

A Yes.

Q Do you have an opinion?

A I do.

Q And what is that opinion?

MR. SPELLACY: Objection.

THE COURT: Sustained.

Q Doctor, will you tell us what indications are normally apparent in the examination of a tooth fragment that will show whether it was broken from the inside or from the outside?

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MR. SPELLACY: Objection.

THE COURT: Sustained, as it relates to State's Exhibit 34.

MR. BAILEY: The question didn't pertain to Exhibit 34, your Honor.

THE COURT: Put the question.

Q Doctor, you testified it is possible through the examination of tooth fragments in certain cases to determine whether the fragments were broken off from internal pressure or from external pressure.

Now, would you explain to us how you are able to make such determinations, and what you need to see?

A What you have to look for is the character of the break. If the tooth is fragmented it will come away, comes apart under tension; the tension is exerted on the inside if it is pulled, and it is exerted on the outside if it is pushed.

It is just like breaking a piece of glass or anything else, that is, if you bend it or put a force that bends it, then the tension is on the side opposite to the direction of movement.

And if the fracture starts on the inside, then it would have to be made by a pull outward.

If it starts on the outside it would be a pull inward. The way in which it breaks will differ in the two cases.

If you break a tooth with a pull from the inside, it

will pivot at the gum mark and it will break across at the gum line, and it will break lower than that in the labial, I mean, on the lingual side, the side next to the tongue.

And if you push it in, it does exactly the opposite, and it will break off high in the rear and lower in the front.

Q All right. Now, from your examination of the large fragment contained in the vial that is State's Exhibit Number 34, do you notice any angle to the break there, indicating whether the pivot was on the lingual or tongue side or the external side or gum side?

A The pivot in this case was very definitely on the lingual side. Not only is it shown by the angle but there are other indications.

Q What are the other indications?

A It is partially a steplash break.

Q What is a steplash break?

A It broke down through the tooth part way and then broke the rest of the way in the rear.

This kind of break cannot be produced from a blow from the front.

MR. SPELLACY: Objection. It is not responsive to the question.

THE COURT: Objection is sustained and the witness is again instructed not to volunteer

responses to questions that are not before him.

The jury is instructed to disregard the last response made to the question.

MR. BAILEY: The defense will make an offer of proof at the bench, if we may.

THE COURT: You may make an offer of proof, Counselor.

(Thereupon counsel and the Court conferred at the Court's bench out of the hearing of the jury, as follows:)

MR. BAILEY: If the witness were allowed to give his opinion he would say that in his opinion the front tooth of Marilyn Sheppard was very definitely broken off by a force coming from the lingual or tongue or inner side of the tooth, based on the observations and examinations he has made and his experience in dealing with such other matters.

I further point out that the question should be received because the State's expert, Coroner Gerber, was allowed to give his opinion based upon the precise same facts.

THE COURT: Under a different set of circumstances, but be that as it may, the objection is sustained, and the opinion will not

be received.

Let the record show further that the Court refers, in sustaining its position, to 100 Ohio Appellate, pages 412, 413, and that part of page 412, the last paragraph of page 412 wherein the Court of Appeals indicated that such testimony would be pure speculation.

MR. BAILEY: All right, I would like to further put his qualifications in the record. (Thereupon proceedings were resumed within the hearing of the jury, as follows:)

Q Doctor Kirk, in your experience as a criminologist have you had occasion to examine tooth fragments in other cases?

A I don't think I can tell you. I very possibly may have but I do not remember.

Q Can you tell us just for the record what experience you draw on in arriving at the opinion you say you have with respect to this tooth fragment?

A Experimental evidence.

Q Have you done experiments with teeth?

A I have.

Q Have you broken teeth in the course of these experiments?

A I did.

Q And is the opinion which you have based on your own



observations through the experiments that you personally conducted with teeth?

A Primarily so, yes.

Q Now, doctor, do you have any familiarity with the rate at which human blood dries?

A Yes, I do.

Q And what variables can affect the rate of drying of human blood?

A External variables, including temperature and humidity, the two important ones.

Internal variables include the condition of the blood deposit which is drying. A thick deposit will take much longer than a thin deposit. In other words, the rate of drying, other things being equal, will be proportional to the thinness of the deposit.

Also, it will depend in the case of blood soaked into absorbent material, such as cloth or stuffing of furniture, it will depend on the inaccessibility of the air to that, so that these will dry much more slowly.

Blood will dry faster on a thin film, than on a non-absorbent surface. This is the most rapid drying you can get, other things being equal.

Q Have you ever done experiments testing the length of time that blood dries on certain objects and under certain conditions?

A I have.

Q Can you tell us approximately how long it takes blood to dry when it is smeared on human skin?

A About, experiments, I found it took about two and a half minutes.

Q Have you performed any experiments in order to determine the lengths of time that blood smeared or spattered on a substance such as the gold watch I hold before me, how long that would take to dry, that being State's Exhibit 24?

MR. SPELLACY: Objection.

A It can be --

THE COURT: I am sorry, is the question dealing with the experiment with respect to the drying of blood on State's Exhibit 24?

MR. BAILEY: No, your Honor, not with this as part of the experiment. The question relates to whether or not this doctor knows how long it would take smeared blood to dry on an object such as the watch.

THE COURT: Sustained.

Q Tell us what experiments you have done in this regard?

A I have taken watch bands, or a watch band, and I have smeared it and I have measured the time that it takes the blood to dry under known conditions.

Q Was that done in connection with your investigation in this case?

A It was.

Q I show you Defense Exhibit CO, and ask you what that depicts?

A That is the particular watch band that I used in the experiment.

THE COURT: I am sorry, Counselor,  
I didn't hear, what was his response?

THE WITNESS: I said that was the  
particular watch band that I used in the experiment.

THE COURT: Thank you.

Q What is the material this watch band is made of?

A It is a plated brass, I believe. I didn't do any metallurgical work on it. But it looks like plated brass.

Q You say that you smeared blood on the watch band and observed the length of time that it took this blood to dry?

A Yes.

Q Now, can you tell us how long it took for the blood to dry, in your experiment?

MR. SPELLACY: Objection.

MR. CORRIGAN: Objection.

THE COURT: Sustained.

Q Can you tell us the conditions as to temperature and

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humidity wherein this experiment was performed?

A I might have to check the exact temperature and humidity. I believe it was 56% relative humidity, and the temperature was close to 70, 69, or something of that kind, very close to 70.

Q When was this experiment done?

A It was done in February or in March of 1955.

Q And where was it done?

A It was done in my laboratory in Berkeley.

MR. SPELLACY: Pardon me, I didn't hear that.

Q Please keep your voice up, doctor.

A In my laboratory in Berkeley.

Q Have you done any experimental or research work with respect to blood and cloth of various kinds?

A In what connection?

Q Specifically in connection with the question of removing blood from cloth by means of soaking or washing with water?

A Yes, yes, I have done that type of experimentation in research.

Q From your experience in this area, can you tell us whether or not an immersion or washing in cold water will necessarily wash blood out of cloth generally?

A Yes, I can tell you. It generally will not wash blood

out of cloth. Even up to four severe launderings will leave blood in many cloths, not in all. Wool cloths, cotton cloths, will both hold blood very tenaciously. Rayons a little less so, and some synthetics still less.

Acetate nylong, dacron, some of those type of cloths, lose the blood quite readily as compared with rayon. Rayon loses it fairly readily as compared with cottons and wools.

Q Are there several kinds of rayons, by the way?

A There are. There is the common rayon, which is most commonly used in commerce, viscous rayon.

There is also the so-called acetate which is not a true rayon. It is a modified cellulose acetate.

There is also the so-called Bemberg or Cupra Ammonia, which is similar in viscous composition but not in the method of manufacture, nor in morphological character of the fiber.

Q As between the three rayons which you just described for us, which is the most absorbent?

A Viscous.

Q Can you tell from examining these trousers, or have you ever examined them under other conditions so that you know the makeup of the fabric?

A No, I have not. I only did see them in the prosecutor's office. I made no tests on them.

MR. BAILEY: Your Honor, may we

have our recess and we can set up the projector



and conclude the doctor's direct as soon as the recess is over.

THE COURT: Thank you, Counselor. Ladies and gentlemen of the jury, the lawyers are going to set up the equipment so that you can view the slides which counselor has requested; and at this time we will recess, so that we can have the equipment set up, and you will have the benefit of your afternoon recess at the same time.

While you are away on your afternoon recess, ladies and gentlemen, you will bear in mind the instructions given you on each occasion when you leave this room.

You will not discuss this case or what you have heard of it amongst yourselves. You shall not permit anyone else to do so. You shall not permit yourselves to overhear anything that relates to this case by any means of communication.

We will have our afternoon recess.

(Thereupon a recess was had.)

THE COURT: Counselor?

MR. BAILEY: I believe, your Honor, our machinery is in order to project Exhibit 42, if that may now be done.

Q For the record, Doctor Kirk, this is a projection of

a color transparency marked State's Exhibit 42, in this case, which purports to show the watch taken from the green bag before any blood was removed from it.

This is the same slide that you examined yesterday while the court was out of session.

A It is one and the same one, yes.

Q Have you examined the slide for -- first of all -- the presence of blood, does there appear to be blood?

A There appears to be blood, yes.

Q Can you tell us in what forms there appears to be blood as you view it, the Exhibit 42?

A The blood -- well, it is dry, obviously, it is dry blood. But I don't know whether that is what --

Q My question is directed to when I say forms, I mean smears and spots and clumps and clots and that sort of thing.

A For the most part it looks like contact transfer, that is, something bloody against the watch band, especially, and apparently also the blood was in a very tacky condition, indicating it was probably very partially clotted at the time.

Q Doctor, I call your attention to a dark spot located in the crevice between the edge of the band and the first link or what appears to be a link, and there has been evidence that on this dark area generally there is a spot which

appears to be superimposed.

Now, are you able to tell us anything with reference to the clotting of blood that would account for the appearance of that little spot?

A Yes, if blood is clotted or partially clotted, it can go on in thicker form, becomes very viscous, very tenacious, very jelly-like.

Q What is happening when blood clots?

A The clotting mechanism is one which takes care of stopping bleeding, and it is common experience, of course, anyone who has cut their hand, that the blood will become very viscous and coagulate into a jelly-like form, and then it will retract and squeeze out the serum, and leaving ultimately a scab after it is dry.

This is the mechanism by which bleeding is stopped. And during the period of clotting the viscosity or the thickness or the tackiness of the blood proceeds from that of a moderately viscous solution, which blood is, always, normally, to a very much more viscous jelly-like material, and ultimately to a relatively hard mass.

So it goes through all those stages. At certain stages of clotting you can transfer whole chunks of blood by contact.

Q Now, Doctor, I call your attention to this spot which appears on the rim in proximity to the indicator place the figure 11 on the normal watch face, and ask you whether or not

you have observed it or studied it?

A I have. I would like to take one more look at it if I might.

Q Certainly. Doctor, calling your attention specifically to what appears to be a point evidence at the edge of this spot, can you tell us whether or not there is an indication of flying blood to start with?

A When you get that shape of spot, you always suspect flying blood, because at that point the appearance is very characteristic of blood which has been traveling through the air and strikes an object.

Now, examining this particular spot leaves the issue somewhat in doubt. It appears that it is not a symmetrical tail on the blood spot, and flying blood invariably leaves a totally symmetrical tail. It cannot come off one side or the other. It has to come off the exact center. And there it appears to be a dysymmetry in the spot which suggests it might not be flying blood. This is also an effect which can be obtained from partially coagulated blood because you can pull strings on it.

Now, whether that is one or the other is very difficult to be sure.

Q Under the circumstances and from what you are able to see can you account for what appears to be this pointed edge on what is now the lefthand side of that spot, the tail

from that spot of blood?

A In one possible way, yes, and that is coagulating blood, can be pulled into strings, and if it is struck in a certain way it could lay down one of these protruding strings that would look like a typical tail of a flying blood spot.

But not having examined the watch specifically, and the condition shown on the slide, this has to be an explanation which may or may not be correct. I wouldn't want to say that this is my definite and final and irrevocable opinion.

Q When you say coagulating strings, can you say what you mean?

A Well, you take a jelly-like state of coagulation of the blood, and at this point, if you touch it, for instance, and pull your finger away you will pull a string out of it, that is, form of thread, just like glue would.

Q Tending to pull it away from the main clump?

A Yes.

Q Doctor, I show you what appears to be a spot of blood up in this area, and ask you whether from what you can see there is any way of telling whether that was flying blood and if so what direction it might have come from with respect to the watch?

A I would like to come down here and look at that. I would not care to say that I could tell definitely from the photograph.



Q Have you observed on this and other occasions when you looked at this photograph, what appear to be small pinpoints of blood in various areas?

A Well, I see areas that look very much like the areas on the watch band, except they are somewhat smaller.

They seem to follow depressions in the watch, and if this is correct, and I think it is, or it may be, that there are depressions there which have blood in them, and this would clearly indicate a wiping action or contact transfer.

I can't be positive that there are such depressions, I am not sure of that.

Q Is there any way to account for the collection of blood in small droplets such as may be seen in one area and another, other than from spatter?

A Oh yes.

Q What might cause the blood to dry in that fashion other than having arrived there as a spatter?

A Well, in the first place, the object that is contacted may not have it uniformly. And furthermore, it may stick, again, if it is partially coagulated blood, if it is clotting, where it will stick and pull blood away from the object at that point, and another point doesn't stick. So it will not deposit regularly.

Q By the way, doctor, when you examined the State's Exhibit 34, which purports to be Sam Sheppard's watch, was

this band broken?

A It was.

THE COURT: What number was that,  
Counselor?

MR. BAILEY: Exhibit 34. I am sorry,  
your Honor, it is Exhibit 24.

THE COURT: 24?

MR. BAILEY: Yes.

Q It was broken at the time I examined it.

MR. BAILEY: I think that is all we  
need for the slide.

Q Doctor Kirk, did you conduct any experiments within  
the Sheppard house itself when you were here in January of  
1955?

A Yes, I did.

Q Did anyone participate with you on those experiments?

A One person did.

Q Who was that?

A Doctor Richard Sheppard.

Q What did these experiments or this experiment, as the  
case may be, have reference to?

A It had reference to a statement made by the defendant  
as to the appearance of a form in the bedroom.

Q What time of day was your experiment conducted?

A It was done fairly late at night, I would say about

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10:00 or 11:00 at night.

Q And whether the conditions of darkness outside, was it total darkness outside?

A Yes, it was darkness normal at that time.

Q Did you arrange some lighting conditions prior to conducting your experiment?

A I did.

Q And what were those?

A I turned on the night light, or light, in the dressing room which is down the corridor from the murder room, and on the opposite side of the corridor, and I turned it on 50 watts first -- it had two wattages that I could use -- and I placed the subject, Doctor Richard Sheppard, wearing dark pants and a white shirt, no jacket, in the murder room, close to the foot of the bed, at the position similar to that of the person who did the murder.

MR. CORRIGAN: Objection, your Honor.

THE COURT: Sustained.

MR. BAILEY: Offer of proof, please.

(Thereupon counsel and the Court conferred at the Court's bench out of the hearing of the jury, as follows:)

THE COURT: Please proceed.

MR. CORRIGAN: My objection is predicated on the fact that we don't know where Steve or

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Richard or Sam told him anybody stood. We don't know exactly what the lighting conditions were. You are trying to duplicate a situation, predicated on what somebody else told him.

MR. BAILEY: The purpose of the testimony offered is to corroborate the story of the defendant as it was put into evidence by the police, that story being essentially that the only illumination on the second floor being the light in the dressing room, which light was still on when the police arrived the next day, I believe.

The defendant ascended the stairs and could see in the bedroom something with a white top or some patch of white.

Now, the evidence would be, if the witness were permitted to testify, that using only the illumination of the dressing room which had a bulb susceptible of two positions, 50 and 100 watts, and placing Doctor Richard Sheppard wearing a white shirt in the position where this and other witnesses have indicated the murderer was standing while the assault was taking place, this witness ascended the stairs, and when a white shirt was used with either wattage illumination he could make out a white form but not discern a human being; and when a

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dark shirt was used he could see nothing in the bedroom from the illumination described.

THE COURT: Let the record show the objection is sustained, and the Court in support of its ruling refers to 100 Ohio Appeals, at page 417, where our Court of Appeals indicates that it is inconceivable that such testimony, now quoting from the opinion, "It is inconceivable that such testimony could be given to a jury at a retrial of this cause."

Further support of the Court's ruling, the Court cites 50 Ohio Jurisprudence, page 547; 20 American Jurisprudence, page 632; and 15 Ohio Jurisprudence, 2nd, page 612; 21 Ohio Jurisprudence, 2nd, page 408, and page 544.

(Thereupon proceedings were resumed within the hearing of the jury, as follows:)

MR. BAILEY: You may cross examine.

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