Mr. SPECTER. And did you leave prior to the time he was pronounced to be dead?

Dr. WHITE. Yes; I did.

Mr. SPECTER. Why did you leave?

Dr. WHITE. My duties had been completed and there was work elsewhere, with the Governor, to be done.

Mr. SPECTER. Who was present at the time you were there, Dr. White?

Dr. WHITE. As best I can recall, Dr. Carrico and I were the physicians immediately present when the President's body was brought in, plus a number of individuals who accompanied the cart on which his body was lying, and the only individual who I knew in that group was his wife, Mrs. Kennedy.

Mr. SPECTER. And what doctors were present at the time you left the room?

Dr. WHITE. Well, it would be impossible for me to tell you all the people that were there, but I knew Dr. Carrico, Dr. Baxter, Dr. Perry and Dr. Zedelitz, Z-e-d-e-l-i-t-z (spelling)—I know they were there.

Mr. SPECTER. Doctor who—what is his first name?

Dr. WHITE. William Zedelitz.

Mr. SPECTER. To what extent did he participate?

Dr. WHITE. I don't believe that he had any—I don't know what he did other than the fact that when I was doing the cutdown he assisted me by just placing some tape over the catheters we used to do this with.

Mr. SPECTER. Is he an intern as you are?

Dr. WHITE. He is a surgical resident here at this hospital.

Mr. SPECTER. Who else was present?

Dr. WHITE. I can't be sure that I saw anyone else, although, as I say—many people were there whose faces I can't recall.

Mr. SPECTER. Can you identify any of the nurses who were present?

Dr. WHITE. Yes; one of the nurses—there were two there, Jeanette, and her last name—I don't know at the present time, and she is chief nurse in the emergency room.

Mr. SPECTER. Doris Nelson?

Dr. WHITE. Yes.

Mr. SPECTER. Jeanette Standridge?

Dr. WHITE. Yes; Jeanette Standridge was the other nurse.

Mr. SPECTER. Do you have anything to add which you think might be of help to the Commission?

Dr. WHITE. No; I don't.

Mr. SPECTER. Thank you very much, Dr. White for coming.

Dr. WHITE. All right, thank you.

TESTIMONY OF DR. ROBERT SHAW

The testimony of Dr. Robert Shaw was taken at 6 p.m., on March 23, 1964, at Parkland Memorial Hospital, Dallas, Tex., by Mr. Arlen Specter, assistant counsel of the President's Commission.

Mr. SPECTER. May the record show that Dr. Robert Shaw is present, having responded to a request to have his deposition taken in connection with the President's Commission on the Assassination of President Kennedy, which is investigating all facts relating to the medical care of President Kennedy and Governor Connally, and Dr. Shaw has been requested to appear and testify concerning the treatment on Governor Connally.

Dr. Shaw, will you rise and raise your right hand, please.

Do you solemnly swear that the testimony you give before the President's Commission in the course of this deposition proceeding will be the truth, the whole truth, and nothing but the truth, so help you God?

Dr. SHAW. I do.

Mr. SPECTER. Will you state your full name for the record, please?

Dr. SHAW. Robert Roeder Shaw.

Mr. SPECTER. And what is your profession, sir?

Dr. SHAW. Physician and surgeon.

Mr. SPECTER. Will you outline briefly your educational background, please?

Dr. SHAW. I received my B.A. degree from the University of Michigan in 1927 and M.D. degree in 1933. My surgical training was obtained at Roosevelt Hospital in New York City, July 1934 to July 1936, and my training in thoracic surgery at the University Hospital, Ann Arbor, Mich., July 1936 to July 1938. Do you want me to say what happened subsequent to then?

Mr. SPECTER. Yes; will you outline your medical career in brief form subsequent to that date, please?

Dr. SHAW. I entered private practice, limited to thoracic surgery, August 1, 1938. I have continuously practiced this specialty in Dallas, with the exception of the period from June 1942 to December 1945, when I was a member of the Medical Corps of the Army of the United States, serving almost all of this period in the European theatre of operations. I was again absent from Dallas from December 1961 until June 1963, when I headed the medico team and performed surgery at the Avicenna Hospital at Kabul, Afghanistan.

Mr. SPECTER. Are you Board certified, Dr. Shaw?

Dr. SHAW. Yes. I am certified by the Board of Thoracic Surgery, date of certification—1948. At the present time I am professor of thoracic surgery and chairman of the division of thoracic surgery at the University of Texas, Southwestern Medical School.

Mr. SPECTER. Did you have occasion to perform any medical care for President Kennedy on November 22, 1963?

Dr. SHAW. No.

Mr. SPECTER. Did you have occasion to care for Governor Connally?

Dr. SHAW. Yes.

Mr. SPECTER. Would you relate the circumstances of your being called in to care for the Governor, please?

Dr. SHAW. I was returning to Parkland Hospital and the medical school from a conference I had attended at Woodlawn Hospital, which is approximately a mile away, when I saw an open limousine going past the intersection of Industrial Boulevard and Harry Hines Boulevard under police escort. As soon as traffic had cleared, I proceeded on to the medical school. On the car radio I heard that the President had been shot at while riding in the motorcade. Upon entering the medical school, a medical student came in and joined three other medical students. He stated that President Kennedy had been brought in dead on arrival to the emergency room of Parkland Hospital and that Governor Connally had been shot through the chest. Upon hearing this, I proceeded immediately to the emergency room of the hospital and arrived at the emergency room approximately 5 minutes after the President and Governor Connally had arrived.

Mr. SPECTER. Where did you find Governor Connally at that time, Dr. Shaw?

Dr. SHAW. I found Governor Connally lying on a stretcher in emergency room No. 2. In attendance were several men, Dr. James Duke, Dr. David Mebane, Dr. Giesecke, an anesthesiologist. As emergency measures, the open wound on the Governor's right chest had been covered with a heavy dressing and manual pressure was being applied. A drainage tube had been inserted into the second interspace in the anterior portion of the right chest and connected to a water-sealed bottle to bring about partial reexpansion of the collapsed right lung. An intravenous needle had been inserted into a vein in the left arm and intravenous fluid was running.

I was informed by Dr. Duke that blood had already been drawn and sent to the laboratory to be crossmatched with 4 pints of blood to be available at surgery. He also stated that the operating room had been alerted and that they were merely waiting for my arrival to take the Governor to surgery, since it was obvious that the wound would have to be debrided and closed.

Mr. SPECTER. At what time did the operation actually start, Dr. Shaw?

Dr. SHAW. That, I would have to refresh my memory on that—now, this, of course—the point he began the anesthesia—that would be about right—but I have to refresh my memory.

Mr. SPECTER. Permit me to make available on the record for you the operative record which has been heretofore marked as Commission Exhibit No. 392, with the exhibit consisting of the records of Parkland Hospital on President Kennedy as well as Governor Connally and I call your attention to a 2-page report which bears your name as the surgeon, under date of November 22, 1963, of thoracic surgery for Governor Connally, and, first, I ask you if in fact this report was prepared by you?

Dr. SHAW. It was.

Mr. SPECTER. Now, with that report, is your recollection refreshed as to the starting time of the operation on Governor Connally's chest?

Dr. SHAW. Yes: the anesthesia was begun at 1300 hours.

Mr. SPECTER. Which would be 1 p.m.?

Dr. SHAW. 1 p.m., and the actual incision was made at 1335 or 1:35 p.m.

Mr. SPECTER. And what time did that operation conclude?

Dr. SHAW. My operation was completed at 1520 hours, or 3:20.

Mr. SPECTER. Will you describe Governor Connally's condition, Dr. Shaw, directing your attention first to the wound on his back?

Dr. SHAW. When Governor Connally was examined, it was found that there was a small wound of entrance, roughly elliptical in shape, and approximately a cm. and a half in its longest diameter, in the right posterior shoulder, which is medial to the fold of the axilla.

Mr. SPECTER. What is the axilla, in lay language, Dr Shaw?

Dr. SHAW. The arm pit.

Mr. SPECTER. Dr. Shaw, will you describe next the wound of exit?

Dr. SHAW. Yes; the wound of exit was below and slightly medial to the nipple on the anterior right chest. It was a round, ragged wound, approximately 5 cm. in diameter. This wound had obviously torn the pleura, since it was a sucking wound, allowing air to pass to and fro between the pleura cavity and the outside of the body.

Mr. SPECTER. Define the pleura, please, Doctor, in lay language.

Dr. SHAW. The pleura is the lining of the chest cavity with one layer of pleura, the parietal pleura lining the inside of the chest wall, diaphragm and the mediastinum, which is the compartment of the body containing the heart, its pericardial sac, and great vessels.

Mr. SPECTER. What were the characteristics of these two bullet wounds which led you to believe that one was a wound of entry and one was a wound of exit, Dr Shaw?

Dr. SHAW. The wound of entrance is almost invariably the smaller wound, since it perforates the skin and makes a wound approximately or slightly larger than the missile. The wound of exit, especially if it has shattered any bony material in the body, will be the larger of the wounds.

Mr. SPECTER. What experience, Doctor, have you had, if any, in evaluating gunshot wounds?

Dr. SHAW. I have had considerable experience with gunshot wounds and wounds due to missiles because of my war experience. This experience was not only during the almost 2 years in England, but during the time that I was head of the Thoracic Center in Paris, France, for a period of approximately a year.

Mr. SPECTER. Would you be able to give an approximation of the total number of bullet wounds you have had occasion to observe and treat?

Dr. SHAW. Considering the war experience and the addition of wounds seen in civilian practice, it probably would number well over a thousand, since we had over 900 admissions to the hospital in Paris.

Mr. SPECTER. What was the line of trajectory, Dr. Shaw, between the point in the back of the Governor and the point in the front of the Governor, where the bullet wounds were observed?

Dr. SHAW. Considering the wound of entrance and the wound of exit, the trajectory of the bullet was obliquely downward, considering the fact that the Governor was in a sitting position at the time of wounding.

Mr. SPECTER. As an illustrative guide here, Dr. Shaw——

Dr. SHAW. May I add one sentence there?

Mr. SPECTER. Please do.

Dr. SHAW. The bullet, in passing through the Governor's chest wall struck the fifth rib at its midpoint and roughly followed the slanting direction of the fifth rib, shattering approximately 10 cm. of the rib. The intercostal muscle bundle above the fifth rib and below the fifth rib were surprisingly spared from injury by the shattering of the rib, which again establishes the trajectory of the bullet.

Mr. SPECTER. Would the shattering of the rib have had any effect in deflecting the path of the bullet from a straight line?

Dr. SHAW. It could have, except that in the case of this injury, the rib was obviously struck so that not too dense cancellus portion of the rib in this position was carried away by the bullet and probably there was very little in the way of deflection.

Mr. SPECTER. At this time, Dr. Shaw, I would like to call your attention to an exhibit which we have already had marked as Dr. Gregory's Exhibit No. 1, because we have used this in the course of his deposition earlier today and this is a body diagram, and I ask you, first of all, looking at Diagram No. 1, to comment as to whether the point of entry marked on the right shoulder of Governor Connally is accurate?

Dr. SHAW. Yes. The point of entry as marked on this exhibit I consider to be quite accurate.

Mr. SPECTER. Is the size and dimension of the hole accurate on scale, or would you care to make any adjustment or modification in that characterization by picture?

Dr. SHAW. As the wound entry is marked on this figure, I would say that the scale is larger than the actual wound or the actual depicting of the wound should be. As I described it, it was approximately a centimeter and a half in length.

Mr. SPECTER. Would you draw, Dr. Shaw, right above the shoulder as best you can recollect, what that wound of entry appeared at the time you first observed it? Would you put your initials right beside that?

(The witness, Dr. Shaw, complied with the request of Counsel Specter.)

Mr. SPECTER. Now, directing your attention to the figure right beside, showing the front view, does the point of exit on the lower chest of the figure there correspond with the point of exit on the body of Governor Connally?

Dr. SHAW. Yes; I would say that it conforms in every way except that it was a little nearer to the right nipple than depicted here.

Off the record, just a minute.

(Discussion between Counsel Specter and the witness, Dr. Shaw, off the record.)

Mr. SPECTER. Dr. Shaw, in our off-the-record conversation, you called my attention to your thought that the nipple line is incorrectly depicted on that figure, would you, therefore, in ink mark on there the nipple line which would be more accurate proportionately to that body?

Dr. SHAW. Yes; I feel the nipple line as shown on this figure is a little high and should be placed at a lower point on the body, which would bring the wound of exit, which I feel is in the proper position, more in line with the actual position of the nipple.

Mr. SPECTER. Now, with the wound of exit as it is shown there, does that correspond in position with the actual situation on Governor Connally's body as you have redrawn the proportion to the nipple line?

Dr. SHAW. It does.

Mr. SPECTER. Would you put an "X" through the old nipple line so we have obscured that and put your initials beside those two marks, if you would, please?

Dr. SHAW. By the "X-1"?

Mr. SPECTER. Yes, please.

(The witness, Dr. Shaw, complied with request of Counsel Specter in drawing on the figure heretofore mentioned.)

Mr. SPECTER. Now, as to the proportion of the hole depicting the point of exit, is that correct with respect to characterizing the situation on Governor Connally?

Dr. SHAW. It is, and corresponds with the relative size of the two wounds as I have shown on the other figure.

Mr. SPECTER. Would you at this time, right above the right shoulder there, draw the appearances of the point of exit as nearly as you can recollect it on Governor Connally?

Dr. SHAW. This is right.

Mr. SPECTER. You say the hole which appears on Governor Connally is just about the size that it would have been on his body?

Dr. SHAW. Yes; it is drawn in good scale.

Mr. SPECTER. In good scale to the body?

Dr. SHAW. Yes.

Mr. SPECTER. Would you draw it on another portion of the paper here in terms of its absolute size?

Dr. SHAW. Five cm. it would be—about like that—do you want me to mark that?

Mr. SPECTER. Put your initials right in the center of that circle.

Dr. SHAW. I'll just put "wound of exit."

Mr. SPECTER. Fine—just put "wound of exit—actual size" and put your initials under it.

(The witness, Dr. Shaw, complied with request of Counsel Specter.)

Mr. SPECTER. Let the record show that Dr. Shaw has marked "wound of exit—actual size" with his initials R.R.S. on the diagram 1.

Now, looking at diagram 2, Dr. Shaw, does the angle of declination on the figure correspond with the angle that the bullet passed through Governor Connally's chest?

Dr. SHAW. It does.

Mr. SPECTER. Is there any feature of diagram 3 which is useful in further elaborating that which you have commented about on diagram 1?

Dr. SHAW. No. Again off the record?

Mr. SPECTER. All right, off the record.

(Discussion between Counsel Specter and the witness, Dr. Shaw, off the record.)

Mr. SPECTER. You have just commented off the record, Dr. Shaw, that the wound of entry is too large proportionately to the wound of exit, but aside from that, is there anything else on diagram 3 which will be helpful to us?

Dr. SHAW. No.

Mr. SPECTER. Is there anything else on diagram 4 which would be helpful by way of elaborating that which appeared on diagram 2?

Dr. SHAW. No.

Mr. SPECTER. Now as to the treatment or operative procedure which you performed on Governor Connally, would you now describe what you did for him?

Dr. SHAW. As soon as anesthesia had been established and an endotracheal tube was in place so that respiration could be controlled with positive pressure, the large occlusive dressing which had been applied in the emergency room was removed. This permitted better inspection of the wound of exit, air passed to and fro through the damaged chest wall, there was obvious softening of the bony framework of the chest wall as evidenced by exaggerated motion underneath the skin along the line of the trajectory of the missile.

The skin of the chest wall axilla and back were thoroughly cleaned and aseptic solution was applied for further cleaning of the skin, the whole area was draped so as to permit access to both the wound of exit and the entrance wound. Temporarily, the wound of entrance was covered with a sterile towel.

First an elliptical incision was made to remove the ragged edges of the wound of exit. This incision was then extended laterally and upward in a curved direction so as to not have the incision through the skin and subcutaneous tissue directly over the line of the trajectory of the bullet where the chest had been softened.

It was found that approximately 10 cm. of the fifth rib had been shattered and the rib fragments acting as secondary missiles had been the major contributing factor to the damage to the anterior chest wall and to the underlying lung.

Mr. SPECTER. What do you mean, Doctor, by the words "fragments acting as secondary missiles"?

Dr. SHAW. When bone is struck by a high velocity missile it fragments and acts much like bowling pins when they are struck by a bowling ball—they fly in all directions.

Mr. SPECTER. Will you continue now and further describe the treatment which you performed?

Dr. SHAW. The bony fragments were removed along with all obviously damaged muscle. It was found that the fourth and fifth intercoastal muscle bundles were almost completely intact where the rib had been stripped out. There was damage to the latissimus dorsi muscle, but this was more in the way of laceration, so that the damage could be repaired by suture. The portion of parietal pleura which had not been torn by the injury was opened along the length of the resected portion of the fifth rib. The jagged ends of the fifth rib were cleaned with a rongeur; approximately 200 cc. of clot and liquid blood was removed from the pleura cavity; inspection of the lung revealed that the middle lobe had a long tear which separated the lobe into approximately two equal segments. This tear extended up into the hilum of the lobe, but had not torn a major bronchus or a major blood vessel. The middle lobe was repaired with a running No. 3 O chromic gut approximating the tissue of the depths of the lobe, with two sutures, and then approximating the visceral pleura on both the medial and lateral surface with a running suture of the same material—same gut.

Upon repair of the lobe it expanded well upon pressure on the anesthetic bag with very little in the way of peripheral leak.

Attention was next turned to the lower lobe. There was a large hematoma in the anterior basal segment of the right lower lobe extending on into the median basal segment. At one point there was a laceration in the surface of the lobe approximating a centimeter in length, undoubtedly caused by one of the penetrating rib fragments. A single mattress suture No. 3 O chromic gut on an atromitac needle was used to close this laceration from which blood was oozing.

Next, the diaphragm and all parts of the right mediastinum was examined but no injury was found.

The portion of the drainage tube which had already been placed in the second interspace in the anterior axillary line which protruded into the chest was cut away, since it was deemed to be longer than necesary. A second drainage tube was placed through a stab wound in the eighth interspace in the posterior axillary line and both of these tubes were connected to a water sealed bottle. The fourth and fifth intercoastal muscle bundles were then approximated with interrupted sutures of No. O chromic gut.

The remaining portion of the serratus anterior muscle was then approximated across the closure of the intercostal muscles. The laceration at the latissimus dorsi muscle was then approximated with No. O chromic guts suture. Before closing the skin and subcutaneous tissue a stab wound approximately 2 cm. in length was made near the lower tip of the right scapula and a latex rubber drain was drawn up through this stab wound to drain subscapular space. This drain was marked with a safety pin. The subcutaneous tissue was then closed with interrupted sutures of No. O chromic gut, inverting the knots. The skin was closed with interrupted vertical mattress sutures of black silk.

Attention was next turned to the wound of entrance. The skin surrounding the wound was removed in an elliptical fashion, enlarging the incision to approximately 3 cm. Examination of the depths of this wound reveal that the latissimus dorsi muscle alone was injured, and the latex rubber drain could be felt immediately below the laceration in the muscle. A single mattress suture was used to close the laceration in the muscle. The skin was then closed with interrupted vertical mattress sutures of black silk. The drainage tubes going into the pleura cavity were then secured with safety pins and adhesive tape and a dressing applied to the entire incision. This concluded the operation for the wound of the chest, and at this point Dr. Gregory and Dr. Shires entered the operating room to care for the wounds of the right wrist and left thigh.

Mr. SPECTER. What did you observe, Dr. Shaw, as to the wound of the right wrist?

Dr. SHAW. Well, I would have to say that my observations are probably not accurate. I knew that the wound of the wrist had fractured the lower end of

the right radius and I saw one large wound on the—I guess you would call it the volar surface of the right arm and a small wound on the dorsum of the right wrist.

Mr. SPECTER. Which appeared to you to be the point of entrance, Dr. Shaw?

Dr. SHAW. To me, I felt that the wound of entrance was the wound on the volar surface or the anterior surface with the hand held in the upright or the supine position, with the wound of exit being the small wound on the dorsum.

Mr. SPECTER. What were the characteristics of those wounds which led you to that conclusion?

Dr. SHAW. Although the wound of entrance, I mean, although the wound that I felt was a wound of entrance was the larger of the two, it was my feeling that considering the large wound of exit from the chest, that this was consistent with the wound that I saw on the wrist. May we go off the record?

Mr. SPECTER. Sure.

(Discussion between Counsel Specter and the witness Dr. Shaw off the record.)

Mr. SPECTER. Now, let's go back on the record.

Dr. SHAW. I'll start by saying that my examination of the wrist was a cursory one because I realized that Dr. Gregory was going to have the responsibility of doing what was necessary surgically for this wrist.

Mr. SPECTER. Had you conferred with him preliminarily to starting your operation on the chest so that you knew he would be standing by, I believe as you testified earlier, to perform the wrist operation?

Dr. SHAW. Yes—Dr. Gregory was in the hallway of the operating room before I went in to operate on Governor Connally and while I was scrubbing preparatory to the operation, I told him that there was a compound comminuted fracture of the radius of the Governor's right hand that would need his attention.

Mr. SPECTER. Let the record show that while we were off the record here a moment ago, Dr. Shaw, you and I were discussing the possible angles at which the Governor might have been sitting in relation to a trajectory of a bullet consistent with the observations which you recollect and consistent with what seems to have been a natural position for the Governor to have maintained, in the light of your view of the situation. And with that in mind, let me resume the questioning and put on the record very much of the comments and observations you were making as you and I were discussing off the record as this deposition has proceeded.

Now, you have described a larger wound on the volar or palm side of the wrist than was present on the dorsal or back side of the wrist, and you have expressed the opinion that it was the point of entry on the volar side of the wrist as opposed to a point of exit on the back side of the wrist, even though as you earlier said, ordinarily the point of entry is smaller and the point of exit is larger.

Now, will you repeat for the record, Dr. Shaw, the thinking—your thinking which might explain a larger point of entry and a smaller point of exit on the wrist.

Dr. SHAW. Yes. As a matter of fact, when I first examined Governor Connally's wrist, I did not notice the small wound on the dorsum of the wrist and only saw the much larger wound on the radial side of the volar surface of the wrist. I didn't know about the second small wound until I came in when Dr. Gregory was concluding his operation on the wrist. He informed me that there was another small wound through the skin through which a missile had obviously passed.

Mr. SPECTER. Now, which wound was that, Dr. Shaw?

Dr. SHAW. This was the wound on the dorsum or the dorsal surface of the wrist.

Mr. SPECTER. Did you then observe that wound?

Dr. SHAW. Yes; I saw this wound.

Mr. SPECTER. And where was that wound located to the best of your recollection?

Dr. SHAW. This wound was slightly more distal on the arm than the larger wound and located almost in the midportion of the dorsum of the wrist.

Mr. SPECTER. Would that correspond with this location which I read from Dr. Gregory's report on the dorsal aspect of the right wrist over the junction of the distal fourth of the radius and shaft approximately 2 cm. in length.

Dr. SHAW. The wound was approximately 2 cm. in length?

Mr. SPECTER. Yes; would that correspond with the wound which you observed?

Dr. SHAW. Yes; I saw it at the time that he was closing it and that would correspond with the wound I observed.

Mr. SPECTER. He has described that as what he concluded to be the wound of entry on the dorsal aspect of the right wrist, but your thought was that perhaps that was the wound of exit?

Dr. SHAW. Yes; in trying to reconstruct the position of Governor Connally's body, sitting in the jump seat of the limousine, and the attitude that he would assume in turning to the right—this motion would naturally bring the volar surface of the right wrist in contact with the anterior portion of the right chest.

Mr. SPECTER. Well, is your principal reason for thinking that the wound on the dorsal aspect is a wound of exit rather than a wound of entry because of what you consider to be the awkward position in having the dorsal aspect of the wrist either pointing upward or toward the chest?

Dr. SHAW. Yes, I think I am influenced a great deal by the fact that in trying to assume this position, I can't comfortably turn my arm into a position that would explain the wound of the dorsal surface of the wrist as a wound of entrance, knowing where the missile came out of the chest and assuming that one missile caused both the chest wound and the arm wound.

Mr. SPECTER. Might not then that conclusion be affected if you discard the assumption that one missile caused all the wounds?

Dr. SHAW. Yes, if two missiles struck the Governor, then it would not be necessary to assume that the larger wound is the wound of entrance.

Mr. SPECTER. Now, would not another explanation for the presence of a wound on the dorsal aspect of the wrist be if the Governor were sitting in an upright position on the jump seat with his arm resting either on an arm rest inside the car or on a window of the car with the elbow protruding outward, and as he turned around, turning in a rotary motion, his wrist somewhat toward his body so that it was present in an angle of approximately 45 degrees to his body, being slightly moving toward his body.

Dr. SHAW. Well, I myself, am not able to get my arm into that position. If the wound, as I assume to be in the midportion of the forearm here and the wound of exit would be here (illustrating) I can't get my arm into that position as to correspond to what we know about the trajectory of the bullet into the chest.

Mr. SPECTER. Assuming that the bullet through the chest then also went through the wrist?

Dr. SHAW. Yes.

Mr. SPECTER. Now, aside from the trajectory and the explanation of one bullet causing all the damage and focusing just on the nature of the wound on the wrist, what conclusion would you reach as to which was the point of entrance and which was the point of exit?

Dr. SHAW. I would feel that the wound on the volar surface of the wrist was the wound of entrance and that perhaps the bullet being partially spent by its passage through the chest wall, struck the radius, fragmenting it, but didn't pass through the wrist, and perhaps tumbled out into the clothing of Governor Connally with only a small fragment of this bullet passing on through the wrist to go out into the left thigh.

Mr. SPECTER. Now, would that be consistent with a fragment passing through the wrist which was so small that virtually the entire missile, or 158 grains of it, would remain in the central missile?

Dr. SHAW. Yes. The wound on the volar surface, I'm sorry, on the dorsum of the wrist and the wound in the thigh which was obviously a wound of entrance, since the fragment is still within the thigh, were not too dissimilar in size.

Mr. SPECTER. Was the wound in the thigh itself, that is, aside from the size

of the fragment which remains in the leg, as small as the hole on the dorsal aspect of the wrist?

Dr. SHAW. My memory is that the wound in the thigh through the skin was about the same as the wound on the skin of the dorsum of the wrist, but I didn't make an accurate observation at the time.

Mr. SPECTER. Would your thinking on that be affected any if I informed you that Dr. Shires was of the view and had the recollection that the wound on the thigh was much larger than a hole accounted for by the size of fragments which remained in the femur.

Dr. SHAW. Of course, Dr. Shires actually treated and closed this wound, but since this wound was made through the skin in a tangential manner——

Mr. SPECTER. Now, you are referring to the wound of the thigh?

Dr. SHAW. I am referring to the wound of the thigh—was made in a tangential manner, it did not go in at a direct right angle, the slit in the skin in the thigh could be considerably longer than the actual size of the missile itself, because this is a sharp fragment that would make a cutting—it would cause a laceration rather than a puncture wound.

Mr. SPECTER. So, the hole in the thigh would be consistent with a very small fragment in the femur?

Dr. SHAW. Yes.

Mr. SPECTER. Now, a moment ago I asked you what would be your opinion as to the point of entry and the point of exit based solely on the appearances of the holes on the dorsal and volar aspects of the wrist, and you responded that you still thought, or that you did think that the volar aspect was the point of entry with the additional thought that the missile might not have gone through the wrist, but only a fraction having gone through the wrist—now, my question is in giving that answer, did you consider at that time the hypothesis that the wound on the wrist was caused by the same missile which went through the Governor's chest, or was that answer solely in response to the characteristics of the wound on the wrist alone?

Dr. SHAW. I have always felt that the wounds of Governor Connally could be explained by the passage of one missile through his chest, striking his wrist and a fragment of it going on into his left thigh. I had never entertained the idea that he had been struck by a second missile.

Mr. SPECTER. Well, focusing for just a minute on the limited question of the physical characteristics of the wounds on the wrist, if you had that and nothing more in this case to go on, what would your opinion be as to which point was entry and which point was exit?

Dr. SHAW. Ordinarily, we usually find the wound of entrance is smaller than the wound of exit. In the Governor's wound on the wrist, however, if the wound on the dorsum of the wrist is the wound of entrance, and this large missile passed directly through his radius, I'm not clear as to why there was not a larger wound of exit than there was.

Mr. SPECTER. You mean on the volar aspect?

Dr. SHAW. Yes; if a whole bullet hit here——

Mr. SPECTER. Indicating the dorsal aspect?

Dr. SHAW. Yes; and came out through here, why it didn't carry more bone out through the wrist than it did, and the bone was left in the wrist—the bone did not come out. In other words, when it struck the fifth rib it made a hole this big around (indicating) in the chest in carrying bone fragments out through the chest wall.

Mr. SPECTER. Wouldn't that same question arise if it went through the volar aspect and exited through the dorsal aspect?

Dr. SHAW. It wouldn't if you postulated that the bullet did not pass through the wrist, but struck the wrist.

Mr. SPECTER. That would be present in either event, though, if you postulated if the bullet struck the dorsal aspect of the wrist, and did not pass through, but only a missile passed through the volar aspect.

Dr. SHAW. Yes; in that case, however, considering the wound of exit from the chest, and if that same bullet went on through the wrist, I would still expect a pretty good wound of entrance.

Mr. SPECTER. You see, I am trying now, Dr. Shaw, to disassociate the thought

that this is the same missile, so that I'm trying to look at it just from the physical characteristics of the appearance of the wounds on the two sides of the wrist.

Dr. SHAW. May we go off the record just a minute?

Mr. SPECTER. Sure—off the record.

(Discussion between Counsel Specter and the witness, Dr. Shaw, off the record.)

Mr. SPECTER. Let us go back on the record and let the record reflect that we have been discussing another aspect concerning Dr. Shaw's thought that if the main missile had gone through the entire radius, that there would have been more damage, presumably, to the arteries and tendons on the underside of the wrist, and I then called Dr. Shaw's attention to one additional factor in Dr. Gregory's testimony which is reflected in his report that "on the radial side of the arm, small fine bits of cloth consistent with fine bits of mohair were found," which was one of the reasons for Dr. Gregory's thinking that the path was from the dorsal aspect to the volar aspect.

Dr. SHAW. Yes.

Mr. SPECTER. And Dr. Shaw's reply, if this is correct, Doctor, that you would know of no readily available explanation for that factor in the situation?

Dr. SHAW. Except that it might have been carried by the small fragment which obviously passed through the wrist and attached to that.

Mr. SPECTER. But could the fragment have carried it from the radial side on it if it had been traveling from the volar side to the radial side?

Dr. SHAW. Yes; it could have carried it through and deposited it on the way through.

Mr. SPECTER. I see, so it might have started on the volar aspect and could have gone on through.

Dr. SHAW. You know, if we could get that suit of his, it would help a lot.

Mr. SPECTER. Well, we are going to examine clothing if at all possible.

Dr. SHAW. Because, I think it would have been almost impossible—I think if you examine the clothing and if you had a hole here in his coat and no hole on this side——

Mr. SPECTER. Indicating a hole on the femur side——

Dr. SHAW. That would almost clear that thing up.

Mr. SPECTER. Yes; it would be very informational in our analysis of the situation.

Dr. SHAW. I doubt if there is a hole in both sides of the sleeve—the sleeve wouldn't be quite that long, I don't think.

Mr. SPECTER. Dr. Shaw, my next question involves whether you have ever had a conversation with Governor Connally about the sequence of events of the day he was shot?

Dr. SHAW. Yes, we have talked on more than one occasion about this. The Governor admits that certain aspects of the whole incident are a bit hazy. He remembers hearing a shot. He recognized it as a rifle shot and turned to the right to see whether President Kennedy had been injured. He recognized that the President had been injured, but almost immediately, he stated, that he felt a severe shock to his right chest. He immediately experienced some difficulty in breathing, and as he stated to me, he thought that he had received a mortal wound.

Mr. SPECTER. Did he tell you why he thought the wound was mortal?

Dr. SHAW. He just knew that he was badly hit, as he expressed it.

Mr. SPECTER. Did he comment on whether or not he heard a second shot before he felt this wound in his chest?

Dr. SHAW. He says that he did not hear a second shot, but did hear—no, wait a minute, I shouldn't say that. He heard only two shots so that he doesn't know which shot other than the first one he did not hear. He only remembers hearing two shots, his wife says distinctly she heard three.

Mr. SPECTER. Mrs. Connally said she heard three?

Dr. SHAW. Mrs. Connally distinctly remembered three shots.

Mr. SPECTER. And, Governor Connally said he heard two shots?

Dr. SHAW. Two shots.

Mr. SPECTER. Would that not be consistent with a situation where he was hit by the second shot and lost consciousness?

Dr. SHAW. Yes; the shock of the wounding might have prevented him from hearing the rifle report.

Mr. SPECTER. Would you have expected him to hear a third shot after he was wounded by a second shot?

Dr. SHAW. He didn't lose consciousness at that time, although he said he did lose consciousness during a part of the trip from the point of wounding to the hospital.

Mr. SPECTER. Did Governor Connally tell you whether or not he heard President Kennedy say anything?

Dr. SHAW. He said that all he heard was the President say, "Oh," that's the only thing he told me.

Mr. SPECTER. Did Mrs. Connally state whether or not she heard the President say anything?

Dr. SHAW. My memory isn't good for that. I don't remember what Mrs. Connally told me on that.

Mr. SPECTER. Are you continuing to treat Governor Connally at the present time?

Dr. SHAW. Yes, although the treatment of the chest is practically at an end, because the chest has reached a satisfactory state of healing.

Mr. SPECTER. Did you continue to treat the Governor all during his stay at Parkland Hospital?

Dr. SHAW. Yes, I attended him several times daily.

Mr. SPECTER. Dr. Shaw, would you think it consistent with the facts that you know as to Governor Connally's wounds that he could have been struck by the same bullet which passed through President Kennedy, assuming that a missile with the muzzle velocity of 2,000 feet per second, a 6.5-millimeter bullet, passed through President Kennedy at a distance of 160 to 250 feet from the rifle, passing through President Kennedy's body, entering on his back and striking only soft tissue and exiting on his neck; could that missile have also gone through Governor Connally's chest in your opinion?

Dr. SHAW. Yes, taking your description of the first wound sustained by the President, which I, myself, did not observe, and considering the position of the two men in the limousine, I think it would be perfectly possible for the first bullet to have passed through the soft tissues of the neck of President Kennedy and produced the wounds that we found on Governor Connally.

Mr. SPECTER. Could that bullet then have produced all the wounds that you found on Governor Connally?

Dr. SHAW. Yes, I would still be postulating that Governor Connally was struck by one missile.

Mr. SPECTER. Now, as you sit here at the moment on your postulation that Governor Connally was struck by one missile, is that in a way which is depicted by diagram No. 5 on the exhibit heretofore marked as "Dr. Gregory's Exhibit No. 1?"

Dr. SHAW. Yes; I feel that the line of trajectory as marked on this diagram is accurate as it could be placed from my memory of this wound.

Mr. SPECTER. And, on that trajectory, how do you postulate the bullet then passed through the wrist from dorsal to volar or from volar to dorsal?

Dr. SHAW. My postulation would be from volar to dorsal.

Mr. SPECTER. Now, then, going back to diagram No. 1, Dr. Shaw, there is one factor that we did not call your attention to or have you testify about, and that is—the marking that the exit is on the volar side and the entry is on the dorsal side as it was remarked by Dr. Gregory, that would then be inconsistent of your view of the situation, would it not?

Dr. SHAW. Yes, it would be.

Mr. SPECTER. And similarly on diagram No. 3, where the exit is marked on the volar, and the entry is marked on the dorsal, that would also be inconsistent with your view of the situation?

Dr. SHAW. Yes—he has the wound on the back being quite a bit larger than the wound on the front here, doesn't he?

Mr. SPECTER. Yes, the wound as it appears here on the diagram is larger.

Dr. SHAW. That wasn't my memory.

Mr. SPECTER. But I don't think that that is necessarily as to scale in this situation. Would it be possible from your knowledge of the facts here, Dr. Shaw, that President Kennedy might have been struck by the bullet passing through him, hitting nothing but soft tissues, and that bullet could have passed through Governor Connally's chest and a second bullet might have struck Governor Connally's wrist?

Dr. SHAW. Yes; this is a perfectly tenable theory.

Mr. SPECTER. And, then, the damage to Governor Connally's thigh might have come from either of the bullets which passed through the chest or a second bullet which struck the wrist?

Dr. SHAW. That is true—as far as the wounds are concerned, this theory, I feel, is tenable. It doesn't conform to the description of the sequence of the events as described by Mrs. Connally.

Mr. SPECTER. In what respect Dr. Shaw?

Dr. SHAW. Well she feels that the Governor was only struck by one bullet.

Mr. SPECTER. Why does she feel that way; do you know, sir?

Dr. SHAW. As soon as he was struck she pushed him to the bottom of the car and got on top of him and it would mean that there would be a period of—well if there were 5½ seconds between the three shots, there would be a couple seconds there that would have given her time to get him down into the car, and as she describes the sequence, it is hard to see how he could have been struck by a second bullet.

Mr. SPECTER. If she pushed him down immediately after he was shot on the first occasion?

Dr. SHAW. Yes.

Mr. SPECTER. But if her reaction was not that fast so that he was struck twice, of course then there would be a different situation, depending entirely on how fast she reacted.

Dr. SHAW. I think if he had been struck first in the wrist and not struck in the chest, he would have known that. He only remembers the hard blow to the back of his chest and doesn't remember being struck in the wrist at all.

Mr. SPECTER. Might he not have been struck in the chest first and struck by a subsequent shot in the wrist?

Dr. SHAW. Yes; but that's hard to postulate if he was down in the bottom of the car.

Mr. SPECTER. Dr. Shaw, have you been interviewed by any representatives of the Federal Government prior to today?

Dr. SHAW. Yes.

Mr. SPECTER. And who talked to you about this case?

Dr. SHAW. I don't have his name. I perhaps could find it. It was a member of the Secret Service.

Mr. SPECTER. On how many occasions were you talked to by a Secret Service man?

Dr. SHAW. Once.

Mr. SPECTER. And what did you tell him?

Dr. SHAW. I told him approximately the same that has been told in this transcript.

Mr. SPECTER. And prior to the time we started to go on the record with the court reporter taking this down verbatim, did you and I have a discussion about the purpose of the deposition and the questions that I would ask you?

Dr. SHAW. Yes.

Mr. SPECTER. And were the answers which you provided me at that time the same as those which you have testified to on the record here this afternoon?

Dr. SHAW. Yes.

Mr. SPECTER. Do you have any other written record of the operation on Governor Connally other than that which has been identified here in Commission Exhibit No. 392?

Dr. SHAW. No; this is a copy of the operative record that went on to the chart of Governor Connally which is in the possession of the record room of Parkland Hospital.

Mr. SPECTER. Do you have anything else which you could tell us which you think might be helpful to the Commission in any way, Dr. Shaw?

Dr. SHAW. No; I believe that we have covered all of the points that are germane to this incident. Anything else that I would have would actually be hearsay.

Mr. SPECTER. Thank you very much, sir, for appearing.

Dr. SHAW. All right, you are welcome.

Mr. SPECTER. Off the record.

(Discussion between Counsel Specter and the witness, Dr. Shaw, off the record.)

Mr. SPECTER. Dr. Shaw, permit me to ask you one or two more questions. Did you find any bullets in Governor Connally's body?

Dr. SHAW. No.

Mr. SPECTER. Did you find any fragments of bullets in his chest?

Dr. SHAW. No; only fragments of shattered rib.

Mr. SPECTER. And did you find, or do you know whether any fragment was found in his wrist or the quantity of fragments in his wrist?

Dr. SHAW. It is my understanding that only foreign material from the suit of Governor Connally was found in the wrist, although in the X-ray of the wrist there appeared to be some minute metallic fragments in the wrist.

Mr. SPECTER. As to the wound on the back of Governor Connally, was there any indication that the bullet was tumbling prior to the time it struck him?

Dr. SHAW. I would only have to say that I'm not a ballistics expert, but the wound on his chest was not a single puncture wound, it was long enough so that there might have been some tumbling.

Mr. SPECTER. You mean the wound on his back?

Dr. SHAW. The wound on his back—yes, it was long enough so that there might have been some tumbling. In other words, it was not a spherical puncture wound.

Mr. SPECTER. So it might have had some tumbling involved, or it might not have?

Dr. SHAW. Yes; I don't know whether the clothes would have occasioned this or not.

Mr. SPECTER. My question would be that perhaps some tumbling might have been involved as a result of decrease in velocity as the bullet passed through President Kennedy, whether there was any indication from the surface of the wound which would indicate tumbling.

Dr. SHAW. The wound entrance was an elliptical wound. In other words, it had a long diameter and a short diameter. It didn't have the appearance of a wound caused by a high velocity bullet that had not struck anything else; in other words, a puncture wound.

Now, you have to also take into consideration, however, whether the bullet enters at a right angle or at a tangent. If it enters at a tangent there will be some length to the wound of entrance.

Mr. SPECTER. So, would you say in net that there could have been some tumbling occasioned by having it pass through another body or perhaps the oblique character of entry might have been occasioned by the angle of entry.

Dr. SHAW. Yes; either would have explained a wound of entry.

Mr. SPECTER. Fine, thank you very much, Doctor.

Dr. SHAW. Thank you.

TESTIMONY OF DR. CHARLES FRANCIS GREGORY

The testimony of Dr. Charles Francis Gregory was taken at 2:30 p.m., on March 23, 1964, at Parkland Memorial Hospital, Dallas, Tex., by Mr. Arlen Specter, assistant counsel of the President's Commission.

Mr. SPECTER. May the record show that at the start of this session that I have here at the moment Dr. Charles Gregory, who has appeared here in response to a letter of request from the President's Commission on the Assassination of President Kennedy.