Copy to = H. WEISBERG — KENNEDY ASSASSINATION CHRONICLES Vol. 3, Issue #2 SUMMER, 1991

The Magic Fragments and Other Stories

By Milicent Cranor

Ballistics virtuoso Martin Luther Fackler, M.D. — advisor to the Obfuscati in the case of the Kennedy assassination — found an opportunity not long ago to promote the single bullet theory (SBT) in a review article on wound ballistics in the "Annals of Emergency Medicine."[9] Like most of Fackler's articles in peer-reviewed journals, it bristles with uncommon erudition and richness of detail. In contrast, Fackler's articles in his own journal "Wound Ballistics Review" bristle more with opinion.[10] Both journals feature a diagram in which Fackler illustrated the Carcano bullet's ability to penetrate 61cm (24 inches) of gelatine without tumbling, without even yawing. Fackler explained,

> Had the wound profile illustrating the penetration potential of this bullet been available at the time of the investigation into the murder it would have allayed doubts about the capacity of a single 6.5mm bullet to have passed through the base of the president's neck, then continued through the chest of...[etc.] [9]

But it was available. The Army produced such a profile, at least verbally (see below). So did an obscure critic. But Fackler had very good reasons for not citing these earlier studies: they would reveal how the bullet's power and stability are also a liability to the official position in regard to (1) fragmentation, (2) penetration, and (3) deformity. This liability lead to a great deal of revising over the years, and that is what this report is about. To appreciate these revisions, you first need to review some basic ballistics:

What a full metal jacketed (FMJ) elongated bullet does to the body and what the body does to the bullet depend on three factors: (1) Impact velocity, here expressed in feet per second (f.p.s.), (2) Orientation of the bullet ("nose-on" or sideways), (3) Target density and depth. Cortical bone — which is in the shaft of the long bones (as opposed to the terminal ends) and in certain parts of the skull — has the greatest density. Skin is next in density, then comes muscle (gelatine only simulates muscle).

What does an FMJ bullet do to muscle? From the Army's bible on the subject, "Wound Ballistics," from the Office of the Surgeon General, Department of the Army:

> On dissection of the wound track, the adjacent tissue is found to be quite sanguinous and, in the case of the average rifle-bullet wound, full of extravasated blood for an inch or more away from the track. In this region, histological examination reveals a separation of muscle bundles with capillary hemorrhages into the interspaces. [3]

This "adjacent tissue," also known as the "zone of extravasation," contains tissue that is stretched and/or crushed during the exploding effects of "cavitation" when a temporary cavity is created. Here are some interesting figures from the Army expressed in *cubic* inches concerning the permanent wound tracks created at various velocities by an "average" FMJ rifle bullet: [13]

f.p.s.	Permanent Cavity	Extravasation Zone	Temporary Cavity
1000	2.55	30.11	66.25
1500	3.82	45.16	99.37
2000	5.09	60.21	132.39

CE 399 is said to have struck JKF's back at about 1900 f.p.s., two inches to the right of the midline, not far from where muscle is attached to bone. Should there have been "separation of muscle bundles" with a completely penetrating wound beginning in the back, making the wound easy to probe? What the book says about the effects of low velocity bullets, defined by this book as below 1200 f.p.s., may — or may not — explain the enigma of Kennedy's hard-to-probe back wound:

> In the case of slow low-energy missiles, the permanent cavity will be distinctly smaller in diameter than the missile which produced it. Tissue elasticity accounts for the reduction in volume.. [3]

How does an FMJ bullet leave fragments behind? There are only two ways this can happen: (1) if the jacket is ruptured, or (2) if the jacket is squeezed while it travels sideways at sufficient velocity, through sufficient viscosity, producing the "toothpaste effect." [29]

We know from its flattened base that CE 399 has been squeezed, but where did this happen? Surely not in Kennedy's neck. Please compare 61cm with the 14cm which, according to the government, represented the width of Kennedy's neck. If the Carcano bullet can go through 61cm without the slightest wobble, a mere 14cm is not likely to make the bullet tumble. Significance: No tumbling, no squeezing.

No squeezing, no fragments. No fragments, no shining proof of CE 399's entrance into the neck near the seventh cervical vertebra, as reported by the Clark Panel.

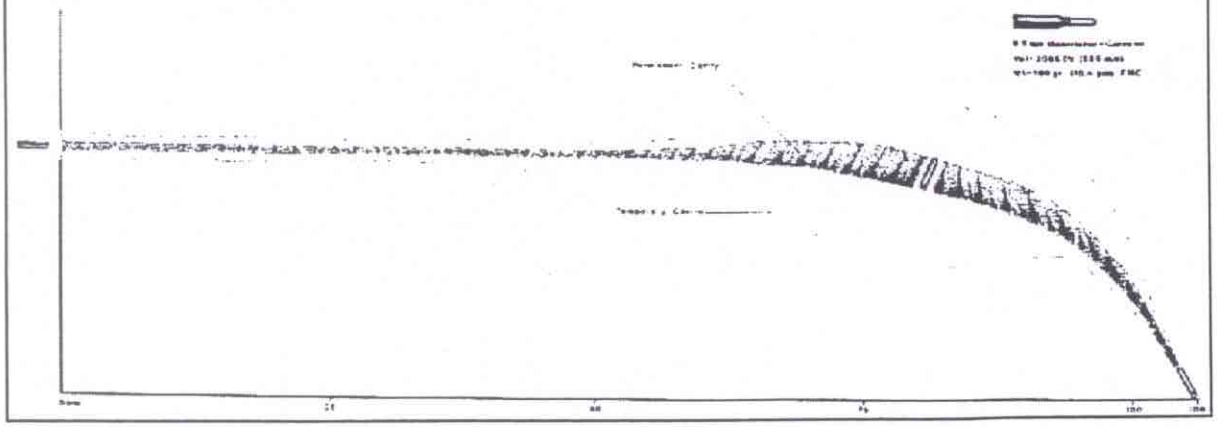
MAGIC FRAGMENTS FROM THE MAGIC BULLET

There are many uncertainties about what actually happened, and what could happen hypothetically, but one thing is certain: experts deceive. There are many examples of this. Not long ago, a "blue ribbon" panel of physicians claimed nicotine is not addictive. And, in 1968, the "blue ribbon" Clark Panel claimed opacities in the x-rays near

FROM DR. FACKLER'S ARTICLE (Ann Emerg. Med. 1996: 28(2):194-203)

Figure 5.

Wound profile produced by the 6.5 Mannlicher-Carcano full metal jacket. Note that this bullet does not deform in tissue and that it penetrates an average 61 cm before beginning to yaw, accounting for its deep penetration. This is the bullet used to assassinate President Kennedy. Had the wound profile illustrating the penetration potential of this bullet been available at the time of the investigation into the murder it would have allayed doubts about the capacity of a single 6.5-mm bullet to have passed through the base of the president's neck, then continued through the chest of Texas Governor John Connally and then through Conally's wrist (including the distal radius) before penetrating his thigh.



This bullet is alleged to have left fragments in John Kennedy's neck, near the spine. But Dr. Fackler's diagram shows it can travel 61 cm (24 inches) without fragmenting, without even tumbling.

the government-approved location of the entrance wound in the back of Kennedy's neck represented metal fragments. [5] They also found a 6.5mm fragment near the revised location (four inches higher) of the entrance wound in the skull.

As if by magic, hard-as-lead evidence — unseen in 1963, despite the careful examination claimed by the autopsists [11] — appeared in the new locations to give substance to the disputed claims. In 1972, Dr. John Lattimer (dubbed "the urologist-apologist" by researcher Bob Dean) "confirmed" the interpretation of the densities as metal fragments. [15] But, in 1974, the fragments were turned into bone by Lattimer [16] when a critic, the late John Nichols, M.D., Ph.D., pointed out that "jacketed bullets usually do not leave particles of metal in soft tissue when bone is not struck." [22] Lattimer's alchemy was "based on studies of various materials" reported in a paper which did not describe any such "studies" or even list the "various materials." [16] In 1978, the fragments were determined to be "artifact" by HSCA radiologists who said they were much too dense to be bone; furthermore, they found similar opacities in irrelevant locations far from the wounds. [4,21,28]

A PENETRATING QUESTION

The late John Nichols M.D., Ph.D., thought critics who asked how one bullet could go through two men were asking the wrong question. He thought he had a better one: how could such a powerful bullet stop so soon (subcutaneous level of Connally's thigh)? [22, 34,35] Nichols fired at various anatomical parts, then gave the bullet what he considered the ultimate test: a stack of knotless, laminated pine. The bullet penetrated 48 inches of it before stopping. [22] For this reason alone, he considered CE 399 a patsy.

The Army conducted tests at the request of the Warren Commission in 1964 and found that after penetrating 72cm of gelatine, the bullet buried itself in the ground and could not be recovered. [24] They did not report firing one single bullet at a succession of structures to represent the neck, chest, wrist, and thigh. But they did, presumably, establish how much velocity is lost in separate body parts. Does the amount of velocity lost in tissue depend on the density of the tissue alone, all other factors being equal? Does the distal wrist always retard the bullet by about 82 f.p.s., regardless of the impact velocity? If so, then we have enough separate bits of information to make an informed guess about how far a single Carcano bullet could

Isn't it the business of coroners to understand the behavior of bullets in flesh? How could the Clark Panel, that blue ribbon team of forensics experts, claim the fragments were metal? Why hasn't a single forensics or ballistics expert raised the question brought up by the critic-pathologist Nichols?

have penetrated.

According to the Army's bible on ballistics, "The greater the velocity the greater the rate of retardation."[3] For example, a 150 grain bullet with an impact velocity of 2500 f.p.s. will traverse 8 inches of thigh in 0.00033 of a second and exit with a residual velocity of 1500 f.p.s. The same bullet with an impact velocity of 2000 f.p.s. will go through the same target in 0.00045 of a second, but it will still emerge with a residual velocity of 1000 f.p.s. In each case, 1000 f.p.s. was lost.[3]

The Neck. The Army fired at a simulated neck consisting of gelatine covered with goat skin at an average impact velocity of 1904 f.p.s. and obtained an average residual velocity of 1779 f.p.s. Average velocity lost: only 125 f.p.s.[25]

The Chest. The Army assassinated a goat in a suit at an average impact velocity of 1929 f.p.s., and obtained an average residual velocity of 1664 f.p.s.; average velocity lost: 265 f.p.s.[24] The Army claimed that actually 400 f.p.s. would have been lost in Connally since the human chest is wider. [7] But Dr. Robert Shaw, the thoracic surgeon who repaired Connally's chest said "The texture of the rib here is not of great density...thin...very spongy, offering very little resistance to pressure or to fracturing." [33] This may explain why John Nichols found that when he fired at a human chest, it retarded the bullet by only 88 f.p.s.[23]

The Wrist. Average impact velocity: 1858 f.p.s.; average velocity lost: 82 f.p.s [26] Nature of target: Spongy bone at the junction of the shaft and wrist, "quite thin," according to Fackler.[10]

The Thigh. The bullet reached only the subcutaneous level.[32] And, thanks to the sleuthing of John Nichols, we learn of the existence of an unarchived x-ray, and supplementary x-ray report in which Dr. Jack Reynolds, a radiologist at Parkland, said a fragment claimed to have been embedded in the femur was actually embedded in soft tissue, only 8mm beneath the skin.[23]

Lattimer's Revisions

As I have previously reported[6], when Lattimer learned about Nichols' results during a telephone call in 1968, he began to lie about the bullet's velocity and the retarding power of the structures it allegedly penetrated. Distorting Nichols' thesis beyond recognition, Lattimer wrote: "Passing through the soft tissues of the neck of President Kennedy with its two layers of

FROM DR. FACKLER'S ARTICLE

Figure 7.

Average distances traveled point-forward in soft tissue before yawing by some common military rifle bullets.

6.5-mm Mannlicher-Carcano: 51 cm
Russian AK-47/Chinese SKS (7.62 × 39 mm): 26 cm
7.62 NATO (American version): 16 cm
M-16A1 (M-193 bullet): 17 cm
M-16A2 (M 855 bullet): 10 cm
AK-74: 8 cm.

These distances are averages: about 70% of bullets yaw within 25% of this average distance, whereas about 15% yaw at a shallower penetration depth and the other 15% at a greater depth of penetration.

(Ann Emerg Med 1996; 28(2):194-203)

MULTIPLE VERSIONS OF THE SINGLE BULLET'S JOURNEY

FEET PER SECOND

	ARMY	*LATTIMER*	*POSNER*	*NICHOLS*
MUZZLE	2160	2000**	2000	–
NECK	1904	–	1700 -1800	–
(minus)	-125	–	-100-300	–
CHEST	1779	1400	1500-1600	–
(minus)	-265-400	–	-600-700	-88
WRIST	1379-1514*	–	900	–
(minus)	-82	–	-500	-82
THIGH	1296-1431*	–	400***	1500

Prepared by Milicent Cranor

*The Army did not spell out what the impact velocities upon the wrist and thigh would be. These estimates are based upon their figures for velocity lost in the preceding body part. (They actually fired at the goat's chest at an average of 1929 f.p.s.; at the wrist, 1858 f.p.s..)

**Before John Nichols, MD, PhD claimed so powerful a bullet would have completely penetrated the thigh, Lattimer said the muzzle velocity was 2500 f.p.s. [12] Nichols believed CE 399 was framed.

***Posner wrote, "400 feet per second, just enough to break the skin and imbed itself into his thigh." (Named sources: Fackler and Olivier.) Some interesting comparisons: Lattimer said the Deringer ball that entered the thickest part of Abraham Lincoln's skull was going only 500 f.p.s. [16] From the Army's bible, "Wound Ballistics": a 150 grain bullet needs to be going 125-150 f.p.s. to penetrate skin, and 200 f.p.s. to penetrate bone. [3]

tough skin would have slowed the bullet slightly more than 30 percent according to the figures of Nichols." [14] This figure, "30 percent," apparently explains how he could claim years later in JAMA that the bullet struck "sideways at approximately 1400 f.p.s., after leaving President Kennedy's neck...then struck Governor Connally going sideways and was compressed." [18] Please compare Lattimer's "1400 f.p.s." with the Army's 1779 f.p.s. [25] Lattimer also revised the bullet's orientation. To make it appear as though CE 399 landed sideways (which would slow the bullet down), Lattimer said the wound in Connally's back was bullet length, "3cm," the size according to the operative report. [16,17,19] But this was after the wound was enlarged and cleaned. [30] The original size was 1.5cm. [31,32]

Lattimer's chicanery: When presented with a body diagram indicating the incorrect larger size (3cm), Dr. Shaw drew the correct size to the right of the diagram. Presented with a diagram of the EXIT wound, Shaw said it was correct.

Lattimer cropped this testimony so that Shaw appeared to be referring to the uncorrected, 3cm-size ENTRANCE wound. And he cropped the diagram to exclude Shaw's correction. [16,17,19] These and other machinations appeared in Fackler's own journal, Wound Ballistics Review. [19]

Table II. Conditions for *Minimal* Deformity of FMJ Bullet

Velocity	Target	Orientation
1400 f.p.s.	Bone	Nose-on
1000 f.p.s.	Bone	Sideways
2000 f.p.s.	Soft Tissue	Strikes nose-on, turns sideways then deforms

Prepared by Milicent Cranor

Deformity from a sideways hit requires much less velocity.
Source: Army's ballistic expert, Larry Sturdivan [36]

Table III. Deformity: Experimental Wrist Bullet Compared with CE 399

Velocity	Target	Orientation	Deformity
1858 f.p.s.	Cadaver wrist, bone "quite thin"	Nose-on	Nose greatly flattened, jacket disrupted
1779 f.p.s.	Connally's back, rib bone "spongy"	Sideways (alleged)	Side slightly flattened, jacket intact

Prepared by Milicent Cranor

Top row: Average impact velocity of Army's experimental bullet. [26]
Bottom row: Approximate velocity with which CE 399 allegedly struck Connally's back, based on Army experiments. [25]
Sources of bone densities: References #10 and # 33 respectively.
Difference in velocities: negligible. Difference in Deformity: great.
Predicted difference in deformity: negligible. The critics were right.

DEFORMITY

The Army performed various tests in 1964 that seem designed to prove the contentions of the Warren Commission. To "prove" the single bullet theory, they fired at a cadaver wrist, then held up the deformed bullet (CE 856) that struck it and said, in effect: This is what a Carcano bullet looks like if strikes a wrist directly. CE 399 is much less deformed; therefore, it did not strike the wrist directly. It must have struck something else first, something soft that slowed it down without deforming it — like Kennedy's neck.

This was pure showbiz. As the Army knew very well, what affects deformity is not where the bullet has or has not been before, but its impact velocity, bullet orientation, and target density.

The Army knew the average impact velocity with which the bullet struck the wrist, 1858 f.p.s., was very similar to the velocity with which they claim CE 399 struck Connally's back, about 1779 f.p.s. — even though that bullet had gone through a simulated neck. Both targets, wrist and back, are said to have about the same density. What is more, they say CE 399 struck sideways, which would have made it easier to deform. Please see Tables II and III which I prepared from various sources to illustrate these comparisons.

If the Army is right, the critics are right.

Revisions by Lattimer and Fackler

John Lattimer told Gerald Posner "They fired...at over 2,000 feet per second directly into a wrist bone. Of course you're going to get deformation of the bullet when it strikes a hard object at full speed." [27] Actually, the CE 399 did allegedly strike an object as hard as the wrist, Connally's back, at a velocity only slightly less than that of the wrist bullet.

Martin Fackler's attempts to dismiss questions about 399's minimal deformity are much more interesting. Assert-

ing that 399 would have struck Connally's wrist at a velocity of 1000-1100 f.p.s., he fired at cadaver wrists at 1108 to 1335 f.p.s. and claims no deformity was achieved [10] He wrote:

"The reason for this experiment was to disprove the assertion by one of the foremost `conspiracy theorists,' that a full metal jacketed bullet could not have passed through Governor Connally's distal radius without becoming more deformed than the recovered bullet."[10] Fackler, who never named the critic or cited his work, placed a reference number after the above quote, but this was a blind: in his short list of references, that number corresponded to a Lattimer paper.

Why didn't Fackler state the velocity with which the bullet allegedly struck Connally's back? Surely the bullet would have emerged from the neck with a enough residual velocity to deform it on the next bony target — according to Fackler's own diagram. Instead, Fackler took advantage of the ambiguities surrounding the retarding power of the chest and seized upon a technicality — the unnamed critic's specific (perhaps overly specific) reference to the wrist. And how did Fackler arrive at the conclusion CE 399 struck the wrist at 1000-1100 f.p.s.? Just as he kept the critic out of view, he kept all his figuring behind the scenes:

> To estimate the striking velocity of the 6.5mm Carcano bullet as it struck Governor Connally's wrist, I took into account the amount of velocity the bullet lost in the air before it reached President Kennedy, the length of tissue travel in both JFK and Governor Connally, and the density and toughness of the tissues perforated. I then consulted several wound ballistics papers... [and] I completed my averaging and interpolations using the ballistics formula to determine projectile retardation coupled with information about factors assigned to various bullet nose shapes in that formula. The estimate I arrived at was 1000 to 1100 f.p.s. I would not argue with any estimate that was outside these limits by up to + 150 f.p.s..[10]

A precise explanation would have taken less space than Fackler's gaseous, reference-free, paragraph above. Fackler is saying in effect that neck and chest combined subtract about 900 f.p.s. in velocity from the bullet, assuming an impact velocity of 1900 f.p.s. on Connally's back (1900 less 1000 f.p.s.). How would Fackler distribute that figure between neck and chest? The 900 f.p.s. for chest and neck combined, minus the Army's figure, 125 f.p.s. for the neck alone, equals 775 f.p.s. lost in the chest alone, nearly double the Army's estimate, and over eight times Nichols' results!

In an article published by JAMA, "Wound Ballistics: Common Misconceptions" [8], Fackler misquoted a researcher who said the bullet's temporary cavity "can approximate 30 times the size of the missile." By "size," he was obviously referring to area [2], but Fackler said he was referring to diameter — then criticized him for the absurdity. Another doctor set the record straight in a letter to JAMA:

> .... there is nothing wrong with the manner in which Amato et. al. phrased their findings; it seems however, that other authors, in referring to their data, have erroneously assumed they were referring to diameters and not areas. This misconception of an accurate concept in an article purportedly reviewing common misconceptions is ironic. [1]

If Fackler can make a mistake like this, there is good reason to not accept on faith his word in regard to figures that support the magic bullet theory, especially since his figures are at variance with the Army's, and because he is so mysterious about where he got them.

CONCLUSIONS

(1) Fragmentation: For ballistics reasons alone, the opacities on the x-ray near the spine could not represent metal fragments from a Carcano bullet and surely the government's own experts knew this in 1968.

(2) Penetration: Nichols could be right, but the issue seems unresolved.

(3) Deformity: The critics were right — and the Army proved it.

(4) Revisionism: It is so rampant that terminology should be established to accommodate the quantity. Just as f.p.s. means feet per second, r.p.y. could mean revisions per year, for example.

(5) Cause of revisionism: It is the business of coroners and forensics experts to understand the behavior of bullets in human tissue. This probably explains the r.p.y. with respect to the f.p.s. CE 399 was a patsy.

REFERENCES

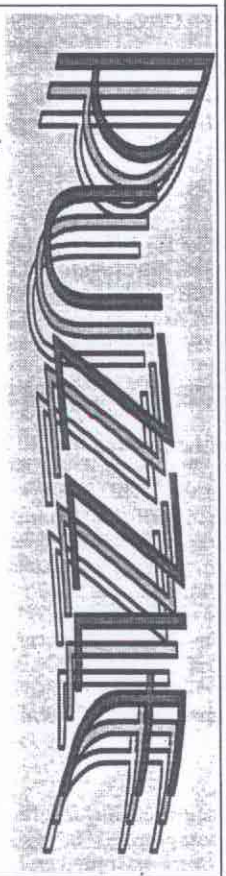
1. Adams, J.A. JAMA 1988; 260:3277 (letter re Fackler).
2. Amato, J.J., Rich, N.M., Billy, L.J., Gruber, R.P., Lawson, N.S. "High-velocity arterial injury: a study of the mechanism of injury." J Trauma 1971; 11: 412-416.
3. Beyer, J.C, Editor. Wound Ballistics. Office of the Surgeon General, Department of the Army, Washington, D.C., 1962; pp 133, 134, 141.
4. Chase, N. 7 HSCA 99: densities not bone
5. Clark, Ramsey. Report of Attorney General Ramsey Clark's Expert Review Panel, 1968.
6. Cranor, M.L. "The Secret of CE 399," The Fourth Decade; vol 1(6), September,1994.
7. Dziemian, A. 5 WCH 86, goat, governor.
8. Fackler, M.L. "Wound ballistics: Common misconceptions." JAMA 1988; 259:2730- 2736.
9. Fackler, M.L. "Gunshot Wound Review.' Ann Emerg Med 1996; 28:194-203.
10. Fackler, M.L. "Tests prove that the pristine bullet does not support a JFK assassination conspiracy." Wound Ballistics Review 1995; 2(2) 38-40.
11. Humes, J. 2 WCH 361
12. Humes, J. 2 WCH 353
13. Lattimer, J.K. "The wound that killed Lincoln." JAMA 1964; 187:480-489
14. Lattimer, J.K. "The Kennedy-Connally single bullet theory." A feasibility study. J Int Surg 1968; 50 (6):524-530, p529.
15. Lattimer, J.K. "Observations Based on a review of the autopsy photographs, x-rays and related materials of the late President John F. Kennedy." Resident & Staff Physician 1972; 18:4-63.
16. Lattimer, G., Lattimer, J.K., Lattimer, J. "The Kennedy-Connally One-Bullet Theory." Medical Times 1974;102:33-56
17. Lattimer, J.K. Kennedy and Lincoln: Medical & Ballistic Comparisons of Their Assassinations. New York: Harcourt

Brace Jovanovich, 1980.
18.Lattimer, J.K. "Additional data on the shooting of President Kennedy." Journal of the American Medical Association 1993; 269(12):1544-1547.
19.Lattimer, J.K. "Differences in Wounding Behavior of the Two Bullets that Struck President Kennedy; an Experimental Study." Wound Ballistics Review 1995; 2(2):13-37.
20.Lattimer, J.K., Laidlaw, A., Heneghan, P., Haubner, E.J. "Experimental duplication of the important physical evidence of the lapel bulge of the jacket worn by Governor Connally when bullet 399 went through him." Journal of the American College of Surgeons 178, pp517-522.
21.McDonnel, G.M. 7 HSCA 98: densities, artifact.
22.Nichols, J.M. Assassination of President Kennedy. " The Practitioner 1973; 11:625-633.
23.Nichols, J.M. "The wounding of Governor John Connally of Texas." Maryland State Medical Journal 1977; 26(1), pp 58-77.
24.Olivier, A. 5 WCH 71, penetration.
25.Olivier, A. 5 WCH 78, neck, penetration.
26.Olivier, A. 5 WCH 82 ,wrist.
27.Posner, G. Case Closed. New York: Random House,1993, p336.
28.Seaman, W. 7 HSCA 99: densities not bone.
29.Sellier, K.G. & Kneubuehl, B.P. Editors. "Wound Ballistics and the Scientific Background." Elsevier, 1994, pp172-178.
30.Shaw, R.R. 6 WCH 88, enlarged wound to 3cm.
31.Shaw, R.R. 6 WCH 85, 86, 1.5cm.
32.Shaw, R.R. 4, WCH 104, 107, 1.5cm.
33.Shaw, R.R. 4 WCH 105, rib "spongy".
34.Shires, T. 6 WCH 106, thigh wound "peculiar".
35.Shires, T. 6 WCH 111, fragment.
36.Sturdivan, L. 1 HSCA 396.

Summer Puzzle:

Why would the blanket found in the Paine's garage still be folded in the shape of the rifle

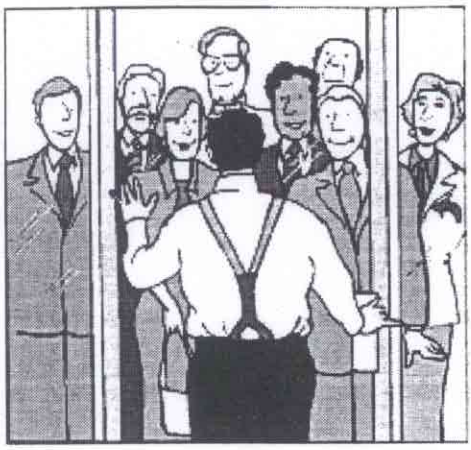
?



Spring puzzle answer:

What do the words "Running Man" mean in the assassination case?

It comes from a classified ad in the Dallas newspaper after the assassination asking to contact "Running Man."



Is it chat time yet?

Yes it is. Now you can go to the Lancer web site for some good old fashioned chat time. Meet other JFK researchers for a chat on the latest evidence or even the oldest.

Real time conversation--just by typing! Nothing can be easier. We call it "*Dealey Plaza 2*" and you'll want to join us there.

Open 24 hours a day.
Nothing to download.

Lancer Chat
http://www.jfklancer.com

JAVA capable browsers only. MAC computers may not have access due to technical difficulties.