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D. A. K.

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Office of Legal Counsel  
Department of Justice  
Washington, D. C. 20530  
November 10, 1966

Commentary

The Editor:

As one of the Assistant Counsel to the Warren Commission, I was pleased to find Professor Bickel's "The Failure of the Warren Report" to be responsible and, for the most part, well thought out, in marked contrast to other such critiques that have recently appeared. He has set a tone at which reasonable discussion is possible. So it is with real gratitude that I would like to make a few comments, albeit for the most part they are adverse.

Professor Bickel recognizes what is essential to logical discussion on this subject, that truth indeed has its coincidences and surprises and that a seemingly unlikely explanation can be validly attacked only by showing that some alternative explanation appears more likely. It is not enough, as Lane, Epstein and others have done, merely to point out improbabilities in the Commission's explanations and stop there, or offer alternative explanations that, however intriguing, are a thousand times less likely. But though I approve his approach, I think that Professor Bickel has misapplied it.

His principal point of attack on the Commission is its conclusion that the single bullet found on a stretcher after the assassination ("Bullet 399") had passed through the President's upper chest and Governor Connally's chest and wrist and lodged lightly in the Governor's thigh. He says that this could not have happened, because "the testimony" was that

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Bullet 399 did not lose enough fragments to account for those left in the wounds that it caused. Professor Bickel failed to cite what testimony, so I can only assume he relies on the same testimony as did Mark Lane and Vincent Salandria when, in separate publications, they made the same assertion. (Mark Lane, Rush to Judgment 78-79; Vincent Salandria, "The Impossible Tasks of the One Assassination Bullet," The Minority of One, March 1966, pp. 12-18.) Lane's case is simply that whereas Dr. Shaw, one of the physicians who operated on Governor Connally, testified that the fragments found in Connally's wrist weighed more than 3 grains, an FBI expert testified to the effect that Bullet 399 weighed only 1.4 to 2.4 grains less than the normal weight of a bullet of its type before firing. Salandria's case is essentially the same except that he also quotes two of the autopsy physicians, Dr. Finck and Dr. Humes, to the effect that they thought, or had heard said, that there were more fragments in Governor Connally's leg or wrist than Bullet 399 could have lost.

But as they have so frequently done elsewhere, Lane and Salandria have in this instance overstated the evidence in support of their own conclusion and ignored or deceptively employed the evidence to the contrary. The cited testimony of Finck and Humes was excerpted from their discussion of other matters; neither man ever purported to have directed his attention to the specific and difficult task of actually measuring or estimating the weight of any of the fragments. Dr. Shaw, who at least did try to assign the wrist fragments a more or less definite weight -- "more than three grains" -- at other points in his testimony admitted that he had never worked on the governor's wrist (4 H 108, 109, 117); he never claimed to have made any other kind of close examination of the wrist fragments; and he declined even to say that he was qualified on such matters. When asked by Arlen Specter, an Assistant Counsel:

"Do you have sufficient knowledge of the wound of

the wrist to render an opinion as to whether that bullet could have gone through Governor Connally's wrist and emerged being as much intact as it is?"

Shaw replied:

"I do not." (4 H 113)

And when asked by Senator Cooper whether his experience with chest wounds had provided him with knowledge also of the "characteristics of missiles, particularly bullets of this type," Shaw replied:

"No, Senator. I believe that my information about ballistics is just that of an average layman, no more. Perhaps a little more since I have seen deformed bullets from wounds, but I haven't gone into that aspect of wounds." (4 H 117)

The testimony of those who were specifically directed to determine the number and weight of the fragments, on the other hand, and whose efforts at estimation were subjected to the discipline of reduction to quantitative terms, supported the Commission's conclusion. Only two bullet fragments were recovered from the Governor's wrist (4 H 122-23). The much larger of the two was weighed and found to weigh one-half grain. (4 H 123; 5H 72-74; CE 842) None were recovered from other portions of the bullet's path. (6 H 95, 106; 5H 73-74). None of the fragments found in the Presidential car or imbedded in its windshield were traceable to Bullet 399, and in view of the fact that the bullet which went through the President's head was known to have shattered, it is virtually certain that they came from it. (Report 87)

No fragments from Bullet 399 were left in the President's body. Traces of copper were left on his coat where the bullet pierced it, but they were so small as to require detection by

a spectograph. (4 H 59) X-ray photographs showed one fragment left in Connally's thigh (6 H 106), one in his chest (6H 111) and seven or eight or more in his wrist (4 H 120). None of these could be actually weighed, of course, but their weights could be estimated by observation. The total of the wrist fragments was estimated to be such as to be "weighed . . . in micrograms." (4 H 120) A microgram is a millionth of a gram, or less than two hundred thousandths of a grain. These fragments were described as "flakes" and most were so small that x-ray photographs had to be taken from different angles and compared in order to differentiate their appearance from that of tiny imperfections in the films or camera. (4 H 120) The thigh fragment was also estimated to weigh "in micrograms" (4 H 125), or "maybe, a tenth of a grain" (6 H 106). No one, not even any of the three doctors who worried about the number of fragments left in the wrist or thigh, considered the chest fragment large enough to be concerned about. Dr. Shaw, in fact, who did the work on Connally's chest, was apparently not even aware that a bullet fragment was present there. (6 H 95) Dr. Shires, who later spotted it in an x-ray photograph, and who was the witness who described the thigh fragment as "maybe, a tenth of a grain," spoke of the sizes of both fragments in the same terms. (6 H 106, 111) Thus, the testimony of all those whose efforts were directed toward measuring the size or weight of the fragments was to the effect that their total weight was in the neighborhood of only one grain.

But even three grains would be consistent with the range of expected weight loss of the bullet, notwithstanding Lane's and Salandria's misleading statements to the contrary. Bullet 399 weighed 158.6 grains when it was found. Although unfired bullets of this type normally weigh about 161 grains, they commonly vary one or two grains from the norm, so Bullet 399's weight loss might reasonably have been as much as slightly more than 4 grains. (3 H 430) Lane and Salandria's only comment on this was to say that the heaviest of the three

bullets of this type weighed by the Commission's expert to determine their approximate average weight weighed only 161.5 grains -- a fact no more significant for the purpose for which they used it than that, for example, the fact that the tallest of three boys chosen at random from a large high school class measured only 6 feet would be significant for determining the height of the tallest boy in the class. It must be obvious to any fair-minded observer that a random selection of three out of a large group can easily fail to include the tallest or heaviest or anything close to the tallest or heaviest. Thus, Lane and Salandria -- and unless he has other evidence unknown to me, Professor Bickel, too -- are wrong on both ends of their argument.

Professor Bickel's alternative theory is that Bullet 399 entered the President's back and stopped short four inches in, and that the rest of the damage to Kennedy and Connally was done by other bullets or their fragments. Since we know that Bullet 399 broke no bones in the President nor even tore any large muscles, and since the bullet itself when recovered was only slightly distorted and but a few grains short of its initial weight, to have come to a halt as quickly as Professor Bickel hypothesizes it must have hit the President with very little velocity -- much less than it would have had had it flown freely the relatively short distance from Oswald's rifle. For if it had not been previously slowed down, the dead stop in four inches could not have been achieved without considerable damage both to it and the President's body. Professor Bickel seeks to overcome this difficulty by suggesting that the bullet lost some speed by having "brushed a branch of the live oak tree" overhanging the street.

But the professor fails to appreciate how much speed the bullet would thus have to have lost. Tests on materials of similar permeability showed that a bullet traversing the entire breadth of the President's upper chest would have lost only about 120 feet per second of its entering velocity. The

test bullets slowed down from about 1904 feet per second, the probable entry velocity of Bullet 399, to about 1785 feet per second. (Report 91, and see 2 H 375, 381) To have stopped only part way through, therefore, Bullet 399 must have entered at something less than about 120 feet per second, that is, it must have been slowed down by the "live oak tree" something like 1800 feet per second.

The necessity of that amount of slowing down destroys Professor Bickel's theory. A light "brushing of a branch" could hardly have sufficed, and if the "brushing" were not light, but substantial, it would have thrown the bullet off its course to the President. (Or must we go into the infinitesimal probabilities of a carom shot?) And since a high velocity bullet colliding with a solid oak with sufficient force to slow it down to less than 10% of its pre-collision velocity would have to have received a very jarring blow, any such collision would also have considerably scarred or distorted Bullet 399 -- but we know, that, in fact, Bullet 399 was virtually unscathed. A head-on collision with a branch of the oak tree, of course, even if it did not stop the bullet altogether, would have left it even more severely damaged. Additionally, whatever the nature of the branch collision that would be necessary to have so reduced the speed of the bullet, it could hardly have left the bullet "pristine," that is, left it with essentially the same spin and arrow-straight alignment as it had when it left the muzzle. But the nature of the wound on the President's back and holes in his shirt and jacket strongly evidenced having been made by a "pristine" bullet. (Report 87-88, 92)

Finally, if as the professor's alternative theory suggests, there were separate shots that hit the President's back, the President's head, Connally's back and the curb, for a total of four, what happened to the fourth empty cartridge? A thorough search of the sixth floor of the Texas School Book Depository Building found only three, and the chance that someone picked one up before the police arrived and kept it seems

remote. There is nothing to lead us to think that anyone on the premises was the kind of person thus to hide important evidence, or indeed, that anyone, no matter how evilly motivated, would have thought it made sense to seize and hide only one cartridge and leave the others and the rifle itself. Moreover, there was very little time for anyone to have done such a thing before the police arrived.

Professor Bickel's attack on the Commission's one-bullet theory also relies on the alleged unlikelihood of a single bullet having gone through both men and done the damage it did to the governor and yet emerged essentially unscathed. But his own theory fares hardly any better. If Bullet 399 missed the President but still did all the damage to Connally, its achievement was not appreciably less than had it also penetrated the President. Its passage through the President's body was so easy as to leave it still traveling about 1785 feet per second, barely 6% slower than had it missed him.

Professor Bickel's critique thus fails by the standard he himself correctly imposed. It fails to show that the Commission's explanation is less likely, given all the facts, than some alternative explanation.

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(This letter expresses only my personal opinions, which are not necessarily those of the Department of Justice.)