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## JOURNAL OF FORENSIC SCIENCES

Official Publication of the American Academy of Forensic Sciences

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## Review of the Forensic Science Examinations Embodied in the Warren Commission Report (A Panel Discussion) \*

### Introductory Remarks \*\*

*Charles A. McInerney, A.B.\*\*\* Moderator, Pittsburgh, Pennsylvania*

[ In the view of many, the American Academy of Forensic Sciences would be remiss if it failed to treat this timely topic, The Forensic Science Examinations Embodied in the Warren Commission Report. It is the opportunity to evaluate the workings of a fact-finding body in a case which is familiar to all. More important, it is an opportunity to study the workings of a commission that had the unique opportunity to investigate a sequence of criminal activities under the optimum condition of unlimited resources in personnel and facilities. The whole of the talents in academic and technical communities of the country, as well as the services of federal agencies, were available to it.

For purposes of this panel discussion it is assumed that all of those present have better than a cursory knowledge of the events surrounding the assassination of President Kennedy. Valuable time, therefore, will not be utilized with a chronological summation. Nor will time be spent in discussing those problems, such as protection and security, which do not fit comfortably into the normal province of this Academy.

The panelists have made an evaluation of the report from the perspectives of their separate disciplines. The approach

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is academic; therefore, disciplined. There is no specific purpose to impugn the judgment of the Warren Commission, or to undermine the United States government, or to encourage any extremist views of conspiracy.

This is a critique by panelists, all of whom are well qualified in the areas explored in their discussions. In those instances where the participants treat their subject harshly, these should be recognized as natural consequences of learned, objective studies, totally consistent with the aims of the Academy to advance the application of forensic sciences. In fact, the nature of this symposium is not appreciably different than some presented in former years where real case situations provided the basis for panel discussions and mock trials.

Some of the questions to be considered are: Was everything done that could have been done? Was anything done that should not have been done? Were the "expert" witnesses truly expert? Should additional independent witnesses have been consulted?

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## THE WARREN COMMISSION: Report and Hearings\*

A Commentary on Issues of Importance in the Study  
of Investigation and Criminalistics

James W. Osterburg, MPA\*\*

The literature of criminal investigation is sparse indeed. For this reason alone the Warren Commission Report is a document of landmark proportions. However, the inherent importance of the inquiry and the not inconsiderable sum spent by the government to consummate the investigation are other aspects that contribute to its significance. Since the report is based on a procedure which is neither pure criminal investigation, a trial, or other regular judicial process, it affords an opportunity to examine the nature of the investigative function and to inquire whether the means chosen were the best of the possible alternatives. In the sub-specialties of forensic science: pathology, criminalistics, questioned documents, and psychiatry, the printed testimony reveals the state of expertise that was available at the time for this—the most demanding homicide investigation ever undertaken. A close reading of the testimony of some of the experts utilized, at least in criminalistics, suggests that there are some areas in which the basic research necessary for the objective evaluation of evidence has yet to be performed. In short, the Warren Commission Report is a document of primary importance to those who are seriously engaged in the study of the investigative process.

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The Commission was created by President Lyndon B. Johnson on November 29, 1963 by Executive Order No. 11130. This measure to investigate the assassination of President John F. Kennedy on November 22, 1963 was undertaken because

Throughout the world, reports on these events were disseminated in massive detail. Theories and speculations mounted regarding the assassination. In many instances, the intense public demand for facts was met by partial and frequently conflicting reports from Dallas and elsewhere. After Oswald's arrest and his denial of guilt, public attention focused both on the extent of the evidence against him and the possibility of a conspiracy, domestic or foreign. His subsequent death heightened public interest and stimulated additional suspicions and rumors (1).

Thus speculation, suspicion, rumor, and conflicting reports—official and unofficial—were elements of the festering doubt among peoples everywhere in the world. How best to resolve this doubt was a question that required an immediate answer.

Several procedures—including a court of inquiry before a Texas state magistrate, a grand jury investigation in Dallas County, Texas, and hearings before Congressional committees of both houses—were under consideration at one time or another (2). The prospects for a definitive answer from any or all such methods of inquiry were slim indeed. The President's appointment of the Warren Commission was a deliberate alternative that

sought to avoid parallel investigations and to concentrate fact finding in a body having the broadest national mandate (3).

The Commission was given two important investigative weapons, viz, the power

to issue subpoenas requiring the testimony of witnesses and the production of evidence relating to any matter under its investigation. In addition, . . . (it could) . . . compel testimony from witnesses claiming the privilege against self-incrimination under the fifth amendment to the U. S. Constitution by providing for the grant of immunity to persons testifying under such compulsion (4).

In addition,

All Federal Agencies . . . (were) . . . directed to furnish services and cooperation to the Special Commission. The Commission . . . (was) . . . also empowered to conduct any further investigation that it deemed desirable (5).

#### WARREN REPORT, COMMENT OF A CRIMINALIST

It would seem that the authority and resources of the Commission were commensurate with its responsibility

to study and report upon all facts and circumstances relating to the assassination of the late President, John F. Kennedy, and the subsequent violent death of the man charged with the assassination (6).

How the Commission proceeded in order to accomplish its objective and how well it succeeded are two questions of great interest to anyone concerned with the investigative process. The Commission in its report discusses the procedural question:

The Commission has functioned neither as a court presiding over an adversary proceeding nor as a prosecutor determined to prove a case, but as a fact finding agency committed to the ascertainment of the truth. In the course of the investigation of the facts and rumors surrounding these matters, it was necessary to explore hearsay and other sources of information not admissible in a court proceeding obtained from persons who saw or heard and others in a position to observe what occurred (7).

The question of how well it succeeded is more difficult to appraise. The data disclosed through a special survey made by Louis Harris of a cross-section of the American public shortly after the release of the report is possibly suggestive of its success. The question and response (in part) were as follows:

The survey, completed after the issuance of the commission report, followed an earlier one taken just prior to release of the report. People were asked: From what you have read or heard, do you feel the full story is in the Warren Commission Report? Or do you think there are still a lot of unanswered questions about who killed President John Kennedy and how it was done? (8).

	Percent
Full story in report	45
Still unanswered questions	45
Not sure	10

Any investigation which fails to satisfy 55 percent of those for whom it was made can hardly be designated an outstanding success. It would be interesting to repeat the poll to learn what change, if any, has occurred with time.

Several carping essayists have left a legacy of critical commentary on the fact-finding and explanations offered by the various official governmental agencies, including the Warren Com-



mission (9, 10, 11). Contributing to this skepticism is the fact that the Commission, despite the high quality of its members, was nevertheless a case of the government investigating itself. To what extent such incredulity would have been mollified had greater use been made of nongovernmental investigators is difficult to assess. Certainly a cogent argument can be made that an independent review by autonomous investigators, and research scholars would have made for greater confidence in the Commission report. Unfortunately the suggestion that such people might be used in the following manner:

To assist in the review of the case as to the comprehensiveness of the investigation. Were any investigative leads not pursued to the ultimate? Were any overlooked? An objective, independent audit of the investigative procedures by people competent in the field of investigative administration is a major consideration for your commission (12).

was rejected by the General Counsel for the Commission with the statement that

... we are hopeful that the review of the underlying investigative materials by experienced members of our staff will be adequate to ensure that the investigation is thorough and accurate (13).

The demands of good scholarship should have been no different in this inquiry than they will be when the matter passes from contemporary interest to the concern of historiographers. Unfortunately little use was made of such scholarly resources and the work of the Commission is the weaker for it. Perhaps, to paraphrase Clemenceau, investigation was too important to leave to lawyers!

An example of scholarly concern with the investigative process is seen in the paper by Professor William P. Brown (14). He has suggested that the President's assassination must be regarded as one of a class of "crimes of national significance" and that in these cases our decentralized policing leaves an obvious gap in the resources and competence necessary to deal effectively with them. Following a discussion of how it would be possible to improve greatly future performance in such cases through institutionalized investigative responsibility, he further suggests that the prevention of any similar travesty of justice would be

#### WARREN REPORT, COMMENT OF A CRIMINALIST

an appropriate tribute to that great American whose death has brought to our attention this flaw in the administration of American criminal justice (15).

The assassination of high federal officials has since been taken care of. Under legislation passed in 1965, this would presumably be a simple federal offense (like treason) investigated and prosecuted in a routine way by regular federal agencies.

The problem remains however of dealing effectively with other crimes of national significance such as the assassination of foreign dignitaries on our soil.

#### GENERAL COMMENTARY

An abundance of physical evidence was available to the investigators of the assassination of President Kennedy. For example, the following types of clue material were found: Impressions—fingerprints and palm prints; hairs and fibers; ballistics—bullets, cartridges, a rifle, a bullet hole in glass, and powder residue; documents—handwriting, paper, and gummed tape; miscellaneous—a photographic negative, whose source had to be determined. The profusion of physical evidence, recognized and collected in the Kennedy case, is at least in part attributable to the resources which were poured into the investigation.

It is interesting to speculate whether a similar amount of physical evidence is often available in other homicides. Moreover, if such evidence is present, is it overlooked in many cases owing to lack of training or education, or is it disregarded owing to the lack of convenient criminalistic resources? It is my belief that there is considerable physical evidence present at many crimes, not just homicides, that is not profitably utilized for some combination of the reasons mentioned above. In any event a major use of physical evidence is to establish a connection between the crime scene and the criminal. This might be termed the development of *associative evidence* (16). This represents the greatest use made of the physical evidence in the Kennedy homicide.

#### INTERPRETATION AND RESEARCH

A close reader of the Warren Commission Hearings and Report will recognize through comparison of some of the testimony

an admission of a softly-mentioned problem in criminalistics, viz. the philosophical basis of interpretation of laboratory data obtained through the examination of physical evidence. The testimony also unwittingly underscores the genuine need for long-overdue, fundamental research which is necessary in order to establish objective criteria for the evaluation of physical evidence.

### Dichotomy in Interpretation

In its simplest terms the dichotomy in evidence interpretation may be stated as the black and white versus the black, gray, and white views. Almost all fingerprint experts are now in complete agreement with the former concept, as are some firearms experts (17). Rarely however are any of these individuals trained as scientists, so that the "it is" or "it is not" philosophy is readily accepted as satisfactory. Furthermore, as testimony, this view meets the requirements sometimes demanded by the legal mind; it does not produce the conflict which results when the "gray" area of doubt intrudes. This disagreement is reflected in the hearings. First let us consider the statement of the black-white view (18).

Q. . . . do you feel that the amount of markings here were sufficient to make positive identification?

A. Yes, sir.

Q. Have you made identification in the past with as few or less markings as are present on this bullet fragment?

A. Oh, yes; and on less, much less of an area. The character of the marks is more important than the number of the marks.

Q. . . . here you were of course unable to see all of the lines which were present on the bullet before mutilation. Have you ever had an occasion where you examined a bullet and saw one portion of it which was an apparent match and then found out that the balance of the bullet was not an apparent match?

A. No, sir; and if I understand your words "apparent match," there is no such thing as an apparent match. It either is an identification or it isn't, and until you made up your mind, you don't have an apparent match. We don't actually use that term . . . Unless you have sufficient marks for an identification, you cannot say one way or the other as to whether or not two bullets were fired from a particular barrel.

In other words, you cannot nonidentify on the absence of similarities any more than you can identify when you have no similarities present.

Q. In other words, you won't make an identification unless you feel enough marks are present to constitute a basis for a positive identification?

A. That is right, and I would not report any type of similarities unless they were sufficient for an identification, because unless you can say one bullet was fired from the same barrel as a second bullet, then there is room for error, and in this field of firearms identification, we try to avoid any possible chance of error creeping in.

Q. Do you avoid the category of "probable" identification?

A. Oh, yes; we never use it, never.

Q. And why is that?

A. There is no such thing as a probable identification, it either is or isn't as far as we are concerned.

Q. And in this case it is?

A. It is, yes.

In a discussion involving a different set of bullets (or commission exhibits), another witness presented the "gray" viewpoint when the issue was raised by counsel (19).

Q. . . . we had testimony . . . yesterday . . . that the . . . (laboratory) does not make probable identifications, but merely positive or negative identifications.

A. I am aware of their position. This is not, I am sure, arrived at without careful consideration. However, to say that because one does not find sufficient marks for identification that it is a negative, I think is going overboard in the other direction. And for purposes of probative value for whatever it might be worth, in the absence of very definite negative evidence, I think it is permissible to say that in an exhibit such as 573 there is enough on it to say that it could have come, and even perhaps a little stronger, to say that it probably came from this, without going so far as to say to the exclusion of all other guns. This I could not do.

Q. As I understand your testimony, therefore, you feel that there are sufficient identical microscopic characteristics on 572 and 573 to say that they were probably fired from the same weapon, but not enough to say that they were definitely fired from the same weapon.

A. Yes. My opinion would be based upon the finding of families of lines that would be of the order of two to four fine striations on the butt that I referred to. For a stronger identification, I would want a larger group, I would want perhaps five or six in a given area, all matching in terms of contour as well as position. But this I did not find. And so for that reason, I would not want to express this as a positive finding. However, I would not want to be misunderstood or suggest that this could not have come from that particular gun.

The literature supports the "gray" view taken by the last witness quoted. Indeed, an even more sophisticated statement (al-



though concerning tool marks rather than bullets) nevertheless expresses the most common view held by criminalists about evidence interpretation (20).

As a result of the microscopic or photographic comparisons made, four conclusions are possible:

1. No opinion or conclusion is reached due to alteration in the questioned mark or tool since the crime occurred.
2. The questioned tool did not make the evidence mark.
3. The questioned tool may have made the evidence mark, but a conclusive identification is not justified. Most cases involving tool marks where only class characteristics of the tool are present fall in this category. Occasionally, this conclusion may remain after microscopic comparison. The strength or value of this conclusion may vary greatly and depends upon the examiner's judgment of the probabilities involved.
4. The questioned tool did produce the evidence mark.

#### Research Requirements

Intimately connected with the question of interpretation is the problem of basic data, upon which objective criteria for the evaluation of physical evidence must be based. If the research work had been done and had been published, the problem would be relatively simple and such an evaluation possible. This indispensable, laborious work was started long ago and continues at a fantastic pace in the established sciences. In criminalistics however, where much of the pioneering effort was by nonscientists (as in ballistics or firearms identification, for example) there is a grave deficiency in published data. Indeed, it is almost nonexistent. Testimony reported in the hearings emphasizes unintentionally the scarcity of published data through failure to mention any journals in which such vital information is available. The subjective basis of firearms identification and the serious deficiency of data are clearly revealed in the following testimony:

Q. Finally, we had discussed briefly your examination of consecutively manufactured bolt faces to see whether any two such consecutively manufactured bolt faces were identical in their microscopic characteristics. How many such examinations have you performed?

A. I would say about four examinations of pairs of bolt faces which have been consecutively manufactured.

Q. And in each case the result was what?

#### WARREN REPORT, COMMENT OF A CRIMINALIST

A. The marks on one bolt face in no way resembled the marks on the other bolt face (21).

Q. Have you examined consecutively manufactured barrels to determine whether their microscopic characteristics are identical?

A. Yes, sir; I have three different sets of, you might say, paired barrels, which have been manufactured on the same machine, one after the other, under controlled conditions to make them as nearly alike as possible, and in each case fired bullets from those barrels could not be identified with each other; in fact, they looked nothing at all alike as far as individual microscopic characteristics are concerned. Their rifling impressions of course would be identical, but the individual marks there would be entirely different (22).

This testimony is typical of the type of explanation offered by experts throughout the country in this area of criminalistics and accepted by courts at all levels. Therefore it is not here intended to question the findings or qualifications of the firearms expert testifying, but rather to emphasize that there is a deficiency of published information available for reference purposes. Already some outsiders who for the first time are looking into the merits of scientific crime detection, have commented with astonishment (relative to lie detection) on the lack of basic research and the need for acquisition of data (23). Unless measures are taken to correct this pervasive shortcoming in many areas of criminalistics, the day is not far off when the legal profession will become sufficiently sophisticated in science to make cross-examination a justifiably harrowing experience. Presently it is the scientific ignorance of lawyers only that permits much of the testimony of crime laboratory experts to go relatively unchallenged. These statements are not a criticism of particular individuals but of police administration in general which has not responded to the recommendations of many crime laboratory workers that this state of ignorance must be remedied through creation of opportunities for applied research. As the United States Supreme Court closes the door on traditional investigative practice, greater use is going to have to be made of physical evidence at crime scenes. Criminalistics, as an organized field of knowledge, still has homework to do before it can play its fullest role in this new era that has been thrust upon law enforcement.

## SUMMARY AND CONCLUSIONS

1. The investigative procedure of the Warren Commission in some areas of criminalistics has been discussed in terms of stated objectives and the means employed to achieve them.
2. Examination of testimony, especially in instances illustrating dichotomy of interpretation, emphasizes the need for great expansion of applied research in criminalistic matters.
3. There is little doubt that the archival material now assembled in the form of records and reports of the agencies involved in President Kennedy's assassination provide the basis for further study into the question of investigative practice and theory.

## REFERENCES

1. President of the United States. President's Commission on the Assassination of President Kennedy. Report. Washington, D. C.: U. S. Government Printing Office, 1964, p. ix.
2. *Ibid.*, p. x.
3. *Ibid.*, p. x.
4. *Ibid.*, p. xi.
5. *Ibid.*, p. 472.
6. *Ibid.*, p. 472.
7. *Ibid.*, p. xiv.
8. Harris, Louis. "Many Doubtful On Assassination," *Courier Journal* (Louisville), p. 13, October 10, 1964.
9. Joesten, J. Oswald: Assassin or Fall Guy? New York: Marzani Munsell, 1964.
10. Buchanan, Thomas G. Who Killed Kennedy? New York: Putnam's Sons, 1964.
11. Farnsworth, C. H. "Briton Questions Warren Findings," *New York Times*, p. 30, December 14, 1964.
12. Personal letter to Chief Justice Earl Warren, dated December 17, 1963.
13. Personal letter from J. Lee Rankin, General Counsel of the Warren Commission, dated January 15, 1964.
14. Beyer, W. P. "Crimes of National Significance," *J. Crim. Law, Criminol. and Pol. Sci.* 55, 509-513 (1964).
15. *Ibid.*, p. 513.
16. Osterburg, J. W. "Significant Concepts in Scientific Criminal Investigation," *Law and Order* 12, 26 (July 1964).
17. Hatcher, J. S., Jury, F. J., and J. Weller. *Firearms Investigation Identification and Evidence*, p. 380. Stackpole & Co., Harrisburg, Pa. (1957).
18. President of the United States, *op. cit.*, Vol. III, p. 434.
19. *Ibid.*, p. 503.

## WARREN REPORT, COMMENT OF A CRIMINALIST

20. Burd, D. Q., and R. S. Greene. Tool Mark Comparisons in Criminal Investigation. *J. Crim. Law, Criminol. and Pol. Sci.* 39, 379-391, pp. 382-383 (1948).
21. President of the United States, *op. cit.*, Vol. III, p. 421.
22. *Ibid.*, p. 429.
23. United States Congress. House of Representatives Subcommittee of the Committee on Government Operations. Use of Polygraphs as "Lie Detectors" by the Federal Government. 89th Cong., 1st Session, 1965. Hearing, Part 6—Testimony of Department of Defense Witnesses, pp. 653-660, August 19, 1965.

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## Assassin Forger\*

(Documents related to the purchase of the murder weapons, and other aspects of the investigation by the President's Commission on the Assassination of President Kennedy)

Allyn Cole\*\*

When I am called "document examiner" I can say with much cordiality and considerable truth "You are another," because the use of documents in human affairs is universal and everyone must examine them, not just for information, but for validity. Any busy man is likely to produce several documents every day and receive a number for action. These documents are not accepted offhand but they are questioned, perhaps not consciously and deliberately, but by almost automatic review of one's experience in dealing with similar documents. A familiar term to document examiners is "standard for comparison." The basic experience everyone has in dealing with documents may be called the standard for test of any currently questioned document. In the ordinary use of documents, questions are likely to be, "Is the signature genuine?" "Was the document put forth in good faith?" "Does the document have some significance beyond its superficial or obvious meaning?" These questions are asked and answered quite rapidly and in most instances the document is quickly passed as genuine, or promptly acted upon, but when one of these questions fails to produce a satisfactory answer, the document may be tested more rigorously and it is usually as the result of these more searching questions that the document examiner is called upon

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## WARREN REPORT—FORGED DOCUMENTS

for close study of documents that have failed to pass regular tests for validity. So it is that the document examiner depends upon others to ask the initial questions. While the great majority of documents are genuine, the possibility of forgery is always present. Probably some forgeries are never questioned, and we know that some are not questioned soon enough to prevent the harm of which they are capable. Lee Harvey Oswald provided himself with photographic counterfeits of identification cards bearing a fictitious name. We do not know how many opportunities there might have been for these cards to be questioned, and we cannot help asking the question, even though it may not have an answer, at what point was Oswald set irretrievably upon the path of an assassin? Was it from the day that he found a method for creating by forged identification cards the fictitious character A. J. Hidell in whose name the murder weapons were purchased? Could early detection of these counterfeits have turned him from his course?

A document is defined in part as any material substance bearing a representation of the thoughts of men by means of any species of conventional mark or symbol. A significant element in this definition is that a document is a record of the thoughts of men. Documents give information about actions, accomplished or proposed, and they give information about the identity of persons, thus showing responsibility for actions, which, unhappily, are sometimes harmful or unlawful.

The examiner of questioned documents is concerned with a document as a record of thoughts—not necessarily as ideas but as purposes—and he is concerned with paper and ink as the material substances, with pen and pencil as the instruments, and often with handwriting, not just as conventional symbols but as individual and identifiable symbols. The examiner is concerned with many other materials or objects that may be a part of a document or affect a document. The usual purpose for examination is to form a conclusion about authorship, or about the source of a document, or about its relationships to other documents or other things, e. g., those which may fix the true date of a questioned document.

Most documents are brought to the examiner's laboratory with a specific question, but study of them is not usually limited to search for an answer to a single query. The examiner fre-



quently poses many other questions to advance his study of the document. This habit of seeing the document as a whole is not by any means an effort to invade other fields of study that have a more formal concern with the meaning of a document, but the examiner will have discovered early in his work that he cannot make a complete examination, even to answer a limited question, unless he takes a broad view of the document, which view must include not just an effort to answer a question, say of authorship of a signature, or presence of an alteration, but must embrace the document from the broadest aspect of its definition as a record of the thoughts or purposes of men. This approach often develops additional important information, and also it is one of the ways the examiner remains keen about his work.

The physical document, as opposed to an oral statement, offers attractive opportunities for extended study. Whenever documents are involved in an important or notorious event, it is the custom to make the studies in depth.

Documents demand our attention for as long as they may give some new thread of information, or give material for new interpretations of events. No doubt this will be true of the documents connected with the assassination of President John F. Kennedy in the city of Dallas, on November 22, 1963, the killing of police officer J. D. Tippit, and the death of Lee Harvey Oswald two days later.

The principal documents are those which bear upon the purchase and delivery of the carbine with telescopic sights used to fire the fatal shots from the sixth floor of the Texas School Book Depository, documents connected with the purchase and delivery of the pistol used to kill officer Tippit, and documents which showed the establishment of the alias in the name of Alek James Hidell. These documents were not immediately available at the time of the assassination but were disclosed by painstaking investigation. Under questioning by Dallas police and federal law enforcement officers immediately after arrest, Lee Harvey Oswald denied any connection with the deaths of President Kennedy and officer Tippit. He lived barely 48 hours from the time of his arrest; therefore, the information developed by study of documents is of great importance.

The assembly of questioned documents that may appear to bear upon a crime usually occurs before collection of necessary standards for comparison, and we have observed that some investigators seem to feel that the main part of the job is finished once the questioned documents have been found, but the first concern of the document examiner is about the nature and extent of the standards. To consider our position for forming conclusions about the documents related to the assassination of President Kennedy, it is in order to review those documents which may be regarded as standards for comparison. These standards also give information about the temperament, problems, and movements of Lee Harvey Oswald.

When a person is suspected of a crime which requires study of documents it may be found that he has lived a shallow and narrow life that produced few documents for use as standards. While it cannot be said that Oswald lived a full life in a constructive sense, he did produce a good variety of documents, particularly those that gave examples of handwriting and hand printing. Indeed, it seemed to be a part of Oswald's personality to produce more writing than necessary in a given situation: witness, the three letters to the Immigration and Naturalization Service, Item (b) below, all making the same inquiry, and the five page brief in support of application for review of his undesirable military discharge, a document having little information but much writing. The principal documents bearing standard writings (1) are as follows:

- (a) A single-page handwritten letter to the Department of State received there November, 1962, transmitting a payment on a loan advanced by the United States Embassy in Moscow. The letter has a brisk, businesslike tone, giving the account number and demanding a receipt for the payment. The signature is that of Lee H. Oswald, and the address is given as P. O. Box 2915, Dallas, Texas. This address makes the letter especially valuable as a standard for comparison because the same address appears on four of the questioned documents, as the one for delivery of the assassination weapons.
- (b) Three single-page handwritten letters from Oswald to offices of the United States Immigration and Naturaliza-



tion Service in San Antonio, Fort Worth, and Dallas, Texas, after his return from Moscow where he had offered to give up his United States citizenship. In these letters he makes sharp inquiries about a certificate of citizenship for his four-month-old daughter born in Russia. Each letter is signed and each letter includes some hand printing along with the larger body of cursive writing. The hand printing is important as a standard because some of the questioned material is in that style.

- (c) Application for review of undesirable discharge from the United States Marine Corps filed with the Department of Defense in June, 1962, containing a considerable quantity of hand printing and a brief in support of the application running to five pages of cursive writing: The address is given as Kalinina Street, Minsk, U. S. S. R. at the end of the brief. The "K" of "Kalinina" is important for comparison with the first letter of the name of the firm from which the assassination rifle was purchased. A certain "G" in the word "Glenview" on the fourth line of the first page of the brief is important for comparison with the "G" of "Goods" in the name of the firm that supplied the murder weapon.

- (d) An application filed with the Department of State, showing issuance of a passport to Lee Harvey Oswald, bearing hand printing, a signature, and a photograph. This is of the same person shown in the photograph on the counterfeit Selective Service Card, bearing the name "Alek James Hidell," Item 7 below.

- (e) Two envelopes, postmarked Fort Worth, Texas, June 19, 1962, and August 1, 1962, addressed to the Navy Discharge Review (one reads "Reveiw") Board, Washington 25, D. C. These envelopes show two variations of hand printing, one that is chiefly lower case, and the other chiefly upper case, but also showing, as does most of Oswald's other hand printing, a mixture of the two styles. This illustrates the truism that a person does not record all of his writing habit in any single specimen but may require several documents prepared at different times to approach a complete recording.

- (f) A diary of many pages maintained by Lee Harvey Oswald while in Russia and probably continued after his return to the United States (2). These diary sheets have stains typical of those known to result from efforts to develop latent fingerprints, but the writing is still legible and can be photographed to give a somewhat better legibility than the stained originals so that they serve well as standards for comparison. Oswald was able to write at a fair speed but not with easy fluency when trying to achieve best legibility so that the hand printing of this many paged diary must have been an onerous task for him.

- (g) A note to the American Civil Liberties Union, received November 4, 1963, with accompanying card made out by Lee H. Oswald. This card shows some of Oswald's best hand printing, but, notwithstanding the effort to print clearly, his occupation is given as "PHOTOGRAPHER." It is interesting to contrast the hand printing on this card with the more careless entries on the library card, Item (h)—where he gives his occupation as "Mechanic." Misspelling of occupational names by Oswald is not less strange than mutilation of his signature, mentioned in Item (i).

- (h) Application for a library card of the New Orleans Public Library, No. 8640, showing the hand printed name "Oswald, Lee H." and the signature of the same name, with certain other hand printing between the two, but not including any of the other writing on the card.
- (i) Signatures as endorsements on salary checks issued from October, 1962 to March 1963, inclusive. Some of these signatures have a normal legibility for Lee H. Oswald and some few show an effect of mutilation. Most people write signatures with pride, aiming either at legibility or distinctiveness, and sometimes for a balance of the two. This is not true of Oswald, but insofar as a writing may be said to convey an emotion, as might a gesture, some of these signatures seem to be written in anger.
- (j) A change of address card dated May 1, 1963, bearing identification data across the lower line which apparently connects it with the application for review of discharge.



This card signed by Lee H. Oswald bears a considerable quantity of hand printing, which makes it valuable for comparison with certain other cards that bear the critical address "P. O. Box 2915" and with still another card that bears the name "A. J. Hidell" as a person authorized to receive mail in the box assigned to Lee H. Oswald.

It is rare that a document problem is accompanied by such extensive and varied standards for comparison, embracing, as they do, documents made upon different occasions for different purposes, with cursive writing as well as hand printing, careful writing and careless, coextensive in time with the questioned material, and all having an internal consistency, that is, clearly identifiable as the act of the same person so that the whole body of the standard writing and every detail of it is available for comparison with the questioned material. These standards give a nearly ideal opportunity for studying the writing of Lee Harvey Oswald in preparation for comparison with questioned writings. They contain a detailed record of his writing habit, which is fully sufficient as a basis for identification or differentiation of other handwriting and hand printing. The questioned documents are those related to purchase and delivery of the assassination weapons, to establishment of the alias "Alek James Hidell" or "A. J. Hidell," and use of the address "P. O. Box 2915, Dallas, Texas." The principal questioned documents are as follows:

- (1) United States Postal Money Order, dated Dallas, Texas, March 12, 1963, in the amount of \$21.45, made out to "Klein's Sporting Goods," the purchaser's name being given as "A. Hidell" (3). This is in payment for the carbine with telescopic sight.
- (2) Microfilm copy of an envelope addressed to Klein's... Chicago, Ill., with microfilm reproduction of the coupon order for an article now known to be the assassination weapon, specifying delivery to "A. Hidell, P. O. Box 2915, Dallas, Texas (4).
- (3) Coupon order form of Seaport Traders, Inc., Los Angeles, California, for "1 .38 St. W. 2" Bbl" (revolver) at a cost of \$29.95, again calling for delivery to "A. J. Hidell, P. O. Box 2915, Dallas, Texas" (5). The requirement of

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a firearm must be regarded as a serious and deliberate act, yet it is strange that the writing on this order form appears to be below the ordinary skill of the author. We have heard of persons who express themselves in a manner calculated to obscure understanding, and it may well be asked why a person should produce handwriting with less than the best legibility of which he is capable in this particular situation, especially in view of the circumstances that he has shown the seriousness of his intent by enclosing a sum of money with the order. Another way to put this question is this: Why is not the order for the revolver at least as legible as the hand-printing on the membership card for American Civil Liberties Union, Item (g) above?

- (4) Change of address card, dated May 12, 1963, signed Lee H. Oswald, giving a new address in New Orleans, Louisiana, and showing the old address as P. O. Box 2915 (6).
- (5) Application for a post office box, dated New Orleans, June 11, 1963, showing the name of A. J. Hidell (and Marina Oswald) as authorized to receive mail in the box assigned to the person who signs as "L. H. Oswald" (7).
- (6) International Certificate of Vaccination, dated June 8, 1963, signed in the name of Lee H. Oswald, and bearing a signature purported to be that of Dr. A. J. Hidell, which spelling is repeated in the stamped impression below the signature (8). The designs of letters in this impression are closely similar to those in a certain rubber stamping kit found among Oswald's effects after his arrest. The signature in the name of Lee H. Oswald on this certificate is distorted as by extreme speed, yet it is identifiable as the signature of Oswald, and a part of the similarity in the name A. J. Hidell to the writing of Oswald is its similarity to the signature in the latter name on this document.
- (7) Selective Service System Notice of Classification (photographic counterfeit), purporting to have been issued to Alek James Hidell, signed in that name, but bearing a photograph of Lee Harvey Oswald (9).



(8) Handwritten letter, single page, to Leslie Welding Co., Fort Worth, Texas, signed Lee H. Oswald, and showing the address as Box 2915, Dallas, Texas. (This letter has been classified "Questioned" as a part of the method of examination reviewed in this paper, because it includes an item that was to be proved, namely "Box 2915 Dallas, Texas," which stands apart from the body. The letter could as well be placed with the standards as it is fully consistent with them.)

These eight documents contain enough questioned writing, cursive and hand printed, to include a good record of the writing habit of the author. The writing is natural for the most part but some elements appear to have been affected by an excess of care, whereas other parts show more than average carelessness, or deliberate distortion. It does not appear, however, that any modifications in these questioned writings were for purposes of disguise but only that different levels of care or carelessness were characteristic of the writer.

The formal conditions for comparison of handwriting have now been established; namely, the presence of a body of standard writing judged to be individual and distinctive, and giving a detailed record of writing habit, and, on the other side, questioned writing also judged to be the product of habit which is extensive enough to show an identifiable pattern.

Handwriting is identified by the presence of a combination of personal writing habits in the standard and questioned specimens beyond any reasonable possibility of coincidence, in the absence of any significant differences, and absence of evidence of forgery as by tracing, drawing, sketching in the questioned specimen which could give superficial appearance of similarity. The number of points of similarity and the weight assigned to them are necessarily matters of judgment by an experienced document examiner, but these are by no means arbitrary judgments since their reliability can only be established by having made a large number of examinations in cases comparable to the one under immediate study, with independent tests of their correctness, so that each new comparison is referable to a body of experience in dealing with comparable cases.

The procedure of comparison after thorough study of the standards, is to take up each item of questioned writing and

to compare it with the entire body of the standard writing with particular attention to individual letters and elements of letters, combinations of letters, connections, approach strokes, terminal strokes, proportions, movement, alignment, spacing, and other details wherein habit is revealed. Of course, the most useful areas for comparison are those where questioned and standard material repeat the same word, letter, or combination of letters, but this does not mean that any other parts are neglected. It is self-evident, however, that a habit in the standards related to a word, say the name "Texas", is best compared with repetition of the name "Texas" if it appears in the questioned material, but the five letters of this name are studied wherever they appear in these writings.

The comparison of standard or known writings of Lee Harvey Oswald with the questioned writings that show purchase and delivery of the assassination weapons and use of an alias reveals a complete agreement in all significant details of writing habit, which agreement is fully sufficient in number of points and the weight that can be assigned to these points to warrant the belief that Lee Harvey Oswald is the author of all of the questioned writing. There is no significant difference and no evidence in the questioned writing to suggest simulation of the appearance of Oswald's writing by some other person. The nature of the agreement between the standard writing and the questioned writing is about the same as that between different items of the standard writing, which is a fair test of the correspondence that may be expected within different specimens of the writing of the same person.

The process of comparison can absorb many hours of time but when it is performed with the view of a possible need to repeat the process in circumstances that require limiting the time for presenting the results of comparison to another person, then the body of standard writing is searched for typical or characteristic samples that can be brought together within a small space in the form of excerpts from photographic copies. This procedure sometimes involves the mounting of questioned and standard specimens on a single chart so that comparison can be made with the smallest amount of eye movement. A modification of this method was necessary in dealing with the several questioned specimens and the large body of standard

writing since a fair sample of the latter would still take a considerable amount of space and make it inconvenient to anchor any one questioned specimen to a single chart. The method selected for shortening the process of comparison was to prepare three charts of standard writing, two showing cursive writing, and one of handprinting, of such moderate size that all three could be laid before an individual viewer who might then take up each questioned specimen and move it over each chart while giving attention to the most convenient areas for comparison. Charts A, B, and C represent a sampling from the large body of standard writing of Lee Harvey Oswald. The black bordered inset on each chart shows questioned writing and suggests the movement of this specimen, which is the writing on the postal money order to Klein's, along each line of each chart for appropriate comparisons where letters and combinations of letters, and elements of letters are repeated within the questioned and standard specimens.

Each chart offers several different elements for comparison. For examples: On Chart A, line 2, in the word "support" consider the last four letters. Then direct your attention to the word "port" on line 3, and to the same combination of letters in the word "transportation" of line 4. You will observe an habitual pattern in the formation of these letters which is closely similar to those in the word "Sporting" of the questioned writing of the inset just below line 4. Specifically the details of agreement are—and this description applies to both questioned and standard specimens—the letter "p" is made without an upper extension but has a short, retraced lower extension instead of a loop. The body of the letter (that part on the writing line) is angular in form and open at the base, not closed against the staff as in the conventional letter. The oval form of the "o" is determined almost entirely by curvature of the up stroke on the right side of the letter, with the left side almost straight. The connection between "o" and "r" is blended with these two letters and has an almost exactly horizontal aspect, with no indication of any tendency to return to the writing line. There is a sharply angular connection between the base of the "r" and up stroke of the "t." In the examples of the lower "r" on lines 2 and 3 the crossbar is placed quite low as it is in the questioned specimen.

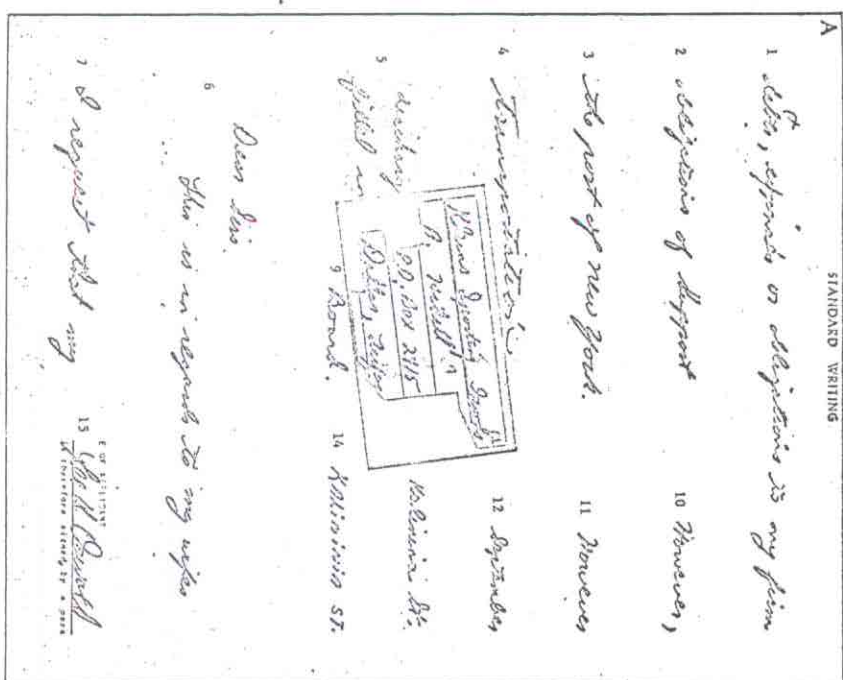


Chart A: The inset (black background) shows questioned writing on the postal money order in payment for the carbine with telescopic sight shipped to the address shown. All other writing is from documents submitted as bearing the standard or known handwriting of Lee Harvey Oswald.

Chart B of standard writing shows the inset of questioned writing opposite line 3 and just below line 10. This chart has two examples of the writing of the address "P. O. Box 2915,"



B  
STANDARD WRITING

1 *Lee H. Oswald*  
2 *441 N. Poydras*  
3 *St. Louis, Mo. 63102*  
4 *Mr. J. Edgar Hoover*  
5 *Washington, D.C.*  
6 *Dear Sir:*  
7 *I am writing you to inform you that I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
8 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
9 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
10 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
11 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
12 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
13 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
14 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
15 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*

Chart B: Again the inset shows questioned writing, which is the same as that of Chart A, but shown here with a variety of additional standard writing.

which are items 1 and 9 of the chart, and these show a close similarity to the same address of the questioned specimen. A noteworthy feature of the figure "5" is the long cap stroke in writing. This chart has two examples of the word "Texas" a cursive writing on lines 4 and 13. Here again there is an exact agreement with the word "Texas" of the questioned writing.

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C  
STANDARD WRITING

1 *LEE H. Oswald*  
2 *441 N. Poydras*  
3 *St. Louis, Mo. 63102*  
4 *Mr. J. Edgar Hoover*  
5 *Washington, D.C.*  
6 *Dear Sir:*  
7 *I am writing you to inform you that I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
8 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
9 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
10 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
11 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
12 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
13 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
14 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*  
15 *I am a former Marine and a member of the Texas School Depository. I have been advised by the FBI that you are interested in the case of Lee Harvey Oswald.*

Chart C: This chart shows hand printing and numerals from the standard writing of Oswald for comparison with relevant parts of the questioned writing shown by the inset. This method of illustration provided for movement of each item of questioned writing over the three charts of standard writing with a stop for close comparison at any point.

ing. Of particular interest is the method of making the letter "x." For proper study a microscope is required whereupon it would be found that the body of the letter, exclusive of the crossbar, is made in the form of a small letter "u" with the second cusp placed somewhat higher than the first. It is as



though the writer believed he might form the "x" as a continuous movement without the need for a separate bar, but since it develops in the form of a letter "u" then the final stroke is added directly across the second cusp. This is a highly unusual method of forming the letter "x" and it is the same in both standard and questioned writing.

Chart C shows standard hand printing. The inset of questioned writing is at line 4 with the address "P. O. Box 2915" in a form of hand printing, and a printed "A" on the line just above. Here again, a microscope is required to see the precise construction of this "A" which begins with a downstroke on the left side that is almost exactly retraced by the following arched upstroke, with the crossbar confined within the body of the letter. This description of the "A" is true for both questioned and standard letters. These elements of the "A" can be seen best in the standard writing in Item 6 in the abbreviation "LA." Chart C has three writings of "P. O. Box," in Item 4 (right side of chart), and in Items 6 and 7. While these standard elements occur in a context of handprinting they agree exactly with the same text in the questioned writing which is associated with cursive writing. An especially close comparison is between line 7 and the inset of questioned writing showing "P. O. Box". A noteworthy feature is that of closing the letter "O" about one third of the way down on the left side by means of a stroke that moves to the left across the top of the letter and then downward.

There are many other similarities of this order between the questioned writing and the whole body of the standard writing. It will have been appreciated from this description which has covered only a few letters that a considerable amount of time is required to locate and study in detail each stroke of each letter. Even then the comparison would not be complete until there has occurred a diligent search for any difference that might have to be classified as one of writing habit to raise the question of possible authorship by another person. This search for differences ordinarily runs parallel with the study of similarity, but is also subject to a separate review examination. This search has not revealed any significant differences between the questioned and standard specimens other than those chargeable to normal variations, and there are none that re-

quire classification as part of a pattern of writing habit of some other person. Instead, there is a pervasive similarity in all significant details between the standard writing and all of the documents related to the purchase and delivery of the murder weapons and related to use of an alias which similarity is enough to warrant the firm belief that all of this writing is in the hand of Lee Harvey Oswald.

#### Summary and Conclusions

Handwriting is produced by the operation of habit. The process of learning to write means the acquirement and development of a set of habits which makes the production of handwriting efficient. It may be said that habit is that which makes handwriting possible. Assuming an opportunity to examine large samples of handwriting wherein individuals have a free opportunity to record all or a substantial portion of personal writing habit, the possibility of finding extensive coincidence is extremely remote. While every literate person has a natural ability in recognizing individuality in handwriting, the forensic identification of handwriting is properly a specialty, involving a formal responsibility for making such judgments subject to rigorous tests of correctness over a substantial period of time so that each new problem is referable to a body of experience with similar problems. The statement by a document examiner that two handwritings, one of known authorship and the other having been of unknown authorship are in the hand of the same person means (1) that similar judgments have been made in comparable cases, so that each such previous instance gives statistical support to the current judgment, and (2) that he stands ready to demonstrate a substantial part of the reasons for his conclusion. Other conditions for such a judgment are adequate standards and a questioned specimen of sufficient scope to give full opportunity for recording writing habit. The documents related to the assassination of President John F. Kennedy are unusual in the large quantity and variety of standard and questioned writings. Their detailed similarity warrants the belief that all of the standard and questioned handwriting is by Lee Harvey Oswald. Beyond the identification thus shown, the documents give information

about the temperament, problems, and movements of their author, and they point to the need for early detection of forged and counterfeit documents to forestall more serious crime.

## REFERENCES

1. Report of the President's Commission on the Assassination of President John F. Kennedy, United States Government Printing Office, Washington, D. C., 1964, pp. 119, 569.
2. *Ibid.*, pp. 259, 264, 392.
3. *Ibid.*, pp. 119, 120, 567, 569.
4. *Ibid.*, pp. 119, 120, 567, 569.
5. *Ibid.*, pp. 121, 567, 570.
6. *Ibid.*, pp. 121, 567, 570.
7. *Ibid.*, pp. 121, 567, 570.
8. *Ibid.*, pp. 121, 122, 577.
9. *Ibid.*, pp. 121, 571, 574.

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## Psychiatric Observations on the Warren Commission Report\*

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This psychiatric study of the Warren Commission Report (1) will present, initially, an overall view of the report and then undertake a more detailed and critical study of the personality profile of Lee Harvey Oswald with particular reference to motivation.

The Warren Commission Report has put to rest irrational apprehension and anxiety created by the assassination of our President at a critical time in the nation's history. Following the acute period of mourning, and after the recovery from the initial shock of the tragedy, rumors of conspiratorial involvement of either the ultra-right or the ultra-left were rampant. The findings presented by the Warren Report are of sufficient detail to negate rumors of conspiracy. Evidence is sufficient to point to Oswald as a lone assassin. The history of the rifle which killed President Kennedy, the ballistics tests subsequent to the assassination, the trajectory studies which establish that the shots came from the Texas Schoolbook Depository, the spicule of glass chipped from the *inside* of the windshield of the presidential vehicle offer convincing evidence to the critical reader. The conclusion which the Warren Report establishes is the absence of either a right-wing or a left-wing conspiracy, a fact which may be of considerable significance in the history of the United States in the years to come. The assassination of President Lincoln 101 years ago is still the subject of conspiratorial accusation and this subject matter has not yet been exhausted.

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The American public may be reassured that the life of our President was not extinguished by deliberate plan of an internal or external group of assassins for any racial, political or religious cause. The Commission has performed a conscientious, detailed and often brilliant task.

Only an individual set and rigid in his belief that our society is corrupt will continue to doubt the facts established by the report. Certainly evidence is not suppressed and areas of controversy are reported in detail. The Commission found no evidence that anyone assisted Oswald in planning or carrying out the assassination.

Herbert L. Packer, professor of law, Stanford University, reports in "The Nation," November 2, 1964, "The Warren Commission has admirably fulfilled its central objective of producing an account of the circumstances under which President Kennedy was assassinated that is adequate to satisfy all reasonable doubts about the immediate, essential facts. We now know as much as we are ever likely to know about what happened in Dallas. Why it happened remains, perhaps forever, obscure. If there are minor flaws in the report—some unavoidable, others, as I shall suggest, that might have been corrected—they are thrown into shadow by the conscientious and at times brilliant job that the Commission has done. Only those for whatever reasons of personal or political myopia cannot bring themselves to face reality will continue to think that the tragedy was proximately the work of more than one man and therefore ultimately the outcome of a conspiracy" (2).

Professor Packer is of the opinion that those who would revise the Warren Report are now merely "flogging a dead horse." It is quite easy to attack the inaccuracies of the statements made by a district attorney, statements which repeated not only inaccuracies but also suspicions and rumor while presenting the central district attorney's case to the television audience. The central findings of the Commission have not been refuted; these findings are that all the wounds sustained by both President Kennedy and Governor Connally were fired 1) from above and from the rear, 2) that these shots were fired from the sixth floor of the Book Depository, 3) that the shots were fired from a rifle, a Mannlicher-Carcano, found on the 6th floor of the Depository, 4) Oswald was the sole owner of this rifle and it was purchased

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through mail-order, and 5) the shots could have been fired by Oswald who was in the Book Depository at the time.

None of the basic facts of the Warren Report depends upon "eyeball" witnesses.

That Oswald was capable of firing a gun at another human whom he looked upon as an enemy is certainly probable. Although the attempt to kill Major General Walker is peripheral to the topic under discussion, there is a note in Oswald's handwriting written before the attempt on Walker's life which reveals Oswald's intent; and evidence substantiates that Oswald "cased" General Walker's home, for pictures taken by a camera owned by Oswald were found among his possessions (3). It is but anticlimactic to report that Oswald's wife stated that Oswald told her that he made an attempt on the life of General Walker. Undoubtedly Oswald was capable of planning and of executing homicide.

What is lacking in the Warren Commission Report is a structured study of Oswald which sufficiently reveals his personality, growth and emotional development. Motivation appears the item most deserving of study and investigation. Here the Warren Report bogs down into a compilation of interviews with significant persons which, while detailed, falls far short of developing any body of knowledge on which the dynamics of Oswald's personality and of his motivation can be adjudged. Mr. Murray Kempton, a columnist for the New York World Telegram, reported in the "New Republic" of October 10, 1964 as follows: "We are the only appellate court the ghost of Lee Oswald will ever know, and so it becomes our duty to cast the coldest eye we can upon a version of the life of Lee Oswald and the death of John F. Kennedy that has been produced by men who have sifted through the memories of 522 witnesses. It is no consolation under these circumstances to read, in the Warren Commission's Report, page after page of ratiocination of the source of Lee Oswald's interior quarrel, and then to look in the appendix and discover that the Commission hired for its staff two Army historians and no psychiatrists. It heard only two witnesses who were psychiatrists, one of whom saw Oswald last when he was 13, and the other of whom saw only Jack Ruby. The Commission has acted faithful to the great tradition of a nation of persons who practice psychiatry



without a license; we then can go forward with less shame to practice the Commission's profession without a license" (4).

Experts in the forensic sciences are experts only when they speak authoritatively in those areas in which they are adequately qualified. While an analytical chemist may report on findings of milligrams percent of alcohol found in a specimen of blood in his laboratory determination, he is not necessarily qualified as a student to study the physiology of alcohol or the motivations which involve an individual in the imbibing of alcohol. It may be tragic when a specialist in biochemistry testifies in criminalistics if he is not informed in this area. It could be equally tragic if a specialist in ballistics were to testify on a specimen of handwriting. How, then, may a lawyer assume competence in the critical area of motivation? The legal mind is trained to assess fact and intent. His training and purpose prepare him to discredit rumor, speculation, conjecture and most of all, motivation.

After a comprehensive study of the Warren Report, this writer was astonished to learn that of the 522 witnesses interviewed or deposed and over 25,000 reports presented to the commission, no psychiatrist studied any data gathered by the formal and official sources or by the investigators and attorneys for the commission. The Warren Commission, composed of a group of outstanding attorneys, competently staffed with assistants trained in the law, appeared to follow the practice altogether too common in the current scene of practicing "lay" psychiatry. It is well known that the law is interested in intent, particularly in matters involving major crimes; indeed it is this fact that is the cornerstone on which the doctrine of mens rea is based. Motivation, the study of unconscious forces, upon which behavior is based is clearly and distinctly *not* the concern of the law, for it is based on conjecture rather than fact, concept rather than a knowledge of purpose. Yet it is interesting to note that an assistant counsel for the Warren Commission, Mr. Jenner, in deposing Mr. Kerry Wendell Thornley was probing for motivation which I insist is not within the realm of legal competence although I must agree that in a modern criminal trial the jury and the judge, the attorneys and the newspapers are all profoundly in search of and deeply affected by motivation. To quote Mr. Jenner, "We are dealing in a very delicate

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field here, and I am pressing you very severely." Mr. Thornley, a one-time Marine colleague of Lee Oswald, replied, "These are sometimes very grey thin lines we have to distinguish between." Mr. Jenner then stated, "*We are probing for motivation*" (5). Despite pages upon pages of detailed information gathered by competent police and legal investigators, the report is quite deficient in establishing motivation.

While reading the report in detail, the writer found himself in many ways assuming the position of a juror listening to evidence. Ballistics data, fingerprint studies, report of investigators tracing the gun and the pistol, and details of this sort are adequately presented and convincing. Occasionally, however, data are presented, which, were the investigators perhaps a bit more alert to the implications of the content, the questions asked of Oswald might have been made more enlightening and indeed more revealing. For example, early in March or late in April 1963 the Oswalds lived on Neely Street in Dallas in a little house which had a small backyard. On a Sunday, according to the wife, Oswald asked her to take a picture of him holding a pistol, a rifle, and issues of two newspapers, identified later as the "Worker" and the "Militant." Two such pictures were taken (6). These pictures have a particular significance for they clearly reveal Oswald's lack of affiliation in fact with either the Communist party or the Socialist Workers party. Students of the political parties of the left recognize that membership in the Communist party and the membership in the Socialist Workers party are totally incompatible. Oswald considered himself a Marxist but not a Marxist Leninist, stating that he was not a member and did not believe in the principles of the Leninist party which is the Communist party. On his return from the Soviet Union he carried on a limited correspondence with the Socialist Workers party, attempted to join that party, and actually subscribed to the "Militant," the official party newspaper of the Socialist Workers party.

In August of 1962, the Warren Report in detail notes that Oswald attempted to initiate dealings with the Communist party, USA, by subscribing to the "Worker" and he continued some correspondence in connection with his "Fair Play for Cuba Committee" (7). He had formed this "Fair Play for Cuba Committee" under the alias of Hildell and he was the sole member!



In addition, he wrote to the Socialist Labor party identifying himself as a member of the "Fair Play for Cuba Committee." It is important to note that neither of the above-mentioned groups of the left report any active participation or membership affiliation of Oswald. Indeed, Oswald was a loner, and it appears that he wanted more immediate recognition and instant acknowledgment as a political leader from all the leftist fronts. Although he claimed to have membership of 35 in the "Fair Play for Cuba Committee" in New Orleans, there is adequate evidence that Oswald was the only member and that he had an alias, Hidel, a name so closely synonymous with Fidel that its origin can be readily identified.

The photograph of Oswald holding two newspapers which represent the official publications of political parties that are thoroughly antagonistic gives convincing evidence of the fact that Oswald lacked affiliation with any of the parties on the left, that he was a loner, and this confirms the facts of the Warren Report. As a personal observation, I find the pictures more convincing than reams of print.

Childhood and development history of Lee Harvey Oswald reveal that as early as age two he was an unmanageable child usually under the care of baby sitters while his mother was employed. At the age of three he was placed in a children's home where for a critical 13 months he was visited only occasionally by his mother. When anticipating remarriage, Mrs. Oswald withdrew Lee from the children's home and he lived with her briefly. After her marriage to Mr. Ekdahl, Lee remained in her home until his mother was divorced in 1948.

A review of the history of Lee Oswald conveys the distinct impression that his home life was utterly unstable, that his family moved frequently between Fort Worth, Texas, Covington, Louisiana, and back to Fort Worth with frequent moves in the last city necessitating many school transfers while in mid-session. His earlier years in New Orleans were indeed hectic. For several years his older brothers had been placed in boarding schools. Study of the significant early years of Lee Harvey Oswald reveals an essential rejection by the mother and a lack of identification with a significant adult. This pattern usually leads to delinquent behavior.

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The personality of Lee Oswald was characterized during boyhood by withdrawal. He played by himself, frequently refused to leave home and, by the age of 10, he preferred to stay indoors and read comic books and listen to the radio. He was described as robust and "mean when he was angry, just ornery." After a married older brother joined the Coast Guard and moved to New York, Mrs. Oswald took Lee to visit and remained for a brief period with her older son. While living with his brother, Lee, then aged 13, fought with his sister-in-law by holding a pocket knife on her during a quarrel, giving evidence of a rage reaction when frustrated of considerable future significance.

Once settled in New York, Lee Oswald's school adjustment deteriorated and the mother transferred him from a Lutheran day school to a public school. He attended school about one day in four and received failing grades in the 7th grade. Truancy hearings were held. Both Lee and his mother were absent. The record is replete with evidence that the mother was as skilled in manipulating her environment as was her son. On a series of occasions she explained his behavior as "due to difficulty in adjusting to his new environment." Lee was declared truant and was remanded to Youth House for psychiatric study. He refused to appear before the presiding judge. Dr. Renatus Hartogs, the only psychiatrist who examined Lee, who was then aged 13, indicated that Lee was a withdrawn and socially maladjusted boy whose mother would not interest herself sufficiently in his welfare (8). His mother had failed to establish a relationship with her son. Mrs. Oswald had considered Youth House as unfit for her son. Dr. Hartogs recommended probation for the boy with a child guidance clinic follow-up and also urged the mother to contact a family service agency for social service assistance. Once the boy had been placed on probation he completed the 7th grade but he soon returned to his previous pattern of truancy and by the time he was in the 8th grade the probation officer was ordered by the judge to make a referral to either an industrial farm or a children's village for residential treatment. Mrs. Oswald rejected the order of the judge; it was evident from reading the report that Mrs. Oswald was reluctant to cooperate with the advice of



the court. Fearful that the boy might be retained in some type of protective custody, Mrs. Oswald took Lee out of the jurisdiction of the court early in 1954 and returned to New Orleans where Lee completed the 8th grade.

During the ensuing few years, Lee was described as demanding and insolent toward his mother and several witnesses have reported that the mother had little or no control over her son. By the fall of 1955, Lee Oswald wrote a note to which he signed his mother's name stating that he must quit school because the family was moving to San Diego. This was a falsehood. After his sixteenth birthday he tried to enlist in the Marines using a false affidavit from his mother stating that he was seventeen. His older brother, John, had joined the Marines using similar tactics. The mother had actually signed the affidavits in both cases (9).

There certainly seems to be some identification between Lee and his older brother for Lee spent his entire sixteenth year memorizing the Marine Manual which he had received from his brother. As soon as he was 17 years of age he joined the Marines.

The pattern of development thus far revealed in the above sketch is not at all deviant from that of scores of young adolescents whose behavior can be considered collectively as delinquent. The pattern of manipulation of the environment by the mother, the free utilization of false affidavits, which is manipulating as well as rejecting, and the overall protection of the delinquent son by evasion, counter hostility, and manipulation is clearly demonstrable.

That Lee Harvey Oswald used rage reactions and temper tantrums to gain his ends indicates the degree of character disorder already prevalent; yet nothing is revealed which is deviant from the case histories of scores of young delinquents. Lee Harvey Oswald's behavior while in the Marine Corps was a continuation of his boyhood pattern; he stayed to himself, did not play cards or work out with the others, read a good deal, violated the usual routine and had to undergo several court martials. The first court martial was in response to an episode in which he stored a loaded pistol in his locker which discharged and sent a bullet into his left elbow. The second

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court martial followed pouring beer on a noncommissioned officer and cursing him while Oswald was intoxicated in a cafe in Japan. He was so difficult in barracks discipline that other members of his quonset hut secured his transfer to another barracks.

Unquestionably he had a pronounced interest in world affairs and appeared much better informed on the international issues than some of his officers. He frequently baited his superiors into conversation in which he could appear the better informed. It was obvious that he had a great desire to appear both intelligent and knowledgeable. Throughout the Marine Corps stay he studied Russian and favored the Castro government in Cuba, a belief that was not unpopular in 1959.

A review of the boyhood and young manhood of Lee Harvey Oswald indicates little more than rejection, withdrawal, and a compensatory need for a self-assertive aggressiveness in areas of politics, religion, and philosophy. These tendencies are not much different than those views expressed by any number of young rebels to the social order. A much more detailed study of motivation is needed in order to distinguish those particular qualities in Lee Harvey Oswald which might differentiate him from the majority of young delinquents.

I am reluctant to become embroiled in those areas which properly belong to the discussants skilled in the law. There was certainly indication upon reading the Warren Report, that much of the evidence presented by the investigators would probably be challenged on cross-examination. Certainly the right of Oswald to assert his innocence, to have access to an attorney, and to be reasonably secure while in custody are topics that are more deserving of legal study than psychiatric comment. I am more concerned with the particular issue which the report presumes to cover through pages and pages of rationalization, comment and opinion expressed on the personality of Oswald in the absence of study and consideration by any medically or psychiatrically qualified staff member. Here, to my mind, lies the weakness of the Warren Report; it is not too late to supplement the lay psychiatric opinions with a conservative professional study of the significant relevant emotional factors in the growth of Oswald. While the mother is still alive she deserves

a thorough psychiatric study; his former wife, Marina, should certainly be interviewed to gain some professional knowledge of her interpersonal relationship with Oswald. Any individual of significance to the growth and development of Oswald throughout childhood, adolescence and into manhood deserves inquiry. In this way it would be possible to build up a significant understanding of Oswald and an attempt could be made to clarify why he committed the acts as charged. This would really be a basic study of personality development and would be inclusive of the concept of motivation.

### Conclusion

Perhaps the most significant contribution the psychiatric profession could offer to augment the Warren Report would be a reassessment of the details, facts, and information already gathered by the investigators of the Warren Commission which would lead to a better understanding of motivation. If, following a perusal of the significant data already gathered, areas of further study seem necessary, a reexamination of those individuals significant to the growth and development of Lee Harvey Oswald would be clearly indicated. Of prime importance would be a study in depth of the mother, Marina, the wife, would also be deserving of a much more careful study in depth. The teachers, fellow students, Marine Corps contacts, acquaintances in the Soviet Union could all add much to the knowledge of the personality of Lee Harvey Oswald.

After a thorough review of the Warren Commission Report, I would urge a further study in depth of the interpersonal relationships of Oswald and the people of significance in his past history. Only through such study can Oswald's motivation be truly ascertained and a better understanding of the personality of the assassin of the President be gained.

### Summary

This study involves a review of the Warren Report and a more detailed study of the unique personality of Lee Harvey Oswald. Although the Warren Commission, a body of outstanding attorneys, appeared to follow that practice common to a group of intellectuals of functioning as "lay" psychiatrists, this writer is appalled at conclusions reached which involve psychiatric

evaluations and judgments without the benefit of trained professional thinking.

A study in depth of those individuals significant to the emotional growth of Lee Harvey Oswald is indicated in order to better understand his motivation.

### REFERENCES

1. The Warren Report, Associated Press Edition, 1964. (This transcript of the report of The President's Commission of the Assassination of President John F. Kennedy was used to prepare this bibliography.)
2. Packer, Herbert L. A Measure of Achievement. The Nation, November 2, 1964.
3. The Warren Report, Associated Press Edition, 1964, pp. 250-252, 316.
4. Ibid, pp. ii, 203.
5. Thornley, Kerry. Oswald. New Classics House, New York, 1965, p. 114.
6. The Warren Report, Associated Press Edition, 1964, pp. 50, 175-179, 190, Exhibit 133A.
7. Ibid, pp. 122-124, 174, 318-319.
8. Ibid, pp. 162, 291.
9. Ibid, pp. 165, 293.

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# A Critique of the Medical Aspects of the Investigation into the Assassination of President Kennedy\*

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Following the initial shock of President Kennedy's assassination on that fateful day of November 22, 1963, the nation addressed itself to the postmortem investigation and evaluation of the crime. The unexpected, and at times almost unbelievable, events that followed the assassination resulted in much confusion and controversy in the minds of law enforcement officials, attorneys, and forensic scientists, not to mention the lay public.

To thoroughly and officially sift through the overwhelming and frequently conflicting pieces of evidence, President Johnson appointed a committee of distinguished Americans, headed by Chief Justice Earl P. Warren. The Warren Commission met with all of the principals, as well as many of the minor persons, who had been involved in the assassination and the events that followed. After many months of interviews, investigations, and evaluations of various legal, police, medical, and scientific reports, the Warren Commission published its findings (1). It was for the purpose of evaluating this report from the standpoint of people active and interested in the application of the forensic sciences to the administration of justice that this symposium was arranged.

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## WARREN REPORT—CRITIQUE OF MEDICAL ASPECTS

Each of us undoubtedly views the Presidential assassination and the Warren Commission Report primarily in the light of his own professional practice, knowledge and experience. Most of the forensic sciences find areas of significance to discuss and perhaps criticize in this report, and certainly that would be true as far as forensic pathology is concerned.

The tragic demise of John F. Kennedy poses no problem for us in terms of determining the *cause* and the *manner of death*. These two questions are the primary and most important ones to be answered by a forensic pathologist in evaluating any death by gunshot wound(s). However, having answered these two questions, the forensic pathologist must proceed further, for he often will be called upon in a court of law under oath to offer professional opinions on collateral matters of importance. Range, number of bullets fired, points of entry and exit, direction and angle of fire, "fatality" of each individual wound—these questions and many more will be posed to the forensic pathologist in pretrial evaluation and on direct and cross-examination during the trial.

In this particular case, all of us, as critics, are handicapped by not having been involved in the autopsy. Consequently, we are limited in our evaluation to those portions of the record that have been made public through official sources. The only other medical facts that we have are those that were released by the physicians at Parkland Memorial Hospital in Dallas, Texas, where President Kennedy was taken and treated before being pronounced dead officially. Thus, we must preface any remarks, particularly any that may seem to be critical, with the caveat that we are not in possession of all the facts. Also, we can appreciate that the pathologists who performed the autopsy, being members of the Armed Services, may not have been permitted to publicly release all their findings.

There are several questions that must be raised by a forensic pathologist in evaluating the autopsy report on John F. Kennedy. By standards found in most competent medical-legal investigative facilities, the autopsy report would not be deemed to be a complete one. Certain essentials are missing, and many questions have been raised and have gone unanswered, at least officially, because of the absence of such information in the

official autopsy report and in the subsequent testimony given before the Warren Commission. It is my purpose briefly to discuss some of the areas of incomplete information and the unanswered questions that have arisen therefrom.

At the outset, it should be stated that this discussion will include comments on the various medical aspects of the assassination of President Kennedy that might not be considered to be directly within the realm of forensic pathology. However, inasmuch as there is no representative of clinical medicine included in this symposium I would be remiss if certain observations of a general medical nature were not made.

The various observations having to do with medicine and pathology contained within this paper will be discussed in chronological fashion rather than in other possible ways, such as diminishing medical or political importance, etc. A chronological discussion would seem to be the most logical approach in this particular instance.

#### Blood Type of the President

The first thing that is noted by a physician in reviewing the assassination of President Kennedy is the fact that his blood type was not known or immediately available to the physicians at Parkland Memorial Hospital. Consequently, O, Rh negative blood was administered (2). It should be emphasized that this lack of vital medical information did not play a role in President Kennedy's death. The nature and extent of his wounds, which will be discussed in greater detail later, were such that he certainly would not have survived no matter what therapeutic measures were undertaken. However, given other circumstances, with wounds of a less grave nature incurred either by accidental means or through an attempted assassination, or given a naturally occurring disease process which requires immediate transfusion of blood, the importance of knowing the blood type of the President becomes obvious.

One wonders why such vital information is not readily available on small medical information and identification cards present at all times with the President and also with one or more of the Secret Service men who accompany the President on all trips.

#### Treatment at Hospital

There can be no criticism of the medical and surgical treatment administered to the President at Parkland Memorial Hospital in Dallas, Texas. As a matter of fact, it is only fair to inject a comment at this point with regard to a medical order made by Dr. Charles James Carico, a surgical resident at Parkland Memorial Hospital, who was the first physician to undertake treatment of the President when his body was brought to the hospital. Dr. Carico, remembering that some comment had been made in the past regarding the possibility that President Kennedy had Addison's Disease, ordered 300 milligrams of hydrocortisone to be administered immediately (3).

All other measures that could have been undertaken were done so with due dispatch, including the administration of oxygen, intravenous fluids and blood, the use of a Bennett Respiurator, the performance of a tracheostomy, and external cardiac massage (4).

At this point, it is important again to emphasize the fact that the President was beyond the possibility of being saved when he was brought to the hospital. His pupils were dilated and fixed, there was no obtainable pulse or blood pressure, and there was only a faint suggestion of a heartbeat (5). Although the President was not officially pronounced dead until approximately 1:00 p. m., which was about 25 minutes after he was brought to the hospital and about 30 to 40 minutes after he received the wounds, this official time of the death pronouncement should not be construed to mean that the President really was alive for 40 minutes after receiving the fatal head wound (6).

It is necessary to comment on one particular surgical measure, namely the tracheostomy. A wound was noted in the anterior aspect of the neck at approximately the level of the knot of the tie and almost at the midline. The surgeons noted the damage to the trachea and soft tissues underlying this skin wound and therefore performed the tracheostomy at this site (7). This is understandable, for the performance of a tracheostomy elsewhere would have meant additional damage to the trachea, with further compromise of respiratory function. It also would have meant that the existing tracheal laceration.



tion would have had to be repaired, thus necessitating another surgical procedure.

Thus, while forensic pathologists frequently bemoan the fact that surgeons destroy sites of gunshot and stab wounds, thereby making it impossible for the forensic pathologist subsequently to determine size, range, entrance and exit characteristics, etc., it should be borne in mind that the prime consideration of the surgeon is to attempt to save the patient's life. Thus, in those cases in which it is more feasible medically to make an incision through an existing wound of the body for a specific surgical reason, there should be no criticism of the surgeon for doing so. Unfortunately, the performance of the tracheostomy through this site was responsible for several misconceptions and controversy that developed subsequently and which remain with us today. This will be commented on later in this paper.

#### External Wounds

The surgeons at Parkland Memorial Hospital noted only two external wounds. These were the wound in the anterior midline of the neck, already described above, and a large gaping wound of the skull in the right occipital parietal region (8).

As a matter of fact, there were two additional wounds of the body that none of the attending physicians at Parkland Memorial Hospital noted. These were a wound in the upper right posterior chest wall, just above the upper border of the right scapula, and a wound in the right occipital region, approximately one inch to the right of the midline and slightly above the external occipital protuberance (9). The fact that these two wounds were not observed or commented upon until some time after the autopsy produced much consternation and added considerably to the numerous rumors and misconceptions that arose following the assassination.

It must be stated, however, that the surgeons should not be criticized for having failed to observe these other two wounds prior to the pronouncement of the President's death. Certainly, it is understandable and indeed medically sound that all their attention should have been directed to the various medical and surgical measures that were undertaken in an attempt to save President Kennedy's life (10). It was not their duty or medical responsibility to search the body at that point for other wounds.

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It is true that a rapid, cursory examination of the entire body should be performed in cases of multiple injuries, for it is often the case that an immediate laceration or injury that appears to be quite serious is in reality not the major injury involved. Therefore, it is necessary to check and see if there are other more serious internal or external injuries that must be attended to primarily. However, such was not the case in this instance. It would have made no difference what other injuries the President had; the large, gaping defect in the skull with extensive laceration and hemorrhage of the brain tissue quite obviously was the primary injury that had to be evaluated and treated immediately. Furthermore, as has already been suggested above, for all intents and purposes, the President was dead or dying during the time that he was at Parkland Memorial Hospital, and there was no real medical need to look elsewhere for other body wounds.

The critical question, however, arises with regard to what the doctors did, or, rather, failed to do, after the President was pronounced dead at one p. m. At that time, one or two additional minutes might have prevented much apprehension, fear, and speculation on the part of many people. Once the President was pronounced dead, it would have taken only a few minutes quickly to examine the rest of the body to see whether or not there were any other penetrating wounds (11). Certainly, the physicians should have been aware of the importance of such a determination at that time and even if they were not, the Secret Service agents and the other people in the Presidential party should have had sufficient presence of mind to have asked the physicians to conduct such an examination.

At the time, nobody really knew what had happened, and there was much confusion as to whether or not the bullets had all been fired from one point, or whether they had been fired by more than one person from different locations. For all anyone knew, it was quite possible that there was a revolutionary plot in the making, or that a small band of right-wing fanatics or Communists were attempting to take over the country. Absurd as this may seem at this time, when one considers the events and circumstances of that tragic day in November 1963 it was not absurd to have considered such a possibility then.

Unfortunately, no such examination of the President's body was performed after he was pronounced dead; therefore, rumors immediately developed, and were spread by many people for various reasons, that the President had been shot from both the front and the back. Although we now know that this was not so, many people still do not accept the fact that President Kennedy was shot only twice, with both bullets having entered from the back.

#### Examination of Clothing and Stretchers at Hospital

It should be noted at this time that all the President's clothes were not removed from his body at Parkland Memorial Hospital (12). Fortunately, they were available for subsequent examination in Washington, D. C., and the analysis performed on the areas of missile penetration helped to confirm which were bullet wounds of exit and which were those of entrance (13).

It is sad to note that such was not the case with Governor Connally's clothing. For some reason, never explained in the Warren Commission Report or apparently commented on by anybody in a public or official manner, the governor's clothes were cleaned prior to any examination, thus making any findings impossible or invalid (14). How this could have happened is a source of amazement, and it is an oversight soundly to be condemned and criticized. It should be remembered that much of the confusion that developed subsequently with regard to the number of bullets that were fired, the angle and direction, etc., stemmed from the fact that it was not clear whether or not the bullet that wounded Governor Connally was the same bullet that had passed through the President's body first. It is quite probable that this question could have been quickly answered correctly if the governor's clothing had not been cleaned prior to examination.

The stretchers that the President and the governor were placed on were not examined officially after the President was pronounced dead and the governor was removed to surgery. It was during the subsequent routine and unofficial handling of the stretcher by a hospital attendant that a bullet was found on one of the two stretchers. The Warren Commission, after

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interrogating many of the people present at the hospital, concluded that the bullet was from Governor Connally's stretcher, although this could not be stated with absolute certainty (15). Again, this is a blunder sharply to be criticized, for there can be no doubt that it added to the confusion that reigned in the minds of many following the assassination. Certainly, after the President was pronounced dead, and the governor was removed to surgery, the stretcher should have been carefully examined to see whether or not any bullets, or fragments of bullets, were present.

#### A Visit from the Coroner

I have heard several forensic pathologists comment that if the assassination had occurred in their jurisdictions, the body would never have been taken from their cities until an autopsy had been performed. Although I agree with this philosophy generally, I cannot accept it in this particular case. As has been stated above, at the time of the shooting of President Kennedy, nobody could state with certainty what the nature and extent of the assassination attempt was. For all that anybody knew, there could have been a revolutionary plot involving many people. It was essential for the presidential party to return to Washington and to get the now President Johnson out of Dallas immediately. Furthermore, without attempting to categorize every type of case that could create a knotty problem as regards the question of local medical examiner or coroner jurisdiction, I find it quite easy to draw the line with the body of the President of the United States. I see no reason why, if a President is assassinated, the body should remain at the place of assassination for examination by the local coroner or medical examiner. To put it in another light, I believe that there is an overriding matter of political concern to the nation that supersedes the immediate powers and philosophies of the local medical-legal investigative facility. Professional pride must yield to grave political practicality in such instances!

If the situation had not been so tragic, there would have been some humor involved in the attempts made by the local officials to have the body of President Kennedy kept within Dallas (16). The Warren Commission Report describes the presence on the scene of one of the justices of the peace who



attempted to "take charge" and who demanded that the body be kept in Dallas for the performance of an autopsy. This gentleman was a persistent individual; he followed the presidential party outside the hospital after the body had been removed to an ambulance, and he knocked on the window of the car in which Presidential Assistant Kenneth O'Donnell was riding. He was, of course, ignored, and the presidential party sped on to the airport. One can visually imagine the scene in which a little "nebbish" is running around the hospital amid this great conflict and drama, attempting to issue orders regarding the disposition of the body of the President of the United States. This local official should have had the good sense and the good taste to have acted in a less conspicuous and more private manner. Certainly, if the medical examiner of Dallas County felt very strongly about the case, he might have been invited to attend the autopsy in Washington, D. C. (17), although I frankly doubt it in light of the official and military approach with which the autopsy was handled at Bethesda Naval Medical Center.

#### News Conferences by Medical Personnel at Parkland Memorial Hospital

I would not agree that it was improper and unwise to conduct a medical conference at the hospital following President Kennedy's death (18). Once again, when one bears in mind that this was the assassination of the President, one must realize that the nation had a right to expect information concerning his death. Therefore, I believe that it was quite proper to conduct the news conference. However, the substance and extent of the statements made by the physicians at the medical conference should be commented upon.

The fact that there is some difference of opinion among the physicians and the news media personnel as to exactly what was said at the conference, and further that this apparent confusion and conflict continued to exist in terms of the testimony recited before the Warren Commission, would seem to prove that one or more of the Parkland Memorial Hospital physicians did state, or at least agreed to a question posed by one of the newsmen, that the penetrating wound of the neck could have been a gunshot entrance wound (19). This comment alone produced

a considerable amount of subsequent misconception, as has already been explained above.

The physicians who were in attendance should have borne in mind the fact that they had not examined the entire body and, therefore, could not be certain as to what the exact nature and extent of the injuries were. Furthermore, even though they had seen two of the wounds, they could not comment as forensic pathologists who had performed the autopsy and examined the wounds grossly and microscopically, and who could, therefore, be able to state with medical certainty whether or not the wounds were those of exit or entrance.

Their comments regarding the nature of the bullet wounds were imprudent, medically unsound, and quite unnecessary. It would have been sufficient to state "that the President had died as a result of severe head injuries inflicted by a gunshot wound." All the medical comments should have been handled by one physician representing the entire team of medical people who had attended the President prior to his death. This physician should have stated firmly that he was not able to make additional comments at that time until he had had a chance to review all the findings with his colleagues and to study the autopsy report. If this had been done, there is no doubt in my mind that a great deal of the subsequent confusion would have been eliminated.

#### Postmortem Examination at Bethesda Naval Medical Center

The body of President Kennedy was taken to Bethesda Naval Medical Center pursuant to a request by Mrs. Kennedy, who felt that the autopsy should be done there because of the President's service in the Navy during World War II. There can be no quarrel with this decision, for Bethesda Naval Hospital certainly is a large institution with adequate facilities for the performance of a competent autopsy.

A point strongly to be criticized is the fact that the three pathologists who were designated by the government to perform the autopsy did not contact the physicians at Parkland Memorial Hospital in Dallas, Texas, prior to the initiation of the autopsy (20). It should be standard procedure for every forensic pathologist who is going to examine a person who has

died from multiple bullet wounds, and who has additional wounds of penetration apparently produced by various surgical measures performed prior to death, to first check with the surgeons who attended the person and find out exactly what wounds were present before the surgical incisions were made, which surgical incisions were made through preexisting wounds, and which surgical incisions were made in other parts of the body unrelated to preexisting wounds. Had this been done, then some of the confusion that apparently continued to exist throughout the performance of the autopsy and afterwards would have been eliminated. The pathologists would have been told about the neck wound, and they would have learned that the tracheostomy had been performed through the site of a preexisting bullet wound. It is difficult to understand why at least one of the three pathologists did not speak with one or more of the surgeons in Dallas, Texas, at some length prior to the performance of the autopsy.

The work of the forensic pathologist is difficult enough; it should never be reduced to a guessing game when this is not necessary. Any and all clinical information that can be obtained before performance of the autopsy is always valuable and should be sought out whenever possible.

#### Choice of Pathologists

I do not believe that the government was wise in its choice of pathologists. One or more prominent civilian pathologists should have been called in to help perform the autopsy, and I further believe that the autopsy should have been performed only by qualified forensic pathologists. There is a definite specialty of forensic pathology and it is so recognized by the American Board of Pathology, which gives subspecialty board examinations in this field. The practice, experience and knowledge of a forensic pathologist are to a great extent quite different from that of a general hospital pathologist. No matter how skilled a hospital pathologist may be, and no matter how many autopsies he may have performed, in the absence of specific training, experience and knowledge in the field of forensic pathology, he should not be called upon to perform an autopsy in a complicated medical-legal case. Certainly, the

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performance of the autopsy in this case was such a complex and important event that it should not have included pathologists lacking extensive forensic experience.

It is my understanding that two of the three pathologists who performed the autopsy are not forensic pathologists, namely Commander J. J. Humes and Commander J. Thornton Boswell, of Bethesda Naval Medical Center. Fortunately, someone did have the good judgment to call in Lieutenant Colonel Pierre A. Finck, M. C., U. S. A., who is a well-trained and very competent forensic pathologist with particular experience and knowledge in the field of missile wounds (21). One can only conjecture how inadequate and incomplete the results of the autopsy findings would have been if Colonel Finck had not been present.

With regard to the question of utilizing civilian forensic pathologists, it must be borne in mind that many of the foremost forensic pathologists in the country are located within a flying distance of one hour or less from Washington, D. C. It would have been easy to have had one or more of these men present for the autopsy. Dr. Russell Fisher in Baltimore, Dr. Joseph Spelman in Philadelphia, Dr. Milton Helsen in New York, Dr. Geoffrey Mann in Virginia, and Dr. Alan Moritz in Cleveland, are only some of the people who are located in areas quite close to Washington, D. C. and who could have been called upon by the government to assist. (Indeed, all these men have previously been utilized by the government to assist in teaching and research programs as forensic pathologists. Were those occasions more important than the autopsy of President Kennedy?)

#### Autopsy Results

There are several things that have been criticized with regard to the autopsy report, and it is true that by the standards of most competent medical-legal investigative facilities throughout the United States the official autopsy report released in the case of President Kennedy would not be considered to be a complete one.

One of the things that has bothered many people is why there was no mention of the adrenal glands, either grossly or microscopically (22). I believe that there are obvious political



overtones implied in this question. The same question as to whether or not President Kennedy had Addison's Disease was raised by certain people during the election campaign in 1960, and there was an obvious and definite attempt to damage him politically by creating doubts within the minds of the people of the United States as to the status of his health. I believe that some of these same people, particularly elements of the political right wing, are responsible for much clamor since the Warren Commission Report was published with regard to the failure of the pathologists to have commented on the adrenal glands. It should be repeated that President Kennedy's death would have occurred no matter what the condition of his adrenal glands was; therefore, from a political and practical standpoint, it is of no consequence for us to know what the adrenal glands showed. However, when one performs a medical-legal autopsy, particularly one of such a complex and significant nature, it is necessary for all the findings to be carefully recorded and published.

A point that largely has been overlooked is the fact that the autopsy report was turned over to Admiral Burkley, the President's personal physician, who released those portions that he felt were "necessary." It is my surmise, not subject to certain confirmation, that the pathologists who performed the autopsy did indeed find, identify, and describe the adrenal glands grossly and microscopically, and that such findings and descriptions were contained within their final report submitted to Admiral Burkley. Therefore, it is only fair to state that any criticism that is to be made concerning this aspect of the postmortem report might well be levelled at Admiral Burkley and other high government officials if they were responsible for determining what was omitted and what was released. The pathologists cannot be criticized if this were the case. However, this deficiency further supports the previous comment that the autopsy should not have been left entirely within the hands of military pathologists, whose professional actions may be completely controllable by the government.

From another viewpoint, also, it is unfortunate if Admiral Burkley and/or other government officials decided not to release the pathologists' findings and diagnoses concerning President Kennedy's adrenal glands. Assuming that there was some

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evidence of adrenal insufficiency (i. e., Addison's Disease), I suggest that it would have been a good thing to let the general public know this. The realization that a person who suffers from a serious disease or physical handicap is not necessarily disqualified or incapacitated from filling an important position, even one as strenuously demanding as the Presidency of the United States of America, would again encourage a more broad-minded and intelligent attitude among the lay public toward people who are handicapped by illness or trauma.

#### Autopsy X-Rays and Photographs

The Warren Commission Report notes that x-rays of the body and photographs were made by the pathologists (23). These were turned over to a Secret Service agent immediately after they were taken, and, presumably, the pathologists, although they may have seen the developed x-ray films and photographs later, did not have these in their possession at the time of their testimony (24). The films and pictures were not presented to the Warren Commission, and it has been stated that they were destroyed. It is not exactly clear who destroyed them, or when and where they were destroyed; but it is absolutely indefensible and unjustifiable that this should have happened.

#### Conclusions of Autopsy Report

I personally concur with the conclusions of the autopsy report, namely, that President Kennedy was shot twice, once in the back of the head, and once in the upper right chest (25). The gunshot wound in the head had its entrance point immediately to the right of the midline and exited on the right lateral aspect of the skull, causing extensive avulsion of bone and brain tissue. This was undoubtedly a fatal wound and totally incompatible with life beyond a few minutes.

The second wound entered the upper posterior right chest, coursing in a slightly downward angle and exiting in the middle of the anterior neck region at about the level of the knot of the tie. This wound would probably have been survived and if it had not been for the head wound, the President's life very likely could have been saved (26). This wound occurred first, and the wound of the skull followed seconds later.

It is to be noted that the pathologists studied the gunshot wounds microscopically and thus confirmed their gross autopsy opinions as to which were wounds of entrance and which were wounds of exit (27). These findings further serve to corroborate the Warren Commission's conclusion that the two bullets that struck President Kennedy were fired from a point to the rear of the Presidential car.

I also agree that there were three bullets fired and that all three bullets were fired from the same place by the same person, namely, from the sixth floor of the book depository building by Lee Oswald. One shot probably missed, and it is not possible to state definitely what happened to that bullet. One bullet was recovered on Governor Connally's stretcher and most likely this bullet is the one that penetrated the governor's posterior chest, exiting in the anterior chest, reentering the dorsal surface of the right wrist, exiting from the volar aspect of the right wrist and reentering the left thigh. Fragments of another bullet were noted within the skull of President Kennedy on x-ray films (28) and other fragments were found in the car.

Some controversy exists as to whether or not the bullet that injured Governor Connally was the same bullet that penetrated President Kennedy's chest. It is very likely that this was the case, although there is still some doubt about this. It is possible that the bullet that injured Governor Connally was the third bullet, totally separate from the two bullets that struck President Kennedy. Again, one is reminded of the importance of Governor Connally's clothes, for had they been available for examination, it might well be that careful and detailed examination would have answered once and for all the question of whether or not the bullet that entered Governor Connally's right posterior chest wall was the same bullet that had already gone through President Kennedy's neck or whether it was a separate shot.

It is fascinating to note how various inadequacies and shortcomings of the total investigation are intermingled and have ramifications throughout the entire postmortem evaluation and the events that followed the shooting of President Kennedy.

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##### Actual Report Before the Warren Commission

Lieutenant Colonel Pierre Finck produced an exhibit in which he demonstrated missile wounds generally and discussed the specific missile wounds involved in the assassination of President Kennedy and the wounding of Governor Connally (29). This is the utilization of demonstrative scientific evidence in its fullest and best sense. It dramatically represents something that all forensic scientists should be concerned about and something that all forensic scientists and attorneys should continue to strive for. If more of this type of evidence had been produced throughout the various stages of the post-assassination evaluation, then many of the misconceptions, misunderstandings, fears and rumors that spread throughout the world, and which in significant measure continue to exist today, would have been diminished greatly, if not circumvented completely.

##### Role of the American Academy of Forensic Sciences

Finally, I should like to raise the question as to why the American Academy of Forensic Sciences was not consulted by the government in the post-assassination evaluation. The American Academy of Forensic Sciences is comprised of many of the foremost forensic scientists, criminologists, and attorneys in the United States of America. It is an unbiased, objective, non-political organization whose very existence is devoted to and based upon the concept of utilizing the forensic sciences to the fullest extent possible, to the ultimate end that justice will be best served.

It is quite unacceptable that this organization was not consulted in some capacity by a concerned governmental agency and asked to make available its services and personnel. This could have been done in a role analogous to that of a lawyer who files an amicus curiae brief in a legal case, or it could have been handled in any one of several other ways. In any event, this did not occur, and it is unfortunate for all concerned.

I should like to believe that if ever a tragedy as horrible as the assassination of President Kennedy occurs again the American Academy of Forensic Sciences will be consulted officially by the United States Government.



## Conclusion

While I agree with the ultimate conclusions of the Warren Commission and with the various forensic scientists and pathologists who were involved in the investigation, I believe that there are many questions that remain unanswered and that many of the conclusions are based on less than absolute medical certainty. Furthermore, it would have been possible to answer these questions in many instances with certainty if the proper measures had been undertaken at the appropriate time.

I do not believe that there was any overt plot on the part of any governmental agency or specific individual to keep any of the facts suppressed, with the possible exception of the findings having to do with President Kennedy's adrenal glands. However, it should be remembered that as human beings we are all subject to personal biases and prejudices, and we are also molded by our professional associations. It is for this reason that it would have been a very wise thing for the government not only to have called upon civilian forensic pathologists to participate in the autopsy, but also to have called upon the American Academy of Forensic Sciences to act in the role of advisor and consultant to the Warren Commission.

The organization best able to have prepared and evaluated all the scientific evidence that came before the Warren Commission was the American Academy of Forensic Sciences. It is unfortunate that in the most politically significant and complex murder of the twentieth century, such expert consultation was not requested.

## Summary

A critique of the medical circumstances and events associated with the assassination of President Kennedy has been undertaken. The treatment given at Parkland Memorial Hospital, Dallas, Texas, and the autopsy performed at Bethesda Naval Hospital, Bethesda, Maryland, have been reviewed and commented upon.

While the conclusions contained in the Report of the President's Commission on the Assassination of President John F. Kennedy are considered to be essentially correct, several de-

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ficiencies and gaps in the overall medical investigation are commented upon. The failure of the commission to have called upon the American Academy of Forensic Sciences in a consultant capacity during the compilation and evaluation of its findings is noted.

## REFERENCES

1. Report of the President's Commission on the Assassination of President John F. Kennedy. United States Government Printing Office, Washington, D. C. Volumes I-XXVI (1964).
2. *Ibid.*, Vol. VI, p. 41. See also Vol. VI, p. 84.
3. *Ibid.*, Vol. III, p. 361.
4. *Ibid.*, Vol. III, p. 360.
5. *Ibid.*, Vol. III, p. 359.
6. *Ibid.*, Vol. III, p. 365.
7. *Ibid.*, Vol. III, p. 368.
8. *Ibid.*, Vol. III, pp. 361, 368. See also Vol. VI, pp. 11, 25.
9. *Ibid.*, Vol. II, p. 351. See also Vol. XVI, p. 980.
10. *Ibid.*, Vol. III, p. 361.
11. *Ibid.*, Vol. III, pp. 361, 363.
12. *Ibid.*, Vol. III, pp. 359, 363.
13. *Ibid.*, Vol. II, p. 365. See also Vol. V, p. 58.
14. *Ibid.*, Vol. V, p. 63.
15. *Ibid.*, Vol. II, p. 368. See also Vol. VI, p. 134.
16. *Ibid.*, Vol. VII, p. 452.
17. *Ibid.*, Vol. VII, p. 462.
18. *Ibid.*, Vol. VI, p. 12.
19. *Ibid.*, Vol. VI, p. 13.
20. *Ibid.*, Vol. II, pp. 361, 367.
21. *Ibid.*, Vol. II, pp. 348, 349, 377.
22. *Ibid.*, Vol. XVI, pp. 982, 988.
23. *Ibid.*, Vol. II, p. 349.
24. *Ibid.*, Vol. II, p. 351.
25. *Ibid.*, Vol. XVI, p. 983.
26. *Ibid.*, Vol. III, p. 372.
27. *Ibid.*, Vol. XVI, p. 988.
28. *Ibid.*, Vol. II, p. 353.
29. *Ibid.*, Vol. II, p. 379.

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