



It's the first lie detector that
can be used on a dead
man. It works on tapes and
other voice recordings

by George O'Toole

Assassination Tapes

The rulers of the state are the only ones who should have the privilege of lying, either at home or abroad; they may be allowed to lie for the good of the state.

—Plato: *The Republic*, Book Three

It's a little frightening. The machine can listen to what you're saying and tell, with a high degree of reliability, whether or not you are lying. It's called the Psychological Stress Evaluator, and it is, in effect, a lie detector. Unlike the polygraph, it needs no physical connection to the subject; therefore it can be used without his knowledge. It works from recordings of his voice, so anything on tape, sound track or phonograph record is fair game for the machine. It is the first lie detector that can be used on a dead man.

Early this year, one of these instruments came into my hands. I resolved to use it to probe one of the darkest mysteries of recent history, the assassination of President John F. Kennedy. I set about collecting every recording I could lay my hands on of anyone who had any direct knowledge of the affair. Soon I had compiled the tape-recorded testimony of twenty-two persons—eyewitnesses, Dallas policemen, the pathologist who conducted the autopsy, members and staff of the Warren Commission, Jim Garrison, Clay Shaw, and even Earl Warren.

I ran the tapes through the PSE systematically, taking each controversial point in turn. Did the rifle which belonged to Lee Harvey Oswald kill President Kennedy? Was Oswald the killer? Were others involved? What of those mysterious autopsy photographs which the Warren Commission never saw—do they support the Commission's lone-gunner, single-bullet theory? And what about the Warren Commission itself? Did its members conspire to cover up the truth?

Slowly a picture emerged. It is blurred, and it is not the picture I expected. Not all the details are there, but I guarantee this: you may believe the lone-gunner theory of the Warren Report, or you may believe the government-conspiracy theory of Mark Lane, Jim Garrison and others, but either way you are wrong.

The PSE is not a crystal ball. It was invented as an interrogation aid, a function it performs well. To my knowledge, this was the first instance of its use as a tool for historical research. To understand what I did with the PSE, one should know something about the device itself.

I first heard of the Psychological Stress Evaluator last year, when I met two of its inventors, Allan D. Bell, Jr., and Charles R. McQuiston. Bell and McQuiston, both former lieutenant colonels, retired from Army Intelligence several years ago to form a company called Dektor Counterintelligence and Security, Inc. It was a logical second career for the two men. Both are experts in the technology of espionage. Either one could pick the lock on your front door in less time than it takes you to find your key. Colonel Bell wears a Black Belt in karate, is an accomplished swordsman and small-arms expert, and has a dozen inventions to his credit, from anti-bugging devices to a miniaturized microdot camera. Colonel McQuiston is one of the foremost polygraph experts in the U.S., a specialist in radio and audio surveillance, and a qualified locksmith.

The PSE grew from an effort to improve the polygraph. Standard polygraphs measure four variables: pulse, blood pressure, respiration and perspiration. Some also measure additional physiological variables. The more variables measured, the more reliable the polygraph.

Bell and McQuiston discovered that the frequencies composing the human voice are not fixed; they shift very slightly from eight to fourteen times every second. But when the speaker is under stress, this normal frequency modulation disappears. What remains are the pure component frequencies of the voice. And a strong indication that the speaker is lying.

The two men developed a device to detect this phenomenon and planned to use it as an additional "channel" on the polygraph. Then they discovered that the new variable was so reliable and accurate a measure of psychological stress there was really no need to measure the other polygraph variables.

Freed from the necessity of strapping the subject into a chair, stretching a pneumographic tube across his chest, gluing electrodes to his palms, and clamping his arm with a blood-pressure cuff, the PSE proved to be much more versatile than the polygraph. Because it can work from a telephone or tape recorder, the PSE can be used without the knowledge or even the physical presence of the subject.

I asked Colonel Bell to tell me about some of the things the PSE was being used for, especially cases in which a conventional polygraph couldn't be used. He mentioned that the police in Howard County, Maryland, have been using the PSE for two years; they have had great success in establishing the innocence of suspects who were afraid to submit to a polygraph examination because of that machine's forbidding aspect.

Bell went on to describe some of his invention's other uses, actual or potential. Dekor and the Federal government are exploring its use as a defense against skyjacking and telephoned bomb threats, and as a means of speeding up customs inspections. Some doctors and psychiatrists are using PSEs to study patients' physical and mental stress. The National Committee to Investigate Aerial Phenomena, a private group that investigates UFO reports, is now using the PSE to interview witnesses in UFO sightings.

I asked Bell if he would lend me a PSE to experiment with, in order to write a piece about the device. He agreed, with two conditions. First, I must take Dekor's three-day course in operating the instrument; second, after using the PSE, I must review my interpretation of its output with his staff, in the interest of accuracy. This seemed reasonable, so I agreed.

The course was held in the meeting room of a Holiday Inn in Falls Church, Virginia. The eight other students were employees of customers who had purchased the device. These included a private detective agency in Pennsylvania, a New York chain

store, and the security service of an East African country. The instructor was Mike Kradz, a criminologist and retired police officer. Kradz projects the tough-cop image, but he is a living rebuttal to the Polish joke. There is nothing about forensic science, from fingerprints to polygraphy, on which the man is not an expert.

The first morning of the course was devoted to the physical operation of the PSE. The device is used in conjunction with a Uhertape recorder, which has four speeds and can be manually wound back to locate a particular point on the tape. The testimony to be evaluated is recorded at a tape speed of 7½ inches per second, then played back and stopped at the beginning of the utterance in question. The recorder is slowed to 15/16 inches per second and played. The sound, no longer recognizable as a human voice, is a long, low rumble.

The PSE itself is built into an attaché case. The case opens to reveal a chart drive, similar to an electrocardiograph, and a number of buttons and knobs. A single cable connects the PSE to the tape recorder.

As the tape recorder reels slowly turn, and a rumble issues from its speaker, the PSE stylus dances back and forth across the moving chart paper, leaving behind a ragged trail. Then the recorder is stopped, the chart paper is stopped, and that's all there is to it. The result is a strip of paper with a squiggly line. The rest is up to the human eye and brain.

On the afternoon of the first day, Kradz showed us what to look for. The unstressed voice looks like an untrimmed hedge, with stalks of different heights sticking up (and down) at irregular intervals. But add some stress, and that hedge begins to look trimmed. The greater the stress, the

6
The more I read,
the more I doubted
the official account of
what happened
that day in Dallas
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smoother the shape. If the subject was experiencing the hard stress which accompanies deception, the over-all outline of the figure tends to take on a rectangular shape, a concertina as seen by the player. Kradz showed slide after slide of charts made during actual police interrogations. He told us the background of each case and pointed out the tell-tale signs of deception, whenever they were present.

That night each student took a PSE back to his room to practice operating it. Some coordination must be learned to become facile in handling the recorder and the PSE, but clearly the difficult part of the course would be learning how to read and interpret the charts.

The next day we learned the theory of

polygraph interrogation, which applied the PSE. There is, first of all, the matter of the "outside issue."

Most people, Kradz pointed out, have some sort of deep secret they don't want known. When faced with a polygraph examination, a person may be more concerned that this outside issue may come to light than he is about the actual substance of the interrogation. This can produce irrelevant stress in some of his answers, and mislead the examiner. Therefore it is necessary for the examiner to interview the subject before the examination, go over all of the questions he intends to ask, and assure the subject he will ask only these questions.

I had reason to remember this later, when I ran my first real interrogation tape.

The interrogation always includes the question, "Are you afraid that I will ask you about something we have not discussed?" A negative answer with no sign of stress eliminates the outside-issue problem. Also, the examiner always asks some innocuous questions, such as, "Do you like the color blue?" in order to observe the subject's general state of tension. And there is always one "red-herring" question.

The red herring is used to identify the "guilt complex responder." Such a person shows stress when he responds to any accusatory question. The examiner may ask, "Did you steal the watch?" when it is money, not a watch, that is missing. A stressed denial will alert the examiner, who carefully compares this response to the stress produced by questions about the missing money.

That night the class was given tapes of real police interrogations. In most cases, Kradz was the examiner, and in every case, he knew the background and resolution of the matter. One case I was assigned concerned a young man accused of stealing money from his father's store. Kradz started by asking the "outside-issue" question. No, the young man replied, he was not afraid Kradz would ask him a question they hadn't discussed. Then the following exchange took place:

"Do you live in Howard County?"

"Yes."

"Do you suspect someone of having taken the money?"

"No."

"Are you wearing a white shirt?"

"Yes."

"Do you know who took the money?"

"No."

"Are you wearing a ring?"

"Yes."

"Did you take the money?"

"No."

There were a few red-herring questions to check for the guilt complex response. The questions about wearing a white shirt and a ring and living in Howard County had been included to measure the background stress elicited by irrelevant issues.

I ran the tape and charted it on the PSE. All but two of his responses were unstressed. The question about suspecting

took the money produced enough stress to indicate deception. The other question which produced stress was, "Are you wearing a ring?" In fact, his yes to that was accompanied by such stress as I had seen only once or twice in the class slides.

The next morning Kradz called on me. Did the suspect take the money, he asked. I said I didn't think so. Kradz nodded. Did he suspect who took the money? Yes, I thought he did. Very good, said Kradz. Did I notice anything else about the interrogation? Well, yes, there was this business about the ring. Perhaps the suspect had stolen it. Kradz smiled. No, the kid hadn't taken the ring, but he was gay. He had exchanged rings with another guy. Nobody

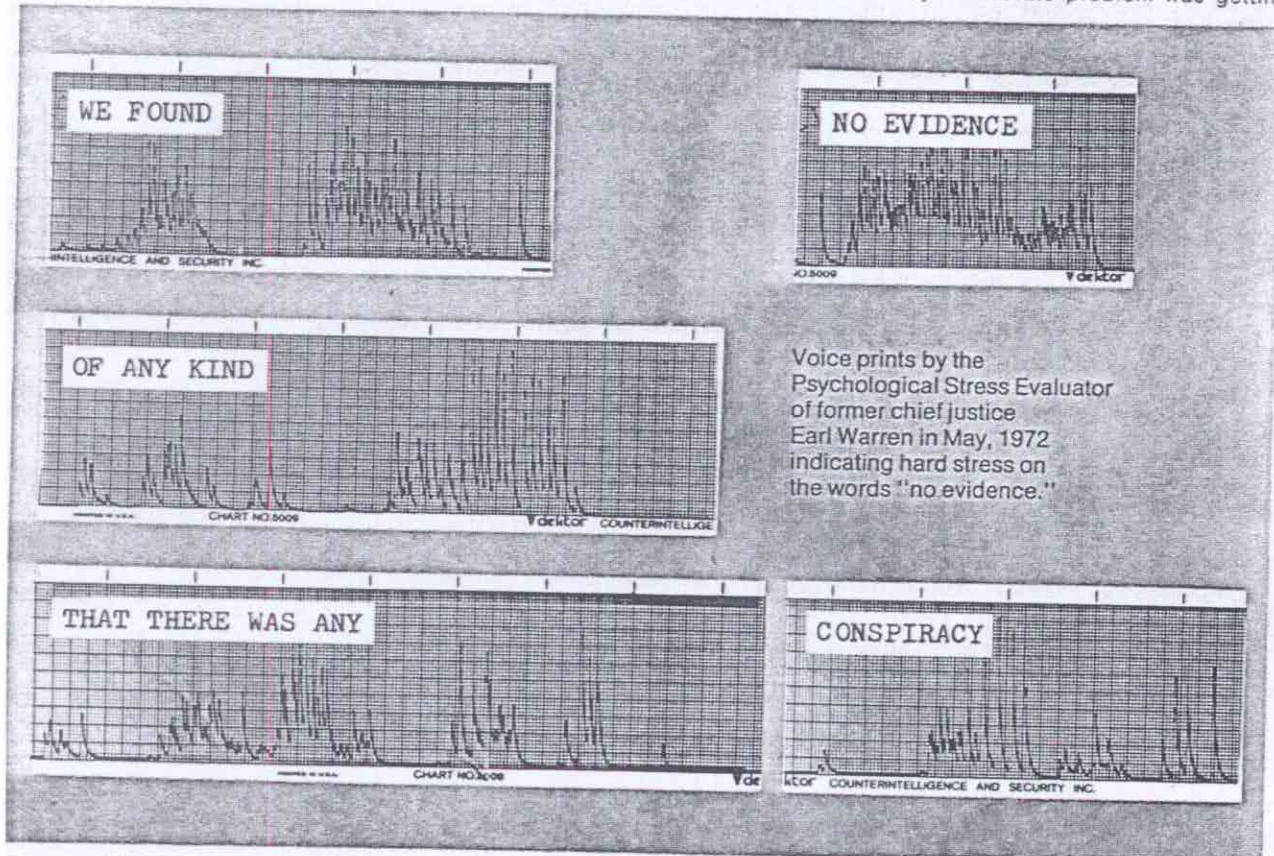
that the speaker had told the truth. However, since interrogation with a PSE seemed to require such an elaborate and structured situation, I wondered if it could be used the way I had hoped, as a tool for historical research.

During the lunch break I took Kradz aside and asked him. Could the PSE be used outside interrogations, where the speaker was telling what may or may not have happened? Yes, he said, the PSE could be used for that. Where there was no stress, I could be confident that the speaker was telling the truth. However, when I did find stress, I had to be very careful about reaching conclusions about its cause; it could result from something other than deception. But if I

I hoped that Jim Garrison would prove that he had solved the mystery. He didn't. Time passed, public interest waned, and the details of the controversy dimmed in my mind, leaving only a dull residue of doubt. I had despaired of ever learning the truth. Now I knew what to do with the PSE.

It was all there: the statements made before television cameras by eyewitnesses, policemen, medical examiners, members of the Warren Commission. Somewhere in a network-television vault were the sound tracks, with the tiny, inaudible variations in voice frequency that could settle once and for all the question, "Did Oswald, acting alone, shoot and kill John F. Kennedy?"

My immediate problem was getting



Voice prints by the Psychological Stress Evaluator of former chief justice Earl Warren in May, 1972 indicating hard stress on the words "no evidence."

knew about it. The kid didn't really expect to be asked about it, because Kradz had gone over all the questions with him. Still, when the ring was mentioned, he panicked.

By the third day of the course, I had begun to give some thought to what I might do with the PSE. I was particularly interested in the fact that the device works from a tape recording. Sound-recording technology is almost a century old (Edison invented the phonograph in 1877), and an enormous amount of history is stored on phonograph records, sound tracks, and tape and wire recordings. I thought how many press conferences, interviews and public pronouncements are stored away in the film and tape archives of the world, and how many questions could be settled if we knew for certain

found a stress pattern in the testimony of several witnesses to the same event, I would very probably have uncovered deception.

Encouraged, I reviewed the list of recent mysteries. Watergate was, of course, the first to come to mind. The ITT affair was also of recent interest. The Kent State incident had never been fully cleared up. But one subject seemed to loom above all the rest—the assassination of John F. Kennedy.

Like many others, I have found it difficult to believe the Warren Report. When Mark Lane's book came out, I read it carefully. I read much of the other criticism of the Warren Commission's findings. The more I read, the more I doubted the official account of what happened that day in Dallas. I waited for the real story to emerge. It didn't.

access to the recordings. I was certain the television networks would have them, but I wasn't sure exactly what to ask for. There must be thousands of hours of sound recordings relating to the assassination. Where, among all this talk, was the critical testimony?

I started digging and soon discovered the existence of a group called the National Committee to Investigate Assassinations, located in Washington, D.C. I called the number listed in the telephone directory and was soon speaking to Bob Smith, the Committee's Research Director. I told Smith that I was a writer and wanted to do a piece on the John F. Kennedy assassination. I asked him for an interview, and he agreed.

We met in the offices of Bernard Fenster-

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wald, a successful criminal lawyer and Director of the Committee, in a modern office building a few blocks from the White House. Fensterwald is a small, dapper man with a thin beard. Smith is a lean, intense chain smoker. Both men appeared to be in their forties.

"Before we begin," I said, "I think I should mention that I used to work for the CIA."

I have run across it often, the theory that the CIA killed Kennedy. It seems absurd to me, and I don't believe it. I worked there for three years and never saw or heard anything suggesting the Agency was involved in the assassination. I never met anyone there I thought capable of doing it. Still, I have learned through bitter experience of the suspicion which attaches to former intelligence officers. Epidemics of paranoia tend to accompany us through life. I thought I'd better get that issue out of the way.

Smith and Fensterwald exchanged glances and smiled. Fensterwald told me that they did not necessarily believe the CIA assassin theory, and they certainly didn't mind talking to a former Agency employee.

Relieved, I began to outline my project. I asked if they had heard of the PSE. Both men were dimly aware of it. I described the device and started to detail the way it could be used as a research tool. They immediately understood what I was proposing and were tremendously enthusiastic. Yes, they said, there were many key statements on tape somewhere, and they would be glad to compile specific references for me. Furthermore, they could, in some cases, provide me with the tape. They said they would be in contact when they had something for me.

While I was waiting, I experimented with the PSE. I telephoned a friend and told him about the device. I asked if he was willing to play a little game to test it out, and he agreed. He picked a number between one and ten. I asked him, "Is the number one?" "Is the number two?" and so on, and he answered no each time. I recorded his responses, ran them through the PSE and called him back. The number he picked, I told him, was five.

He was dumbfounded. He had not heard of the PSE and had thought I might be concocting some elaborate joke at his expense. But when I called back and correctly identified the number he had picked, he realized I was serious. And he was shocked.

I played the same game several times with others and did not always have similar success. With Bernard Fensterwald, I was able only to narrow the answer down to two numbers, one of which turned out to be cor-

rect. With others I have been completely unable to identify the right number. The problem with this game is that the player knows that it is just that. He knows that I know he is lying, it is a socially acceptable situation, and there is nothing at stake. The stress which accompanies real deception is not always present.

I obtained a tape recording from CBS News of a portion of a *Sixty Minutes* program in which Mike Wallace interviewed Clifford Irving. The interview took place during the height of the controversy, while Irving was still claiming to have gotten Howard Hughes' life story through a series of interviews with the billionaire. It was a consummate job of lying, embellished with such convincing details as Irving's disagreement with his colleague Susskind about whether Hughes kept his organic prunes in a paper or a plastic bag. *Sixty Minutes* re-ran the segment after Irving's confession because the man's sheer virtuosity as a prevaricator was amazing. I was interested in the interview for a different reason: at the height of the controversy, Irving had been given a polygraph examination and had passed it. I wanted to see if the man who had beaten the conventional lie detector could also beat the PSE.

I selected a point in the interview at which Mike Wallace suggested that Irving had not interviewed Howard Hughes, but had happened on some transcripts of Hughes' statements. Irving asked how he could have happened on them. Wallace rejoined, "Where did you happen on those transcripts?" Irving replied, "I got the transcripts from Howard Hughes." I charted this statement on the PSE.

It was a perfect example of total stress, horizontally blocked, with the smooth, "trimmed-hedge" wave form. Clifford Irving was a master liar, and he had beaten the polygraph, but he would have been caught by the PSE.

A few days after our first meeting, I received a call from Bob Smith. He had turned up a few things for me. I visited him at the Committee's office in downtown Washington. He gave me a tape recording and a typewritten transcript. The recording was the Louis Lomax television program of Sunday, October 16, 1966. Wesley Liebler, a member of the Warren Commission's staff, was the guest. The transcript was of a CBS News television program entitled *The Warren Report*, which had been broadcast in four one-hour segments on June 25, 26, 27 and 28, 1967.

I examined the transcript. The programs had been narrated by Walter Cronkite and other CBS newsmen. They reviewed every major point of controversy that had been raised by the critics of the Warren Report, interviewing eyewitnesses, Dallas policemen, medical examiners, ballistic specialists and many others who had some inside knowledge of the assassination of John F. Kennedy. For what I had in mind, it was a gold mine. I telephoned CBS and learned that I could get a copy of the program's

soundtrack if I would pay for the dubbing charges. I told them to go ahead.

Next I played the Lomax-Liebler tape. Apparently Mark Lane had been on an earlier Lomax program, and now Liebler was on to rebut him. I didn't need the PSE to know that Liebler was stressed. He seemed very agitated, and his breathing audibly indicated his tension. He was angry about the things Lane had said, the questions Lomax was asking him, and the reaction of the studio audience. Given his highly emotional state, he did not seem a very promising subject for the PSE. Nonetheless, I decided to give it a try.

Charting a tape with the PSE is a long and tedious process, and it was impractical to chart the entire program. I ran some of Liebler's statements which were not in dispute and discovered, as I had expected, a great deal of stress. He was pretty charged up.

Most of the exchange between Liebler, Lomax and the audience was argumentative and did not deal with specific factual points. I found two key statements by Liebler, though, and I charted them.

The first statement, in response to a question by Lomax, was, "I have no doubt about the conclusions of the [Warren] Report." Plenty of stress was evident, but not much more than in other statements.

The second statement related to those Warren Commission documents which were not included in the Report—they were locked up in the National Archives. Lomax asked Liebler if there was anything in the documents which would alter Liebler's opinion. Taken literally, it was a strange question, since Liebler had seen the documents and, if they would alter his opinion, they would already have done so. Lomax probably meant to ask if the documents would conflict with the conclusions of the Warren Report. Whatever Liebler thought the question meant, he answered quickly, "Oh, none, none at all." The PSE showed much more stress here than during any of Liebler's other statements.

It was all pretty confused and fuzzy, and it didn't tell me more than I'd already known: Wesley Liebler was pretty upset when he appeared on the Louis Lomax program. I hoped that the CBS tapes would yield more enlightening results.

I finally received a call from CBS's Washington office saying the tapes had arrived. I broke a few traffic laws getting there to pick up the tapes and returning to my apartment. I had already selected the points I wanted to check from the transcript of the program. I mounted the first tape on the recorder, ran it down to the first point of interest, and turned on the PSE.

For the next three days and nights, I ran charts. When I finished, I had a splitting headache, my kitchen floor was ankle deep in chart paper, but I had a much clearer idea of what did and did not happen that day in Dallas.

Before I describe my results, I feel that I must offer the reader a few comments ar

words of caution:

1. Although the PSE is a well-established interrogation aid, it has not been validated as a tool for historical research. Even though experts familiar with the machine believe that it can be used in this way, my project was the first attempt to do so.

2. It is easier to demonstrate with the PSE that a speaker is telling the truth than to show he is lying. Stress can be caused by things other than deception; but the absence of stress is an extremely reliable indication of truthfulness. Of course, the absence of stress does not prove that a statement is true, only that the speaker believes it to be true.

3. Although I found a great deal of stress in the testimony of the assassination tapes, in no single instance can I say that the individual was lying. I point this out not only to protect myself from libel suits but because I am not morally certain any one individual was not telling the truth.

4. Nonetheless, stress in the testimony of many witnesses to the same event makes the mathematical probability overwhelming that at least some of them were lying.

These points could not be better illustrated than they were by the Jim Garrison-Clay Shaw Affair.

Garrison, it may be recalled, was the New Orleans District Attorney who, in 1967, claimed to have solved the Kennedy assassination. He presented an elaborate case against a local businessman, Clay Shaw, and others, as members of an assassination conspiracy. In one of the hour-long programs, CBS interviewed Garrison, Shaw, and two other people involved in Garrison's allegations.

In his interview, Garrison was hostile and did not make many firm, factual statements I could test with the PSE. However, he did say, "There's no question about it [that he knew how the assassination had been carried out] . . . we know the key individuals involved . . . there is no question about the fact [the conspirators] were there [in Dealy Plaza]." The PSE showed good to hard stress on each of these statements. I also ran a noncontroversial statement of Garrison's as a control: "Oswald was not killed there [at the movie theater where he was arrested]," and found no stress. Garrison's statements about his case against Clay Shaw strongly indicated deception.

Next I ran some statements by Clay Shaw denying his involvement in such a conspiracy, and denying ever knowing or meeting Lee Harvey Oswald. I also ran a control statement. Shaw turned out to be heavily stressed throughout.

This was not particularly surprising. The man had been accused of conspiring to murder the President of the United States and was being interviewed about it before television cameras. He would have to have been a pretty cool customer not to show a lot of stress, even if he were telling the complete truth.

Finding that both Garrison and Shaw showed stress was not an encouraging

development. Of course, both men could be lying. Garrison might have found some valid evidence linking Shaw to the assassination and then, in the time-honored tradition of prosecutors, invented the rest of his case. But Shaw's stress could easily be the result of his predicament, and Garrison's might also be the result of some outside issue. The situation was ambiguous.

I ran the testimony of Lee Odom, Odom, a Dallas businessman, was attempting to explain the mysterious coincidence of the post office box numbers. It seems that the Dallas post office box number 11906 appeared in the notebooks of both Clay Shaw and Lee Harvey Oswald. In his testimony, Odom stated that he could not account for the number appearing in Oswald's notebook, he knew how it got into Shaw's. It was Odom's box number, and he had given it to Shaw, whom he'd met by chance on a business trip to New Orleans. The PSE showed hard stress during his statement. No unrelated control statement was available for me to run for comparison.

This didn't really clear things up. There were several obvious alternative explanations for Odom's stress. For example, there

Deception is not proved
by stress, but given
enough witnesses' testimony,
the PSE is able
to arrive at the truth

had been a number of rather unsavory allegations in the press about Clay Shaw, unrelated to the Garrison charges. Odom may have felt extremely uncomfortable about linking himself to this man in any way. The coincidence of the box numbers seemed very suspicious, but Bob Smith of the Committee had pointed out to me that both Shaw's and Oswald's notebooks were filled with numbers, so the chance of such a coincidence was not that remote.

At this point I began to wonder if the television camera was the "outside issue" in every case. Perhaps just being on television will so thoroughly rattle the average person that, lying or not, he is going to show stress on the PSE. I checked this out by recording and charting a number of people on television programs—public officials, men in the street, even witnesses to a particularly gruesome accident. There was occasional stress, but it never reached the high level I was finding in the assassination tapes.

I also recalled something else which put my mind to rest on this point: the PSE had been used to analyze the statements of con-

testants on the television program *To Tell The Truth*, and identified "the real Mr. So-and-so" with an accuracy of better than 94 percent. The problem obviously was not the television camera.

I ran the testimony of William Gurvich on the PSE. Gurvich had been Garrison's chief aide in the investigation of Clay Shaw until he resigned, charging Garrison with wrongdoing. He said, "The truth as I see it is that Mr. Shaw should never have been arrested." He was asked if Garrison had known of certain illegal and unethical methods Gurvich had alleged were being used by Garrison's staff. He answered, "Yeah, of course he did. He ordered it." There was no stress in Mr. Gurvich's statements. The PSE showed that he believed what he was saying.

Obviously I did not have enough testimony from a large enough number of witnesses to create a detailed picture of the Garrison-Shaw affair, but it seems probable that, at the very least, Garrison did not have much of a case against Shaw (a view later held by a New Orleans jury) and likely that Shaw was completely innocent of complicity in the assassination. The lesson of this episode is twofold. First, stress in any one person's testimony does not prove deception. Second, given enough testimony by different witnesses, the PSE can arrive at the truth.

The first person I ran on the PSE who had any direct knowledge of the assassination was Oswald's widow, Marina. Unfortunately, only one of her statements was on the CBS tapes—that Oswald had owned a rifle. The PSE said she was telling the truth.

The rifle had been one of the major points of controversy raised by critics of the Warren Report. The debate centered on two points: whether the Mannlicher-Carcano alleged to have belonged to Oswald was the rifle found by the Dallas police in the Texas School Book Depository, and whether that particular gun could have been the murder weapon.

On the tapes, Darrell C. Tomlinson, an employee of Parkland Hospital, testified that he had found a rifle bullet on a stretcher which he believed had carried Governor Connally. There was no stress in his statement. The PSE said he was telling the truth.

Dr. Joseph D. Nicol, Superintendent of the Bureau of Criminal Investigation for the State of Illinois, ran ballistic tests on bullet fragments found in the presidential limousine, and on the intact bullet found by Tomlinson. Nicol testified that both the intact bullet and the bullet fragments had been fired by the Mannlicher-Carcano. He, too, was apparently telling the truth.

Deputy Constable Seymour Weitzman of the Dallas police claimed that he found Oswald's Mannlicher-Carcano on the sixth floor of the Texas School Book Depository. However, on the day of the assassination, he had told the press that the rifle he'd found was a German Mauser. The following day he signed an affidavit to that effect. But on the CBS tapes he testified that he had been mistaken about that point, that it had really

been Oswald's rifle. The PSE showed considerable stress in his statements.

Patrolman Gerald L. Hill testified that he found three spent bullet hulls on the floor beneath the window from which the fatal shots allegedly were fired. The PSE showed hard stress in his statements.

The rifle was one of the principal points used by the Warren Commission to link Oswald to the assassination. The PSE substantiated the testimony that Oswald owned a rifle and that the evidence supplied to a ballistics expert indicated this rifle was the murder weapon. However, the PSE did not substantiate the controversial claims of Dallas police regarding the discovery of this evidence.

The hospital employee was apparently telling the truth when he recounted finding the bullet on a stretcher at Parkland Hospital, but many critics have charged that the bullet had been deliberately planted there. This is the famous "single bullet" which the Warren Report says passed through the bodies of both the President and Governor Connally, and then lodged in Connally's wrist. Several researchers have tried to repeat this, firing the same type of bullet into the wrist of a cadaver. The bullets never remained perfectly intact, as the one found on the stretcher, they became twisted lumps of lead and copper.

The second link between Oswald and the assassination is the charge that he killed Officer Tippitt, a Dallas policeman, while fleeing from the scene of the first shooting. A number of eyewitnesses have testified that they saw Oswald shoot Tippitt, and one of them, Domingo Benavides, was interviewed on the CBS tapes. He was asked if there was any doubt in his mind that Oswald was the man he saw shoot Tippitt. He replied, "No, sir, there was no doubt at all." There was absolutely no stress in his statement. He was telling the truth.

The killing of Officer Tippitt by Oswald has fueled the fires of controversy over the Warren Report. Tippitt was far from his usual beat when he was shot. Some witnesses have alleged that Tippitt and Oswald were seen together in Jack Ruby's nightclub. They theorize that the three men were part of an assassination conspiracy, and that Tippitt had been sent to silence Oswald, but had been beaten to the draw.

The Dallas police radio dispatcher, Officer Murray Jackson, was asked if he thought Tippitt knew Oswald. "No," he replied. "I don't think he knew Oswald." Did Jackson know Oswald? "No," answered Jackson, "I didn't either." The PSE showed heavy stress in both statements.

Perhaps the greatest source of controversy over the Warren Report is its claim that all the shots were fired by one gunman. Some eyewitnesses claim to have heard shots and seen gunsmoke in the area of a low hillock ahead and to the right of the presidential motorcade. This hillock has come to be known as "the grassy knoll." One of these witnesses was a railroad worker named S.M. Holland, who observed

the scene from an overpass near the knoll. The PSE confirmed that he thought he had seen a puff of smoke on the knoll, but it could not support his claim that he had heard a shot from that direction.

Another witness, Charles Brehm, was quoted by Mark Lane as having said that he had seen a portion of the President's skull flying back over the left rear end of the limousine. Lane offered this as evidence of a shot from the grassy knoll. On the CBS tapes, Brehm stated heatedly that he had been quoted out of context, and emphatically denied that any shots had come from the knoll. Despite his emotional state, there was almost no stress in this statement.

Officer Jacks of the Dallas police, who was riding in the limousine of Vice-President Johnson, denied that any of the shots had come from the direction of the grassy knoll. The PSE turned up a fair degree of stress.

Three witnesses, Mrs. Caroline Walther, Arnold Rowland and Howard Brennan, claimed to have seen gunmen in the windows of the Texas School Book Depository building. Mrs. Walther said she saw two men, one armed with a rifle, the second

Chief Justice Warren:
"We explored both these theories and found no evidence that either group was involved"

with a shorter gun. Rowland told the Warren Commission he had seen two men, one an elderly Negro, in the window Oswald is alleged to have fired from, but on the CBS tapes he claimed he had seen an armed man at a different window. The Commission relied heavily on the testimony of Brennan, who claimed to have seen a gunman in the "Oswald window" actually firing the last of the shots. The PSE showed hard stress in the testimony of all three witnesses.

The PSE analysis of the eyewitnesses' testimony regarding the source of the shots is ambiguous. It supports Holland's claim to have seen a puff of smoke on the knoll, and Brehm's denial that any shots came from that direction, and it raises serious doubts about all other claims and counterclaims. This contradiction seems to result from the notorious unreliability of eyewitnesses, perhaps compounded by a fair amount of fabrication. Deception, if it is present here, may have been motivated merely by a desire for attention. Or there may have been darker reasons.

There is, however, other evidence and testimony that could shed some light on the existence, number and location of assassins other than Oswald. This brings us to perhaps the most dubious and controversial element in the Warren Commission's version of the event—the autopsy.

Within minutes after the shooting, Kennedy had been rushed to the emergency room at Parkland Hospital, where Dr. Malcolm Perry tried to save his life. The physician saw that the President had suffered a massive head wound and a smaller wound in the throat. Perry performed a tracheostomy, cutting through the throat wound in an attempt to open a breathing passage. Afterward, when hope for the President had been abandoned, Perry met with the press and declared that the wound in the front of the neck had been an entry wound.

The President's body was flown to Washington, D.C. There, approximately eight hours after the shooting, an autopsy was performed at Bethesda Naval Hospital. Because of the tracheostomy, the nature of the neck wound could no longer be observed and was, at first, overlooked. Later, after consulting the Dallas doctors, the Bethesda pathologists concluded that it was an exit wound. The autopsy report stated that there were two entry wounds, one low in the rear scalp and one at the right base of the neck; and two exit wounds, the throat wound and a large irregular wound on the right side of the head.

The confusion was compounded when two FBI agents present at the autopsy reported that a wound had been found in the President's back, and that no corresponding exit wound had been located. Diagrams made during the autopsy seemed to confirm this, showing the lower of the two entry wounds to be below the shoulders, not at the base of the neck. What became of the bullet? The agents reported that Bethesda doctors thought the bullet had dropped from the wound when the Dallas doctors attempted external heart massage. But this was the shot that the Commission claimed had passed through Kennedy and struck Governor Connally.

X-rays and color photographs of the autopsy were made. The brain was removed from the body. Brain and skin tissue slides were prepared for microscopic examination. Remarkably, the Warren Commission never asked to see any of this evidence, relying instead solely on the testimony of Captain James J. Humes, one of the pathologists who conducted the autopsy. Even more incredible is the disappearance of the brain, the slides, and some of the photographs, which were alleged to have been turned over to the National Archives by the Bethesda Naval Hospital.

Both Dr. Perry and Captain Humes were interviewed on the CBS tapes. Perry was asked about the throat wound he'd seen when the President was brought to Parkland Hospital. His answer seemed evasive. He neither confirmed nor denied that he had thought it was an entry wound, talking instead about the difficulty of making such a determination and the fact that his attention had been devoted to saving the President's life. Then the interviewer asked him directly whether he had thought at the time that it was an entry wound. "Actually, I didn't really give it much thought," he replied. He

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showed hard stress on the PSE. Unfortunately, he made no other definite statement about the nature of the wound.

The interview with Captain Humes was more informative. Just before the interview, in 1967, Humes had re-examined the autopsy photographs and X-rays, and he discussed them at length on the CBS tapes. The diagrams drawn during the autopsy, he said, had not been intended to precisely represent the location of the wounds. However, he now produced a sketch which, he said, did represent these locations accurately. The interviewer asked, "Your re-examination of the photographs verify that the wounds were as shown here?"

"Yes, sir," he replied. No stress.

Were there any wounds other than one at the base of the neck and one up in the skull? "No, sir, there were not." Moderate stress, not enough to suggest deception.

Was there any doubt that the wound at the back of the President's head was an entry wound? "There is absolutely no doubt, sir." Again stress, but again moderate.

Altogether, how many wounds were there? "There were two wounds of entrance and two of exit." At this point the stress became hard.

And where were the entry wounds located? "Posteriorly, one low in the right posterior scalp, and one in the base of the neck on the right." Hard stress again.

Could he be absolutely certain that what he said was an entry wound was, in fact, that? "Yes, indeed we can." Hard stress.

The interview with Humes was one of the longest and most detailed on the CBS tapes, and I charted most of it with the PSE. It was clear to me that he believed much of what he was saying, but the frequent flickerings of moderate stress and the occasional flashes of hard stress suggested that he wasn't nearly as confident of his testimony as he claimed to be. As Dr. Perry had pointed out, sometimes it's not easy to tell an entry wound from an exit wound.

The interviewer asked him one good "bottom line" question:

"Do you have any different conclusion, any different ideas, any different thoughts now, after seeing [the autopsy photographs] again, than you had at that time?"

"No," replied Captain Humes, "we think they bear up very well, and very closely, our testimony before the Warren Commission."

The stress was hard.

Arlen Specter, one of the Warren Commission's principal investigators, also spoke on the CBS tapes. He said that the case against Oswald fitted together very well, and that seldom could one find among actual crim-

inal convictions a case equally persuasive. He added that there was no foundation for the charge that the Commission had been formed to whitewash the facts.

The PSE said he was telling the truth.

John McCloy, a member of the Warren Commission, said much the same thing, and added that he had seen no credible evidence to contradict the findings of the Commission. The PSE backed him up on this, but it failed to do so when, speaking of the Warren Report, he said, "There was nothing fraudulent about it." Here the PSE showed hard stress.

If Specter and McCloy were as confident as the PSE shows them to be in the truthfulness of the Warren Report, what could be fraudulent about it? Perhaps the snipping off of a few loose ends, the suppression of a few pieces of inconvenient evidence which conflicted with a version of events they believed to be essentially true.

The one man who could be expected to have the most informed opinion regarding the work of the Warren Commission is former Chief Justice Earl Warren himself. He had declined to be interviewed on the CBS program in 1967, but he did appear on television in May, 1972, in an interview

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There was very hard stress on "no evidence"

which was part of a series called *The Brandeis Television Recollections*. Bob Smith of the Committee provided me with the tape.

The interview was an hour long, but the Kennedy assassination and the Warren Commission came up only once. The interviewer, Abram Sachar, Chancellor of Brandeis University, was friendly and deferential. I charted some of Warren's remarks unrelated to the assassination and found that he was generally unstressed. Sachar raised the subject of the Commission obliquely, and Warren volunteered several rather lengthy statements about it.

Warren said that immediately after the assassination there were two theories, one that Khrushchev and Castro were behind the killing, the other that a group of right-wing Texas oilmen were responsible. He said:

"We explored both of those theories for ten months and found no evidence that either of them was involved in it."

The PSE showed hard stress.

He continued:

"... we found no evidence of any kind that there was any conspiracy."

Again there was stress, and particularly hard stress on the words "no evidence."

"I have read everything," said Justice Warren, "that has come to my notice in the

press, and I read some of the documents that have criticized the Commission very severely, but I have never found that they have discovered any evidence of any kind that we didn't discover and use in determining the case as we did."

Hard stress once again. The word "never" was a perfectly "trimmed hedge."

"I have found nothing since that time," he continued, "to change my view, nor have I heard of anything that has changed the view of any member of the commission since that time."

The stress was hard. As I had now come to expect, the word "nothing" seemed a particularly beautiful example of stress. Another word seemed to show even more stress: "member." Could he have been thinking of someone in particular? On January 19, 1970, Senator Richard B. Russell, a member of the Warren Commission, revealed that he had never believed that Lee Harvey Oswald acted alone.

I had charted the last of the assassination tapes. Of course, these few thousand feet of recording tape are only a small fraction of the relevant testimony recorded and stored away in the archives of television news departments. There is, for example, Lee Harvey Oswald, as he was led through the Dallas police station, denying that he had killed the President. There are statements by Marina Oswald, Jack Ruby and by others.

I have no doubt that with these tapes, a Psychological Stress Evaluator, and time to work on them, a very detailed picture of the assassination of John F. Kennedy could be reconstructed, a picture that might even reveal the identities of the assassins and their co-conspirators. I hope that sooner or later someone does this. I have gone as far as the private resources of a free-lance writer permit.

What, given the sample of testimony I have processed with the PSE, can I say about the assassination?

We should first examine the testimony in which no stress was found, since it is almost certain that these people were telling the truth as they saw it. This strongly suggests the following:

1. Oswald owned a rifle.
2. A bullet fired from that rifle was found on Governor Connally's stretcher at Parkland Hospital.
3. Bullet fragments *alleged* to have been found in the presidential limousine also came from Oswald's rifle.
4. At least one eyewitness believes he saw gunsmoke on the grassy knoll, but another is equally certain no shots came from that direction.
5. Oswald shot and killed Officer Tippitt.
6. At least one member of the Warren Commission and one member of the Commission's staff really believe in the validity of the Warren Report.
7. Jim Garrison had little or no case against Clay Shaw.

Almost all of this tends to support, in one way or another, the Warren Report. But now

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let's look at the testimony that is called into question by the PSE:

1. The claim that Oswald's rifle was found in the Texas School Book Depository.
2. The claim that bullet hulls matching Oswald's rifle were found in the same place.
3. The claim that one gunman was seen in the "Oswald window" of the Dallas Book Depository.
4. The claim that two gunmen were seen in this window.
5. The claim that a gunman was seen in a different window of that building.
6. Another claim that no shots came from the grassy knoll, and a claim by the witness who saw the gunsmoke on the knoll that he also heard a shot from that direction.
7. A claim by a Dallas policeman that neither he nor Officer Tippitt knew Oswald.
8. The claim by the pathologist—the Warren Commission's only source of information about the autopsy—that the X-rays and autopsy photographs support his testimony before the Commission.
9. The claim by a member of the Warren Commission that there was nothing fraudulent about the Warren Report.
10. The claim by Earl Warren that the Commission found no evidence of a conspiracy; that none of the Warren Report's critics ever found anything the Commission had missed; that he had found nothing since the publication of the Report to change his view; and that he knew of no Commission member who had ever changed his mind about their conclusions.

If we accept that each instance of stress indicates deception, an interesting and unexpected possibility emerges:

Oswald was involved in some way in the assassination, if only as a fall guy. Some of the Dallas police force may have been involved, planted the evidence that implicated Oswald, and covered up the fact that there was a conspiracy. The medical examiner believed his own testimony to the Warren Commission, but later had doubts. The Commission found evidence of a conspiracy but didn't believe it, so they covered it up in order to present a tidy package to the public. Later, at least one member of the Commission changed his mind, but since he didn't know what really did happen, he decided to say nothing. So there was conspiracy in Dallas, and in Washington nothing worse than blundering.

I could say all this with certainty if I knew that stress always equals deception. Unfortunately, I do not know that. But the PSE analysis of the assassination tapes has generated a staggering amount of fresh doubt regarding the Warren Report. This doubt rises not only from specific points the PSE has called into question, but from the very sinister implications of the very existence of deception among policemen, government officials and Commission members. The question remains: did such deception exist or was the stress found by the PSE the result, in every case, of an outside issue?

Obviously, whenever stress is found by the PSE and cannot be cross-checked by a structured interrogation, some probability must be accepted that this stress is caused by an outside issue. No study has yet been conducted to establish what this probability might be, but let us pick, for the sake of discussion, a figure that may seem ridiculously high—70 percent. In other words, we are assuming that 70 percent of the times the PSE finds stress in testimony, it results from something other than lying.

Now, let's ignore the deception indicated in the testimony of the eyewitnesses; even if present, it might have resulted from mere desire for attention. That leaves eight "insiders" who have demonstrated stress when making statements supporting the Warren Report: the Dallas policemen Hill, Jacks, Jackson and Weitzman; the medical examiner, Captain Humes; Commission staffer Wesley Liebler; Commission member John McCloy; former Chief Justice Earl Warren.

Assuming that there is a 70 percent chance that any single instance of stress is "outside issue," what is the probability that all eight instances are due to factors other than deception? Elementary probability theory tells us that it is seven-tenths raised to the eighth power, or approximately 6 percent.

In other words, even making some fairly conservative assumptions, there is a 94 percent chance that at least one of these eight men is lying.

My own personal opinion? I don't know. I remember the young man with the ring. He said he was wearing it, and he was, but he stressed. He stressed not because he was lying, but because there was something about that ring that really bothered him, something he didn't want the world to know. Perhaps that is also true of these men who, in one way or another, learned some part of the truth about the assassination of John F. Kennedy.

I suppose I'm not absolutely sure even of that. When I first met Bob Smith of the Committee, I asked him if there was any one thing the government could do to clear up the mystery. Yes, he replied, the one thing that would help more than anything else would be to make available the physical evidence — the detailed FBI lab reports, the X-rays and autopsy photographs, the microscopic slides, the bloodstained clothing, yes, even the President's brain, wherever it has been hidden. These things, he said, would go far toward answering the questions about what actually happened that day in Dallas. Maybe they would even confirm the Warren Report.

So when I say I'm not absolutely certain these men are concealing something, I mean I can think of something that could conceivably change my mind. That is, if the government would open all its files on this matter to us and prove that we are wrong —we, the people who ten years later still believe we haven't yet heard the full account of the events of November 22, 1963.

