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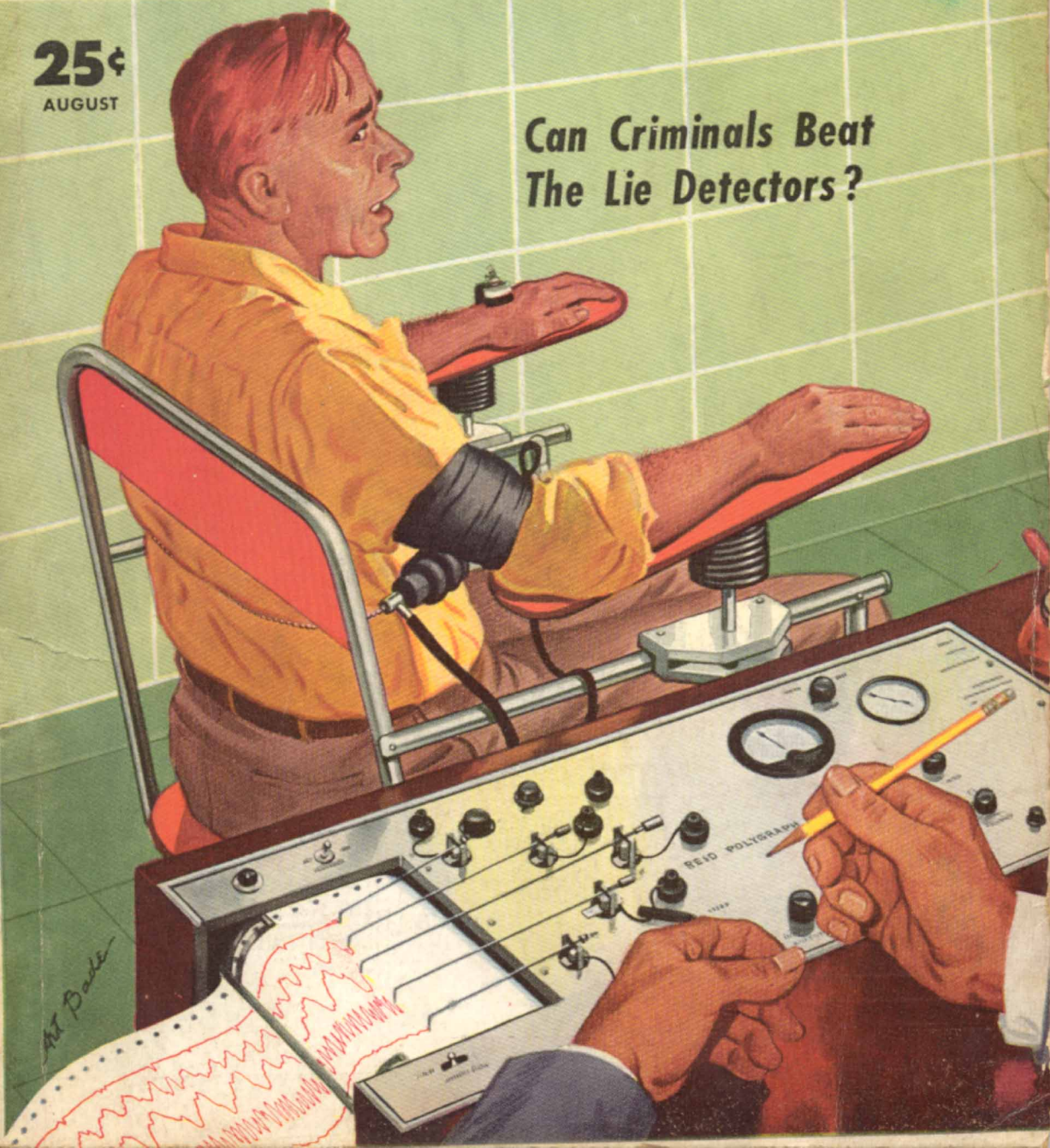
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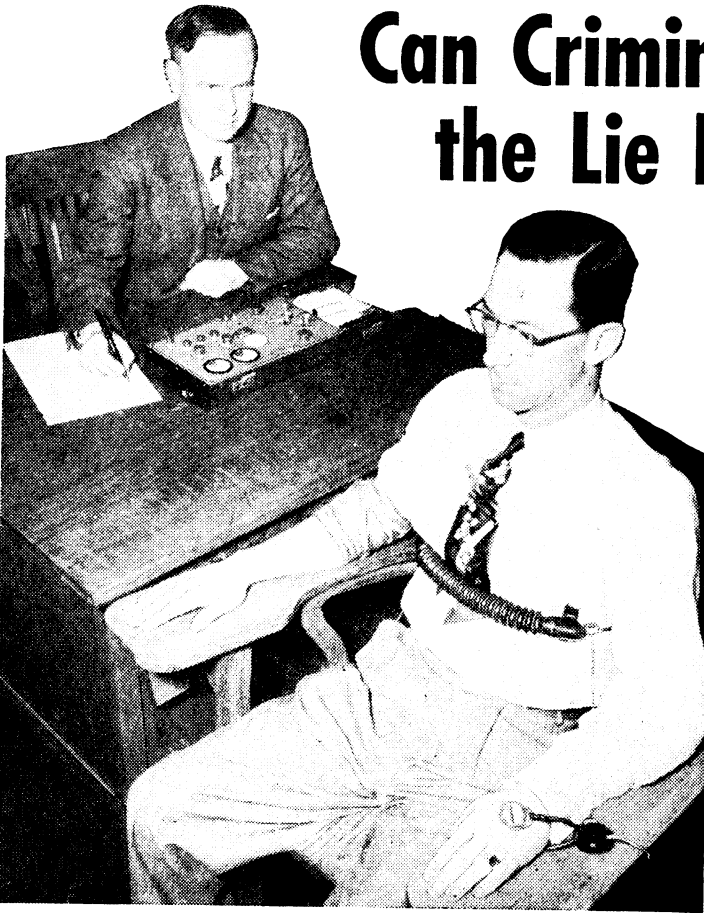
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Can Criminals Beat  
The Lie Detectors?



# Can Criminals Beat the Lie Detectors?

By FRED T. BLAKEMORE



Detective Lieutenant Michael J. Cullinane of the Massachusetts State Police demonstrates the lie detector technique with Michael J. Kilroy, an employee of the Massachusetts Department of Public Safety, playing the part of the "suspect". The instrument used here is the three-bar Keeler Polygraph which records blood pressure-pulse, respiration, and psychogalvanic skin reflex, but not arm and leg movements.

**C**ONTRARY to some popular thinking the polygraph lie-detector does not flash a neon sign and cry "tilt" when a suspect is caught telling a lie.

The lie-detector instrument itself is only one part of a trio of lie-detector, operator, and questioning technique which, taken together, arrive at guilt or innocence. That lie-detector experts generally claim only 95% accuracy for their tests indicates that occasionally the lie-detector gets taken. But how? And by whom?

Actually, although almost everyone *thinks* he can beat the lie-detector, it's extremely rare for suspected criminals to win out against the combination of the latest machines and well-trained, experienced operators. But they do keep trying, and their crafty efforts to evade justice have spurred lie-detector manufacturers and operators to develop refinements of the machine and examining techniques which will narrow the already slim margin of error in this modern search for the truth behind all kinds of social misdeeds.

A poor backwoods farmer was taking a lie-detector test after he had been accused of stealing a roll of barbed wire from his neighbor. At the crucial question, "Henry, did you steal that wire?", Henry replied, "No." And the lie-detector indicated that he was telling the truth. Yet he actually had taken it.

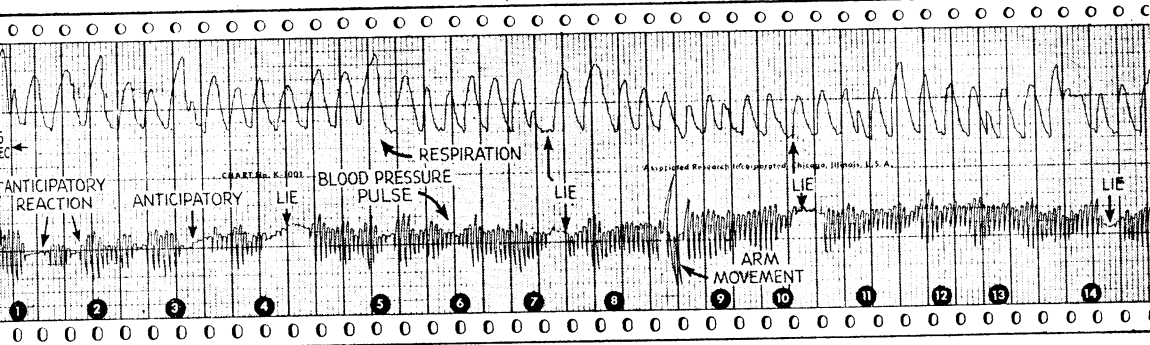
Now, Henry did not beat the lie-detector in a head-on battle. The roll of rusty barbed wire had long lain unused beside his neighbor's fence and when Henry took it he was, in his mind, putting to good use some wire that its owner did not need. Since Henry did not look upon his act as stealing, he had no fear of detection, and his "no" answer was recorded as the truth. Because Henry, in this instance, was not capable of distinguishing between right and wrong, the lie-detector failed.

The theory of the lie-detector is based upon the fact that fear of detection will cause certain physiological reactions in our bodies when we tell a lie. The most dependable reactions for lie-detector work are found in our blood pressure, pulse, and respiration.

Consequently, the standard polygraph lie-detector records relative changes in blood pressure, pulse, and respiration. In addition, this lie-detector probably will include a galvanometer for recording skin reflex in terms of the minute changes in electrical resistance that occur as a result of emotional stress. Some of the latest equipment also detects muscular contraction.

A truck driver for a cartage company picked up a man on the highway who formerly had worked for the company. Once in the cab the hitch hiker pulled a gun on the driver and ordered him into the bed of the truck. There the former employee shot the driver and escaped with \$700 and some valuable merchandise.

The driver survived the shooting and informed the police of his assailant. On the lie-detector



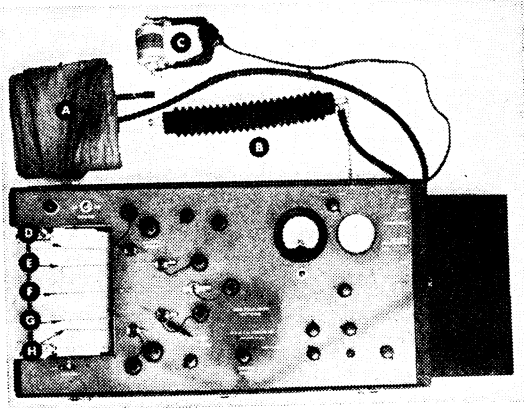
This is the record of a peak of tension or card control lie detector test given by Harvey F. Payne, president of Leonarde Keeler, Inc., Chicago, to a slightly jittery Bill Schoentgen, S & M feature editor. Recordings were made only of respiration (top line) and blood pressure-pulse (bottom line). Bill was instructed to answer the first two questions—regarding his name and place of residence—truthfully, and to reply, "No," to all the rest. He deliberately tried to control his respiration, and succeeded to some small extent, but the blood pressure-pulse reaction provided the big giveaway. Here are the questions: 1. Is your name William? 2. Do you live in Chicago? 3. Was the card you selected between 1 and 8? 4. Between 9 and King? 5. Was it a Diamond? 6. Heart? 7. Spade? 8. Club? 9. Was it a 9? 10. A 10? 11. A Jack? 12. A Queen? 13. A King? 14. Have you answered all these questions truthfully? Bill replied, "Yes," to the final question—another lie. Could you determine from these recordings which card had been taken from a deck of 52? Payne did, on the first try. It was the 10 of spades.

test the criminal showed no reaction to questions regarding the shooting, robbery, or kidnaping. However, on a question "Have you ever stolen anything in your life?" the polygraph recorded a definite reaction. A subsequent confession revealed that as a boy he had stolen from his mother. In his mind that crime was much worse than shooting, robbery, or kidnaping. In fact, he could even chuckle about the latter, while the former elicited tears of remorse.

In the poor farmer's case, he had reasoned himself into a position where wrong appeared to be right. But the hitch hiker's conception of right and wrong was so twisted as to constitute mental imbalance.

The polygraph examiner must prepare his questions with utmost care, from as much information as he can glean about the suspect. Out of a list of about a dozen questions, probably only two or three will pertain to the crime committed. These are known as "hot" or relevant questions. In Henry's case, the question, "Did you steal that wire?" was relevant or "hot." The remaining questions, usually something like "Do you smoke?" or "Do you wear glasses?", are considered irrelevant because they do not pertain to the crime being investigated. They establish the subject's normal blood pressure-pulse-respiration reaction to the test situation itself. The theory is that by establishing a normal reaction pattern through the use of irrelevant questions then, when a hot question is asked, any deviation from the norm will be immediately discernible.

But the questioning technique has had to develop rapidly to keep ahead of sharp criminals who are constantly trying to beat the machine. Recently an ex-convict was arrested as a suspect in a clothing store robbery. One irrelevant question asked to establish his normal reaction was "Were you born in the United States?" He answered "Yes," but actually he was born in Mexico and was in the United States illegally.

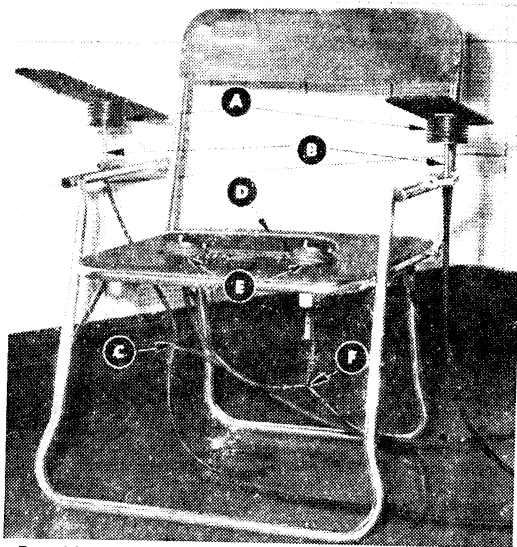


Top view of Reid Polygraph shows component parts of this lie-detector: (A) Blood pressure cuff to be wrapped around subject's arm; (B) pneumograph tube which fastens around subject's chest to record respiration changes; (C) Electrodes which fasten to hand for psychogalvanic skin reflex; (D) Muscular movement pen for arm recordings; (E) Respiration recording pen; (F) Psychogalvanic skin reflex recording pen; (G) Blood pressure recording pen; (H) Muscular movement pen for thigh recordings.

This established a supposedly normal test reaction which was not a true one, and it threw the operator off in his interpretation of test results. However, the suspect tipped his hand at the close of the test by asking the examiner, "How did I do on that first question?" This aroused the suspicions of the examiner and another test, using different questions, established the suspect's guilt.

That's why, when establishing a norm, polygraph examiners generally pose only irrelevant questions to which they know the correct answers. They will ask, "Do you smoke?" when they have seen the suspect with a cigaret in his mouth. "Were you in jail last night?" when they know that he was brought from lock-up.





Portable chair and equipment for recording muscular movements with the Reid Polygraph. Forearm board rests are attached to tops of bellows (A), the base of which is connected to hollow rods (B). Rubber tubing attached to the rods is joined to a tee fitting (C) for direct connection to the polygraph. Thigh board (D) has dual bellows (E), interconnected with rubber tubing leading to tee connection (F) and thence to polygraph where movements are transcribed by recording pens.

A card control test also helps to establish a normal reaction pattern. The suspect, shown a group of about seven ordinary playing cards, is asked to select one, look at it, and place it back in the group. After shuffling the cards the examiner tells him to reply "no" to every question, including the one in which he is asked about the chosen card. Thus, his answer to at least one of the questions will be a lie. The reaction, or lack of any, occurring when the subject lies about his chosen card will establish a normal reaction pattern to use as a yardstick later in the actual examination.

One of the most infamous criminals in recent Chicago crime history was able to nullify the effectiveness of the lie-detector. By constantly moving his arms and legs he kept his blood pressure-pulse reactions in such a state of fluctuation that it was impossible to record accurate lie-detector results on him. But in this partial victory lay his defeat. His unwillingness to cooperate with the lie-detector examiner was a cog in the prosecution's case against him. They reasoned that if he were innocent he would be eager to cooperate with the lie-detector test.

Other criminals have tried to "beat the machine" by muscular movement. In 1944 a truck driver rolled into his home station with a story of a robbery of \$25,000 worth of furs from his truck by armed bandits on the highway. At the request of his employer he submitted to a lie-detector test. Examination of test records showed more of a response on irrelevant questions than on

relevant, which should have been a tipoff, but he was dismissed as innocent.

Later he was caught removing valuable merchandise from his truck, and confessed to having taken the \$25,000 worth of furs. He had beaten the machine by pressing down on his arms at irrelevant questions and releasing the pressure at "hot" or relevant questions. Thus, the normal rise in blood pressure-pulse which occurred when he was asked the "hot" question, "Did you take the \$25,000 in furs from your truck?" was more than offset by the falsely stimulated rise when he pressed his forearms down at such questions as "Did you ever smoke?"

But lie-detector expert John Reid, developer of the Reid Polygraph, had an answer to this one. If the machine can be beaten by muscle contraction, then develop a device to detect muscle contraction, he reasoned. So he invented a unit which consists, basically, of two adjustable forearm board rests and an adjustable thigh board rest which set on bellows connected by rubber tubing to another set of bellows within the polygraph lie-detector. Any pressure exerted on the arm or thigh bellows causes air displacement, forcing air into the instrument bellows and actuating the recording pen.

Although some experts contend that muscle contraction can be visually detected by an experienced operator, here's a case where the muscle contraction equipment paid off. A husband, accused of pushing his wife down a flight of stairs, claimed she had tripped and fallen. Two days later the wife died without regaining consciousness. During the polygraph test the husband, like the truck driver, sporadically contracted and released the muscles in his thighs in an attempt to confuse the test results, and thus distorted the blood pressure and respiration pen recordings. But the thigh board and bellows picked up the pressure he was exerting on his thighs. Faced with this evidence, he admitted his guilt.

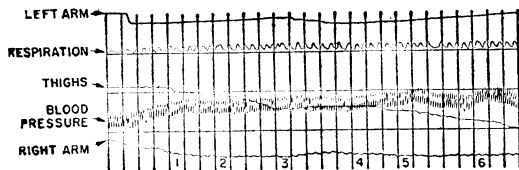
Blood pressure-pulse recordings are taken with a blood pressure-pulse cuff which is fastened around the subject's arm, and respiration recordings are made by means of a pneumograph tube (a 10-inch corrugated rubber tube) which, with the aid of a strap, fits around the chest. Psychogalvanic skin reflex is measured by an electrical device which records changes in the resistance of external current between the palm and back of the subject's hand. (It is not, as popularly believed, an actual measurement of the amount of perspiration secreted by the hands.) Electrodes charged with an imperceptible current of electricity and cushioned by sponges dipped in a salt solution are attached to the palm and back of one hand. A recording of psychogalvanic skin reflex is made simultaneously with the blood pressure-pulse and respiration changes. All of these factors—blood pressure-pulse, respiration, psychogalvanic skin reflex, and muscular contraction—activate pens which record impulses on the surface of moving graph paper, driven by a small synchronous electric motor. In this manner a

continuous and simultaneous recording is obtained of these elements during the test.

Persons of inferior intelligence (idiots, imbeciles, and morons) who are not able to distinguish properly between truth and falsehood, should not be subjected to the lie-detector technique, nor should children under 13. A person with a fair education and a sense of social responsibility will have a harder time beating the lie-detector than the person with little education.

Pathological liars do not respond to the lie-detector. Lying is compulsive and uncontrollable in a pathological liar, who eventually reaches a stage where he himself is no longer certain of what is true and what is not. Only rarely can the polygraph operator spot a pathological liar. In most cases his deception is undetectable by any method short of the interrogator's possession of the actual facts about which he is lying, or by exhaustive psychological tests to determine his mental make-up. Fortunately criminals cannot learn how to become pathological liars just to beat the lie-detector.

In certain cases, feelings other than fear of detection influence a lie-detector test. For instance, in a juvenile court case a youngster of 14 was



Only contraction of thigh muscles (center line) indicated deception in this examination. Left arm movement, respiration, blood pressure, and right arm movement (from top to bottom) all showed normal reaction patterns.

caught with an expensive watch that he denied stealing. The polygraph recorded no significant reactions on hot questions about the stolen watch. After interrogation, however, the boy finally admitted taking the watch. When asked what he thought about during the lie-detector test he replied: "Boy, won't those guys in the home be jealous when they find out I've been on the 'big machine!'" His emotion of pride far outweighed any fear of detection.

Sometimes criminals have almost beaten the machine by concentrating on something other than the crime under investigation when asked "hot" questions. A bank teller accused of stealing a sum of money gave no significant lie-detector responses when questioned about the theft. But on the card control test his respiration and blood pressure-pulse recordings became considerably distorted when he was questioned about his chosen card, the three of diamonds. The examiner observed a deliberate attempt to breathe abnormally and flex the biceps muscle at this point, and he requested an explanation. The suspect finally confessed to embezzling the money

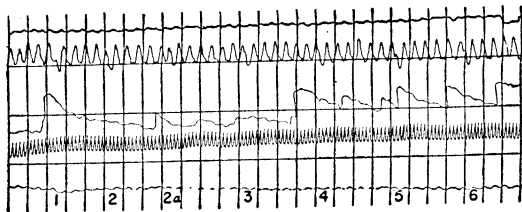
and admitted that on the card test he had attempted to accentuate the response when he lied about the three of diamonds so as to render insignificant, by comparison, any responses in his records when questioned about the missing money. Also, he admitted that whenever he was questioned about the missing money he would "concentrate on something else." Had he known his previous record showed no deception he would not have tried to beat the card test.

Subjects who are physically depleted or have been under considerable emotional tension usually will fail to respond normally to the lie-detector technique. Their adrenal glands may have been so over-stimulated that they temporarily lose their ability to secrete the emergency-action chemical, adrenalin, under the stimulus of fear or anger. For accurate lie-detector tests the subject should be in a calm, unemotional state of mind. Testing invariably is done in a quiet, private room away from the presence of arresting officers, spectators and telephones.

Some experienced criminals, deliberately inducing a state of emotional or adrenal fatigue by refusing to eat or sleep, have attempted to beat the machine by circumventing it. But lie-detector authorities operate on the assumption that an innocent person will be glad to cooperate with the test, and if a suspect won't cooperate, he may be trying to hide his guilt.

However, an innocent person who is angry can be reported guilty by the lie-detector. A box of money was stolen from a company, and suspicion was directed at one man. His superiors requested that he submit to a lie-detector test. Prior to the test he threw his hat and coat on the floor and snapped at the examiner. Test results indicated a definite reaction on the hot question, "Did you take the box of money?" But the polygraph examiner recognized the man's state of mind, and was able to calm him down. Then, after cracking a few jokes, the operator ran the test again and determined his innocence.

It is easy to see that the operator or examiner is a vitally important link in the lie-detector setup. One of the top men in the field of lie-detection, Fred E. Inbau, was asked recently, "If you were unjustly accused of a crime would you be willing to take a lie-detector test to prove your innocence?"

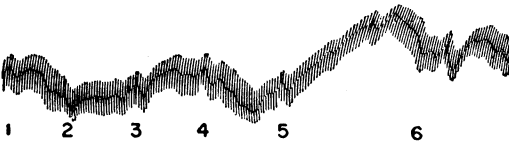


Although this record of a lying subject (being questioned about a burglary) contains no significant responses in blood pressure or respiration, the application of muscular pressure in the arms and thighs suggested the probability of deception. A subsequent interrogation resulted in the subject's confession.

Inbau, formerly director of the Chicago Police Scientific Crime Detection Laboratory, and currently co-authoring a book on lie-detection with John E. Reid, his former associate in the Chicago Crime Lab, said, "Yes, if you let me choose what I know to be a competent and qualified examiner." Both Inbau and Reid believe that a capable lie-detector examiner cannot be trained in less than six months.

Business and industry find the polygraph lie-detector valuable in screening prospective employees and in detecting employee thefts.

A recent robbery of a Brinks, Inc., armored



This subject was suspected of having received \$10,000 from a maid who stole the money from her employer. He admitted having received only \$4,000. On the peak of tension test record shown here he was asked whether the amount was (1) \$4,500, (2) \$6,000, (3) \$7,000, (4) \$8,000, (5) \$10,000, and (6) \$15,000. Peak of blood pressure-pulse tension occurred after question No. 5. Following the test the subject confessed to having received the full \$10,000.

car of \$65,000 was laid to five Brinks employees. These five men had locked their truck and gone into a restaurant to get a cup of coffee. When they returned the truck was still locked, but \$65,000 in cash had disappeared. Each member of the truck crew took a lie-detector test and was recorded innocent. This caused Brinks to look up former employees who might have had a key made to fit the armored car. They found two, tested both and one confessed.

Prospective employees, especially those who will be handling money, are often screened by use of the lie-detector. Questions asked them are designed to uncover any criminal record, gam-

bling habits, debts, marital status, and anything that might motivate them to steal. It is not uncommon to re-examine them every six months.

Most common users of the lie-detector are: Check cashing services, currency exchanges, bartenders, insurance adjusters (who occasionally bring claimants in for a test before paying off a claim), department stores, mail order houses, public utilities. Generally the employees, if they have nothing to hide, do not mind being tested.

Do the courts recognize lie-detector evidence? At the present time—no. They seem to feel as did the Supreme Court of Kansas in 1947 in *State vs Lowry* that the lie-detector technique has not yet gained sufficient scientific recognition to warrant acceptance of results as conclusive evidence.

However, lie-detector evidence has been judged admissible in court if both the prosecution and defense attorneys agree to its presentation. And, in actual practice, lie-detector evidence finds its way into decisions of the preliminary courts, as differentiated from appellate courts. In Chicago Felony Court the lie-detector is regularly employed in preliminary cases to determine whether to hold a suspect to the grand jury or dismiss him. It is also used in Chicago Boys Court, Auto Court, and Domestic Relations Court.

Should lie-detector results be admissible in law courts as primary evidence? Responsible men in the field say, "No—not yet." They point out that the lie-detector is an immensely powerful instrument because it is potentially able to go right to the core of most cases and come up with a definitive answer at least 95% of the time. By that token, if its results were accepted 100% there would be no need for judges or courts.

Also, before polygraph lie-detector results are admitted as primary evidence in court, some authorities say, examiners must be licensed and a system of boards of review should be set up which would have the power to standardize and inspect polygraph operations as insurance against their possible misuse.

Sample test records of another kind of lie detector, the B & W Electronic Psychometer, which uses electrodermal response or varying skin resistance (comparable to the psychogalvanic skin reflex) as the sole means of detection of deception. This machine does not provide a continuous recording of a subject's reactions. The operator must note responses on the test record from a dial and indicator needle. Left is an experimental susceptibility test to determine the extent of a subject's reactions, and at right is a record of an actual test on a person suspected of arson. After the test the suspect confessed to the crime.