

a case"). Restraint in recognition of one's ignorance about the possible presence of such conditions depends, ultimately, on the professional standards and integrity of the examiner since no control exerted outside the examination room can ever be entirely effective.

(2) *Can one beat the polygraph?*

If the aforementioned conditions represent natural limitations to the accuracy of the polygraph, we may now consider whether it is possible to fool a polygraph examiner. The machine itself cannot be fooled because it simply records a pattern of responses to a series of questions while it is the examiner who interprets their meaning. What, then, can a person do deliberately to avoid the appearance of deception or to mislead an examiner? What follows consists of a series of conjectures and the preliminary results of one experiment.

The experiment which deals with this question was performed by Kubis (1962) and has been described above. Though only preliminary data are available, they show that by tensing the muscles of the feet or by use of self-exciting images, test subjects could drop the accuracy of examiners in guessing a number from 75 to 80 percent to 20 percent. In 55 to 70 percent of the cases, it was possible to direct the attention of the examiner to a decoy number instead of the previously selected number.

Experiments on human conditioning add a significant note. In a recent review entitled "Does the Heart Learn?" Shearn (1961) concludes that both the form of the electrocardiograph cycle and the heart rate may be conditioned in accordance with classical rules. The technique is illustrated by an experiment of Petrova:

"An auditory stimulus (whistle) was combined with intravenous injections of nitroglycerin. Because the act of injecting the fluid would act as a conditioned stimulus, its effect was extinguished with repeated intravenous injections of normal saline. The whistle, on the other hand, was always sounded after the nitroglycerin had been injected (but before the effect of the drug was manifest). After about 100 pairings of the whistle and nitroglycerin, the whistle presented alone produced changes typical of those elicited by the drug (accelerated heart rate, decrease in QRS voltage, and augmented P and T waves)" (p. 452).

It is known that alterations in the breathing cycle can affect the cardiac response, thereby providing a means of conditioning the heart without intermediary use of some drug (Huttenlocher and Westcott, 1957). Preliminary experiments suggest that a person can learn to alter his GSR with the aid of a meter which permits him to observe the magnitude of his responses. There is no doubt that the EEG can be modified by means of conditioning (Ellingson, 1956). Gerard (1951) reports that alpha waves of the EEG, which normally disappear when a bright light shines on the eye, do not disappear when the observer deliberately pays no attention to the light. However, these facts do not imply that the EEG could be manipulated with the dexterity required to accomplish deception; not enough is yet known about the value of the EEG for use in the polygraph. Polygraph examiners know that a person who moves and squirms during an interrogation can alter the responses shown on the record; this effect would influence the interpretation of the over-all record if it could be accomplished systematically without the examiner's knowledge.

It is possible that a person could be taught through a series of carefully arranged conditioning experiments to bring some of his autonomic responses under his direct control. Lacey (1958c) has demonstrated that each person uses his body in a unique way to express his own emotional responses; this is the result of normal training and maturation. Kubis (1962) has demonstrated that autonomic responses can be influenced through simple instruction without formal conditioning. There can be no doubt that same degree of manipulation is possible; however, in order to accomplish deception, a person would have to learn to suppress or to excite his physiological responses in a pattern adequate for his purposes.

In recognizing the feasibility of such an attempt, we do not know whether training could be accomplished with sufficient elegance to become a useful device for an enemy agent. One method would be to learn to deaden all responses, so that no pattern would be discernible in response to significant or nonsignificant items; another method would be to overrespond to all items with similar effect. Though an examiner might be led to make an indeterminate conclusion in such cases, he might also be alerted to this unusual circumstance. It would be much more effective if a person could deliberately react to nonsignificant items and deaden his response to significant items; but in this case, he would also have to