

# Explorers in White Coats

the mountains they climb, the rivers they cross,  
the discoveries they make are in the mind of Man

By PAUL V. GALLOWAY

**M**AN has poked around in every isolated spot on his planet. From Leif Ericson to Admiral Byrd, he has relentlessly explored the uncharted areas of the earth. Unknown regions still exist today, but a majority of them lie within the boundaries of the human body. Present day pathfinders wear the white coats of scientists, physicians, psychologists and psychiatrists instead of buckskin breeches or fur parkas, and their trailblazing takes place in modern laboratories instead of in virgin wilderness or on unknown waters.

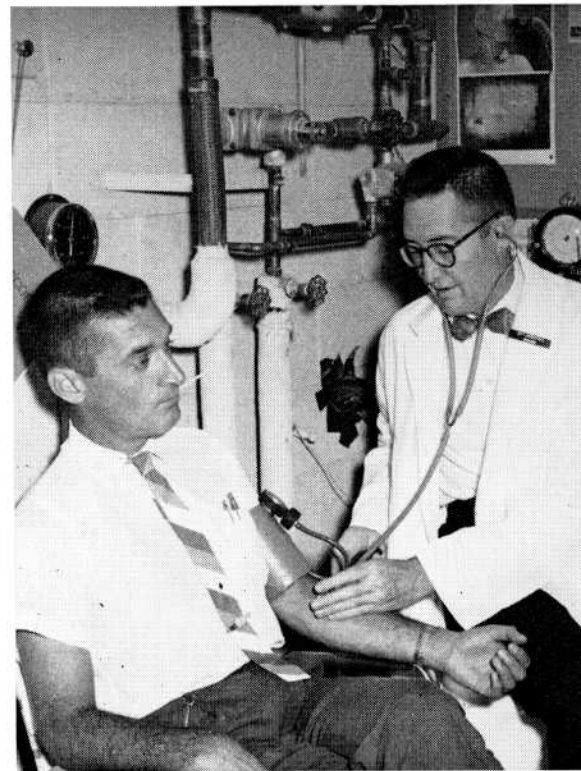
One such explorer is Dr. Jay T. Shurley, research professor of psychiatry at the O.U. School of Medicine and senior medical investigator for the Veterans Administration Hospital in Oklahoma City. Dr. Shurley, as head of the Behavioral Science Laboratory at the V. A. Hospital, is the leader of a learned expedition which is probing the mysteries of Man's mind.

Through experimental study the Behavioral Science Laboratory is seeking to learn more about Man's relationship with his environment, specifically the correlations between the physiological and the psychological processes as manifested in behavior. The aims of the Laboratory are being ac-

complished through the work of three complementary laboratories: the Sensory Isolation laboratory, directed by Dr. Shurley; the Concept Identification laboratory, under the direction of Dr. Vladimir Pishkin, chief research psychologist, and the Psychophysiology laboratory, headed by Dr. Gordon H. Deckert, clinical investigator in psychiatry.

One of the more fascinating parts of the laboratory's work is conducted in a small, red-bricked building on the hospital grounds. Within one of its two rooms, both below the ground level, Dr. Shurley and his associates have constructed a unique, controlled environment. It might better be described as non-environment, for when the test subject enters it, he is deprived of almost every sensory stimulus to which he is accustomed. "We have created a world of monotony," says Dr. Shurley. "A world of unchange. Of unstructure. By observing a person's reactions—how he 'structures' his world in such a situation—we are able to learn a great deal."

The subject floats face down in a tank of water, breathing through a specially designed mask fitted with tubes which pipe



Before entering the world of darkness and silence, a subject is examined by Dr. Shurley.

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in air at 72 degrees Fahrenheit and 40 per cent humidity. The water is heated to a precise 93.5 degrees Fahrenheit. "We found that 93.5 is the exact temperature at which a person can remain comfortable for long periods of time," explains Dr. Shurley. "At 93 degrees one becomes chilled after some time in the water. At 94 degrees a person soon develops a slight fever."

The cylindrical tank is eight feet deep and eight feet in diameter. Material used in life preservers is placed on the subject's body in such a manner that he floats a few inches below the surface of the water. After a while he loses the sensation of wetness and feels as if he were floating in air. "It's the closest we can come to weightlessness," says Dr. Shurley.

**T**HE room is completely dark and completely soundproof. Testers in the adjoining room monitor an electroencephalographic machine, which measures the electrical impulses emitted by the subject's brain, and a tape recorder into which he reports his reaction to the world of darkness and silence.

To date more than 150 adult volunteers have been tested in Dr. Shurley's Sensory Isolation lab. Most have come from the medical community—interns, nurses, medical students, physicians—but journalists, Navy frogmen and women astronaut candidates have also been among those tested.

Before entering the tank, the volunteer is given a day-long battery of psychological tests. After the testing, the subject is ready to take the plunge. A rubber, Halloween-type mask is placed over his head (a new, clear plastic model has recently been developed but has yet to be used), its breathing apparatus adjusted and checked, wires to the electroencephalograph and tape recorder connected, and the "floaters" attached. The testers give final instructions and then leave the room, closing a thick, sound-proof door behind them. The subject is left in a world in which he has never before been, floating in space, not hearing, not seeing, alone.

And how does a person react in such a situation?

"At first the subject finds the experience rather pleasant," Dr. Shurley relates. "It's nice and peaceful. No distractions, perfect quiet. After a short while, however, we find he usually becomes quite anxious. The monotony can be extremely unsettling. He may find it difficult to concentrate, and often he will hallucinate."

Dr. Shurley is quick to point out that hallucinating is a normal response to an abnormal situation. Human beings operate in terms of mental imagery—the ability to see things not actually present—much of the time. In sensory isolation, subjects receive heightened images. Man's interdependence with his environment involves more than fulfilling basic needs like food and shelter. He is dependent upon sensory stimulation, which has to do with the development and maintenance of orientation in his environment. When this stimulation is denied a person, he falls back on certain defense mechanisms to compensate for his loss of orientation. One of these defenses is to hallucinate.

"Hallucinations can tell us if the mind is reacting in a healthy manner," explains Dr. Shurley. A person will often experience a reassuring hallucination in a frightening situation. Several test subjects have told of seeing a person, usually in a white coat, which they thought of as a doctor, enter the room while they were in the tank and address them in a kind manner, comforting them and assuring them that everything was going well. This is a very healthy reaction. The two miners in Pennsylvania, Fellin and Throne, who recently were trapped in a mine cave-in for two weeks, reported that they both saw two men with them in the darkness of the cavern. They called to them for a light and they vanished. They told another time of seeing a door rimmed in blue light with marble steps behind it, leading out of the mine. These were very optimistic hallucinations and quite healthy reactions for the men to have.

A person who has lost his eyesight will

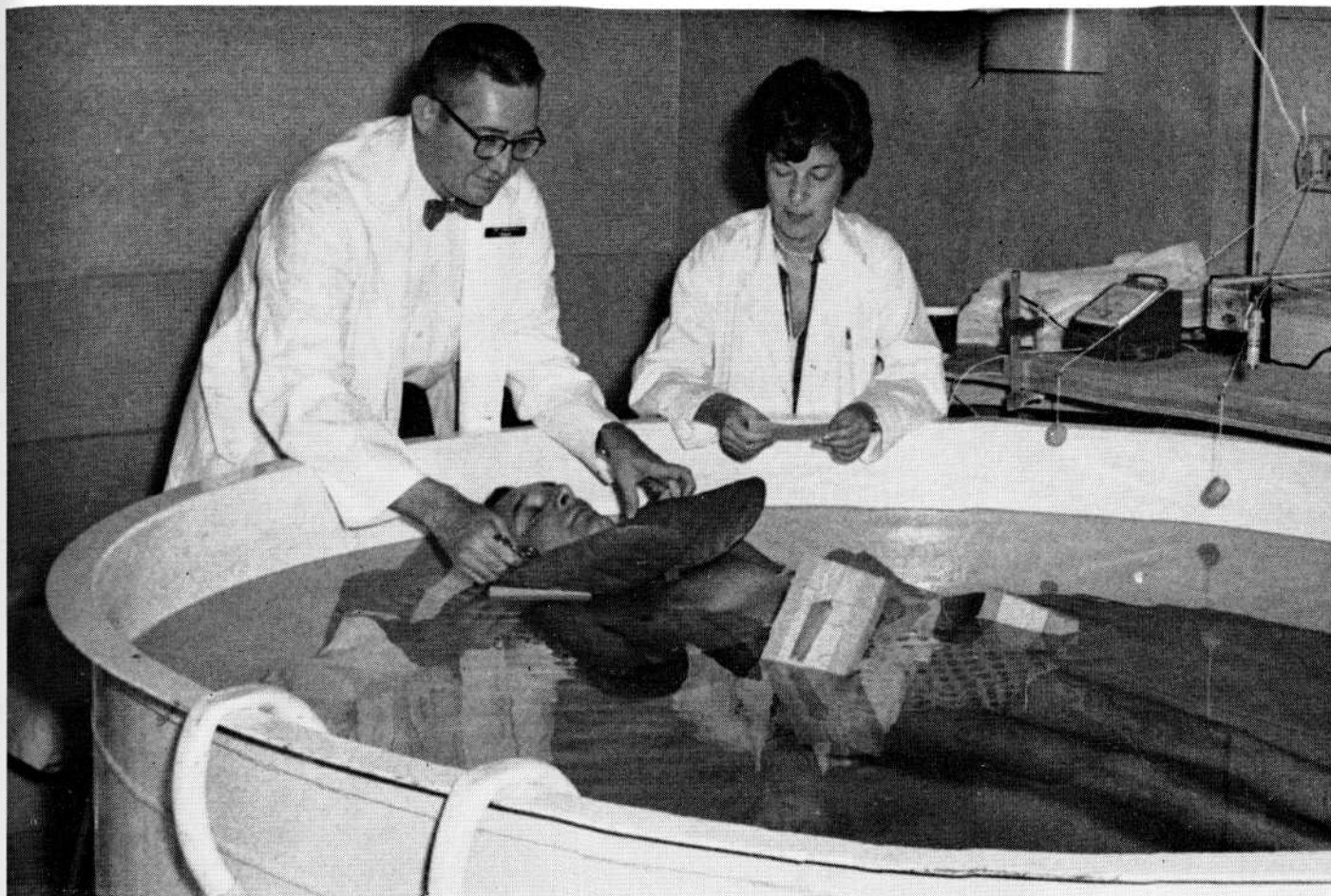
often hallucinate. This is a tremendous loss, and the person is forced to reorient himself in his environment. During the readjustment period before the other senses become more acute, he feels threatened, anxious. And he hallucinates, which is a very normal adaptation. A person who has polio and has to be placed in a respirator often develops hallucinations; persons injured in accidents in which the spinal cord is severed experience them in most cases.

"Children, too, as we all know, with their large, active imaginations are highly capable of hallucinating," says Dr. Shurley. "Many of them have their imaginary playmates and pets and their vivid dreams. Eventually they learn the difference between hallucinations and reality, but it takes a while. And before they learn, they experience some terrifying dreams that seem quite real to them. But of course, this is the difference between our subjects' waking hallucinations and theirs, for our people have a clear separation between hallucinations and reality—although they may not be aware of it while they are in the tank.

"We were testing a young man once, who was recalling a childhood experience—we encourage our subjects to talk as much as they can—when he suddenly stopped and began admiring some old coins which he had 'discovered' on the bottom of the tank. He even picked one out and began describing it in detail when he suddenly stopped, obviously doing a double take, and said, 'Hey, wait a minute, I can't be seeing coins in here. It's completely dark.'"

**A** JOURNALIST who stayed in the tank almost five hours found that instead of concentrating on a report he had intended to prepare in his mind, he was singing off-color songs, weeping for people "who never stop to think what life is all about," and talking to an imaginary voice which he would order to "keep quiet," and then would obey his own order and fall silent himself.

About one-third of those tested report vivid hallucinations, more vivid than



Dr. Shurley and an associate check the positioning of a test subject as he floats on his back in the tank. (Usually the subject floats slightly under the surface, face downward, breathing through a special mask.) In a few minutes he will be left alone in a "world of monotony, of unchange."

dreams. Creative persons, Dr. Shurley reports, readily welcome hallucinations, and they report some very graphic ones—street scenes complete with many people and beautiful buildings with highly imaginative design. The pragmatic person, on the other hand, is wary of hallucinations, certainly doesn't enjoy them, and seldom reports any well delineated ones.

There are two methods of determining how long a subject remains in the tank. The testers sometime set the length of time they wish a person to stay, and other times the subject is asked to stay as long as he can. Generally the time in the tank runs from three to seven hours. The endurance record was set, predictably, by a Navy frogman, who remained in the water for 12 hours. "His reactions were calm, quiet ones, and his hallucinations were extremely plausible," Dr. Shurley relates.

One of the best times is held by Miss Jerrie Cobb, the first woman to be accepted as an astronaut candidate. Miss Cobb and two other female astronaut hopefuls were flown to Oklahoma City in 1960 to be tested in the SI laboratory. (Later the fe-

male astronaut program was cancelled.)

*Life* magazine in its report on the test stated: "The lack of sensory stimuli can be a grave danger to an astronaut. This is because the human brain, when it receives no message from the outside, no jolts of electricity from the nerve ends of the body, is apt to lapse into an irresponsible state of dreaminess and even of hallucinations. To a space traveler who may have to react in split seconds after dreary hours of doing nothing, the ability to remain in touch with reality is all important . . ."

Miss Cobb passed the test with colors flying, staying 9 hours, 40 minutes and leaving only because Dr. Shurley was convinced she had proven her suitability. "Miss Cobb excels in loneliness," Dr. Shurley was quoted as saying.

While alone in the world of monotony, Miss Cobb slept, as some subjects do, dreamed about her dog, worked out a crick in her back and noticed a tiny light leak in the chamber, reporting it into the microphone.

When asked to estimate the length of time she was in the tank, Miss Cobb missed

the mark by nearly half, guessing the elapsed time as five hours. Subjects invariably under-estimate the time spent in the water, Dr. Shurley says, from 50 per cent on up. Although one might expect the time to drag, subjects apparently lose all sense of time and judge its passage poorly.

The knowledge gained through research at the Laboratory has two applications: as a contribution to (1) basic understanding of human behavior and to (2) clinical studies of disorders of perception in mental illness. An hallucination is a symptom of some mental illnesses, and a distressing one. Too little is known about the phenomenon—about the meaning of an hallucination for a given individual—Dr. Shurley believes, and by producing them in the SI lab, they are able to be studied "fresh off the griddle, just as they are occurring."

"To know what disorder is, we must know what order is," Dr. Shurley explains. "Up until now we have used only healthy persons and studied their reactions to the controlled environment we have con-

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# Explorers in White Coats

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structed—that is, the relationship of persons with their environment and yet separate from it. Some time in the future, we intend to use the mentally ill in the SI lab.

“Hallucination,” he continues, “is merely an interesting aspect of sensory isolation, however. We have a theory we’re checking out now—called information theory—devised by a Bell Telephone scientist named Shannon, and we’re applying it to information processing by the brain. We want to learn more about how the brain processes information. We are testing rate and speed operations by feeding in bits of sensations to the senses. We feed in describable amounts of information to a person in the tank with his sight removed, hearing removed, temperature steady, an appreciable amount of gravity removed—gravity provides us with a rich amount of gratification—and in this way we first find out how he responds to ‘nothing.’ Then we insert discreet stimuli: ticks, buzzes, flashes of light. We recover these signals for measurement by recording them on the electroencephalograph.”

Dr. Shurley, a six-foot four-inch Texan, has been working in the field of sensory isolation since 1955. He began at the National Institute of Health in Bethesda, Maryland, working with Dr. John Lilly, who has since left the field. In 1957 Dr. Shurley came to Oklahoma City on a dual appointment to the V.A. Hospital and the O.U. faculty.

The Behavioral Science Laboratory is supported by grants from the Veterans Administration, and Dr. Shurley uses University students in psychiatry to assist him in the work of the Laboratory, a rare opportunity for a practical application of their knowledge while still in school.

Dr. Shurley received his medical degree from the University of Texas Medical School and took his psychiatric training at Pennsylvania Hospital in Philadelphia.

In October, 1961, he became the fifth scientist in the nation and the first psychiatrist to receive the career research post of Senior Medical Investigator awarded by the Veterans Administration. Dr. Shurley has also gained wide recognition from laymen for his work through newspaper and magazine articles. The most recent account of the Laboratory’s work appeared in the *National Observer*. Dr. Shurley and his as-

sociates have presented numerous papers to scientific gatherings, and a trip to Antarctica is planned in the future to apply Laboratory findings to conditions on that icebound continent.

Explorers of today may differ in appearance from the Lewises and Clarks, the Amundsens, the Pearys; their equipment and techniques may have changed; the regions they explore may not be the same, but the challenge of discovery never disappears or fades. New horizons will always be sought by men who seek to learn more about Man and his environment.

## *Always Room*

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in food preparation, house cleaning, building repair or furniture renovation, the housing officials wanted him to develop a pride in his work.

Dr. Smith believes that the students eventually become aware of such an attitude on the part of a University employee, whether he is a classroom teacher with a Ph.D or a Cross Center cook with a gift for apple pie. He also believes that students will do their best when they believe that others are going out of their way to help them.

“We only worry when we reach the point of being afraid to try something new to improve our program,” Dr. Smith maintains. “In other words, we’ll try everything we can think of until we get the job done.”

## *Another Feather*

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80 volumes on the history of Oklahoma and has told the story of such neighboring states as Kansas, Missouri, New Mexico, Texas, Arkansas, and Colorado—all of which are represented in the Press list either by full-statured histories in one volume or by multi-volumed projects on various aspects of state history.

“Oklahoma has a record of being a good neighbor,” says Lottinville, “But our responsibility extends even further than that: it asks that we develop and share the history of our neighboring states, whose progress is linked indissolubly with our own. Perhaps we can grow together to even greater heights in the years to come.”

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