

PSYCHOLOGY

The Reality of Dreams

Dream researchers are just beginning to dream—about the meaning of similar dreaming patterns in animals and men, and the purpose dreams play in mental and physical health.

By **EDITH LEDERER**

► **COULD IT BE** that dreams do not depend on sleep at all?

Perhaps dreaming occurs when the body is not aroused by outside influences from the environment—regardless of the time of day.

If this is true, daydreaming might be more than just a figure of speech.

Since the Viennese father of psychoanalysis, Dr. Sigmund Freud, probed the world of dreams 65 years ago, scientific dream theory has come to replace the speculations of the poet and sage.

Freud believed that dreams were "wish fulfillments" that took place to safeguard sleep. Dream life, to him, was similar to many types of mental illness.

By encouraging a patient to recollect one of his trips into dreamland and, without reflection, report all his reactions to the physician, Freud thought he could reach the regions of the unconscious responsible for the mental ailments that plague modern man.

Recently, however, dream researchers have shifted their focus from the mind and its psychology, stressed by Freud, to the brain and its physiology.

Telltale Eye Movements

In their University of Chicago "sleep laboratory," in 1953 Dr. Nathaniel Kleitman and Dr. Eugene Aserinsky ushered in the period of scientific dream measurement when they discovered that sudden bursts of rapid jerky eye movements in sleeping subjects were a clue to dreaming.

Their original method—still the basis of most dream research—utilized a sleeping subject who had tiny electrodes attached from his temples to an electroencephalograph (EEG) machine.

While he slept, instruments recorded his brain wave activity, heart and respiratory rates. What became evident almost immediately was that distinct breathing, heartbeat, rapid eye movement and brain wave patterns showed up at the same time during sleep.

The scientists decided to wake their sleeping subjects during the rapid eye movement periods to see if they were dreaming. Out of 191 arousals, 152 dreams were reported—a batting average of 80%.

Later, Dr. Kleitman and Dr. William Dement, now at Stanford University, Stanford, Calif., discovered that the subject's dream recall was almost 100% when he was awakened after a distinct brain wave pattern appeared on the EEG.

Since the specific brain wave pattern seemed to be a better indicator of dreaming, Dr. Dement and his colleagues set out to find out what rapid eye movements actually did represent.

Rapid eye movements, they found, are indicators of visual events being experienced by the dreamer. The eyes of the man who is watching a tennis match in his dream will be moving back and forth across the court as the play progresses—stopping on one side when the ball bounces off the court.

"It appears that the dreamer is almost totally immersed in his dreaming consciousness. But he participated in the dream with both emotional and physiological responses as if it were a waking experience," these dream researchers point out.

As he does during waking hours, the dreamer watches or participates in a continuing, ongoing experience. However, sometimes he will shorten or leave out one part of the sequence. The girl who is getting dressed for a big dance in her dream may arrive at the ball without ever getting out of the car.

In dreams, everything does not happen in a flash, either. It takes as long to get dressed or undressed in a dream as it would in real life.

In calm dreams, the dreamer's pulse and breathing are fairly regular and he lies motionless. However, when he is physically

active or under emotional stress in his dream, his breathing becomes irregular. The muscles he uses in the dream show weak movement, and his eyes gaze at the dreamed visual picture that he clearly "sees."

When Drs. Kleitman and Dement were recording the dreamer's activities on the EEG during sleep, they found that a repeated pattern of hills and valleys, varying in depth, regulated sleep and dreams.

They distinguished separate sleep stages, but found that only in one did dreaming take place. In this one, the lightest stage, everyone dreams. The flow of the sleep-dream cycle takes a person from the brink of sleep to deep slumber. From this depth he makes a rising approach to light, dreaming sleep.

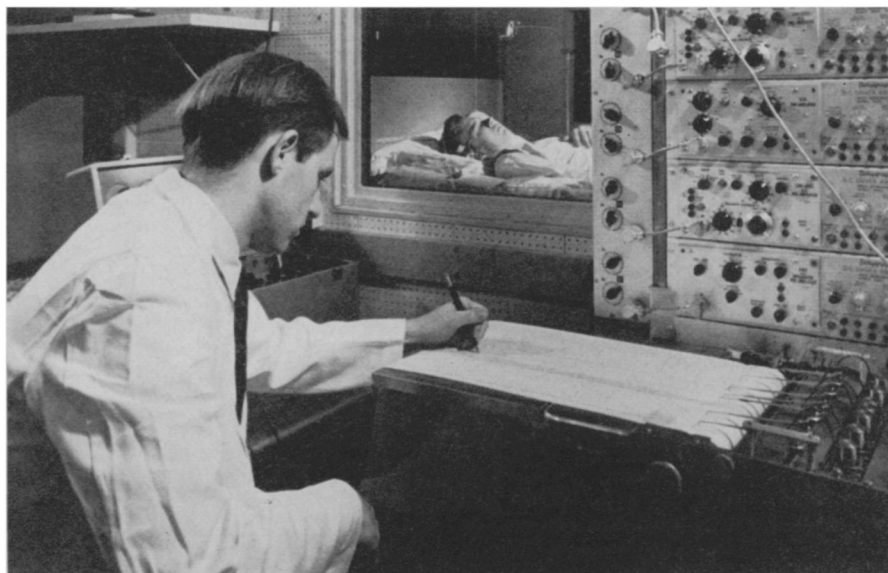
This first dream is short, about nine minutes. When it ends, he falls into a deeper sleep, and returns to dream again about 90 minutes later, this time for about 19 minutes.

Four a Night Is Average

The average adult will have four dreams every night, each one generally longer than the last. The third dream averages 24 minutes, and the fourth, 28 minutes—but dreams may last as long as an hour.

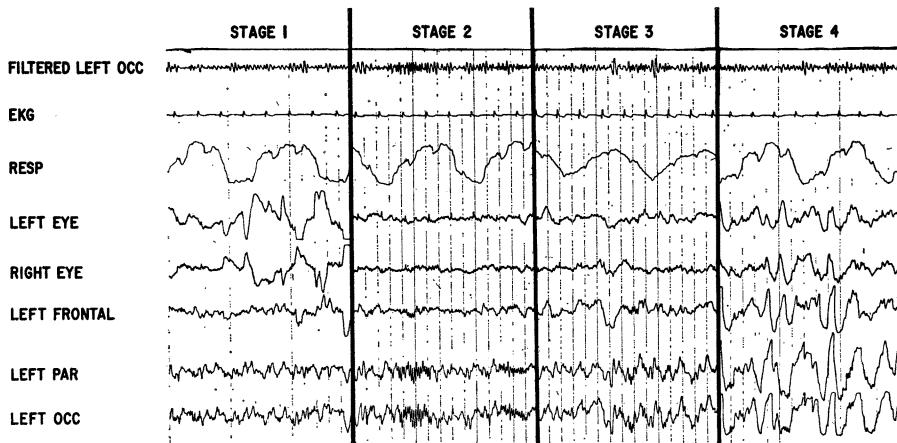
It seems, therefore, that the state of dreaming has its own unique set of physiological characteristics, which differ significantly from those of sleeping and waking.

This distinct "third state" associated with dreaming has led Dr. Frederick Snyder of



National Institutes of Health

PERCHANCE TO DREAM—A Public Health Service psychiatrist at the National Institute of Mental Health studies the sleeping and dreaming pattern of the sleeping subject in the next room.



State University of New York Downstate Medical Center

SLEEP STAGES—The different body responses during the four stages of sleep are shown on this chart. Dreaming sleep, which takes place during stage 1, is illustrated most clearly by the opposing right and left eye movements. The other three stages are for non-dreaming sleep. The eye movements in stage four are caused by an electrical brain wave effect not related to dreaming.

the National Institute of Mental Health, Bethesda, Md., to theorize that an underlying physiological—rather than psychological—mechanism centered in the nerve fibers can explain the regular occurrence of dreaming.

Whatever this mechanism may be, Dr. Dement has found that it is essential. When he reversed the technique for recalling dreams developed by Drs. Kleitman and Aserinsky, the subjects were awakened at the beginning of an EEG dream-pattern period instead of at the end.

Although they got as much sleep as a control group that slept normally, the non-dreamers became irritable and upset during waking hours.

This reaction was similar to that of disc jockey Peter Tripp, who carried on a 200-hour sleep deprivation marathon in 1959. At the beginning of his no-sleep stint, he was easily upset, and by the fourth sleepless day he began to have hallucinations.

When Dr. Dement and Dr. Charles Fisher, Mt. Sinai Hospital, New York, allowed their dream-deprived subjects to sleep undisturbed, they noted an increase in their total dream time. Similar results were found after prolonged sleep loss.

The results of these dream deprivation experiments indicated to Dr. Snyder that something had interfered with the basic dream mechanism he had theorized.

Perhaps, he speculated, the conditions which produce mental illness—whatever they may be—could sufficiently interfere with the function of this mechanism to bring about dreaming when the patient was awake.

If this were true, the old Freudian belief that psychosis is a “waking dream” would gain new plausibility.

Since Freud, psychoanalysis has been used as a therapeutic tool to reach the unconscious mind of the psychologically disturbed person.

However, Drs. Roy M. Whitman and Milton Kramer with Bill Baldrige at the University of Cincinnati, who studied “which dreams are told and which are not in a psychotherapeutic session,” throw out a word of caution to the therapist.

By recording a subject’s dreams as they occurred during normal sleep, and discussing them during a later psychiatric session, the researchers found that portions of dreams, and whole dreams were omitted.

Dreams containing attitudes and experiences that the subject felt would bring a negative response from the psychiatrist were omitted. For one male subject these were strong homosexual feelings, and for a female subject they were initially guilt feelings about sex.

These scientists believe that there may be an automatic selection process determining which dreams are presented by the patient to the therapist. It could be the untold dream that contains the major interpersonal conflicts.

Freud May Have Been Right

Freud may have been right when he said “it is not only quite possible, but highly probable, that the dreamer really does know the meaning of his dream; only he does not know that he knows, and he thinks that he does not.”

The question of dreaming has also been studied in newborns and animals. Many mammals such as monkeys, cats, dogs, goats, sheep and even the opossum show similar EEG brain-wave patterns to those of dreaming adults.

Dr. Howard Roffwarg of Columbia University, New York, has recently found that a low-voltage, fast-wave EEG pattern also exists in newborn infants. Their dream-sleep cycle is almost the exact picture of the dreaming sleep pattern in adults.

Although the infants show rapid eye movements, it is doubtful that they are experiencing visual dreaming. However, it would seem that the physiological mechanism is inborn.

Where does all this leave the dreamer and the dreaming mechanism that seems to be evident in many forms of life? Is the dreaming pattern in animals related to that of humans? If it is, how has it evolved, and what function does it play in animals and humans?

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