

PSYCHOLOGY

Learning While Asleep

► CAN YOU learn a foreign language while you are asleep?

The verdict of "not proved" was the conclusion of psychologists Drs. Charles W. Simon and William H. Emmons of the RAND Corporation, research organization for the Air Force. They reported their verdict to the *Psychological Bulletin* (July).

Their conclusion supports the personal opinion of college professors that it helps if the students stay awake.

Only ten scientific studies of learning while asleep have been made, of which only three have been published, the psychologists reported. Five were academic theses.

Chief fault the psychologists found with the research studies was in not making sure that the subjects were really asleep. In four of the studies, the experimenter asked the subject after his training, whether he had awakened. This is not satisfactory evidence of sleep.

It is a common experience, the reviewers pointed out, for a person to awaken during the night, perform a number of rational

acts before retiring again, and yet remember nothing of it the next day.

Two of the experimenters asked the subjects if they were asleep before proceeding with the training. Two asked the subjects to press a button whenever they woke up. In two of the studies, however, the experimenter did not even remain with the subject to note whether he looked asleep.

All ten studies were found to have weaknesses in experimental design, statistical method, or criteria of sleep.

It is doubtful whether any of the studies produced any acceptable evidence that learning during sleep is possible, the scientists concluded. The tests tend to show that learning may take place in a special kind of waking state where the subjects do not remember that they have been awake.

Future research may conclusively show, the scientists suggested, whether it is really possible to learn during sleep and also may provide comparative data between wide-awake and resting learning.

Science News Letter, July 16, 1955

ENTOMOLOGY

Bees Remember Time

► PARISIAN BEES trained to feed at a regular hour in their Paris home showed up right on schedule for their sugar water meal in New York. (See SNL, June 25, p. 405.)

In spite of the time lag between Paris and New York, the bees flown from Paris kept to their previous 24-hour feeding cycle.

To Dr. Max Renner of the University of Munich who is conducting the experiment, this supports the idea that bees have a kind of internal "clock" or time control.

If the bees had changed their feeding time after the flight across the ocean, then it would have seemed that external factors, like the position of the sun, controls the bees' "time memory." This was not the case, however.

In the laboratory at the American Museum of Natural History in New York, the bees fed from 3:15 to 5:15 p.m. This corresponds to 8:15 to 10:15 p.m. Paris time, the hours the bees were trained to feed.

Final conclusions cannot be drawn, however, until a similar experiment is completed in Paris, Dr. Renner said.

For the second half of the experiment, a new group of bees was trained in New York to feed from 1:30 to 3:30 p.m., New York time. The bees have been flown back to Paris, to see if they keep to the New York feeding schedule.

Dr. Theodore C. Schneirla, curator of the museum's department of animal behavior, said that this research on bees ties in with similar work going on over the

world to learn how plants and animals carry out cyclic activities, like the daily opening and closing of flowers or the routine feeding behavior of many animals.

When better understood, this knowledge of cyclic behavior should have many applications from controlling plant growth to helping man carry out his own cyclic activities without specific external timing devices, Dr. Schneirla said.

Science News Letter, July 16, 1955

TECHNOLOGY

Drill Holes in Hair, And Thread With Wire

See Front Cover

► INSTRUMENT MAKERS are now doing better than splitting hairs. They drill holes in human hair and thread them with fine wires. One hair so treated is shown on the cover of this week's SCIENCE NEWS LETTER.

A drill of one mil, or one-thousandth of an inch, makes the invisible holes. The drill is so delicate it could be snapped or bent by accidental contact with paper tissue.

It takes a microscope and a steady hand to thread the tiny hole. The microscopic drill is used by General Electric's General Engineering Laboratory to make tiny fuel injection nozzles, orifices in leak disks that control the flow of gas into a vacuum chamber, and apertures for electron beams in sensitive X-ray equipment.

Science News Letter, July 16, 1955

MEDICINE

Cancerous Moles Spotted By Radioactivity Test

► WHETHER OR not a mole is malignant can be determined by a simple radioactivity test developed by doctors of the University of California at Los Angeles Medical Center and the Los Angeles Veterans Administration Hospital.

Drs. Franz Bauer and Charles Steffen reported the new procedure in the *Journal of the American Medical Association* (July 9).

A small, harmless amount of radioactive phosphorus is intravenously injected into a patient having a mole suspected of being malignant. Three hours later a special Geiger counter is passed over the mole and tissue surrounding the mole, and the radioactivity measured.

Rapidly growing cells such as those in cancer take up more radiophosphorus than normal tissue. Thus if the mole is malignant, the radioactivity will be higher in the mole than in surrounding normal tissue.

More than 70 cases have been studied with the new procedure. In all cases, moles that showed a significant increase in radioactivity proved to be cancerous.

Although the new procedure is thought to be an effective diagnostic tool, the radiophosphorus used does not emit strong enough radiation for treatment of malignant moles, the doctors said. They emphasized that the procedure does not replace a biopsy, but makes the physician malignancy-conscious and guides him concerning the extent of necessary surgery.

Science News Letter, July 16, 1955

PUBLIC SAFETY

Teen-Age Girls Drive Better Than Boy Friends

► TEEN-AGE GIRL drivers get into fewer fatal automobile accidents than teen-age boys, but they both get into an "unduly high proportion" of fatal collisions, a study at Iowa State College showed.

Fifteen times as many men and four times as many women under 19 had fatal accidents in Iowa last year as would be expected from their general accident record, Dr. A. R. Lauer, director of the college's driving laboratory, found.

The Iowa study showed that in the 20 to 24 age group there was not only a sharp drop but a marked deficiency of fatality drivers among men. The ratio of fatal to reported accidents was found to rise gradually with age after 24, but it does not become significantly out of proportion until the age of 75.

For women, the proportion of fatal accidents remains about constant after 20. It is significantly higher below 19 and significantly lower at about age 50, the report said.

Provisional licenses for persons up to the age of 21 was suggested. After 21, regular permits would be issued if the driving records are satisfactory.

Science News Letter, July 16, 1955