BIOLOGY

Bats Used For Rhythm Studies

➤ LITTLE BROWN BATS exposed to blue, red, yellow and green light may yield new information about the biological clock mechanisms of mammals.

A study of biological rhythms in physiological and behavioral functions of organisms is being undertaken at Argonne National Laboratory.

Space scientists, for example, need to know the effects on space travelers of the changing of normal day-night light cycles. Earth-bound travelers are plagued by disrupted sleep and generally upset patterns of body function after fast transcontinental and overseas flights. The nature, location, and factors controlling this mechanism are still unknown. Understanding of the bat's internal clock may yield information that could be of value to humans.

About four dozen small bats, taken from their "summer homes" in attics of buildings in the Northern Michigan area, are being temporarily housed in the Biological and Medical Research Division at Argonne. Dr. Robert C. Stones, assistant professor of zoology at Michigan Technological University, Houghton, Mich., and Dr. Douglas E. Smith, senior physiologist at Argonne, are collaborating in the experiment, which is the first of its kind.

The bats have been placed in a number of cages, each cage having a different colored light source for illumination. The scientists hope to learn if specific wave lengths of colored lights are detected by the bats. They also want to know if the lights affect daily activity and body rhythms.

Dr. Stones and other experimenters in the past have subjected the bats to changing white light sources and have found that the animals will adjust their body functions to conform to the changing lights. The effects of colored lights remain a mystery.

Sensitive thermocouples are implanted under the skin of the bats to automatically send signals to a recording system. The best way to study the animals' pattern of behavior scientists have found is to record the variations in body temperature. The mammals' body temperature, while the bats are inactive and fasting, is normally only a few degrees above the environmental temperature. When active and feeding, the bats' temperature can climb to 105 degrees F.

In their natural habitat, bats feed at dusk, are active at night and sleep during the day.

Argonne

TIMELY BATS–Bats' biological rhythm system is extremely precise, making them useful for studies of the biological clock mechanisms of mammals. Dr. Robert Stones, on temporary research assignment at Argonne National Laboratory, is using about four dozen little brown bats for his research.

MEDICINE

Surfers' Feet Chip

➤ SURFING has really become big-time: now it has its own occupational disease.

Small chips and spurs of bone have been found in the feet of several avid surfers. Apparently they are caused by the great prolonged pressure on the dorsum of the foot when a surfer kneels to take a wave with his feet tucked under him, reported Dr. David W. Gelfand, Lieut. USNR, at the Station Hospital in Port Hueneme, Calif.

Dr. Gelfand reported that he had discovered the changes by accident during a routine X-ray examination of a surfer's ankle. Since then four of eight more devotees of the sport examined showed the same changes.

Surfers regularly develop soft tissue swellings called "surfers' knots" on the dorsum of the foot and just below the knee. The bone chips were always located directly under a surfers' knot on the foot. None was found on the knee.

"Only the small joints of the foot appear to be susceptible to this kind of damage," said Dr. Gelfand in the Journal of the American Medical Association, 197:189, 1966.

A surfers' knot can be extremely painful, he added, but beyond that the problem is not highly serious. In contrast to skiing or a body contact sport, surfing is relatively safe. The worst product of a surfers' knot, he said, would probably be a mild deformity or arthritis of the dorsum of the foot.

For surfers themselves the knots were a badge of achievement, the physician reported. When their knees or feet became too painful, they dangled their legs in the cold water until they became partially anesthetized and then resumed surfing.

"There is a persistent but unfounded rumor among surfers," said Dr. Gelfand, "that those with large knots on their feet will not be drafted because their feet will not fit into the standard combat boots."

MEDICINE

Vitamin C Counteracts Tetanus Toxin in Rats

➤ DEATH from tetanus has been prevented by injections of vitamin C, or ascorbic acid.

The experiments were done by Dr. P. K. Dey of the University College of Science, Calcutta, India, who has previously shown that ascorbic acid can nullify the lethal and convulsive properties of strychnine, which are similar to those of tetanus toxin.

No human application of the tests has been made, but Dr. Dey stated in Die Naturwissenschaften that "it definitely appears that vitamin C can be effectively used as a simple prophylactic and therapeutic tool to combat the neurotoxic effects of tetanus toxin."