BIOCHEMISTRY

Probe "Time Clocks" of Cells

A HUGE "atomic spotlight" is being used by scientists at Argonne National Laboratory, Lemont, Ill., to study the physiological "time clocks" that exist in all body cells.

The spotlight is actually a biological spectograph, the world's largest of its type, and can aid in determining the reactions of living organisms to different wavelengths (colors) of light. It was built by Dr. Charles F. Ehret of Argonne's staff.

Recent evidence points to the presence of chemical compounds within cells that somehow regulate physical needs such as the desire for sleep. Every complex living organism has a natural timetable that is apparently regulated by these mechanisms, Dr. Ehret said.

For example, a person who travels by plane to a distant part of the world would be required to alter his eating and sleeping habits to conform to the different day-night schedule, and would feel uncomforable until his "time clock" adjusted to the new environment.

In order to learn more about the nature of this "time clock" mechanism, Argonne scientists are exposing one-celled animals called paramecia to different wavelengths of light at various times. They have found that the "clocks" can easily be reset by exposing the animals to ultraviolet light.

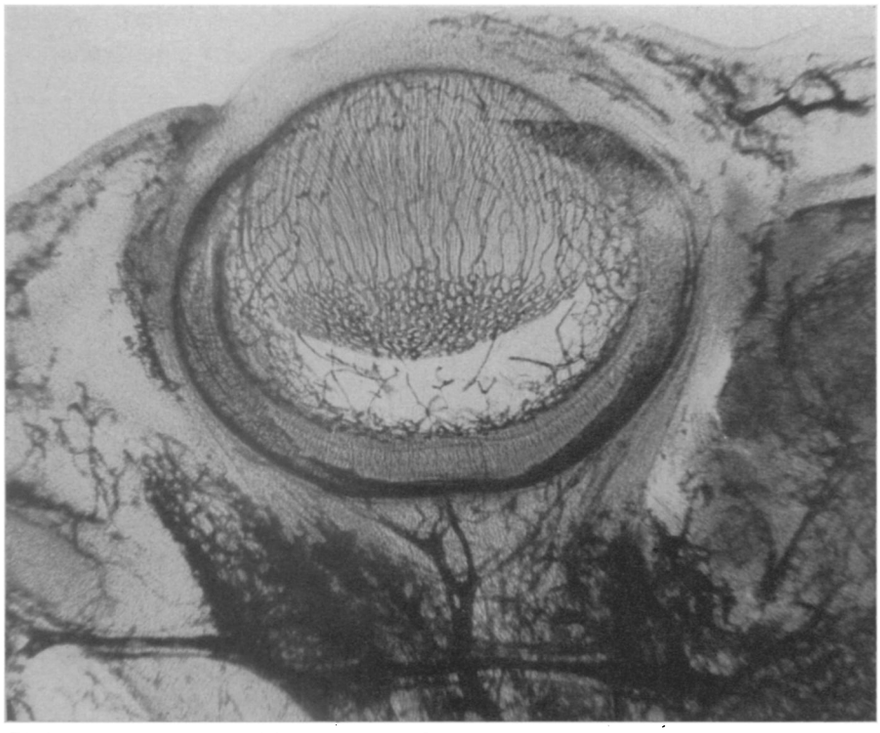
Two of the typical effects, Dr. Ehret said, are alteration of mating response and alteration of the basic chemical activities of the cells. This, in turn, can be reversed by exposing the paramecia to longer wavelengths, such as blue violet in the visible spectrum.

The wavelengths that have been most effectively absorbed by the complex pigments of paramecia somehow trigger a biochemical reaction that regulates many of the animal's life processes.

"These pigments have not yet been isolated for study," Dr. Ehret said, "but we know they exist because they leave 'fingerprints' by their action following the absorption of certain wavelengths of light. Once we understand the chemistry of nature's time clocks, we will have a way to probe the mechanism that controls wakefulness and sleepiness in humans."

Dr. Ehret said it may eventually be possible to eliminate the feeling of sleepiness by controlling these chemical "time clocks."

Science News Letter, March 26, 1960



BLOOD VESSELS IN THE EYE—The retina and lens of this rabbit embryo, injected with India ink, reveal minute blood vessels. Changes in the pattern of the veins indicate the growth of the embryo. Dr. Leon H. Strong of Chicago Medical School will study such growth with the aid of a grant from the U. S. Public Health Service.

PUBLIC HEALTH

Tumor-Causing Phenols In Cigarette Smoke

COMPOUNDS known to be capable of promoting the growth of tumors have been isolated from cigarette smoke by two researchers.

The compounds isolated belong to the phenol family. Their presence in cigarettes is reported in Nature, 185:764, 1960, by W. Carruthers and R. A. W. Johnstone of the Washington Singer Laboratories, University of Exeter.

The two researchers isolated phenol compounds from British cigarettes. Some of the phenols have recently been identified in Japanese cigarettes while still others have been found in Argentinian cigarettes, they point out.

The researchers suggest that a portion of the phenols found in the smoke resulted from the burning of the tobacco.

Science News Letter, March 26, 1960

PALEONTOLOGY

2,600-Year-Old Seals Found in Antarctic Ice

THE U.S. COAST GUARD icebreaker East Wind is on its way back to the United States from Antarctica with the perfectly preserved carcasses of two 2,600-year-old seals in its refrigerated chamber.

The seals will be delivered to the Lubbock technical museum in Texas for study and research. They were among a group of 90 dead seals which an aerial survey photograph had shown entombed in the ice of Taylor Ravine in the Antarctic, Capt. Richard D. Schmidtman, East Wind skipper, said.

Special scientific processes have shown the seals to be about 2,600 years old. Capt. Schmidtman said scientists had concluded that the seals had either wandered into the ravine or had been chased there by some unknown animal. The ravine was miles from their natural food and they had starved to death before they could get out.

East Wind left Boston on Dec. 1 and became the first ship to land a party on Scott Island since its discovery in 1902.

The island is difficult to find because it is always covered with ice and could easily be mistaken for an iceberg.

The ship's landing party took the first mineral and geological samples ever collected from the island, as well as gravity readings.

Science News Letter, March 26, 1960

ASTRONOMY

Crab Nebula Is Seen First Time With 120-Inch

See Front Cover

Among the first pictures just taken with the newly completed 120-inch telescope at Lick Observatory of the University of California, is the one of the Crab Nebula seen on the cover of this week's SCIENCE NEWS LETTER.

This nebula, located in the constellation Taurus, was photographed in 30 minutes in red light. About 5,000 light years away, it is the gaseous mass thrown off by the supernova observed by the Chinese in 1054 A.D. This stellar explosion was so brilliant it could be seen in daylight for several days.

In recent years the Nebula has been found to be one of the strongest sources of heavenly radio waves.

Science News Letter, March 26, 1960