

The scientists who did the research are Dr. T. R. Burnight, J. D. Purcell, Dr. R. Tousey, and Dr. K. Watanake, all with the Naval Research Laboratory, Anacostia, D. C.

In one set of experiments X-rays were detected by their effect upon photographic films covered by thin aluminum and beryl-

lium windows. The ultraviolet radiation was demonstrated by exposing to the sun's radiation a phosphor strip that gave off light when heated after return to earth, thus demonstrating the presence of the invisible radiation from the sun at the high altitudes.

Science News Letter, May 7, 1949

ASTRONOMY

Stars Planetary Parents?

► PAIRS of yellowish lemon-shaped stars which waltz through space may be the ancestors from which come planetary systems such as the one in which our earth is located.

How one type of double star might be the parents of planetary systems like our own was suggested to the meeting of the National Academy of Sciences in Washington by Dr. Otto Struve of the University of Chicago's Yerkes Observatory, Williams Bay, Wis.

These yellowish double stars are called W Ursae Majoris eclipsing binaries, with the stars eclipsing one another as they move through space.

Discovery that these pairs of stars have a common envelope of gas about them has led to Dr. Struve's new theory. This gaseous envelope around the double stars is not symmetrical, varying in thickness and other properties. This indicates, the Yerkes astronomer said, that these pairs are not stable. They may either be moving apart to form more widely separated stars, or they may be moving together into a single star.

Dr. Struve's theory proposes that these yellowish, closely-mated double stars may have come from bluish, more widely spaced

double stars, known as Beta Lyrae or U Cephei. This may come from the loss of streams of gases by the bluish stars. The streams are estimated to carry off a weight equal to not less than one hundred-millionth of the sun's mass each year. In addition, the streams also are believed to slow down the bluish stars.

Thus, the bluish double stars may be moving closer together, forming the yellowish star pairs. If the process continues, then the yellowish double stars may be moving together to form a single star.

The single star, resulting from the evolutionary process of this theory, might be like our sun, with planets such as the earth formed from the mass carried off by the streams from the stars.

The eclipsing double stars from which planetary systems may be formed are both slightly smaller than our own sun, but one weighs about as much as the sun and the other is only about half as heavy.

Dr. Harlow Shapley, director of the Harvard College Observatory, has discovered that this type of eclipsing double star, W Ursae Majoris, is more numerous in the heavens than all other types of eclipsing star pairs.

Science News Letter, May 7, 1949

PSYCHOLOGY

Eye's Index Point Mapped

► THE center of your eye has an index point that is to your eye what the sensitive tip of your forefinger is to your hand. Your most exact and finest seeing is done with this index area in the center of the eye's fovea.

Although this important center in the eye has been known to scientists since Clerk Maxwell first discovered it in 1856, it has now been mapped for the first time, Prof. Walter R. Miles, of the Yale School of Medicine reported to the National Academy of Sciences in Washington.

At the back of the eye in the center of a yellow pigmented section is a little depression which contains an area known as the fovea. At the center of the fovea, Prof. Miles located the index area, known to scientists as the visual fixation disk. When mapped out on charts by means of tests upon 20 men, using color filters, three concentric circles or ovals appeared. The

visual fixation disk is a tiny, but well defined core, occupying four and one-half per cent of the entire area of the fovea.

The outer border of the disk is well-defined, contrasting markedly with the area outside it. The edge is about as sharp, Prof. Miles reported, as the edges of typed letters on a good carbon copy.

When you want to do any precise seeing you turn your eye so that this portion of the retina is turned directly on what you want to distinguish, such as the marking of a slide rule or the eye of a needle you are trying to thread.

The size of the disk, if it were projected onto a printed page held 14 inches from the eye, would be about the size of the capital letter "M". At workbench distance of 28.6 inches, the disk would cover an object a quarter-inch across. At floor distance of 57.3 inches, the projected disk would be a half-inch in diameter. When looking across

a typical street 100 feet wide, it would measure nine inches.

The total retina, or light-sensitive back of the eye, is a semi-circle about 180 degrees from end to end. The visual fixation disk occupies only one-half of one degree of this semi-circle. This tiny part of the fovea contains from 1,200 to 2,000 cones, which are the bright light and color detectors for the eye. The cones in this area are longer and thinner than they are elsewhere and this difference helps to explain the importance of the area for sharp seeing.

Science News Letter, May 7, 1949

METEOROLOGY

Thunderstorms Are Made Up of Distinct "Cells"

► THUNDERSTORMS are made up of distinct units or "cells", each acting more or less independently of the others, Dr. Horace R. Byers of the University of Chicago told the National Academy of Sciences in Washington.

Each cell consists of a system of vertical air currents set up by marked temperature differences between ground level and higher altitudes.

Each cell goes through a three-stage life cycle, Dr. Byers explained: first the cumulus or fleecy-cloud stage, then the "mature" stage during which the air currents flow towards the earth and rain falls, and finally the dissipating stage during which the storm dies out.

Science News Letter, May 7, 1949

RADIO-MEDICINE

Cancer Under Microscope On Regular TV Channel

► TELEVISION fans of the nation's capital have now seen for themselves the differences between cancer cells and healthy, normal cells of the human body. They were able to do this through the twin eyes of the television camera and the microscope in a program sponsored by the U. S. National Cancer Institute and the American Cancer Society over WMAL-TV.

Slides with tissue-paper-thin slices of normal and cancer tissues were first focussed under the microscope. Then the huge television camera was swung over and down onto the microscope eyepiece. As the viewers looked, they heard Dr. William Ober, research fellow at the National Cancer Institute, point out the orderly arrangement and shape and small nuclei of the normal cells and compare these to the irregularly arranged and sized cancer cells with their larger nuclei. These differences, he explained, are what help the pathologist diagnose cancer.

The program is the first in which microscopic scenes have been televised over a regular television channel.

Science News Letter, May 7, 1949