

ASTRONOMY

Devise Twinkle Telescope

► A TWINKLE TELESCOPE first developed at Perkins Observatory, Delaware, Ohio, can measure from the ground the speed and direction of high-altitude winds.

It measures the twinkling of stars and may become standard equipment for weathermen, who could gauge upper-air winds by observing starlight. Now they send up radiosonde balloons to obtain such readings.

The twinkling of stars has long been known to result from the air's turbulence, but the new instrument is the first devised to time the motion of the shadow bands caused by the dancing atmosphere.

The twinkle telescope was developed by Philip E. Barnhart and James Galli of the Perkins Observatory, and Dr. W. M. Protheroe, now at the University of Pennsylvania's Flower and Cook Observatory. It consists of two telescopes, which are pointed at the same star, the starlight falling on them being recorded electronically. Intensity records of the two are then compared.

The three scientists found the motion and direction of the shadow bands was the same as that of the wind near 40,000 feet. This altitude is about the level of the tropo-

pause, above which lies the stratosphere, and close to that where the very fast jet stream is found.

Since this is the altitude at which jet pilots will fly, twinkle telescopes may be installed at airports to help the pilots take advantage of favorable winds and avoid areas of severe turbulence.

Research leading to the instrument's original development was supported in part by the U. S. Air Force Cambridge Research Center. Scientists at Perkins, at Flower and Cook Observatory, the Naval Observatory in Washington and elsewhere are now working to improve the device and to confirm the relationship between stellar twinkling and atmospheric turbulence.

The shadow bands caused by this turbulence can be seen any starlit night in the mirror of any reflecting telescope with a diameter of four inches or more. They last such a fleeting time, one-hundredth of a second or less, that attempts to measure them photographically have been unsuccessful.

Details of the work are reported in the *Journal of the Optical Society of America* (Oct.).

Science News Letter, October 20, 1956

BIOCHEMISTRY

Find Heart Disease Clues

► STUDYING THREE BROTHERS with too much fat in their blood has given a scientist one clue to the cause of the condition, which leads to dangerous artery trouble and heart disease.

The excess fat in the blood is known medically as hyperlipemia. It comes from an inborn deficiency of an enzyme that aids in normal fat transport, Dr. Richard J. Havel of the National Heart Institute, Bethesda, Md., believes on the basis of his study of the three brothers.

When these brothers ate, the fats in a single meal stayed in their blood for as long as two days. In normal persons fats from foods are broken down and removed from the blood within eight hours.

Removal of food fats from the blood is speeded in normal persons by injections of anti-clotting heparin. Heparin had little or no effect on the fatty blood of the three brothers.

This suggested a probable deficiency of the fat transport enzyme, lipoprotein lipase. The enzyme breaks down large fatty particles into smaller ones that can be utilized by body cells.

Dr. Havel wondered, however, whether the brothers had enough enzyme, but had fat particles that resisted its action. To test this, he transfused blood plasma from one brother into another and into a healthy volunteer. In the healthy volunteer, half of the fat from transfused plasma was removed

in 17 minutes. This time was shortened to eight minutes by heparin injections.

In the brother with excess fat in his own blood, half of the fat in the transfused plasma was removed in 85 minutes. The rate of removal was not affected by heparin.

The simplest explanation for the findings, Dr. Havel said, is that patients with too much fat in the blood have a congenital deficiency of the enzyme that breaks down large fat molecules and thus helps transport them.

Science News Letter, October 20, 1956

ARCHAEOLOGY

Find Tiny Wood Animals 3,000 Years Old

► DISCOVERY of tiny, wooden "toy" animals, which had lain hidden in deep dry caves in the Grand Canyon for from three to four thousand years, was reported at the annual Pecos Conference of archaeologists and other scientists in Flagstaff, Ariz.

The 100 little animals, some as small as two inches high and others up to 15 inches, were made by the split-twig technique. The Indians of the Southwest had a way of splitting willow twigs and twisting them into various shapes so that they look very much like the figures made nowadays from pipe cleaners.

The little animals were found by Dr.

Douglas Schwartz of the University of Oklahoma. With them, he also found some miniature spears.

Although the ancient Southwestern Indians did make toys for their children, and it is quite possible the tiny animals were playthings, Dr. Schwartz believes it is more likely the objects were used in hunting rituals. They were found in relatively inaccessible caves that were not living places.

The fragile little wood figures were at first judged roughly to be made "before 600 A.D." Radiocarbon dating has now shown them to be much older. There is a strong possibility that the figurines were made about 1600 B.C.

That makes them nearly 2,000 years older than any other evidence of man found in the Grand Canyon area.

Science News Letter, October 20, 1956

DENTISTRY

Drill Teeth With "Feather Touch"

► A DENTAL DRILL used "like a paint brush with a feather touch" prepares teeth for filling so easily the patient often cannot tell exactly where the dentist is drilling, Dr. Roderick A. McEwen of Atlanta, Ga., reported at the American Dental Association meeting in Atlantic City.

The drill operates at a speed of 150,000 revolutions a minute, which is well above the human perception of vibration.

Besides the almost entire absence of pain after the tooth preparation, the new drill makes possible finer preparations of cavities for filling or other repair.

Science News Letter, October 20, 1956

ENTOMOLOGY

Rare Mosquitoes at Army Medical Center

► THOUSANDS of rare mosquitoes, 8,500 live adults and more than 20,000 in the larval form, have been flown from Malaya to Walter Reed Army Medical Center in Washington.

From studies using the mosquitoes, Army medical scientists hope to learn more about how to stop the spread of encephalitis, or so-called sleeping sickness, strange fevers that are like dengue fever, and other unconquered diseases mosquitoes spread.

The mosquitoes belong to six different species. Two, *Culex gelidus* and *Culex tritaeniorhynchus*, have never before been successfully colonized or raised in captivity.

Special quarters for the mosquitoes consist of a room paneled in heavy wire screening and cages of heavy wire screen. White mice and baby chicks will be bitten by the mosquitoes, but no human experiments are planned.

The mosquitoes are not infected because they were all raised in captivity in Malaya before being flown to Washington.

Science News Letter, October 20, 1956