

Do You Know?

With a standard *parachute* a man falls at about 14 miles an hour.

Big-game animals have increased in the United States during the recent years to over 7,000,000, or one to every 19 human beings in the nation.

Fish kept in cold storage for a long time unprotected from atmospheric oxygen deteriorates; the fat becomes rancid, darkening the flesh to a rust color.

Color blindness of the mild red-green type has been apparently cured by a course of treatment that includes vitamin A.

Mixing *penicillin* with ice cream makes possible its administration by mouth instead of through the usual hypodermic injection.

The contents of the Army insect-killing device known as the *aerosol bomb* included 3% DDT, 2% of a 20% pyrethrum concentrate, 5% cyclohexanone, 5% lubricating oil, and 85% Freon gas as carrier.

Asparagus loses quality rapidly after harvesting as ordinarily handled; experiments are now being conducted to prevent deterioration by wrapping selected bunches in cellophane bags, icing immediately and keeping refrigerated.

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and Howard T. Behrman, M.D.

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ASTRONOMY

Universe Not So Old

Is now believed to be only slightly older than the earth. Studies of the Milky Way are the most direct evidence of new theory.

► THE UNIVERSE as a whole is now believed to be only slightly older than our own earth, Dr. Bart J. Bok of the Harvard Observatory told the nation's outstanding high-school-age scientists at a session of the Science Talent Institute.

Dr. Bok discussed modern advances in the study of astronomy at the Science Institute attended by the 40 winners of the Fifth Annual Science Talent Search, sponsored by Science Clubs of America and administered by Science Service.

Pointing out that astronomers of 25 years ago estimated the age of the universe at five trillion years, as opposed to a mere two or three billion years for the earth, the Harvard astronomer said that modern research has cut the estimated age of the universe to only slightly more than that of the earth.

Dr. Bok attributed the recent reduction in estimates of the age of the universe to photographic studies of the Milky Way, spectrum studies of the heaven's galaxies and developments in astronomical theory.

The most direct evidence that the universe is not much older than the earth is to be found in the studies of the Milky Way, said the astronomer.

Our Milky Way system is composed of many loosely-held-together clusters of stars, he explained. As the Milky Way is rotating rapidly about its central star clouds, the shearing effects resulting from the tidal pull of these central clouds would tend to disrupt loose aggregations of stars in a matter of a few galactic revolutions, he pointed out.

"We know of no way in which star clusters are still being formed at the present time," he said, adding that "The presence of several hundred clusters on our Milky Way photographs indicates, therefore, that our system has not been whirling around its axis for more than a relatively few galactic revolutions."

Time estimates, Dr. Bok continued, can be made from studying the spectrum lines of the more distant galaxies to determine how long ago all galaxies were together at the origin of the expansion. These studies place the age of the universe at from two to three billion years, he said.

The discovery of stars pouring out tremendous amounts of energy that indicate a more recent age has led to changes in the theory of astronomy that support the shorter time-scale for the universe, the astronomer said.

"Everywhere in the universe there are signs of youthful exuberance," declared Dr. Bok.

Science News Letter, March 30, 1946

ELECTRONICS

Velocity and Accuracy Tests Made Simultaneously

► HOW AN ELECTRICAL method developed by the War Department during the war to measure the velocity of projectiles is now in use by the Western Cartridge Company in East Alton, Ill., to make simultaneous accuracy and velocity tests with the same bullet is told in *Sports Afield*. Previously, separate bullets were required for each test.

The instrument used is called a counter chronograph. In making the dual velocity and accuracy tests, a rifle is fired from a mechanical rest. The bullet passes over photoelectric cells in two devices called light screens which are a measured distance apart, and are connected with the counter electrically. The shadow cast by the bullet as it passes over the first photocell starts the chronograph counting; its shadow over the second cell stops the counting. When used outdoors only daylight is required; within darkened shooting ranges tubular lights, under which the bullet passes, are used. The counter records the time required for the bullet to pass from one screen to the other. A target beyond records the bullet's accuracy.

The "brain" of the counter chronograph is a so-called electronic counting circuit which performs the breath-taking function of counting and recording 1/100,000-second time intervals. With an ingenious arrangement of tiny neon bulbs it records the count of electronic pulses that pour into the counter at a rate of 100,000 per second. With its four banks of light, it can count 9,999 pulses, the time measurement of about one-tenth of a second.

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