

their limbs intersected each other.

As *Venus* advanced, the point of the Pyramid still grew lower, and its circular Base wider, until it met the light which crept round from the points of intersection of the two limbs; so that when half the planet appeared on the Sun, the other half yet off the Sun was entirely surrounded by a semi-circular light, best defined on the side next to the body of *Venus*, which continually grew brighter, till the time of the internal contact.

Imagination cannot form any thing more beautifully serene and quiet, than was the air during the whole time; nor did I ever see the Sun's limb more perfectly defined, or more free from any tremulous motion; to which his great altitude undoubtedly contributed much.

When the *internal contact* (as it is called) drew nigh, I foresaw that it would be very difficult to fix the time with any certainty, on account of the great breadth and brightness of the light which surrounded that part of *Venus* yet off the Sun. After some consideration, I resolved to judge as well as I could of the co-incidence of the limbs; and accordingly gave the signal for the *internal contact*, at 2^h. 28' 45" by the clock . . . and immediately began to count seconds, which any one, who has been accustomed to it, may do for a minute or two, pretty near the truth. In this manner I counted no less than 1' 32" before the effect of the atmosphere of *Venus* on the Sun's limb wholly disappeared; leaving that part of the limb as well defined as the rest. From this I concluded that I had given the signal for the *internal contact* too soon; and the times given by the other observers at *Norriton* confirm me in this opinion.

Science News Letter, April 2, 1932

ZOOLOGY

"Riotous Living" Doubles Weight of Town Skunk

THE PRODIGAL skunk that deserts his country home and goes to live in town increases his substance by riotous living.

Prof. J. W. Hamilton, Jr., of Cornell University, has examined nearly five hundred specimens of skunks, and finds that those caught in towns weigh ten or twelve pounds, as against five or six pounds for their countrybred brethren. The town skunks' stomachs showed that they were devotees of the easy living offered by garbage piles; they contained breadcrusts, meat, eggshells and fruits.

Science News Letter, April 2, 1932

COSMOLOGY

Entire Universe Still Young, Little Older than Earth Itself

THE FAR-FLUNG universe of stars, nebulae and star-dust is not much older than the solar system and the earth itself.

This startling conclusion was presented by Dr. Ernst J. Opik of Tartu University Observatory, Esthonia, now serving as lecturer in astrophysics at Harvard, who closed a symposium on the time scale held during the dedication of the new Harvard Observatory astrophotographic building.

Facts gathered by Dr. Opik indicate that the age of our universe is not very much more than 3,000 million years. The probable length of known geologic time is something like 1800 million years.

This reduction in the time that the universe could have existed may have far-reaching effects on astronomical theory and conceptions. It deals a severe blow to the idea that the universe of stars and nebulae is an outgrowth of a process of relatively slow evolution.

"We infer that not much more than 3,000 million years have elapsed since the spiral nebulae, the stars, and the star-dust or meteors were born out of the original parent system, which we call chaos because we do not know much about it," Dr. Opik said.

Most impressive was evidence of the universe's youth brought to earth by meteorites or "falling stars." Dr. Opik reported that Prof. Fritz Paneth, chemist at the University of Königsberg, Germany, has determined the age of a number of meteorites by analyzing their relative contents of helium and radium. He found values ranging from 100 to 2,900 million years. Pultusk stone meteorites which were seen to fall in 1868 gave a preliminary age of 500 million years, which due to loss of helium in space and in museums during sixty years is probably a minimum age. Astronomers are confident that these meteorites came from interstellar space. These chemical determinations of age suggested to Dr. Opik a low age for the stellar universe.

Double stars also shine evidence that the universe is young. Dr. Opik found that statistics of the distribution of distances and relative magnitudes in double stars indicate that since their origin

the masses of the stars could not have decreased appreciably. The drop in luminosity of an average dwarf star since its origin can not have been more than half a magnitude, Dr. Opik found as another indication of the universe's youth.

"Stars of different spectral classes cannot have evolved from one another," he said. "They must have been created simultaneously and their age is too short for any appreciable evolution."

The terrific rushing away of the nebulae as signalled in the reddening of their light, which is considered evidence of an expanding universe, indicates, in Dr. Opik's opinion, a possible age of the extragalactic universe of only a few thousand million years.

Ten years ago the universe was thought to be ten million million years old; now Prof. Opik divides these old estimates by a million or so and makes the universe about the same age as the earth, about three thousand million years.

Science News Letter, April 2, 1932

ARCHAEOLOGY

Doubt Raised That Troy Is Located Correctly

THE TROY that millions of high school students have laboriously located on the map of Asia Minor may not be the Troy of Homer, after all.

Critics are raising new doubts that Hissarlik, commonly accepted to be Troy, fits the specifications of the historic city. The mound of Hissarlik was excavated by Heinrich Schliemann in 1870, and ruins of nine successive cities were found on the site. The sixth of these cities, built about 1500 B. C. and destroyed some three centuries later, is the one known as the Trojan War city.

Homeric scholars are disturbed by the revival of doubts, long dormant, that Hissarlik is the scene of Troy, reports *Antiquity*.

The latest declaration that the site of Troy must still be sought is by a French scholar, M. Vellay. The Greek ships that sailed to Asia Minor for the siege of Troy must have been drawn up on the Hellespont, M. Vellay emphatically

argues. But this could not have been done at the shore near Hissarlik, because there is not room for the camp and the maneuvers.

Disagreeing with this view, in *Antiquity*, Miss Winifred Lamb, British archaeologist, declares that M. Vellay demands geographical accuracy from a poet whose very identity is obscure. The Iliad has its roots in the folk-memory of the dark ages, she says and was often pruned before it grew to its final form.

Although she dismisses M. Vellay's geographical argument as not strong enough to wreck Hissarlik's reputation for being the scene of Troy, Miss Lamb states that the important region around Hissarlik is too little known, and should be further explored.

Science News Letter, April 2, 1932

EVOLUTION

Would Study Effect of Radium Find on Evolution

DO THE GREAT deposits of radium more recently discovered in northern Canada have any effects in speeding up the rate of evolution of the plants and animals in their neighborhood?

This question has been raised in *Science* by Prof. W. C. Broadfoot of the University of Alberta. Prof. Broadfoot calls attention to the now well known ability of X-rays to speed up evolutionary change, first demonstrated to the scientific world by Prof. H. J. Muller of the University of Texas. The effects of radiations from radium and other radioactive substances have also been the subject of numerous experiments, and of observations on living organisms in regions of high natural radioactivity in the earth.

In the latter localities there have been some apparently positive results, but of so small a magnitude as to leave the question still in doubt. But the newly discovered deposits of pitchblende have a far higher natural radioactivity than that of any locality so far tested, so that Prof. Broadfoot believes they might throw some light on the question, either through effects on organisms brought in and purposely exposed, or through observation of changes in the natural fauna and flora of the region.

A drawback is the great distance from the nearest centers of biological research, traversable for all practical purposes only by airplane, and the consequent high cost of making such experiments and observations.

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ASTRONOMY

New Long-Time Clock Is Rotation of Milky-Way

Occurring Every Four Hundred Million Years, Revolution Of Great Galaxy of Stars Would Supplement That of Earth

A NEW CLOCK for measuring long periods of time may prove the rotation of the great galaxy of stars in which the solar system is located, Prof. Robert H. Baker, director of the University of Illinois Observatory, suggested in an address during the dedication of the new building housing the great Harvard collection of four hundred thousand astronomical photographs.

The revolution of the Milky Way, which occurs about once in four hundred million years, would supplement the rotation of the earth, which measures the day, and the swing of the earth around the sun, that measures the year.

When the dinosaurs existed, some two hundred million years ago, Prof. Harlow Shapley, director of the Harvard College Observatory, said in commenting, the solar system was on the other side of the galaxy.

The age of the earth is not less than eighteen hundred million years, and probably about two thousand million years, as measured by the radioactive clock, Prof. Arthur Holmes of Durham College, England, told the astronomers. Accurate determinations of the amount of helium in rocks give the geologist information on their age, because helium is given off at a known rate by the disintegration of radioactive uranium and thorium elements in the rocks.

The oldest known rocks exist in North America. Up until a few weeks ago uraninite from the Black Hills, S. D., held the record with 1460 million years of age, but radium-bearing rock from the radium bonanza at Bear Lake in northern Canada has shown nearly the same age, and rock from Manitoba assays an age of eighteen hundred million years. As these rocks were molten when laid down and injected into existing rocks, the rocks around them must be even older.

With increasing age the earth is not getting any feebler in energy, Prof. Holmes observed. In fact, in the Tertiary age, which led up to the appearance of man, the earth seems to have been more active than in earlier ages.

New estimates of the age of the earth have disturbed the astronomer's confidence in the stability of the solar system, Prof. E. W. Brown of Yale declared. Although he feels no concern about the immediate safety of the earth, he cannot tell just what it was doing two thousand million years ago when its crust was formed. Prof. P. W. Bridgman of Harvard warned that it was unsafe to theorize as to what had happened thousands of millions of years in the past and what would happen far in the future because we have only a few hundred years on which to base ideas.

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ETHNOLOGY

Monte Alban Neighborhood Stirred by Ghost Legends

NEW TALES of ghostly doings are stirring the countryside around Monte Alban, scene of recent treasure-tomb discoveries.

Long before Mexican archaeologists entered "Tomb Number Seven" at the ancient ruined city and found gold and pearls and other Indian treasures, there were legends. It was whispered that a hollowed gourd filled with gold could be seen, appearing magically in the middle of a phantom lake at Monte Alban. Other legends told of spirits who walked in the ruins carrying away gold.

Now that treasure has been found, and the Oaxacan imagination has been stirred, new legends are being generated. It is said that the guardians of the ruins see a phantom market which appears at midnight. The scene before them is the old Monte Alban, as it was in ancient times. Those who see and do not believe become enchanted and mysteriously disappear, the story goes. But those who do believe come to no harm.

A soldier stationed with the military guard tells another strange story. A female dog and her puppies come out of a secret passage of a mound, he says, but they disappear when any one approaches.

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