

possibly there would come the discovery of a new type of energy in the bodies that emit beta rays or electrons.

Dr. W. O. Richardson, famous British physicist, maintained that the meaning of energy is indefinite within the nucleus or heart of the atom.

Hope that neutrons, the recently discovered atomic particles, can be used to reveal the structure of the atomic hearts was expressed by le duc Maurice de Broglie, French physicist, who described a peculiar absorption of neutrons by lead. M. de Broglie visualizes the neutrons as waves and he believes that they interfere with the hearts of lead atoms and are thus absorbed differently than would otherwise be the case. Further experiments, he hopes, will elucidate just what is within the nuclei or hearts of atoms.

Science News Letter, September 17, 1932

ASTRONOMY-GEOLOGY

Pacific Not Big Enough To Furnish Moon

THE MOON didn't come out of the Pacific Ocean basin.

So says D. Artur Neuberg, of Meisen, Germany, in flat contradiction to a widely held theory, that pictures the earth as "calving" the moon out of the Pacific Ocean basin in some remote geological period.

Choosing one of three proposed methods for calculating the total volume of the Pacific Ocean basin, Herr Neuberg arrives at an estimate of approximately 700 million cubic kilometers (167 million cubic miles). But the moon, with a diameter of 3,480 kilometers, has a volume of approximately 22 billion cubic kilometers (5 billion, 240 million cubic miles). The Pacific Ocean basin is therefore about 31 times too small to supply all the material needed.

Even if the Pacific, Atlantic and Indian oceans, together with all smaller seas, were scooped out to make the moon, they would not yield nearly enough material. According to Herr Neuberg's calculations, their collective volume is roughly one and one-third billions of cubic kilometers (319,200,000 cubic miles), or only one-sixteenth that of the moon.

Herr Neuberg sticks to the theory held by another school of geologists, that the earth and the moon were shot off together from the sun as a single egg-shaped mass, which subsequently separated into a larger body, the earth, and a smaller, the moon.

Science News Letter, September 17, 1932

ARCHAEOLOGY

Golden Goats' Heads Found In Ruins of Old Persian Palace

FIVE mountain goats' heads wrought in gold are among the long-buried art treasures of a Persian palace at Damghan, now restored to the light of day by American archaeologists.

First cabled reports of the discovery to the University of Pennsylvania Museum at Philadelphia, indicate that the Persian treasures may rival those of the royal tombs of Ur. Ruins at Damghan are being excavated by a joint expedition from the University Museum and the American Institute for Persian Art and Archaeology, led by Dr. Erich Schmidt.

The sumptuous array of jewelry and ornaments includes necklaces and diadems of gold, vessels delicately carved in alabaster, copper weapons and accoutrements, and cones made of gold

and silver. All of these adorned the persons or the palaces of Persian royalty 3,500 years ago.

Dr. Schmidt's cable does not tell where the treasure lay, but the Museum staff assumes that it was in a room of a small palace discovered by the excavators.

This palace appeared to have been buried by a natural catastrophe, probably by a fire, commented Horace H. F. Jayne, director of the Museum. The art objects in the ruins would confirm this hypothesis, for precious metals, seldom escape pillaging enemies.

The Persian treasure opens up new vistas of history, Mr. Jayne declared. The golden goats' heads, in particular, are important because they suggest affinities with the Sumerians.

Science News Letter, September 17, 1932

ASTRONOMY-PHYSICS

Shrinking Atom Alternative For Expanding Universe Theory

THE theory that the universe is expanding at a tremendous rate might also be called the theory of the "shrinking atom," Sir Arthur Eddington, British astronomer, reminded members of the International Astronomical Union at their meeting in Cambridge, Mass.

"All change is relative," he declared after summarizing the evidence that the universe is doubling its diameter once in 1300 million years, about the length of geologic time as measured in rocks here on earth.

"The universe is expanding relatively to our common standards; our common standards are shrinking relatively to the size of the universe.

"We walk the stage of life performers of a drama for the benefit of the cosmic spectator. As the scenes proceed, he notices that the actors are growing smaller and the action quicker. When the last act opens the curtain rises on midget actors rushing through their parts at frantic speed."

Sir Arthur credited Americans with

the observational work that laid the foundation for the expanding universe theory, mentioning Slipher, Hubble and Humason by name. Prof. W. de Sitter of Holland gave the first theoretical hint of an expanding universe in 1917 and just as predicted, the remote spiral nebulae appear to be running away from us and the velocity of recession increases in proportion to the distance.

But, said Sir Arthur, "they are not avoiding us—everyone is having the same experience."

Science News Letter, September 17, 1932

ENGINEERING

Corrosion Fought to Save Money for Industry

A NATION-WIDE battle against the loss of millions of dollars each year by the corrosion of non-ferrous metals and alloys is being waged by the American Society for Testing Materials.

The committee's program calls for the use of about 23,000 test plates of copper, tin, zinc, bronze and similar metals and alloys over a period of 25 years. The Society estimates that during the past five years cooperating companies contributed more than \$175,000 to the work as materials, special testing equipment, labor and funds.

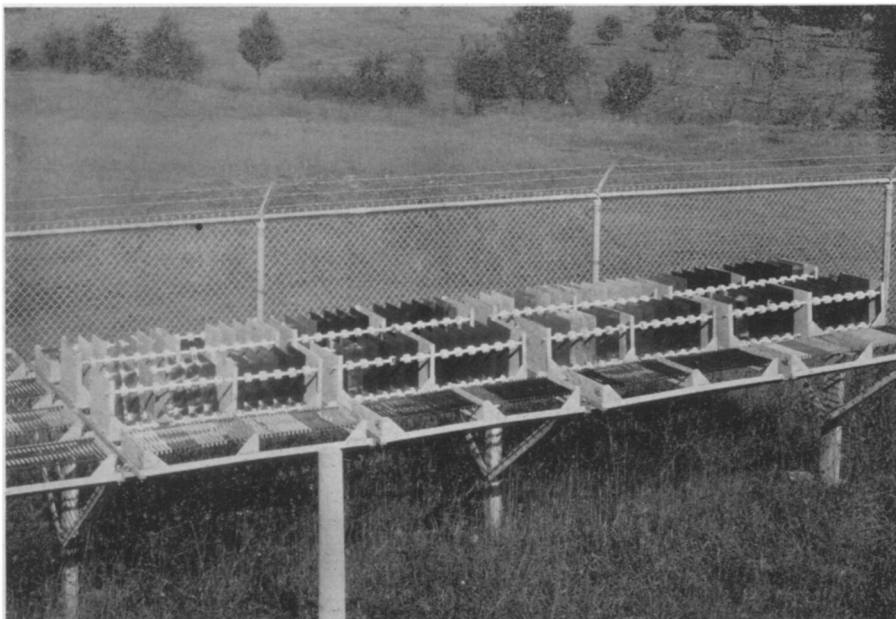
The most extensive division of the program, which makes use of the greater part of the 23,000 specimens, studies atmospheric corrosion. Test plates of different metals are exposed to the atmosphere in various parts of the country.

Rural, Salty or Contaminated

The effect of rural atmosphere is being recorded on plates in open fields at State College, Pa., and Phoenix, Ariz. Seacoast air sometimes blows salt spray over the metals at Sandy Hook, N. J., and Key West, Fla. High humidity exerts its effect at Rochester, N. Y., and La Jolla, Calif., while contaminated industrial atmosphere surrounds plates at New York City and Altoona, Pa.

The results of weathering under these conditions are studied at definite intervals during the years of exposure by determining the change in weight of the plates and their loss of strength and ductility. A part of this work is being done at the U. S. Bureau of Standards in Washington under the direction of H. S. Rawdon, chief of the Division of Metallurgy.

Science News Letter, September 17, 1932



ON QUARTER-CENTURY TEST

Scientists are learning from these plates of non-ferrous metals exposed to the weather at State College, Pa., how to save a part of the millions lost each year through the corrosion of such metals in industry.

ASTRONOMY

Two Huge Telescopes Are Planned for United States

80-Inch Reflecting Instrument Will Be Built in Texas by Two Universities; Harvard Prepares For 61-Inch Mirror

A NEW ASTRONOMICAL observatory, equipped with an eighty-inch reflecting telescope, will rise upon the summit of a peak of the Davis mountains in western Texas within the next six years as the joint creation of the University of Chicago and the University of Texas, and the largest telescope in Eastern United States, a sixty-one-inch reflector, will soon be installed in the new Oak Ridge station of the Harvard College Observatory.

The new observing post of the stars in Texas will be one of the world's finest and it will be named the McDonald Observatory after William J. McDonald who left a bequest to the University of Texas. The University of Chicago will staff the observatory, and Dr. Otto Struve of the Yerkes Observatory at Williams Bay, Wis., will divide his time directing both observatories. The University of Texas will erect and maintain the McDonald Observatory.

The Davis mountains where the McDonald Observatory will be located have

ideal observing conditions. The University of Chicago is cooperating with the University of Texas in the new observatory because of the need of an observing point in the south companion to the Yerkes Observatory.

Cornerstone for the new Oak Ridge station to house the Harvard instrument was laid as a part of the ceremonies of the International Astronomical Union. It is located twenty-six miles from Cambridge near the town of Harvard, Mass.

To Reach All of Sky

The new telescope will be the fourth largest in the world. It will supplement the sixty-inch reflecting telescope now being erected at the other Harvard observing station in South Africa. The South African telescope will be the largest in the southern hemisphere. With the two instruments, the Harvard astronomers will be able to reach all parts of the sky.

The new eighty-inch reflecting telescope for Texas will be exceeded in size only by the hundred-inch mirror now on Mt. Wilson, Calif., and the projected 200-inch telescope planned for southern California by the California Institute of Technology.

This instrument will be the most powerful in the world for some purposes. Dr. Struve explained that for the photography of faint nebulae and distant universes it will be as powerful as the 100-inch telescope on Mt. Wilson, now the world's largest. For other special tasks it will be even more powerful.

"It is not, however, our intention to surpass the remarkable performance of the Mt. Wilson telescope," Dr. Struve stated, "but rather do we hope to supplement it and to develop such features which, for one reason or another, are omitted at Mt. Wilson. It is our desire to make our work supplementary to that of other institutions and to avoid duplication of any sort."

The concave mirror on which the starlight falls will be 80 inches in diameter, and the beam will be focussed 27 feet above.

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