GENERAL SCIENCE

Recently Destroyed Planets Source of Many Meteorites

"Super-Top" Spinning Out Life Secrets; New Device to Read Patient's Nervousness; No Water Found on Mars

MANY of the chunks of iron that fall flaming and roaring from the sky as meteorites are pieces of a couple of planets that met destruction quite recently, as geology goes—only 100 million years ago, or even less. That was late in the days of the dinosaurs here on earth, and not long before the "New Deal" that ushered in the age of mammals.

This startling piece of cosmic news was announced before the Denver meeting of the American Association for the Advancement of Science by Dr. William D. Urry of the Massachusetts Institute of Technology.

Like Stainless Steel

Dr. Urry has for some years been conducting research on the ages of terrestrial minerals, using a method worked out by Prof. F. A. Paneth of Imperial College, London, and himself. Now for the first time he has applied this method to substances of non-earthly origin—pieces of iron chemically very similar to stainless steel, that are found in all collections of meteorites.

The newest of the 25 iron meteorites thus far examined are these bits of "recently" smashed planets 100 million years old; the oldest is 2,900 million years old. The greater number of the specimens are more than 1,000 million years old, but none exceeds the estimated age of the earth itself, between 2,000 and 3,000 million years.

Craters on the moon, an astronomical and geological puzzle for many years, are due to violent explosions of meteorites that plunged into the airless surface of the earth's satellite with great energy. This theory of the lunar pockmarks was presented to the Society for Research on Meteorites by Dr. L. J. Spencer of London.

Only the hundred-mile blanket of air around the earth protects it from undue damage by meteorites that still bombard it. But Dr. Spencer believes that there must have been an earlier period during which these stray masses of the solar system were much more numerous.

There is little use looking for great masses of iron buried beneath the floors of great meteor craters like the one in Arizona, is the opinion of John D. Boon and Claude C. Albritton, Jr. These great gaping holes were probably made by projectiles from the sky, all right, but the projectiles exploded shortly after they hit, scattering their fragments far and wide.

Wartime experience shows what to expect from high-velocity projectiles, even if they contain no explosive charge, they pointed out. Bullets at a velocity of a half-mile a second explode when they hit anything solid enough, even at a glancing angle. And large meteorites fall at speeds approaching a hundred times that of a bullet. Pieces of meteoric iron have been found as much as six miles from the craters where the parent body struck and burst.

Said Mr. Boon: "Evidently when a giant meteorite hits it penetrates the earth for a short distance, like an airgun bullet penetrating a piece of cheese; then it explodes."

250,000 Times Gravity

A new scientific search for the real meaning of life, differentiating it from the stuff of the universe that is not alive, is about to begin with the ultra high speed top or centrifuge as the tool.

The new super-tops of science are whirled by powerful air blasts at great speeds so that they produce fields from 250,000 to 300,000 times the intensity of the gravitation, the force that holds things down to earth. This causes molecules of different weights to be separated cleanly.

Dr. Ralph W. G. Wyckoff, of the Rockefeller Institute for Medical Research laboratories at Princeton, N. J., stated that the whirling of disease-causing materials in the new ultra-centrifuge also promises "some day to indicate a new way in which the body can protect itself against disease."

The work of Dr. W. M. Stanley, also a Rockefeller researcher who demonstrated the disease-causing viruses of some plant and animal maladies are actually complex chemical molecules, has been widely acclaimed. Since then a cancer-like disease principle, some of the material involved in smallpox, and even a bacteriophage substance that seems to eat staphylococcus germs, have been shown to be sharply and uniformly sized molecules that the super-tops of science pick out even though these molecules are beyond the reach of human vision amplified by the microscope.

Because deadly diseases that still plague the human race are now considered virus-caused but unconquered—such ills as infantile paralysis, encephalitis, and even common colds—these new advances are extremely hopeful for the future.

Dr. Wyckoff declared, "A new field of research into the mechanism and control of disease has opened up the possibility of treating its cause as a pure chemical compound."

Measuring Nervousness

The nervous patient, unduly tense and excited when his physician begins an examination, can now have the exact state of his nervousness measured by a new instrument, the neurovoltmeter, described by Dr. Edmund Jacobson of the University of Chicago.

The neurovoltmeter is a simple instrument using a string galvanometer and fine, sharpened wire electrodes that are inserted into nerve or muscle tissue without undue discomfort. It will measure variations in electrical nervousness amounting to fractions of millionths of a volt.

The new instrument will permit the physician to keep track of effects of even the most delicate treatment upon the nervous and muscular system, Dr. Jacobson predicted. The study of mental disease will also be advanced by its use.

Mars continues to be a desert, defying astronomers' biggest telescopes and most delicate instruments to find any trace of water vapor on the rust-red surface of its middle part. So reported Drs. Walter S. Adams and Theodore Dunham, Jr., of the Mount Wilson Observatory.

Last April Mars was in especially favorable position for observation. The astronomers turned the great hundred-inch telescope on the planet, arming it with a nine-foot spectral grating to split the light reflected from its surface into the rainbow band of the spectrum.

Dark absorption lines appeared in the spectrum, part of them due to the "soaking up" of the planet's light by water vapor in the atmosphere of the earth. Particularly critical study was made to see if any of this light absorption took place in water vapor in the atmosphere

of Mars itself, before the light left on its long trip earthward. But of this the astronomers reported they could find "no evidence whatever."

Astronomy and botany are expected to cooperate in finding out the age of certain undated wooden statues of saints in Southwestern churches. These "santos," carved by Indian artizans in gratitude for petitions granted, are of all ages from early mission days to very recent, but they have been neglected by archaeologists, and nobody has any idea of how old the various types are.

Dating Sample "Santos"

Here is where "astrobotany" comes in. Dr. A. E. Douglass, noted for his studies on the age of prehistoric pueblos by comparison of tree-ring patterns in their timbers, is to be consulted on the tree-ring patterns in the wooden "santos" themselves. Over most of their bodies there are concealing layers of paint, but the flat bases on which they stand offer excellent points for examination.

After tree-ring chronology has established the ages of a few good sample "santos," resemblances in style of workmanship and conventions of religious symbolism will help to get the rest properly classified. The program for this study in recent archaeology of the Southwest was presented by Curator Mitchell A. Wilder of the Taylor Museum for Southwestern Studios at Colorado Springs.

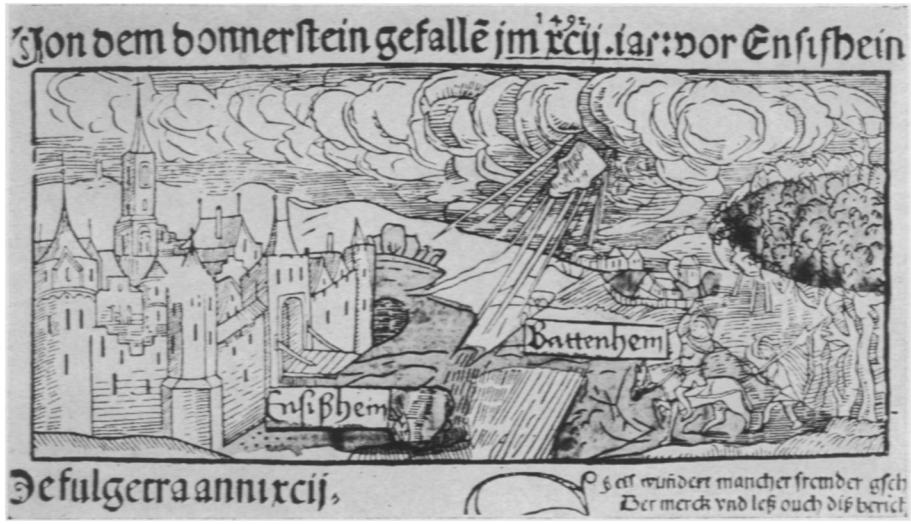
2,000 "Sky Dogs"

New stratosphere records will be sought in an entirely new kind of stratosphere balloon, Jean Piccard, twin brother of strato-pioneer Auguste Piccard, announced. Mr. Piccard will undertake the long ascension under the lift not of a single giant balloon as heretofore used, but with a "sky dog team" of 2,000 small rubber pilot balloons.

"Since a single sounding balloon is able to carry a half-pound instrument to an altitude of twenty miles it is obvious that 2,000 sounding balloons could lift an air-tight gondola weighing 1,000 pounds to the same lofty position," he said. "It is my intention to construct such an assembly and to make scientific observations at the altitudes reached by sounding balloons.

"Before making such a flight I intend to test the possibilities of the composite balloon by making, in the near future, an experimental flight with eighty sounding balloons attached to an open gondola."

Science News Letter, July 3, 1937



FOLK STILL MARVEL AT METEORITES

America now has a special society for the study of meteorites, which took an active part in the Denver meeting of the Amerian Association for the Advancement of Science. But interest in these "thunder-stones" is much older than that; as witness this woodcut from an ancient German book, telling of the first one actually seen to fall, and collected afterwards. It plunged to earth on Nov. 16, 1492, near Ensisheim, Alsace. The Field Museum of Natural History has a piece of this meteorite.

GENERAL SCIENCE

Publishing Scholarly Data Is Vital World Problem

MILLIONS upon millions of words flow from the world's printing presses day by day.

In the face of this daily flood of the written word it may seem unnecessary to plead for and provide more and easier publication. Nevertheless to the scientific and scholarly world getting the findings of researches into the thought stream of civilization is a pressing problem.

The details of cosmic ray observations, the cryptic derivations of mathematical formulae, the intricacies of chemical determinations, the delving of a scholar of language into a tongue long dead, the columns of statistics compiled to chart the course of population—these data are of little interest to most of us although they are important to all of us. To publish such material in large editions is not necessary, but to have it available to those experts who need to use it is essential. Now, next year, or within a decade or so, a dozen or a few hundred scholars and experts will want this information.

A combination of photography and the microscope promises to make it possible to supply upon demand such records to the specialists. Upon strips of motion picture film are photographed the typed sheets, illustrations, and drawings of the research reports. An ordinary page shrinks to a mere inch in height. This "microfilm" costs about a cent a page and the scholar reads it with a projection or magnifying device.

Such a system of auxiliary publication for scholarly material is being operated by the newly organized American Documentation Institute. And by a similar process the rich and voluminous literature of the past in libraries is being made available.

Science News Letter, July 3, 1937

PHYSIOLOGY

Golfer's Energy Expenditure Would Warm Ton of Water

A GOLFER who plays 18 holes on a warm day gives off enough heat to raise the temperature of a ton of water one degree. He loses enough water through perspiration to fill two water glasses. These estimates, by A. H. Reinach, industrial expert on water and beverage cooling equipment, are cited as good reason why golfers enjoy a cool drink at the "nineteenth hole."

Science News Letter, July 3, 1937