GEOPHYSICS

Comet, Not Meteorite, Ruined Siberia Forest

➤ THE FAMOUS 60-mile swath cut through a Siberian forest in 1908 was likely made by a comet and not a meteorite.

Russian scientists investigating the site said evidence indicates that the heavenly body came from outer space past the solar system.

"This is characteristic of comets and not of meteorites," Drs. V. G. Fesenkov and Ye. L. Krinov report in an article translated by the Joint Publications Research Service.

Aerial photographs of the impact area showed that the fiery comet exploded at least three times in mid-air. The explosion seared the land and knocked down trees over a 30-mile radius. Ground tremors and shock waves were picked up by observatories hundreds of miles away.

The Russian proposal contradicts the widely-held theory that the devastated area was caused by a meteorite. Russian scientists say the head-on collision at such high velocities had to come from an object hurtling in a direction against the movement of the solar system.

A comet, which normally goes against the "grain" of the solar system, is the answer, the scientists emphasized.

Comets are gaseous balls, spotted with tiny particles, that periodically enter the solar system. Meteorites are stony or metallic bodies that rotate around the sun. When the earth passes through their orbit, they enter the atmosphere and fall to earth.

"No fragments of meteoritic substance have been found in the central area of the fall, despite the enormous size of the body," the article stated. The tremendous explosions virtually disintegrated the small particles of the comet.

The fall occurred in a forested region of the Tunguska River in north central Siberia. Many craters were formed near the center, but no lives were lost. Scientists did not visit the remote area until 1927.

• Science News Letter, 80:256 October 14, 1961

GEOLOGY

Earth's Hot Center Is 12,000 Degrees

➤ THE EARTH'S CENTER is a searing hot mass of iron with temperatures greater than 12,000 degrees Fahrenheit.

The earth's core, a solid ball of iron with a thick liquid covering, has a density of nearly 600 pounds per cubic foot, Dr. V. N. Zharkov of the USSR Academy of Sciences reports in an article translated by the U. S. Joint Publications Research Service, Washington, D. C.

Dr. Zharkov based his figures on complex theoretical equations and indirect evidence of the earth's core.

Shock waves generated by earthquakes or man-made explosions hurtle through the earth's inner layers, passing through the center. The bending of the waves as they pass through the various layers helps scientists determine the approximate densities of the layers.

The figures were inserted in a formula and compared with theoretical figures obtained from an iron core. Dr. Zharkov's 12,000 degrees is three times greater than previous estimates.

A small amount of nickel may also be present in the core, the scientist believes.

High pressures make the core more dense than iron found on the surface. The average density of iron is about 450 pounds per cubic foot. One cubic foot of water weighs approximately 62 pounds.

Scientists have been debating what the center of the earth is like for many years. Before seismic instruments were developed, they had very little to go by. This gave rise to many popular misconceptions such as the possibility that the core was made of gold.

One 19th century writer pictured the earth's center as being hollow, an idea that actually had many followers during that time.

• Science News Letter, 80:256 October 14, 1961

NATURAL RESOURCES

Need Expanded Research As Phase of Fuels Policy

➤ NEGLECTED AREAS of research and development in the use of fuels could get a strong Federal push from results of a recently authorized Senate probe aimed at laying the foundation for a national fuels policy.

One of the expected recommendations is the reactivation of research programs on means of producing oil from coal and shale. Work began during World War II, when new sources of liquid fuels were in heavy demand, but was discontinued several years ago.

Continued research on production and piping of gas produced from coal, as a replacement for depleted natural gas fields, may also be urged.

The policy study will be conducted by the Senate Committee on Interior and Insular Affairs. It was first proposed by Sen. Jennings Randolph (D.-W. Va.).

Sen. Randolph points out that the United States has a "virtually inexhaustible" supply of coal, which will last 2,000 years at current production rates.

He stresses, however, that the Senate study is not for the purpose of producing a policy to give the coal industry "an unjust advantage" over oil and gas interests.

The senator told the Electrical Heating Conference in Washington, D. C., that lack of a fuels policy led to unemployment in coal-producing states and "financial distress" for coal-hauling railroads, when our energy base was transformed from coal to oil and natural gas. Nuclear power will bring new problems and a further transformation "in the next four decades."

He predicted that by the year 2000 nuclear power will supply about 20% of the total U. S. need for energy sources. Expanded power needs will make this 20% equivalent to about one-half of today's total energy production.

• Science News Letter, 80:256 October 14, 1961

IN SCIEN

GENERAL SCIENCE

Federal Spending Climbs For Industrial Research

➤ FEDERAL FINANCING of industrial research and development by private firms was more than four times heavier in 1960 than in 1953, the National Science Foundation, Washington, D. C., reported.

The annual total for Government sponsorship of research and development projects has climbed from $1.4 billion to $6.1 billion in the seven-year period.

The Government financed 58% of the $10.5 billion in projects reported for 1960. Its share of the 1953 total was only 39%.

Federal funds accounted for 87% of the research and development done by the aircraft industries and 68% of that done by the electrical equipment and communications industries. Industries largely self-supporting included paper, drugs, oil refining and extraction, and stone, clay and glass products.

The overall $10.5 billion figure represented a 10% increase from the $9.6 billion tallied for 1959. Federal participation has shown an annual increase of seven percent or more each year since 1953.

• Science News Letter, 80:256 October 14, 1961

MEDICINE

Lung Cancer Operation Risk Shown by X-Rays

➤ WHETHER or not a surgeon should operate on lung cancer patients can be shown by X-rays after injection of radio-opaque matter into the heart and large blood vessels (angiography).

Half of the 100 patients studied by Drs. D. E. Sanders, N. C. Delarue and George Lau, Toronto, Canada, were ruled out of surgery as bad risks because their cancers had spread too much.

Without such examinations, the radiologists told the American Roentgen Ray Society convention in Miami Beach, Fla., nearly two-thirds of the lung cancer operations must be counted as unsuccessful because the cancer could not be removed.

The radiologists said the use of angiography should supplement other kinds of diagnosis. They said their studies still could not make a positive definition of the lung root area. Nor did they show the spread of cancer from the lung to the chest wall or other areas not immediately involved with the heart and blood vessels.

What happened after injecting the radio-opaque matter, they said, was a constriction of the vessels and a thickening of the walls of the chambers or the outside coating of the heart and lungs. This showed up in multiple X-ray exposures or in cine-fluoroscopic examinations.

• Science News Letter, 80:256 October 14, 1961

CE FIELDS

PUBLIC HEALTH

Need More Information On Poisonous Mushrooms

➤ ALTHOUGH DEATHS from mushroom poisoning are rare in the United States, more must be known about the poisonous substances and their specific effects in order for a physician to treat a suspected case properly.

In New England alone, more than 800 mushroom species are found, yet only 53 varieties are considered to be poisonous. The toxic agent in 29 of these varieties, however, is still unknown, and tentative identification in 14 others is still questionable.

Writing in the New England Journal of Medicine, 265:681, 1961, Dr. Robert W. Buck, secretary of the Massachusetts Medical Society, asserts that much time has been wasted injecting guinea pigs, rabbits and mice with mushroom extracts and distillations. Such procedures "throw little light on the identity of the offending substance."

Few wild mushrooms are eaten in the United States. Known fatalities from mushroom poisoning in this country number only 24 in the last 37 years.

Eleven of these deaths were blamed on the white-spored bulb agarics, containing highly lethal "amanita toxins," and seven on the species *Gyromitra esculenta,* which causes most of the mushroom deaths among country people in eastern Germany and Poland.

Although it contains poisons, another mushroom, the fly agaric, has been used by Kamchatka Eskimos for at least 200 years as "a pleasurable intoxicant," Dr. Buck reports. Five other species, discovered in Mexico in 1957 and used by Indians, reportedly produce narcotic intoxication accompanied by "strange hallucinations."

• Science News Letter, 80:257 October 14, 1961

NATURAL RESOURCES

Advance Planning Urged For Balanced Forest Use

➤ TO BALANCE the use of United States forest lands for both commercial logging and recreation, landowners and recreation authorities should get together on long-range plans for areas still to be developed, a Maine lumber executive believes.

Curtis M. Hutchins, chairman of the board of the Dead River Company at Bangor, said at an American Forest Products Industries meeting in Washington, D. C., that bottling up timber resources to form large-scale wilderness areas and sanctuaries for recreation may be "far less in the public interest" than effective commercial management.

The problem is particularly important to Maine, he said, because the northern part of the state contains more than 10,000,000 acres of undeveloped timberland, with an exploding demand for recreational use which is "something which we feel sure is about to come."

So far, problems have been successfully solved through "natural and spontaneous cooperation" among landowners, recreationists, and state and Federal officials.

Maine has opened its lakes, streams and forests to fishing and hunting. Landowners and lumber firms have permitted free public use of their truck roads, except while cutting is going on or in times of drought when fire danger is high. Land for campsites, boat-launching areas and ski slopes has been donated to public authorities.

The problem, Mr. Hutchins believes, will become "radically different and tougher," however, when visitors start flocking in large numbers to the forests, lakes, rivers and mountains of northern and eastern Maine.

Eighty-seven percent of Maine's land area is forested, and the forest industry is the state's largest. It pays 33% of the wages and employs 29% of the wage earners in the state. Recreation, classed as the second most important industry, brings Maine about half as much income as the forest products themselves.

• Science News Letter, 80:257 October 14, 1961

MEDICINE

Drug Safely Reduces High Blood Pressure

➤ A NEW DRUG called CAPLA (mebutamate) was reported to reduce high blood pressure without serious side effects.

CAPLA stands for Central Acting Pressure Lowering Agent, and is believed to quiet the overly active control centers in the brain and spinal cord, which are involved in the development of hypertension.

Dr. Harry Shubin, medical director of the Wolffe and Broad Street Hospitals in Philadelphia, told a meeting of the metropolitan chapters of the New York State Society of Internal Medicine in New York that the drug had been effectively used to treat 100 patients suffering from various types of high blood pressure.

Good to excellent results were seen in 70% of those with essential hypertension, the most common form of high blood pressure. In 84% of the 93 patients with abnormally high diastolic pressure, CAPLA lowered the pressure to a normal range, Dr. Shubin said.

The new prescription drug was produced by Wallace Laboratories, Cranbury, N. J. Dr. Frank M. Berger, president and director of research, who discovered the drug, said it was the first to reduce high blood pressure without impairing the normal "regulatory mechanism of the body."

Although many drugs have been developed to control hypertension, their use is often complicated by depression, severe nasal congestion, gastric acidity, diarrhea or constipation.

Drowsiness and headache are the only side effects reported with any frequency by patients using CAPLA, Dr. Berger said.

• Science News Letter, 80:257 October 14, 1961

OCEANOGRAPHY

Radioactive Fallout Greater Over Ocean

➤ RADIOACTIVE fallout from nuclear testing is probably three times greater over the ocean than on land.

Woods Hole Oceanographic Institution scientists have found more strontium-90, an A-bomb by-product, in water than on land at similar latitudes. The cause of the increased fallout is unknown.

The water sampling measured the radioactive debris that normally stays in the stratosphere for many years before it is washed back to earth by rainfall. The increased fallout over the oceans seems to support recent theories that fallout remains for a much shorter time in the stratosphere than previously estimated, Dr. V. T. Bowen reports in the Institution's Oceanus magazine, 8:20, 1961.

The effect on fish food harvested from the ocean is also in doubt. "Not enough information is now available to confirm or disprove the possible effect on humans," Dr. Bowen emphasized.

The sampling was made during an equatorial cruise of a Woods Hole ship in the Atlantic Ocean. Water samples scooped out of the ocean depths also showed a higher concentration of radioactivity than on the surface.

Naturally occurring strontium-90 does not exist in measurable amounts in the ocean. It was first detected in the Atlantic after the bomb tests in early 1954.

• Science News Letter, 80:257 October 14, 1961

PUBLIC HEALTH

Laboratory Animals Surveyed for Staph

➤ SCIENTISTS and caretakers sometimes need protection from laboratory animals, according to a report on staphylococcal disease at the 12th annual meeting of the Animal Care Panel held in Boston.

Drs. Thelma J. Dean and Bennett J. Cohen of the department of animal care, University of California Medical Center, Los Angeles, said an outbreak of staph among animal care personnel had prompted a survey among dogs newly received from Los Angeles pounds.

In the search for *Staphylococcus aureus* carriers, nasal swabs from the dogs revealed 126 positive staph strains among 200 dogs. Further results will be reported, both on dogs and other laboratory animals such as rabbits, monkeys, chinchillas and rats.

The scientists pointed out that a similar epidemic of staphylococcal disease resistant to antibiotics had been studied after an outbreak at the University of Pennsylvania's Veterinary School. Newly admitted animals as well as long-term residents of the school were shown to be carriers of a staphylococcal strain that could infect humans.

In the Los Angeles outbreak, animal care personnel at the Veterans Administration Hospital as well as those in the Medical Center were affected.

• Science News Letter, 80:257 October 14, 1961