

ASTRONOMY

Pacific's White Ash Shows Possible Comet Collision

➤ A LAYER of clean white ash discovered on and beneath the bed for the Pacific Ocean may record a possible comet collision with earth in ancient times.

The layer might also result from widespread volcanic action, Columbia University scientists say. Until the age of the very fine-grained ash of glassy fragments and the extent and identification of the deposit are determined, geologists can only speculate concerning its origin.

The discovery was made by scientists aboard Columbia's research vessel Vema and is reported in the *Proceedings of the National Academy of Sciences* by Dr. J. Lamar Worzel, assistant director of Lamont Geological Observatory, Palisades, N. Y.

The ash was found over a large area of the tropical eastern Pacific. Dr. Worzel says sub-bottom sound reflections indicate the layer extends at least 750 miles north of the equator and about 825 miles south of the equator within a few hundred miles of Central and South America.

He reports that the ash ranged from an inch to a foot in thickness and the layer rises to the ocean floor in some areas and is as deep as 120 feet below the ocean bed in others. He says it was found in places where the ocean ranges from a little less than a mile to more than three miles deep.

Dr. Worzel says the ash was deposited "fairly recently," possibly within the last 100,000 years, and probably fell within a relatively short time, such as a year or so.

In a paper accompanying Dr. Worzel's report, Dr. Maurice Ewing, director, Bruce C. Heezen, submarine biologist, and David B. Ericson, geophysicist, all of Lamont Observatory, say that the single ash layer over such a wide area "must record a notable event in the history of the area."

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PUBLIC HEALTH

Flu, Polio, Hepatitis Increase During March

➤ THE MONTH of March witnessed an increase in poliomyelitis, influenza and hepatitis.

The current outbreaks of influenza have occurred in approximately 20 states, a U. S. Public Health Service spokesman said.

Furthermore, influenza is expected to spread around the country more extensively before the expected decline in late April.

The PHS reports increased absences in schools due to influenza and influenza-like illnesses are on the rise. Death rates for the 114 large cities in the United States have remained normal, however.

Weekly reports from the PHS indicate the incidence of poliomyelitis is again slowly climbing. During the first 11 weeks of 1959, 249 cases of polio were reported, compared to 172 last year. More than 170 of the 249 cases reported so far this year are paralytic. Ninety-six of last year's cases were paralytic. The remainder consist of non-

paralytic and unspecified polio. Better reporting may be responsible for the apparent increase in the number of paralytic cases this year, the PHS spokesman said.

As the U. S. swings into its polio season, PHS officials have expressed concern for the millions of Americans who have not received Salk protection. The number of recorded cases of all types of polio is expected to increase steadily in the immediate future.

Meanwhile, in addition to the flu and polio virus battles, hepatitis still continues to gain ground. The latest PHS data show that 6,195 cases have been reported during the first 11 weeks of this year while 3,576 occurred last year over the comparable period of time.

This current pattern of the liver-damaging disease is similar to the last serious outbreak in 1956.

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ANTHROPOLOGY

Scientists Urged to Dig for Specimens of Peking Man

➤ GIVE UP the loss of the bones of ancient Peking Man, one of man's earliest ancestors, as a "perfect crime," and start digging for new specimens of this Pleistocene forebear.

This is the advice to anthropologists contained in *Science* (March 27).

The famous bones were lost to science during the confusion of World War II. Negotiations had been completed to ship the precious specimens to the United States for safe keeping during the hostilities and the bones in three cases were given to U. S. Marines who were being evacuated from Chinwangtao. But the ship ran aground in the Yangtze Kiang River, the Marines were captured, and no one knows what happened to Peking Man.

In recent years, the Communist Chinese have charged that Americans stole the bones of Peking Man and are keeping them hidden in America. This charge was traced to an "honest mistake" by a British paleontologist, Prof. D. M. S. Watson. Prof. Watson, on a visit to the American Museum of Natural History in New York, was shown another ancient skull from Java, Solo Man. He mistook this for the missing skull of Peking Man. He mentioned the incident to a colleague in East Germany and from there the report, somewhat embroidered, spread to Communist China.

In the meantime, anthropologists may have already resumed digging at the Choukoutien cave, site of the original find of Peking Man. Announcement of renewal of the search was transmitted to the journal *American Anthropologist* by Hallam L. Movius Jr. of Harvard University who dug out the information from a Communist China propaganda sheet and from Russian reviews of reports of Chinese scientists.

Although anthropologists in this country do mourn the loss of the original bones of Peking Man, they do not believe that it does irreparable damage to science because excellent casts of the bones are available in various parts of the world which can be used for study.

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IN SCIENCE

OCEANOGRAPHY

Discover "Hot Spot" on Pacific Ocean Floor

➤ A "HOT SPOT" stretching some 3,600 miles along the floor of the eastern Pacific Ocean in a relatively narrow band has been discovered.

Dr. R. Von Herzen of Scripps Institution of Oceanography, La Jolla, Calif., says the band of high heat flow in the earth's sub-oceanic surface appears to be associated with the East Pacific Rise, a broad elevated region. The trenches bordering this rise on each side, on the other hand, appear to be associated with low heat flow.

Dr. Roger Revelle, director of the Scripps Institution, has said that such measurements of heat flow changes in the Pacific Ocean indicate the earth's interior is slowly churning over in giant blocks hundreds or thousands of miles in size. Radioactive heating at great depths is thought to cause rocks deep beneath the surface to flow upward in some places and downward in others.

The heat flow rates were found to be 50 times higher in some regions than in others, Dr. Von Herzen reports in *Nature* (March 28).

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PHYSIOLOGY

Shrew's Skull Grows When Spring Comes

➤ IT IS SPRING and right now some shrews' skulls are increasing in size.

The brain cases of the Common Shrew, a mouselike animal, have been increasing ever since January, two British scientists report, and they will go on increasing until July when the skulls will begin decreasing in size, particularly in depth.

This "striking seasonal fluctuation," which is also found generally in the shrew's weight and length of body, is a real variation in the depth of the animal's brain case. It is not due to errors in measurement nor to the presence of smaller individuals, report Peter Crowcroft and Jean M. Ingles of the British Museum of Natural History in London.

The depths of the brain cases of 423 shrews, *Sorex araneus*, were measured using a specially designed instrument. The size averaged about five millimeters in October followed by a decline to less than 4.7 mm. in January and a maximum of more than 5.1 mm. in July.

Greater seasonal variations are found in shrews living in colder winter climates, the scientists explained.

"Similar studies of shrews from various regions of North America would be of great interest," they conclude in *Nature* (March 28).

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E FIELDS

ASTRONOMY

Twin Stars Found Stellar Lightweights

► TWIN STARS have been found to be stellar lightweights, each of the pair having the smallest mass of any known star.

The double star is also one of the closest to the earth, only five others being nearer. Dr. Peter van de Kamp, director of Sproul Observatory, Swarthmore, Pa., reported that the twin stars take 200 years to make a complete circuit around each other.

He told the American Astronomical Society meeting in Rochester, N. Y., that the double star known as L726-8 has a combined mass only 79-thousandths that of the sun. The individual masses of each star are only 44-thousandths and 35-thousandths that of the sun.

Dr. van de Kamp said measurements on photographs taken during the last ten years showed the twin stars' very slight motion against the background of more distant stars. From these measurements, he calculated that L726-8 is 8.6 light years from earth. (A light year is the distance covered in one year by light traveling at 186,000 miles a second, or about six trillion miles.)

The only nearer stars are the sun, 93,000,000 miles; Alpha Centauri, 4.3 light years; Barnard's star, six light years; Wolf 359, 7.7 light years; and Lalande 21185, 7.9 light years.

The next lightest weight star known is Ross 614B, which is also the second faintest star known. It is only one-twelfth the mass of the sun and 70,000 times fainter.

Dr. van de Kamp said the new measurements furnish a "substantial extension" of the fainter end of the mass-luminosity relationship, the link between a star's mass and its real brightness, or absolute magnitude. The absolute visual magnitudes of the twin stars in L726-8 are 15.35 and 15.85.

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AGRICULTURE

Radioisotopes May Make Pesticides Obsolete

► RADIOISOTOPES may in a few years make the 2,4-D's and the DDT's as obsolete as we all hope war has become.

Our efforts to control plant and insect pests should be as selective as our system of criminal justice, Atomic Energy Commissioner John F. Floberg told researchers at the fourth annual Conference on Radioisotopes in Agriculture, meeting in Stillwater, Okla. Condemning "indiscriminate spraying against the gypsy moth" and "broadcast spraying against the fire ant," Mr. Floberg foresees an opportunity for radioisotopes to contribute better ways of controlling these pests.

Noting the recent advances in the use of radioisotopes in agriculture, Mr. Floberg ex-

plained the AEC has two major interests in the field: determining the effect of radiation on plants and animals, and encouraging the use of atomic energy products and techniques in fundamental and applied research.

Research with isotopes ranges from metabolism studies of the cow's germ cells to the effect of ionizing radiations on root growth. Most of this research is basic, thus contributing to our knowledge about plants and animals, Mr. Floberg said. As far as practical applications of radioisotopes go, there have been several promising results.

The current U. S. Department of Agriculture's campaign to exterminate the screw-worm fly in Florida is very successful. Researchers are considering using radioisotopes to control other insect pests. A second practical contribution is the production of new plant varieties by using radiation to induce mutations.

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PSYCHIATRY

Sleeplessness Suspected In Schizophrenic Illness

► PROLONGED insomnia is suspected as precipitating some cases of schizophrenia.

Schizophrenia is called the "split personality" mental disease. Victims become dis-oriented and lose contact with reality.

Many persons on the brink of a psychotic break suffer from severe insomnia, the inability to sleep. A few pass through a prolonged period of wakefulness as the schizophrenic process unfolds, three Salt Lake City doctors report in the *Archives of Neurology and Psychiatry* (March).

Such sleep deprivation, when combined with isolation and incapacitating anxiety, may have an illness-causing potential that has not been fully appreciated.

Experience with two patients who suffered severe emotional disturbances coupled with sleeplessness and followed by outright psychotic attacks aroused the doctors' interest.

Both patients were "racked with intense psychological pain and overwhelmed by seemingly insoluble problems." Both failed to sleep for several days, emotionally isolated themselves, and became psychotic. The schizophrenic episode was brief in each case, and the patients recovered rapidly with treatment, Drs. Eugene L. Bliss, Lincoln D. Clark and Charles D. West of the University of Utah College of Medicine and the Veterans Administration Hospital, Salt Lake City, report.

Further tests on medical students revealed that sleep deprivation for 72 hours resulted in confusion, inability to judge the passage of time, and other intellectual deterioration to their minds.

The doctors say no subject became psychotic.

"One can only infer that if these changes were to occur in someone who was also profoundly anxious and deprived of group support, more serious psychopathological sequelae (consequences) might result," the doctors suggested.

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OCEANOGRAPHY

Winter "Shrinks" Ocean, Pt. Barrow Study Shows

► FREEZING winter temperatures "shrink" the water of the Arctic Ocean and, as a result, tide variations at Point Barrow, Alaska, are 20 inches lower in winter than in summer.

This was discovered by M. Allan Beal, oceanographer with the Scripps Institution of Oceanography.

Mr. Beal has been making year-around hydrographic observations through the ice at Point Barrow in an International Geophysical Year study program to learn basic facts about seasonal changes in Arctic Ocean tides.

To measure seasonal fluctuations of the tides at Point Barrow, Mr. Beal adapted a tide gauge into the first known automatic tidal station in the Arctic. This instrument registers the tide's extreme high point to be in August and its lowest point in April.

To explain the fluctuation, Mr. Beal and his assistants established 22 observation stations off Point Barrow, keeping constant observations the year around. To get from station to station when ships were unable to pierce the ice, they rented airplanes which could land on the ice.

Then they cut holes and lowered Nansen bottles through them. This procedure showed that the water under the ice in the winter is saltier and denser than summer water. The volume, being reduced, explained the lower winter tides.

Mr. Beal has been on this Arctic tide-investigation assignment for four years. The Point Barrow laboratory is staffed with 30 to 36 scientists and technicians, and about 100 maintenance men.

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BOTANY

Weeds Highly Resistant To Gamma Radiation

► A COMMON, blue-flowered herb named Speedwell is described as "one of the most radio-resistant plants known."

While investigating the doses of gamma radiation needed to prevent weed seeds from growing, two British scientists report that Speedwell could take more than 100,000 rad. (A rad is a unit of absorbed radiation dose.)

In contrast, another weed, *Anisantha sterilis*, was found remarkably radiosensitive since only 5,000 rad was lethal.

"The results obtained indicate that arable soils need treatment with at least 100,000 rad of gamma radiation to inhibit weed growth effectively," H. J. M. Bowen and S. R. Smith of the Wantage Radiation Laboratory, Grove, England, say. This treatment, they point out, would sterilize any insects or nematodes in the soil as well as probably destroying a high percentage of bacteria and fungi.

Details of the research appear in *Nature* (March 28).

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