

PHYSICS

Matter Created on Loan Due in 80 Billion Years

► ALL ENERGY, in whatever form including matter, is being created on a loan to be repaid in 80 billion years.

This theory was suggested in London by Dr. A. O. Zupancic of the University of Ljubljana, Yugoslavia. He said the continuous creation of matter from nothing and its disappearance into the void again had been interpreted by applying the Heisenberg uncertainty principle to the observable universe.

According to the Heisenberg uncertainty principle, it is impossible to determine simultaneously both the position and velocity of a material particle, since the very act of measuring affects the particle.

By applying this Heisenberg principle to the observable universe, Dr. Zupancic has found that the universe has a period of vibration of 80 billion years. Although this "is considerable even on a cosmological scale, it is not infinite."

New matter is continuously being created out of nothing, according to the steady-state theory of the universe first proposed in 1948.

Dr. Zupancic has now calculated, based on the Heisenberg principle, that matter is being created at the rate of 62 atoms of hydrogen per cubic inch of space every billion years. This figure, he reported in *Nature* 207:279, 1965, is the same as that proposed by the originators of the steady-state theory.

• Science News Letter, 88:72 July 31, 1965

GENERAL SCIENCE

Withhold Information On USSR Space Progress

► THE FEDERAL Government knows a lot more about the Soviet Union's progress in space than it is admitting, said Rep. George Miller (D-Cal.), chairman of the House Committee on Science and Astronautics.

"I think they know a great deal more than they let you know," said Rep. Miller on the radio program *From the People*. He added that the public was not alone in this, because he as a Congressman was "not cut in on any of it" either.

However, Rep. Miller said that this is a necessary evil, because if the Government publicized all its information, some of the sources might disappear.

"The 'other fellow' doesn't have a free press," said Rep. Miller. "He gets nothing, and if we insist on too much, maybe we're playing into his hands."

This limited release of information is not "abuse of freedom of the press," however, he said. Rep. Miller cited a similar case of dummy anti-aircraft batteries that were placed around Washington during World War II.

"Well, they had one of these dummy batteries near the Capitol," he said, "and some Congressman comes in and raises the dickens on the floor—you're fooling the

people, you're saying you have anti-aircraft batteries and all you have is wooden guns out there"—This is the very thing you didn't want. He gave it off and of course the press picked it up."

SCIENCE SERVICE managing editor Charles Betts asked Rep. Miller if the U.S. has any effective way to evaluate Russian progress in space.

"Well," Rep. Miller answered, "I would cast some aspersions on the CIA (Central Intelligence Agency) if I said . . . I think they have a lot of information in government, but you don't discuss sources or where it comes from. As long as it's there and available when you need it, you let it rest."

Panelists on the program, produced by Radio Press International, were Herb Brubaker, RPI Washington Bureau Chief, and Mr. Betts. Steve Nevas, RPI, was the moderator.

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ENTOMOLOGY

Moths Found Eating Plastics Plus Woolens

► MOTHS have apparently found another man-made product to go along with their diet of woolen suits and sweaters—plastics.

Recently the larvae of an aquatic species of moth were found nibbling away at the polyethylene linings of ponds. In one report, damage occurred in a greenhouse where the pond was a wood-framed structure with a paper underlay and polyethylene lining. A second reported case was outside with soil underneath the polyethylene. All the holes were at or just above the water level, Paul E. S. Whalley of the British Museum (Natural History) reported in *Nature* 207:104, 1965.

"Records of damage to polyethylene by insects are now fairly frequent," Mr. Whalley said. The larvae of one common household pest, the brown or false clothes moth, is known to eat its way through many man-made products, including polyethylene, polystyrene and nylon, he reported.

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GEOPHYSICS

Rare Meteorite Gases Are Both Solar, Primeval

► THE RARE GASES found in meteorites, earth's only known visitors from space, result both from the long-ago action of the sun and from the original primeval gas from which the planets in the solar system were formed.

These two distinct sources for rare gases in meteorites were reported in Washington, D.C., by Drs. Robert O. Pipin and Peter Signer of the University of Minnesota, Minneapolis. The quantities and differences in such rare gases as neon, argon and krypton give scientists clues to the birth and growth of the solar system.

Meteorites are now generally believed to have formed very early in the history of the solar system, the researchers said in *Science*, 149:253, 1965.

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IN SCIEN

MILITARY SCIENCE

Lightweight Radar Unit Made for Limited War

► A NEW, 38-POUND ANTENNA has been developed by the Air Force as part of a lightweight, portable radar unit to be carried by foot soldiers in the field.

The unit is a 200-pound "manpack" surveillance radar which is compact and can be operated under moderately severe weather conditions. At the Rome Air Development Center in Rome, N.Y., it was announced that the new unit was designed for use in a limited war situation, "such as Viet Nam."

The mast of the antenna consists of six four-foot aluminum sections. The antenna itself is described as highly directional and selective, and is constructed of horizontal, parallel tubular rods. It is 15 feet long, a foot wide and a foot high.

The antenna rotates at seven revolutions per minute and is capable of operating in winds up to 60 miles an hour.

The Air Force says the mast, drive unit and antenna can be assembled by three men in less than one half-hour.

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GENERAL SCIENCE

Canada Enjoying Influx Of Professional People

► WHILE GREAT BRITAIN has been plagued by a "brain drain" of professional people, Canada has been enjoying a "brain tap," a top economist reported.

Thousands of British professional and technical people have migrated to North America in recent years in search of higher salaries and more research support, resulting in a serious shortage of trained workers there. Recently a number of Canadian leaders have voiced fears of a similar brain drain in Canada.

Prof. Harry G. Johnson of the University of Chicago, however, calls the brain drain in Canada pure "fiction."

"Not only has Canada enjoyed a net inflow of professional people but it has had a net inflow in every major category of professionals with the exception of graduate nurses," Prof. Johnson reported.

Canada has absorbed an average of 7,790 professional people annually from the rest of the world while 4,681 Canadian professionals moved to the United States, said Prof. Johnson, citing figures from the First Annual Review of the Economic Council of Canada. This leaves a net inflow of 3,109, probably only a small part of which has migrated to other countries.

About half of Canada's total immigration of professional and technical people has come from Britain, making Canada "a significant element in the British brain drain," Prof. Johnson added.

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CE FIELDS

METEOROLOGY

Drought Plight Global; Madrid's Water Cut

► THE SAME DROUGHT problem that is plaguing the northeastern United States is also severely hitting many other areas of the world.

In Spain, lack of rain on that famous plain and everywhere else has forced authorities to turn off Madrid's municipal water supplies for several hours each night. In an unusual step highlighting the seriousness of the shortage, hotels and hospitals are also affected, the U.S. Weather Bureau said.

A spokesman for the Spanish Embassy in Washington, D.C., told SCIENCE SERVICE that the problem comes from a combination of no rain and exceedingly rapid population growth in the last several years. The expansion of the city has far outstripped development of new water supplies.

In northern Italy and parts of southern France, lack of rain has caused a threat of forest fires throughout those heavily wooded areas.

Portugal, for the first time, is reported to be purchasing electric power to augment domestic supplies cut by a water shortage that has reduced hydroelectric output, according to the Weather Bureau.

The bureau further reports "one of the worst" droughts in 60 years throughout South Korea. Wells are drying up at an alarming rate and in several communities, drinking water is being doled out from fire fighting supplies.

Data from Communist China indicate another in a series of poor harvests because of drought. Peking has disclosed that wheat areas in the northern and northwestern regions of the country are particularly hard hit.

South Africa is going through one of the worst dry spells anybody can remember. In Basutoland, Southeast Africa, the populace, hit by drought-created crop and water supply failures, is reportedly being kept alive on tinned milk and biscuits donated by the United States.

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GENERAL SCIENCE

Junk Car Problem Can And Must Be Solved

► THE BIGGEST auto pile-up in history, the pile-up of junked cars along the road, has been a big smudge on the natural beauty of this country, but the problem can be solved.

Harry Marley, Syracuse, N.Y., president of the Institute of Scrap Iron and Steel, told the White House Conference on Natural Beauty that industry-government cooperation can eliminate the problem of junked cars littering the landscape. The scrap industry has the capacity to process the old

cars as scrap for steel mill use, he said, but mill demand is not keeping pace with the number of cars coming off the road.

Mr. Marley's recommendations for cleaning up the problem include:

1. Economic incentives to steel mills and autowreckers to increase mill use of auto scrap and encourage faster recycling of old cars as scrap.

2. Requests that auto makers consider designs to make scrapping easier and plans to prompt dealers to scrap older model used cars rather than sell them.

3. Elimination of legal restrictions on moving cars quickly from owners to processors for scrapping.

4. Government assistance in loan programs and research to increase scrap use, further improve auto scrap processing methods and ease acquisition of modern processing machinery.

5. The use of Federal and state highway funds for landscaping roadsides and the relocation of unsightly auto graveyards which cannot be screened from view.

"In the desire for a more beautiful country, we should keep in mind that ugly, unlovely old cars are a resource and should be conserved; that the entire salvage industry is performing a service which the public would have to pay for if the industry did not exist; and that the ultimate and real solution to this problem lies in getting old cars back into the scrap cycle faster and in larger quantities than ever before," Mr. Marley said.

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CHEMISTRY

Irradiated Wood-Plastic To Be Industry Tested

► THE WOOD PRODUCTS industry has been invited by the U.S. Atomic Energy Commission to help evaluate a new radiation-treated wood-plastic material.

The new material is formed by impregnating wood with liquid plastic monomer and then treating it with ionizing radiation from a source such as cobalt 60. The radiation causes the monomers to become linked in chains, forming giant molecules called polymers. For example, if styrene monomers were used, polystyrene would be formed throughout the wood sample.

This combination of wood and plastic produces a material that retains the appearance of the original wood but offers "improved properties." By varying the monomer and the wood species, many wood-plastics with different properties can be produced.

Under the AEC plan, wood companies may have their own wood processed free of charge, so that they can make samples of products for evaluation and testing. Their results would be reported to the AEC.

The Lockheed-Georgia Company has been selected by the AEC to process the samples. Interested companies should direct their inquiries to Lockheed's Georgia Nuclear Laboratories, Dawsonville, Ga., Att.: P. J. Roberts, before Aug. 20, 1965. Between 50 and 100 companies will be selected for participation.

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TECHNOLOGY

Pipe-Peeking Device Spots Flaws and Dirt

► A NEW INSPECTION device can look down 72 feet of pipe to find tiny flaws or pieces of dirt.

The device, Borescope TG5, has four interchangeable eyepieces for monocular, binocular, vertical and angular viewing. Extension tubes give the instrument a viewing distance of 866.7 inches down bores, tubes or cylinders. Defects can be photographed by attaching a single lens reflex camera.

Built by Carl Zeiss, Inc., New York, the optical inspection device can be used in iron and steel works, chemical processing plants, foundries, shipyards, airplane factories and power stations.

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TECHNOLOGY

Dry Ice May Be Used As Spacecraft Insulation

► DRY ICE may soon be used to insulate spacecraft from the extraordinarily high temperatures experienced during exit from and reentry into the earth's atmosphere.

The dry ice would be used as insulation only with spacecraft powered by liquid hydrogen, which would itself be used to produce the required dry ice. Carbon dioxide would be pumped into the insulation system enclosing the spacecraft. Cold from the liquid hydrogen would freeze the carbon dioxide into dry ice. In turn, high temperatures would return the dry ice to carbon dioxide, which would be expelled from the spacecraft.

This technique was developed by scientists at the National Aeronautics and Space Administration's Langley Research Center, Langley Field, Va. They awarded a contract to the Convair division of General Dynamics Corporation in San Diego to study its insulative qualities.

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COMMUNICATION

Self-Correcting Radio Eliminates Disturbances

► A SELF-CORRECTING radio receiver could automatically eliminate static, black-outs or other atmospheric disturbances that may interrupt communications between spacecraft and ground installations.

The system would use a small special-purpose computer to measure interferences as they occur and then change receiving equipment to match them.

Prof. Paul E. Wintz, Purdue University, Lafayette, Ind., reported that preliminary tests have shown that the self-correcting system is effective, but research is being continued to find out how well it will work under all circumstances. The research project is being supported by the National Aeronautics and Space Administration.

Prof. Wintz described the system at a meeting of the National Telemetering Conference in Houston, Texas.

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