

SPACE

Glass Filament Capsule Will Unfold in Space

➤ A COMPACT space capsule fashioned from glass is the latest space design. It will be made of thin glass filaments and it will be wound into a structure unfolded after being launched into space.

The glass strands will be held together by a resin binder that is hardened by ultraviolet rays from the sun only after the capsule has unfolded in space. The capsule is now under development, William Bandarup, supervisor of the plastics section for Aeronutronic, Ford Motor Company division, Newport Beach, Calif., told SCIENCE SERVICE.

Glass filament winding and resin also make up the case and rocket nozzle of the retro, or brake, rocket for the moon ball designed to land on the moon from the U. S. Ranger spacecraft.

The moon ball is made of balsa wood which is 50% to 60% better as an energy and shock absorber than anything now known. Instruments designed to make measurements of moon quakes are shielded inside the balsa ball. Balsa is so effective as a shock absorber that aeronautics scientists propose it be used in aircraft and inside automobile bumpers.

Balsa wood will absorb 15,000 to 20,000 foot-pounds of energy per pound of material used. Aluminum honeycomb, used under the astronaut's couch in the Mercury capsule, is the next best shock absorber with an absorption of 8,000 to 10,000 foot-pounds. However, a combination of urethane foam and aluminum honeycomb will absorb about 11,000 foot-pounds of energy.

• Science News Letter, 82:72 August 4, 1962

MEDICINE

Hallucinating Drug Now Sold on Black Market

➤ A HALLUCINATING drug known as LSD-25 is now being sold on the black market, and physicians everywhere in the country should be on the lookout for patients with LSD intoxication.

Two Los Angeles doctors report this "alarming development" in the *Journal of the American Medical Association*, 181:161, 1962.

The underworld traffic is in LSD tablets, ampules and saturated sugar cubes, Drs. Sidney Cohen and Keith S. Ditman of the Veterans Administration Hospital and the University of California Medical Center said. The dangers associated with the misuse of the drug include suicide, prolonged psychotic reactions and antisocial behavior.

Some persons who take marihuana also take LSD and hold "LSD parties." Occasional "catastrophic reactions" can be anticipated from such casual, unattended use, the two physicians warned.

LSD is the popular name for d-lysergic acid diethylamide. The visual and mental distortions caused by the drug can be a devastating experience. Accidental ingestion of the drug by individuals who are un-

aware of its nature has already occurred, the physicians said.

A child who inadvertently consumed a drug-saturated sugar cube remained partially disoriented a month later.

Addiction to LSD has not been observed, but a new, although not rare, type of the drug habit is appearing in which persons frequently indulge in a variety of stimulants, narcotics, sedatives and hallucination-producing drugs.

A clinical laboratory test for detecting the drug in a patient is not available, but diagnosis can generally be made from the patient's history and an interview.

A patient of one of the doctors said she and her "beat" friends regularly take one or another of eight different kinds of drugs and claim that withdrawal symptoms for any single drug do not occur.

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ARCHAEOLOGY

Find Link Between Mastodon and Early Man

➤ A HARVARD UNIVERSITY archaeologist, excavating in Mexico, has found the remains of a mastodon along with scrapers and other human tools some 30,000 years old, marking the first definite association between this extinct animal and New World man.

The discovery was made by Miss Cynthia Irwin, a Harvard graduate student who has led excavations the past few months at El Horno, a site about 10 miles from Puebla, Mexico. The expedition, partially sponsored by the American Philosophical Society, is a joint enterprise of Harvard's Peabody Museum and the University of Puebla, Mexico.

The discovery has excited other American archaeologists and paleontologists and a number are on the way to El Horno to examine the findings. Although hundreds of mastodon skeletons have been found in the New World, from Alaska to South America, they have never been found in clear association with human artifacts. The mastodon, which superficially resembles an elephant, flourished in the New World forest from about 500,000 to 10,000 years ago. Scientists have thought that early man hunted the mastodon but have never before had proof.

Miss Irwin made the finding in an earth strata called the Valsequillo Zone, and, on geological evidence alone, estimates the age around 30,000 years, as old as any of the remains of early man found in the New World. Scientists will have a more accurate estimate of the age when the findings have been dated by the radiocarbon technique.

The extinct mastodon and the modern elephant belong to the same animal family but are not nearly so closely related as the elephant and the larger mammoth.

Scientists have known for some time that early man hunted the mammoth, for the remains of these animals occasionally turn up in association with spear points, scrapers, and other human implements, but until now proof was lacking.

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IN SCIENCE

HORTICULTURE

Chemical Helps Plants During Long Dry Spells

➤ GARDEN FLOWERS wilting under the hot summer sun may find relief from a new anti-drought chemical which "tells" them to close pores and conserve their water.

A standard ingredient of many fungicides, including that found effective against Dutch elm disease, closes the pores (stomata) of several plants and keeps them closed, reducing water transpiration and wilting of the plants. A short bath in 8-hydroxyquinoline sulfate makes parched plants live a week or two longer and keeps cut flowers from wilting for several days, Drs. E. M. Stoddard and P. M. Miller, pathologists at the Connecticut Agricultural Experiment Station, New Haven, have reported in *Science*, 137:224, 1962.

Solutions of 1,000 and 2,000 parts per million of the chemical in water were used. Water losses from the treated plants were much lower than from the untreated (water soaked) plants, the scientists said.

The chemical would be especially valuable for high value crops in areas of infrequent rainfall and in areas undergoing severe drought.

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ANIMAL PSYCHOLOGY

Early Handling Makes Mice What They Are

➤ ENVIRONMENT and parental care, rather than heredity, may make mice, and possibly men, the way they are.

But the family a mouse comes from does have a lot to do with the way his parents treat him. And that depends, too, upon the way the parents themselves were treated as infants.

This is the result of experiments reported in *Science*, 137:129, 1962, by Dr. Robert H. Ressler of the Behavior Genetics Laboratory at Western Reserve University, Cleveland.

Baby mice were taken out of the home nest and transferred to foster parents either on the day they were born or within four days after birth. The scientist noted when foster parents handled the baby mice by carrying, dragging or licking them. Twenty of the litters of baby mice were from one strain and another 20 from a different strain. Half the baby mice were placed with foster parents from another family strain.

Greater resistance to the stresses of life had been traced earlier to more handling when they were very young.

Such differences, Dr. Ressler concludes, should not necessarily be attributed to the family heredity of the mice, but to differences in the way they were treated as babies.

• Science News Letter, 82:72 August 4, 1962

E FIELDS

TECHNOLOGY

Underwater Network To Detect A-Bombs

► AN UNDERWATER nuclear test detection system outside territorial limits of the United States and the Soviet Union may eliminate the need for a territory inspection system under international control.

New information on detection of underground atomic explosions is "encouraging," President John F. Kennedy said at his press conference broadcast to Europe via the satellite Telstar.

As reported by SCIENCE SERVICE last March, Defense Department data (which the President said would be released soon) establishes that underground explosions, even those of very low yield, can be distinguished from earthquakes and detected at very great distances. According to information from the Coast and Geodetic Survey, detection ability is substantially increased by placing seismometers under water.

Since inspection on territory is not essential for detection of above ground nuclear tests, the Department of Defense data appears to eliminate this requirement demanded by the United States and refused by the Russians.

This condition "at this time" remains part of the U.S. nuclear ban proposals, the President said, until the full range of detection is known.

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SEISMOLOGY

Worldwide Seismic Storm Caused by Ocean Waves

► HUGE WAVES, traveling several thousand miles from a ferocious storm in the Atlantic, pounded and smashed the beaches in the Gulf of Guinea so violently that earthquake recording stations around the world picked up the murmur for hours.

Never has a storm with such force and duration been reported from so many stations. Still the small vibrations (microseisms) nearly went unnoticed because they did not compare with earthquake recordings, SCIENCE SERVICE learned from Dr. Jack Oliver, Lamont Geological Observatory, Columbia University, Palisades, N. Y.

The worldwide barrage of vibrations, which pulsed strongly every 27 seconds for eight hours on most seismographs, was recorded on highly sensitive seismographs at Palisades for nearly two days beginning June 6, 1961, Dr. Oliver explained. Only after combing the small amount of information available from the remote area did the solution come to light.

The oceanographic research vessel VEMA from Columbia University was the only ship in the immediate area of the storm and no tide gauges were in use along the

African coast to record the height of the waves, the seismologist said. All information about the intensity of the storm came from the VEMA and scattered sources, such as the Tiros weather satellite and an African weather station.

During most storms the background noise or beat generally comes every four to nine seconds. Dr. Oliver explained that he only recently found that all storms also generate long-period microseisms, although none with the length and strength of the June 6 storm.

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TECHNOLOGY

New Electronic Device Protects Hearing

► THE ARMY Medical Service has devised a new electronic item which protects the ears of armored soldiers from the high-intensity noise of gunfire.

Developed by the U.S. Army Medical Research Laboratory at Fort Knox, Ky., the mechanism is box-like in shape and is connected by wires to the gun and intercom system of the tank. Before the gun goes off, the device generates a little clicking noise in the gunner's earphones which immediately damps or contracts the eardrums.

Researchers of the Psychology Division at the Army Medical Research Laboratory have devised a measure of hearing conservation termed "Temporary Threshold Shift Reduction (TTSR)." TTSR is a measure which expresses in decibels—a standard sound intensity unit—the difference in temporary hearing loss induced by gunfire sounds when the individual is and is not protected by the electronic device.

Temporary threshold shift reductions of from 1 to 60 decibels have been recorded in persons protected by the acoustic reflex device.

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ENGINEERING

Too Few Engineers Foreseen for 1971

► THE UNITED STATES will be short at least 110,000 engineers by 1971, according to a report issued by the Engineering Manpower Commission of Engineers Joint Council.

Based on a study of 517 companies and government agencies, the Commission claims national technical and scientific progress will be seriously hurt by the growing shortage of engineering manpower.

Only three-fourths of the required engineers will graduate each year for the next ten years, based on present demand. But new agencies and companies will put even further strain on the already small stock of trained engineers and physical scientists.

A partial solution is an increased use of technicians and more effective use of present engineers. The training period for a technician is only two years, as opposed to four or more years for a qualified engineer.

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MINERALOGY

Geology Can Aid Doctors, Canadian Professor Says

► DOCTORS may receive a big hand from rock scientists in the fight against cancer and other diseases caused by tiny amounts of harmful minerals in food, water and air, a Canadian professor has claimed.

Geologists and physicians are teaming up to solve the riddles plaguing many communities, deficiency disease and trace element imbalances, Dr. Harry V. Warren of the University of British Columbia, Vancouver, reported in Mining Engineering, 17:41, 1962. More diseases are being discovered each year which are related to these minute amounts of minerals, or elements in rocks and soil.

Vegetables and water pick up enough of these trace elements to cause high cancer death rates in many areas, Dr. Warren said. Studies in England have produced startling results on the incidence of disease in relation to location.

Few geologists have shown interest in the field of health and the doctors show even less in geology. But this is likely to change quickly with more information being demanded in health studies, the professor said. Canadians have taken a leading position in these areas, but the need for medical advances in all countries will probably throw many geologists and doctors together.

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SPACE

New Space Map to Guide Future Astronauts

► MOON-TRAVELING astronauts may have a new item in their space luggage—a moon map picking the best spot to land.

The map shows a desirable place to land that is also of scientific interest. The map was one of four moon maps scheduled to be completed this year by U. S. Geological Survey scientists.

Future space probes bristling with photographic equipment will zero in on the possible landing areas in the next few years and take close-ups of the moon's landscape. The manned lunar landing will be sometime before 1970.

The new moon map covers an area about the size of Colorado giving the speeding manned vehicle plenty of elbow room. Deep craters, large "seas" and domes are scattered throughout the area.

Geologists have figured out the probable ages of the features of the lunar landscape. The sea known as Mare Imbrium is probably about 4.5 billion years old, nearly as old as the earth.

The age of the moon's rocks was based on the amount of meteorites pelting the moon's surface throughout history.

The map was prepared from moon photographs, telescopic observations, and analysis of the degrees of brightness on the moon's face. The mapped area of the moon, known as the Kepler region, is in the left central region of the moonlit side.

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