

## PUBLIC SAFETY

**Device Detects Fires Before They Break Out**

► A FIRE in a space cabin simulator at the School of Aerospace Medicine at Brooks Air Force Base, Texas, may make it possible to detect fires and sound an alarm before they break out.

The fire in the cabin was not detected until after it broke out. However, a device developed by Dr. Thomas B. Weber, formerly with the School and now at Beckman Instruments, Inc., Fullerton, Calif., clearly recorded chemical and electronic evidence of the fire.

The device can be adapted for use in homes, schools, aircraft, buses, ships, theaters and other public buildings, even such a structure as the Empire State Building. It would warn occupants that material was smoldering somewhere by triggering an alarm.

Development of this device is another example of research in space environment paying off in benefits to the earthbound, both life-saving and money-saving, that helps to justify the current national investment in space exploration.

• Science News Letter, 83:104 February 16, 1963

## CHEMISTRY

**Acid-Resistant Liquid Patches Rubber Parts**

► AN ABRASION-RESISTANT material is being produced in liquor form to patch rubber parts such as belts and acid tanks, to repair cuts in rubber rolls, and build them up, to line the inside of ducts, and perform other repair jobs with rubber.

With greater tensile strength than rubber, this material can be bonded to rubber and metal, and forms a patch stronger than the original rubber.

Developed by the Elasto-Tuff Company, this elastomer is highly resistant to abrasion, acids and petroleum products and can withstand heat up to 250 degrees Fahrenheit.

• Science News Letter, 83:104 February 16, 1963

## MEDICINE

**Laborers Warned: Take Care of Hands**

► DO NOT use your hand as a hammer. Skilled laborers were warned to be careful of their hands by a Detroit heart and vein specialist who has treated eight workmen in a ten-month period for thrombosis of hand arteries or similar ailments.

Dr. Irwin J. Schatz of the division of cardiovascular disease, Henry Ford Hospital, emphasized in the *New England Journal of Medicine*, 268:281, 1963, that physicians should be on the lookout for evidence of this type of occupational injury, which is not as rare as is generally believed.

Repeated use of the palm to force automobile hub caps into place, as well as tool adjustments commonly made with the hands by machinists, truckers, engineers, welders

and plumbers, can result in severe obstruction to the blood supply. This can cause ulceration and possible amputation if not treated promptly.

A single blow to one workman's palm was sufficient to cause a blood clot in the artery of the ulna, the inner and larger bone of the forearm. In most cases, however, the injury had been repeated during a period of months.

Treatment for those whose symptoms were only spasms of the finger arteries, Raynaud's phenomenon, consisted of avoidance of further injury, abstinence from tobacco, and providing adequate warmth and protection for the injured part.

Five patients underwent sympathectomy, a cutting of a portion of the sympathetic nervous system, to promote healing of ulceration.

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## TECHNOLOGY

**Steeper Road Grades Consume More Truck Fuel**

► TRUCKS driving on highways with a 3% average grade consume 42% more fuel than on highways with a 1% average grade, report researchers in a Highway Research Board bulletin entitled "Studies in Highway Engineering Economy." In the study of the relative merits of three alternate locations for a proposed ten-mile section of an interstate highway, highway engineers felt that "the effect on truck time may be even more significant."

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## NUTRITION

**Research Aims at Special Cow-Produced Milk**

► SCIENTISTS are now working on a balanced milk—cow-lactated to order. Fifty daughters of one Holstein sire are helping.

They have aided in a discovery that brings closer the time when animal breeding may alter the composition of milk to meet individual requirements. Milk content depends on the cow's ancestry.

Until about 1950 scientists believed that casein, protein found in large quantities in milk, was a structural entity that could not be fractionated. At that time Agricultural Research Service chemists separated casein into three components, which have now been further separated. These discoveries are expected to be highly important in research under way to develop concentrated and dried milks that remain stable in long-term storage.

The studies of the Holstein milk revealed two additional components in "alpha-s" casein, a clue that casein characteristics are genetically controlled.

Dr. C. A. Kiddy, a geneticist at the Agricultural Research Center, Beltsville, Md., and M. P. Thompson, L. Pepper and C. A. Zittle at the Eastern utilization research laboratory near Philadelphia are working on alpha-s casein.

The work is reported in *Agricultural Research*, February 1963.

• Science News Letter, 83:104 February 16, 1963

**IN SCIEN**

## ARCHAEOLOGY

**Archaeologists Discover Headless Elephants**

► THE REMAINS of dozens of headless elephants are among the remarkable discoveries archaeologists are making at one of the few campsites of ancient man known anywhere in Europe.

Archaeologists led by Prof. F. Clark Howell of the University of Chicago have discovered two places where Stone Age hunters killed and butchered animals for food nearly half a million years ago.

From excavations at the rich sites of Torralba and Ambrona, 85 miles northeast of Madrid, have come not only hundreds of elephant bones, but the remains of horses, wild oxen and a very rare rhinoceros. With the bones, stone and wooden tools, and carbon and charcoal have been found.

All this material will help archaeologists piece together facts on the hunting methods of prehistoric man.

They may be able to determine how the animals were caught and killed in the first place, and what happened to the missing skulls of the elephants.

Perhaps the animals were bogged down in the swamps when they came to drink or possibly they were driven to the butchering sites by fires set by the hunters. The elephant skulls may yet turn up.

Only a very small portion of the 86,000 square yards at the Ambrona site have been excavated so far. Prof. Howell is asking the National Science Foundation to continue sponsoring the excavations.

Human remains may be discovered at these sites, the earliest in Europe associated with human occupation. Soil analyses will be run to date the sites more accurately, and studies of plant and tree pollen from the sites will permit reconstruction of the vegetation and vegetational history of the valley.

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## TECHNOLOGY

**New Electronic Telephone Switching System**

► A NEW ELECTRONIC telephone switching system may be the answer for business firms likely to be faced with growth.

The private branch exchange (PBX) features novel switching features controlled by electronic equipment at a telephone company central office. Thus services can be expanded to accommodate future growth and a company's changing requirements.

Bell Telephone Laboratories made the innovations chiefly by use of small high-speed electronic devices, by data-processing-system-like arrangements to control switching, and by the use of time-divided electronic switching.

• Science News Letter, 83:104 February 16, 1963

# CE FIELDS

## RADIOLOGY

### Fallout Contaminates Spinach and Cabbage

➤ RADIOACTIVE strontium-90 and cesium-137 in fresh leafy vegetables such as spinach and cabbage increased markedly in Japan after the 1961 Russian nuclear tests.

The air-exposed parts of these vegetables were contaminated directly. The plants were also made radioactive from accumulated deposits in the soil.

At the National Institute of Radiological Sciences, Chiba City, Japan, Drs. Ryushi Ichikawa and Masako Eto tested leafy vegetables from about ten locations widespread over the country in May and June 1961, before resumption of nuclear tests; during October 1961, just after resumption of the Russian tests, and again in January and March 1962.

Contamination levels became progressively higher in the later samples because of radioactive fallout, the scientists reported in the journal *Nature*, 197:509, 1963.

• Science News Letter, 83:105 February 16, 1963

## TECHNOLOGY

### Man-made Synthetic Developed for Shoes

➤ A MAN-MADE material will soon compete with leather in the manufacture of shoes and other leather goods.

The manufacturer, however, disclaims competing with the usual shoe material, leather. The material, although tough and leatherlike, is not primarily a substitute or a replacement for conventional footwear materials, in the claims of the Du Pont Company, Wilmington, Del., which developed the material.

The word "poromeric" has been coined to describe the new product that breathes and is defined as a "microporous and permeable coriaceous (leatherlike) sheet material."

Shoes made from poromerics have been successfully field tested and will be produced in a plant to be located at Old Hickory, Tenn., some time in 1964. A pilot plant in Newburgh, N. Y., will produce a small number of shoes made of poromeric in the spring of 1964.

The Du Pont Company also introduced in 1961 a material called "Pattina," a chlorolefinic (an unsaturated chlorinated hydrocarbon) shoe material having a shining lacquer-like surface similar to patent leather, which is resistant to cracking, chipping and peeling and needs only mild soap and water for upkeep. Pattina is produced in alligator and lizard grains and other surface effects.

The easy-care, easy-wear Pattina shoe material's appeal is due to its unusually smooth surface, natural appearance and its

broad spectrum of colors. White Pattina will not yellow although exposed continually to the sun. In the fall of 1961 an unusual shoe design made of Pattina featuring airy perforations along the vamp sold out within a few days at \$34.95 a pair.

It is easy to handle for manufacturers, permitting a wide variety of styling.

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## ECONOMICS

### Prosperous Times for All in Year 2000

➤ THE AVERAGE American family will have more than twice the spendable income it now possesses and much more leisure time by the year 2000.

That is the conclusion of the Outdoor Recreation Resources Review Commission, a 15-member commission headed by Laurance S. Rockefeller.

A greatly expanded outdoor program is urged to meet the needs of the 350 million people enjoying this unparalleled prosperity.

Here are a few of the key projections: Population, about 180 million in 1960, will reach 240 million in 1976 and 350 million in the year 2000.

The average family, which had \$6,574 to spend in 1959, will have \$10,350 by 1976 and about \$14,750 (all after taxes) by 2000.

Job-holders, currently more than 66 million, will number 90 million in 1976 and 135 million in 2000. They are expected to work a 36-hour week by 1976 and a 30-plus hour week by 2000.

Total expenditures for Federal, state and local government will more than double by 1976 and will be three-and-one-half times above the current level by 2000.

These and many more forecasts are carried in the new publication, "Projections to the Years 1976 and 2000." The 434-page book is available from the Government Printing Office, Washington, D. C., for \$2.00.

• Science News Letter, 83:105 February 16, 1963

## PSYCHOLOGY

### Monotony Blocks Creativity, Imagination

➤ BOREDOM dulls the imagination, psychologists at the University of Chicago have demonstrated.

Students who had just heard a monotonous recording which listed the streets, buildings and stores in a small town tended to write less original stories than those who listened to an amusing account of America today. The bored students, more concerned with new and different experiences, also showed a greater need for mental stimulation. Students who had heard no recording at all were just as imaginative as those who had been entertained. Psychologists have not yet discovered the specific conditions which produce creativity.

The study was done by Dr. Salvatore R. Maddi and Alan M. Charlens, Dorothy-Anne Maddi and Adrienne J. Smith and reported in the *Journal of Personality*, 30: 513, 1962.

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## ORNITHOLOGY

### Missing Mate Returns At Call of Bird's Song

➤ A BIRD contacts its missing mate by singing out a code-like song, Drs. E. Gwinner and J. Kneutgen of the Max-Planck Institute for Behavioral Physiology have discovered. When a male bird sings a tune that only its partner has sung before, the female understands the message and returns immediately.

Two ravens and three thrushes were studied in captivity. When the birds were deprived of their mates they used familiar melodies to call them back.

Drs. Gwinner and Kneutgen said that these bird "conversations" may show the bird's drive for self-preservation. Their research is reported in *Die Naturwissenschaften*, 49:615, 1962.

• Science News Letter, 83:105 February 16, 1963

## PHYSIOLOGY

### Gravitational Force Affects Chickens' Growth

➤ IF ASTRONAUTS were like chickens they might be half their size after six months of pressure under three times the force of gravity. Walter Schirra withstood eight "g's" with no apparent ill effects, however.

Drs. Arthur H. Smith and C. F. Kelly of the University of California at Davis told the New York Academy of Sciences conference on body composition in New York that birds in an animal centrifuge had only half the body mass of control chickens not subjected to the experiment. The growth stunting occurred after several months of being subjected to two or three times the force of gravity.

Four other similar studies with animals are under way, two in England (one at Cambridge and one at London Hospital Medical College), one at University of Iowa, Iowa City, and one at Emory University, Atlanta, Ga.

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## ANTHROPOLOGY

### Skeletal Material of 100 Pre-Humans Found

➤ SKELETAL material from 100 pre-human individuals found in the Near East and Africa have given anthropologists a "fair description" of two types of creatures, reports the Smithsonian Institution.

One is manlike, *Australopithecus*, with a low forehead, wide face and raised nose section. The apelike group, *Paranthropus*, has no forehead and a face similar to that of an ape. Both groups have small brains, walked standing up, show a difference in pelvic structure from that of the apes and have teeth that are more like those of modern man than the ape.

The apelike creatures lived on an all-vegetable diet while those more similar to man had devised methods of obtaining meat.

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