

MEDICINE

Heat Therapy Bad for Neck If Injury Is Severe

➤ **HEAT FEELS** comforting and relaxing to a patient with a minor neck injury, but pain is made worse by continued heat treatment, a Los Angeles surgeon told the 30th annual meeting of the American Academy of Orthopaedic Surgeons.

Dr. Harold E. Crowe reported a study he had made on more than 300 patients with "whiplash" neck injuries (a term he coined 34 years ago to describe those resulting from traffic accidents), in which he identified 6% suffering from severe injuries.

"If the pain is aggravated by diathermy, microtherapy, ultrasonic therapy or heat," he explained, "the injury is likely to be severe."

An older patient with degenerative disease of the neck may have his neck crippled by frequent and prolonged use of diathermy, high-frequency energy, he said. Active stretching exercises that can be done at home are better than such treatment.

• Science News Letter, 83:72 February 2, 1963

ASTRONOMY

600 Million Milky Way Planets May Have Life

➤ **TO ASTRONOMERS** it is becoming more and more probable that intelligent life exists in the universe elsewhere than on earth.

Prof. Lloyd Motz, Columbia University astronomer, assigns three life-supporting planets to each sun-like star in the Milky Way on the basis of what is known about the solar system. Since there are 200 million stars similar to the sun in the Milky Way, out of some 100 billion of all types, there is a possibility of 600 million planets with intelligent life.

The Milky Way is a gigantic pinwheel of stars in which the sun, earth and other planets are located. There are billions of other galaxies in the observable universe. Prof. Motz's estimate is an increase of several hundred million over the figure usually suggested for the number of planets having life in the entire universe.

Prof. Motz reported his views to the Institute of Aerospace Sciences meeting in New York.

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AGRICULTURE

New USSR Combine-Truck Works Year Around

➤ **A NEW PIECE** of Soviet farm machinery can be used all year around—for plowing, harvesting, threshing, and, even, as a truck.

It is a chassis, self-propelled frame with wheels, to which different farm implements can be attached. U.S. farmers have a "universal tractor" which can be used as a combine, corn picker and small grain harvester.

When the Soviet chassis carries a combine attachment, it costs 50% less than the older

models and is 25% to 30% lighter. The combine-chassis machine has a special cabin which provides the operator with fresh air and protects him from dust.

With the truck attachment it can carry four tons and has four cubic meters of carrying space. The truck can travel across soft, muddy roads and is powerful enough to go up steep hills. It has been used as a milk transport and for carrying sugar beets. The chassis-truck is not as good as a regular truck for long travel over good roads. The machine which has been under development will be tested in the future by Soviet farmers in the fields. Future planned attachments will add implements for harvesting corn, pressing hay, harvesting potatoes and distributing fertilizers.

News of the combine-truck was reported in a Russian journal, *Science and Life*.

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PSYCHOLOGY

Good Roommate Difficult To Predict by Analysis

➤ **LIKE** a good wife, a good college roommate is hard to predict by cold analysis.

Dr. Roger Nudd, director of the housing office at the University of California, Los Angeles, explored roommate compatibility among several thousand students in University-owned residence halls.

Preferring to nip unhappy roommate situations in the bud and to pair up seemingly compatible students, Dr. Nudd and his staff have discovered that the best "matchmaking" attempts are often foiled by those hard-to-predict "little things."

Although questionnaires and tests have proved helpful in pinpointing some major areas of dissatisfaction (such as different economic and moral values), every now and then a night owl ends up rooming with an early sleeper, a smoke stack with a non-smoker, a Beethoven buff with a jazz addict and a cold-blooded person with a fresh-air fiend.

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SPACE

Van Allen Likens Space Race to World Series

➤ **THE SPACE RACE** is a World Series competition between the United States and Russia to Dr. James A. Van Allen of the State University of Iowa, discoverer of the Van Allen radiation belts in space.

Ordinary citizens, as well as the President and the Congress, tend to emphasize the prestige value of our peaceful space efforts, Dr. Van Allen said in a Congressional hearing.

Interplanetary travel fires the public imagination and this is "the essential spice in the space race," he said.

Federal expenditures on space activities are estimated to total \$5 billion to \$6 billion in 1963, and Dr. Van Allen does not believe they would be so great if we were not trying to win an international competition.

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IN SCIEN

METEOROLOGY

New Device Provides Fast Storm Warnings

➤ **AUTOMATIC** storm warnings from any location telling the height and intensity of storms will be possible in the future with a new device.

A new electronic setup produces storm maps and replaces time-consuming interpretation and transmission of radar storm data. One map shows storm intensity by rating storms between numbers one and seven. The second map indicates storm tops in 10,000 foot categories.

The Storm Radar Data Processor, called STRADAP, is projected for use to transmit storm information from all parts of the nation to a national center in less than 20 minutes.

Incorporating ideas of Dr. David Atlas, chief of the Air Force Cambridge Research Laboratories, Radar Weather Branch, in Bedford, Mass., the new device should improve air safety.

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METEOROLOGY

Computer Grows Clouds And Produces Rain

➤ **TWO SCIENTISTS** have produced the small, puffy clouds of a summer's afternoon on a computer, proceeded to let them grow into big rain clouds and determined how to make them pour. Now they plan to tell engineers how to do the same for real clouds.

The team set up the conditions of cumulus clouds on an IBM 7090 computer. The cloud grew and showed the proper oscillations that such a cloud would show in the sky, C. E. Anderson of Douglas Aircraft Co. missile and space systems division said in Santa Monica, Calif.

The numerical experiment was an attempt to determine what the significant controls on clouds are and their development under various conditions.

By introducing anticipated disturbances, he said, it is possible for the computer to calculate cloud growth.

Artificial elements could also be introduced into the calculations, such as data for carbon black to aid the development of clouds, or silver iodide for seeding clouds to produce rain.

He said that from this investigation, carried on with D. Gish, it would be possible to work out the best procedures for modifying real clouds without going out and doing actual experiments.

The next step would be to tell engineers how much material should be seeded and when and where, to make small clouds grow and produce rain.

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CE FIELDS

TECHNOLOGY

Brushless Motors Use Transistor Switching

► SMALL ELECTRIC motors up to one horsepower are now produced without the traditional brushes and commutators, using transistor switching instead.

Announced by Ametek, Inc., New York, electronic commutation was devised by Leonhard Katz of Astro-Dynamics, Burlington, Mass. The new kind of motor will be used for space applications, submerged in liquids, in miniature blowers for cooling electronic units, for driving tools in cramped quarters and where sparking of ordinary motors is dangerous.

Transistors, silicon rectifiers and special circuits are used in the new motor. Noise and wearing of brushes of ordinary motors is eliminated.

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MEDICINE

Exercises in Bed Good For Weightlessness

► IF ASTRONAUTS do their exercises faithfully while weightless during their space flights, they will keep healthy muscles despite their confinement to cramped quarters.

Travel without the pull of gravity in space vehicles on the way to the moon or in orbit has somewhat the same effect on the muscles and the bony skeleton as complete rest in bed.

Col. Earl W. Brannon, in experiments at the U.S. Air Force Hospital, San Antonio, Texas, put 30 volunteer airmen through a two-month test, doing simple exercises that kept the muscles toned up while they were bedridden as a substitute for weightlessness.

Col. Brannon told the meeting of the American Academy of Orthopaedic Surgeons at Miami Beach that preliminary findings indicated the simple set of exercises he had devised for all muscle groups would be a practical solution to weightlessness. Called "isometric" exercises, they require no apparatus but depend only on the individual's pushing against something solid and immovable.

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RADIOLOGY

Radioactive Iodine May Give Fallout Protection

► FALLOUT PROTECTION is seen in the discovery that small doses of a harmless iodine compound will counteract absorption into the body of radioactive iodine, one of the chief dangers of atomic fallout.

Daily doses of one to two milligrams of sodium iodide were sufficient to suppress absorption of radioactive iodine from out-

side sources, in children, three Massachusetts physicians discovered. Adults would require three to four milligrams a day.

The study, which was on mentally retarded children at the Wrentham (Mass.) State School, was conducted by Drs. Krishna M. Saxena and Earle M. Chapman of the Harvard Medical School and Massachusetts General Hospital, and Dr. Charles V. Pryles of Boston University.

"We chose this population of children," the researchers said, "because it was desirable to secure children living under constant conditions of environment, diet and iodine uptake. Their salt supply was found to be free of iodine."

A minimum uptake of outside radioactive iodine, 5%, was achieved four to six weeks past the date of initial administration. The uptake of outside iodine was cut in half 24 hours after the first iodide was taken by children.

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TECHNOLOGY

Product Can Be Too Good for Use Required

► A PRODUCT may be too good in a number of ways, according to A. H. Tenney of Union Carbide Chemicals Company, New York.

"Do not make the mistake of overrating your product because one or more of its properties surpasses the standards set by the requirements of the use," he said. "Your customer is not interested in anything beyond that which is adequate for his purpose. The material he buys is that which provides the best compromise in terms of adequacy to meet all requirements critical to performance."

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BIOCHEMISTRY

Anti-Tumor Chemical In Glowing Mushroom

► A MUSHROOM that glows in the dark yields a chemical that has anti-tumor activity in mice, six Japanese scientists reported in London.

The mushroom is a deadly one, *Lampteromyces japonicus*, that has caused fatalities due to its similarity in appearance to edible mushrooms. It grows on rotten beech trees in October.

The deadly chemical and the anti-tumor factor are the same, the Japanese studies of extracts from one ton of the fresh mushrooms showed.

Tests are underway to determine exactly how effective the chemical, called lampterol, is against tumors in animals, the scientists reported here in Nature, Jan. 19, 1963.

Drs. K. Nakanishi, M. Tada, Y. Yamada and M. Ohashi of Tokyo Kyoiku University, Otsuka, N. Komatsu of the University of Tokyo, Minato, and H. Terakawa of Tokyo Medical and Dental University, Ichikawa, Chiba, conducted the mushroom studies, part of an intensive screening of about 600 mushrooms for anti-tumor substances.

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ICHTHYOLOGY

DDT Resistance Seen In Minnow-like Fish

► RESISTANCE to DDT is believed demonstrated for the first time by mosquito fish, *Gambusia affinis*, a genus of top-feeding minnows found in the southern U.S. and other warm climates. Mosquito fish are valuable in the destruction of mosquito larvae because of their surface feeding habits.

Three Mississippi scientists reported in Science, 139:217, 1963, that mosquito fish from waters near cotton fields that had been long treated with chlorinated hydrocarbon pesticides showed a marked resistance to DDT compared with fish from areas where insecticides had not previously been used. They tested 1,175 fish.

Mosquito fish usually die within a few hours after application of DDT. Among vertebrates the fishes are notable for their susceptibility, although resistance to insecticides among insects is quite common, and two species of frogs have been found resistant.

Drs. S. Bradley Vinson, Claude E. Boyd and Denzel E. Ferguson, Mississippi State University, said "one could easily imagine that a genetically resistant population (of mosquito fish) might result from periodic applications of insecticide."

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METEOROLOGY

Radar Device Measures Rainfall 100 Miles Away

► RAINFALL as far as 100 miles away can be measured by a new radar device.

To be tested by the U.S. Weather Bureau, the "radar precipitation integrator" converts the intensity of radar echoes at 150 points over a river basin into quantitative terms. The information is then transmitted to River Forecast Centers over regular communication channels.

The radar precipitation integrator was developed and constructed by the Stanford Research Institute. Tests of the equipment will be conducted at the Weather Bureau's Radar Research Laboratory in Norman, Okla.

When it is ready for operational use, the integrator will improve river and flood forecasts substantially. From a single, convenient location, it will provide instantaneous measurements of precipitation at many points over a broad area. These measurements will be used in modern computers to prepare river and flood forecasts.

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SPACE

Astronauts Undershoot Reach Distance

► ASTRONAUTS weightless in space will not reach out as far as they intend, if earth-based U.S. Air Force findings under conditions of simulated weightlessness and complete darkness are borne out.

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