

quickly form a strong attachment to its own kind if it is to survive. If this process is found in human infants and if it persists into adult life, it will explain many previously puzzling relationships.

Two areas of further research are needed, Dr. Scott said. One is the collection of information on critical periods from as many social species as possible to determine whether or not such a period is a basic law of behavior.

The other is to obtain additional information about human development in relation to education, where the possible existence of critical periods for learning has great practical importance.

• Science News Letter, 83:3 January 5, 1963

MEDICINE

Arthritis Pain Affected By Change in Weather

➤ AT LEAST one type of weather change makes the pain of arthritis worse. When the humidity goes up and the barometric pressure goes down, as happens before a rain-storm, arthritic pain actually does increase.

Many other combinations of weather changes may also affect arthritic patients, Dr. Joseph Lee Hollander of the University of Pennsylvania School of Medicine, Philadelphia, told the American Association for the Advancement of Science meeting in Philadelphia.

Arthritic patients have claimed for years that they could predict weather changes because their pain became worse before storms and cold snaps, but it took scientific tests in a controlled climate chamber (Climatron) to give credibility to what was believed to be an "old wives' tale."

The first studies Dr. Hollander and his assistants made were with changes of one climatic factor at a time. None of the 14 patients tested felt any worse after the change of any single climatic variable. But 10 of 11 arthritic patients who endured the synthetic storm conditions felt worse most of the times such changes were made.

In 29 out of 40 trials, these patients felt worse although they were completely unaware of the timing or type of climate changes arranged by the researchers.

During a four-hour period, the barometer went from a high of 31.5 inches down to a low of 28.5 inches, while the humidity rose from a low of 25 per cent to a high of 80 per cent with a constant temperature of 76 degrees.

In all, 30 arthritics lived in the Climatron for periods of two to four weeks. This study is the first part of a long-range program to discover effects of climate not only on arthritis, but on chest diseases, bronchial asthma and other illnesses. Dr. Hollander's team is working under a grant from the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md.

• Science News Letter, 83:4 January 5, 1963

TECHNOLOGY

Tough Plastic So Good Almost Discarded

➤ WHEN IT WAS discovered a quarter century ago, it was almost discarded because

it was unaffected by any chemical, so slick nothing stuck to it, hot irons would not melt it, electric arcs would not char it and moisture would not rot or swell it.

Now this fluorocarbon resin plastic has won for the Du Pont Company the Industrial Science Achievement Award of the American Association for the Advancement of Science. After the discovery, millions of dollars were spent on research and development. Now, Dr. Samuel Lenher, Du Pont vice president, told the scientists in Philadelphia that this Teflon fluoro-carbon and its modifications are used for such applications as:

Artificial blood vessels and heart valves for the human body.

No-stick coatings on cookware.

Bearings and brushings that run for life-time of machinery without lubrication.

Gaskets that withstand even nitric acid. Airtight suits for rocket men that safely withstand flash temperatures of 1650 degrees Centigrade and sustained heat of 260 degrees.

Coatings for building materials that promise to last longer than the two decades so far experienced.

Hoses, seals, insulation and other components of bombers, satellites and industrial products.

In addition to the discovery of the group of fluoroelastomers, Du Pont chemists found how to limit the number of atoms that link together to form a long-chain molecule, creating telomers in contrast to the long-chain polymers of earlier plastics.

Other reports to the annual AAAS sessions included:

Fish are responsible parents, taking care of babies—Prof. George W. Barlow, University of Illinois zoologist.

Arid western America may have to change its ways of living because of a shrinking water supply—Dr. Terah L. Smiley of the University of Arizona.

Expansion of cities and living mostly confined to indoors create new health problems, including monotony that affects mentality, productivity and creativity—Dr. Igho Hart Kornbluh of University of Pennsylvania Graduate Hospital.

• Science News Letter, 83:4 January 5, 1963

SPACE

Magnetic Field of Venus Undetectable by Mariner

➤ VENUS does not have a magnetic field detectable at a distance of 21,594 miles from its surface, the closest point reached by the U.S. probe Mariner II, or from anywhere else along the probe's path.

Dr. P. J. Coleman of the University of California at Los Angeles reported this to the American Association for the Advancement of Science meeting in Philadelphia, the first official result of the Mariner II scan of Venus.

Dr. Coleman said that no rise in magnetic field higher than that of interplanetary space was found by Mariner II as it swept near Venus last Dec. 14. However, he reported that "interplanetary space is not (Continued on p. 13)

Questions

ARCHEOLOGY—Where is an ancient worship site used by Joseph and Abraham located? p. 2.

CLIMATOLOGY—Where is the world's greatest rainfall in one minute recorded? p. 8.

COMMUNICATION—How many words per minute were transmitted in the world's fastest communication across television channels and telephone lines? p. 5.

PUBLIC HEALTH—What location in the U. S. has an excess of radioactivity in milk? p. 9.

TECHNOLOGY—What plastic is used for such diverse applications as artificial blood vessels and airtight suits for rocket men? p. 4.

ZOOLOGY—How long have beavers been in southeastern New England? p. 6.

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GENERAL SCIENCE

News From Science Clubs

► INTERESTING programs presented for and/or by science club members have been reported to the national office of Science Clubs of America, 1719 N Street, N. W., Washington 6, D. C.

The Bronx High School of Science, New York, N. Y., launched its Jubilee Year with a celebration ceremony on Dec. 5. In embarking on its Silver Jubilee Year, the school takes as its theme "Young Scientists—A Vital Resource of the Nation." Throughout the year, the school will call attention to the indispensable role of the scientist in the future of America and the world and to the need for early discovery and development of scientific and mathematical talent in the youth of the nation. To assist other schools in their efforts to develop young scientists, the Bronx High School of Science will publish and distribute an account of its work and its program during its first quarter century. It will sponsor a Science Demonstration and Congress to be held at the school next April. The school's own students and other young scientists from the metropolitan area will be invited to attend and participate in a program on "Current Frontiers in Science." The Jubilee Year celebrations will come to a climax next May 25 at a gala ball to be held at the Statler Hilton Hotel. On that occasion, the school will honor several of its alumni who have won outstanding distinction in the world of science.

AAA Meeting

(Continued from p. 4)

empty and low magnetic fields are always, or nearly always, present."

The lower limit of the magnetometer making the magnetic field recordings was five gammas, a unit of magnetic measure. There were no changes of this magnitude near Venus that could be attributed to the planet's influence. The earth has a field of 30,000 gammas at the equator and 50,000 at the poles.

However, Venus could still have a magnetic field but one so weak that it was pushed closer to the planet than 21,594 miles by the solar wind, the low density clouds of charged particles continuously blowing in space. Nevertheless, the observations are consistent with the possibility that Venus does not have a magnetic field.

The Venus observations, as well as all others made of Venus and other planets, suggest that planets that rotate much less rapidly than earth have small magnetic fields. This is consistent with the theory that the earth's field is caused by the dynamo-like action of the earth's molten core.

Although Dr. Coleman made the official report, he did so also for Drs. Leverett Davis Jr. of California Institute of Technology, Edward G. Smith of the National Aero-

The American Museum of Atomic Energy, Oak Ridge, Tenn., observed October as Science Youth Month by play-ign host to 36 school groups from five states. Nearly 2000 students from schools in Georgia, Kentucky, North Carolina, South Carolina, and Tennessee received special guided tours of the Museum—the only museum in the country devoted solely to providing the general public with information on all phases of the nation's atomic energy research and development programs. Many of the groups, in addition to touring the museum, were taken on tours of unclassified facilities at Oak Ridge National Laboratory, under a special student-tour program.

A one-day "mass visit" of industrial and university physicists recently brought 2,348 high school students in the Detroit public schools face to face with some of the nation's leading scientists. Twenty-one physicists spent the day in 19 Detroit high schools. They gave talks to the students about both classical and modern physics, took part in laboratory demonstrations, and later on met with school authorities to discuss methods of improving physics teaching in the area. The scientists made the visits under the Visiting Scientists Program in Physics for High Schools sponsored by the American Association of Physics Teachers and the American Institute of Physics.

• Science News Letter, 83:13 January 5, 1963

nautics and Space Administration's Jet Propulsion Laboratory, Pasadena, and C. P. Sonett of NASA's Ames Research Center, Ames, Iowa.

• Science News Letter, 83:4 January 5, 1963

ZOOLOGY

Coexistence Not Seen In War of Earthworms

► ALTHOUGH an American trend favors the European style, in earthworms the situation is reversed.

The European lumbricids are entrenching themselves into the grassroots of America, even driving out the native *Diplocardia* in central United States.

Although an uncertainty still reigns over the causes of competition between the native worms and the foreign intruders, a recent study outside of St. Louis indicates that the European lumbricids were present in numbers of up to 34 per cent of the population. They are prevalent in South Dakota, Illinois and Nebraska. The native *Diplocardians* have the edge in Louisiana, Texas and Oklahoma.

The St. Louis study was reported by Dr. James H. Stebbings, Johns Hopkins University, in the British science journal, *Nature*, 196:905.

• Science News Letter, 83:13 January 5, 1963

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