

GENERAL SCIENCE

Dr. Warren Weaver Wins Arches of Science Award

► DR. WARREN WEAVER caps an illustrious career in science as the first winner of the Arches of Science Award of the Pacific Science Center Foundation, Seattle, Wash.

The Arches of Science Award consists of a cash prize of \$25,000 and a gold medal. The selection of Dr. Weaver places this new award on a plateau of prestige comparable to that reserved for the highest prizes for achievement in science. To many in the scientific community, the award is already being characterized as "an American Nobel Prize."

The Arches of Science Award was created to recognize outstanding contributions by an individual to the understanding in America of the meaning of science by contemporary man.

Dr. Weaver has distinguished himself in many fields. He is perhaps best known as one of the ablest communicators of science. He is an internationally known mathematician whose special forte is the theory of probability and statistics. He is an outstanding author, educator, editor and lecturer. As an administrator of some of the leading research institutes and philanthropic foundations in the nation, Dr. Weaver has been involved with the overall spectrum of scientific research. He is recognized as the outstanding interpreter of the scientific revolution which has transformed mankind in the last half-century.

Associated with the Rockefeller Foundation for 28 years, he is a former vice president and now a consultant and trustee of the Alfred P. Sloan Foundation. Through his research disbursements of \$50 million for the Rockefeller Foundation, the stage was set for the decoding of the gene and the rationalization of the physicochemical machinery of the living cell—one of the most important research movements now underway in science.

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TECHNOLOGY

Hair May Replace Fingerprints for Sleuths

► HAIR MAY REPLACE fingerprints for the sleuths of Scotland Yard.

The British Atomic Weapons Research Establishment at Aldermaston has joined forces with Scotland Yard and the Home Office to find a new and better weapon against criminals than the fingerprint system.

By placing hairs in a nuclear reactor and making them radioactive, it is possible to trace minute particles of elements in them.

Criminals can wear gloves to prevent their leaving tell-tale fingerprints, but hairs are something different: most persons shed them wherever they go, but they are not aware they are doing so.

The first full-scale test is being conducted with hairs contributed by a thousand people all over Britain. They were picked at random from electoral rolls and asked to comb

their hair over a piece of paper and send it to Aldermaston. Answers to a separate questionnaire about age, sex, occupation and other details are not being disclosed to the researchers.

The research is expected to provide a powerful new means of pinpointing criminals. In the words of Dr. Hamilton Smith, of the forensic medicine department of Glasgow University, who last year showed from a few hairs of Napoleon that the former French emperor was given arsenic 40 times between 1820 and his death the following year, possibilities of the experiments "almost approach science fiction."

A single hair left on the scene of a crime might lead detectives to the culprit. It might contain elements only found in a certain part of the country. It might show traces of an industrial process carried out in one particular plant.

Similar experiments are being carried out at the Chalk River atomic station in Canada. The results of the two studies will be made available to crime fighters in other Western nations.

Work has been going on in the United States along these lines since 1954 at the Oak Ridge National Laboratory in cooperation with the Department of Justice and other Government departments.

The U.S. Atomic Energy Commission reports that the first activation analysis experiment was undertaken in 1936, shortly after the discovery of artificial radioactivity by Nobelists Frederic and Irene Curie-Joliet. Not until after World War II, however, when nuclear reactors and more modern equipment became available, did interest in the activation technique develop with any rapidity.

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AGRICULTURE

Anti-Insect Bandage Would Encircle Tree

► A NEW CHEMICAL ANTI-PEST bandage would be wrapped around a tree in springtime, and would then kill all insects feeding on the tree during the growing season.

Dale M. Norris of the University of Wisconsin's entomology department said the inside of the bandage would be impregnated with a chemical that would be absorbed through the trunk of the tree and distributed by the sap system to every part of the tree above the ground.

Persons using the bandage would touch only the outside, and would not be endangered, Mr. Norris said, so home owners would be able to place potent insecticides in their trees with safety.

"We have suitable chemicals and the necessary knowledge to get them into the tree," he said. "All we need is for some commercial firm to work out the details and put it on the market."

Mr. Norris predicted that in the near future, internal medicine will be practiced almost as widely on plants as on people, at least in insect control.

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IN SCIENCE

GENERAL SCIENCE

Great Peanut Butter Controversy Debated

► THE CONTROVERSIAL issue of whether peanut butter should be required by law to contain at least 90% peanuts will be debated at a hearing set for Oct. 18th in Washington, D.C.

A peanut butter standard was published by the U.S. Food and Drug Administration last July, but calls for a hearing held up its implementation. The FDA announced that the hearing will be preceded by a conference to simplify issues and schedule witness.

Most objections to the standard center around the following points:

Should artificial flavorings and sweeteners, chemical preservatives, color additives and anti-oxidants be allowed in peanut butter? Should peanut content be lowered to 87%?

At present, nothing regulates peanut content said the FDA. It has ranged as low as 78% in some brands of peanut butter.

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ICHTHYOLOGY

Four-Eyed Fish Captured Alive in Ocean Depths

► SCIENTISTS have found a deep-sea fish which uses four eyes to spot its dinner and enemies.

The rare fish, about 18 inches long, was captured alive off the Oregon coast by a trawl tow, reported Drs. William Percy of Oregon State University, Corvallis, Samuel L. Meyer, University of Oregon Medical School, Portland, and Ole Munk, Institute of Comparative Anatomy, Copenhagen, Denmark.

Two of the fish's four eyes are large, highly specialized and well developed, the scientists reported in *Nature* 207:1260, 1965. They are directed toward the dorsal or top part of the fish and are separated only by a thin wall. This provides for a wide binocular field of vision to watch for prey and enemies swimming above the fish. Two secondary eye globes, located below the larger eyes, permit the fish to see light and movement of objects beneath him.

The fish, named *Bathylchnops* (which means deep-lamp eye) *exilis*, displayed vigorous swimming movements when first captured, indicating that the fish is a strong swimmer.

In the murky depths of the ocean, a creature's ability to see is often a matter of survival. Because of its shape, a regular, two-eyed fish can focus only one eye at a time on an object, and hence is unable to judge how near or far away an object is. A fish with four eyes, however, has a definite advantage over its two-eyed relatives, for it can see objects in depth, and is less likely to miss when striking at its prey.

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E FIELDS

ARCHAEOLOGY

Ancient U.S.-Mexico Cultural Bridge Dated

► **RADIOCARBON DATING** of ceramic relics from Latin America adds proof to the theory that Florida was linked long ago to the ancient civilizations of the new world.

More than 180,000 ceramic fragments were dated from approximately 1500 B.C. to near the time of Christ. The age closely corresponds to that obtained in an early radiocarbon study of objects found in Florida.

It had been determined that advanced cultural traits appeared in the southeastern United States between 1500 B.C. and 500 B.C. Apparently the culture originated from Mexico's central coast.

Dr. James A. Ford, curator of anthropology for the University of Florida and the State Museum, spent 18 months excavating pieces of ceramic from 12 sites in Mexico and Latin America. Alfonso Medellin, director of the anthropological Museum of Vera Cruz, Mexico, worked with Dr. Ford.

Their object was to work out a chronology for the ancient Indian cultures—Inca, Maya, Aztec and the more modest but developed culture of the southeastern United States—all of which evolved from a common base called the "Pan-American Formative."

A further proof of the cultural bridge is that decorated ceramics brought to Florida by Dr. Ford show remarkable resemblance to the designs of early ceramics found along the Gulf Coast of Florida and Alabama.

No traces of the early civilization have been found in Texas or northern Mexico, indicating that travel must have been by sea.

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BIOTECHNOLOGY

Pacemaker Corrects Backflow of Urine

► **A CHILDHOOD ABNORMALITY** that can cause fatal kidney disease has been corrected in experimental work.

A backflow of urine into the ureter leading from the bladder to the kidney has been treated successfully in preliminary trials on two six-year-old girls.

An experimental electric pacemaker was used to stimulate the ureter conducting the urine to turn its contents in the right direction.

Dr. Armand E. Brodeur of St. Louis University and Cardinal Glennon Hospital, St. Louis, told a meeting of the Society for Pediatric Radiology in Washington, D.C., that if he and his co-workers can get 50 different patients to respond successfully

to the pacemaker treatment they will have confidence in its permanent use.

"The thing we would like to see done," Dr. Brodeur told SCIENCE SERVICE, "is to have someone develop an implantable pacemaker to improve on the one we are now using externally."

The way the external pacemaker works is through implanting two wires at the ureteral pelvic junction. The wires lead to the outside.

The ordinary pacemaker has been used to stimulate the natural pacemaker mechanism of the heart, thus getting normal heart contractions under way.

Pacemakers have been used to induce urination when voiding has stopped, but Dr. Brodeur said the heart pacemaker had inspired the present work. In 1961 Dr. Brodeur, with Dr. W. F. Melick and Francis Herbig, also of St. Louis University, began working with pigs, trying the pacemaker out on five animals.

After four years of animal experimentation they felt ready to use the pacemaker on children with advanced ureteral reflux (backflow).

The present surgical treatment for reflux in humans is usually a by-pass operation, whereby the kidneys are disconnected from the bladder and then reinserted into a loop of the small intestine, which is in turn connected directly to the skin through a permanent opening. Infection does occur, however, and the patient must be given antibiotics.

"We would like to use the pacemaker alone," Dr. Brodeur said, "but it will take money to perfect the implant procedure. What we expect to do next is to try the pacemaker with an 'ileal sleeve,' or segment of the small intestine, which has been done as a substitute surgery for the bypass."

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ZOOLOGY

Man Builds Dam Where Beavers Did Years Ago

► **A BEAVER DAM** nearly 3,000 years old has been found in Taylor County, Wis., on the exact site selected by modern engineers for a new dam designed to create a flowage for wildlife.

The remains of the old dam were found while workmen were excavating a core for the new structure.

The old dam had been between 30 and 40 feet long and was buried under more than seven feet of peat soil.

Wood used in the dam looked like aspen, which beaver still favor for use in their dams, and teeth marks were clearly evident.

Samples of the wood were sent to the University of Wisconsin for radiocarbon analysis.

The laboratory scientists reported that the wood was about 2,834 years old, dating back to approximately 870 B.C.

Forest service engineers had conducted a detailed survey to find the best spot for a dam to create the new flowage, and selected the site that had also been chosen by beaver engineers long ago.

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PHYSIOLOGY

Dark Hair Seems to Gray Sooner Than Blond Hair

► **THE REASON BRUNETTES** appear to turn gray sooner than blonds is probably a visual impression. A few white hairs stand out more distinctly against a background of dark than of fair hair.

Neither the original hair color nor the person's sex affected the graying process in 6,653 men and 2,067 women, according to an Australian study reported in *Nature*, 207:877, 1965.

Half of the 50-year-olds are at least 50% gray irrespective of sex or hair color. Fair hair appears to have turned completely gray sooner than dark hair because it is lighter to begin with. But in fact, the "calculated ages at which 50% of the population at risk are at least 50% gray are 48.6 years for fair hair; 49.4 years for medium hair and 49.1 years for dark hair."

Reporting the study were E. V. Keogh of the Anti-Cancer Council of Victoria, East Melbourne, and R. J. Walsh of the Australian Red Cross Society, Sydney.

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TECHNOLOGY

New Device Tracks Lightning in Forests

► **A NEW ELECTRONIC** device can quickly locate the spot where lightning has just started a forest fire.

Lightning, which accounts for 35% of forest fires, is a particularly difficult problem because the bolts often start smoldering or "sleeper" fires which often cannot be spotted by forest men in look-out towers until they burst into high damaging flames.

The invention is a cathode ray type of electrical storm tracker, developed by radio technician Alex Stewart of the Institute of Electrical and Electronic Engineers in British Columbia, Canada.

The inestimable value of the quick spotter with its alarm system is that fire-fighting equipment can be rushed to the beginning blaze before it develops into a conflagration that could destroy valuable timber, wild life and human property.

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SPACE

Gemini 8 Space Walk To Last 96 Minutes

► **ASTRONAUT** David R. Scott's planned space walk from Gemini 8, a full orbit or more long or at least 96 minutes, will add up to an hour and 56 minutes when combined with Astronaut Edward White's 20-minute foray from Gemini 4.

Neither Maj. Scott nor his pilot, Neil Armstrong, have ever been in space. However, Astronaut Armstrong as an X-15 pilot came within 57,000 feet of flight in space.

Unless the Soviet Union launches one, there will be no more space walks until Gemini 8, Gemini 6 and 7 are both docking practice flights involving separately launched Agena target vehicles.

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