

PUBLIC HEALTH

Less Trachoma Results From Home Treatment

► **FIRST GRADE CHILDREN** in the Pima Indian village of Blackwater, Ariz., have had about 50% less trachoma since the Public Health Service instituted home treatment of the viral eye disease. But 19% of them still have it.

Blackwater, located 50 miles southeast of Phoenix, is made up of 82 households scattered over 10 square miles of desert. Medical care for the 434 Pima Indian inhabitants is supplied by the PHS Indian Hospital in Sacaton and a Public Health Service nurse.

In a survey PHS conducted in 1962, 71% of the Blackwater first graders had active trachoma, in spite of school treatment.

Although active trachoma in Blackwater is predominantly a disease of childhood, PHS undertook a house-to-house survey in 1963 to find out how many members of families had the disease and to see if it could be curbed.

They found what they expected—that in the close contacts inevitable in households where several children sleep in one bed, where a common towel is used by all members of the family and flies carry contamination, trachoma prevalence can be explained in terms of “intrafamilial spread.”

Active trachoma was diagnosed in 44 persons among the 404 Pima Indians examined in the survey, or 10.9%. An additional one third of the population showed signs of previous trachoma infection, however. Thirty-six percent of the active trachoma occurred in children eight and nine years old.

Visual disability if not actual blindness in the adult population indicates that trachoma is a significant problem among these Indians. Home treatment consisted of dropping a one percent oil emulsion of the antibiotic tetracycline into the affected eyes. Monthly visits to give instruction and deliver medicine were made to each household with active cases. A year later the first grade cases had shown a 52% drop.

Dr. Stanley O. Foster, now with the department of medicine, San Francisco, Calif., Medical Center, reported the survey in *Public Health Reports*, 80:829, 1965.

Trachoma is hopefully dying out in the United States, but it still affects some 400 million people in the world, particularly in Asia and Africa. It often leads to blindness.

• *Science News Letter*, 88:216 October 2, 1965

PHYSICS

Hope Diamond Glows Red in Ultraviolet Light

► **SOMETHING EXTRAORDINARY** has been discovered about the Hope Diamond besides its long, tragic history. The diamond glows like a red-hot coal for several minutes after illumination by ultraviolet light.

Nothing like this has been known to happen with other diamonds. Dr. George Switzer, chairman of the department of mineral sciences at the Smithsonian Institution, said the Hope Diamond emits a longer wavelength of red light than other dia-

monds of the same type, which give off a light blue color after ultraviolet illumination. No explanation for this has yet been found. Dr. Switzer said the diamond perhaps gives off its energy in other forms, such as heat. If that is the case, the light's wavelength would be longer, he noted.

The diamond not only glows with unusual color, but its light is far more intense and sustained than that of other diamonds.

The peculiar property was discovered last April when the diamond was on loan to the De Beers Diamond Pavilion in Johannesburg, South Africa. Researchers at the De Beers Laboratories obtained permission to test the world's largest blue diamond and unexpectedly found the red glow.

The Smithsonian will not arrange for public view of the phenomenon, although the diamond itself is on permanent display. Dr. Switzer explained that a very dark room is needed and the Institution does not have such display facilities.

• *Science News Letter*, 88:216 October 2, 1965

GEOLOGY

USSR Plans to Drill Through Earth's Crust

► **THE SOVIET UNION** will renew its attempt to drill through the earth's crust next year, the Soviet Embassy in Washington, D.C. reported.

Projected depth is nine miles at a site in the Murmansk region of Russia's northern Kola Peninsula. Murmansk is bounded by Finland and the Arctic Ocean.

Last year Soviet scientists abandoned a similar attempt to reach the earth's mantle with a drill near the Caspian Sea. Reported economic and technical difficulties halted the project.

This new attempt will put the Soviet Union back into the running with the United States, whose deep-drilling Mohole Project is still “just getting underway.” The National Science Foundation said a contract will probably be awarded soon for construction of a floating platform from which U.S. scientists will drill 35,000 feet or 6.6 miles into the ocean floor. Actual drilling will not start for another three years.

Scientists in Washington are sceptical about Soviet ability to drill as deep as nine miles.

“I think they're dreaming,” commented Max C. McLean, assistant to the Mohole Project director. “They think they can do it, but the present state of art says it can't be done.”

Mr. McLean, an oceanographer, learned of the Soviet project at an international congress in Monaco last spring. He was told by Dr. N. S. Timofeev, head of the USSR's All-Union Research Institute on Deep Drilling Technology, that the Murmansk drill will be accomplished in two stages.

First, conventional equipment will be used to bore a hole some four miles deep. This will take two or three years. By then, Soviet technicians expect new machinery to be completed that will enable them to go down another five miles.

• *Science News Letter*, 88:216 October 2, 1965

IN SCIENCE

GENERAL SCIENCE

Man Must Halt Threat Of Rule by Automation

► **MANKIND MUST HALT** the threat of rule by automation if humans are to achieve their full potential. Automation actually started even before men were used like machines to build the pyramids.

Automation should serve the human community in the same way that chemical hormones and the nervous system serve the human body. If this is not accomplished, mankind is in danger of becoming a “passive, machine-serving animal,” warned Lewis Mumford, president of the American Academy of Arts and Letters.

He told some 1,700 scholars attending the bicentennial celebration commemorating the birth of James Smithson, held in Washington, D.C., that mechanization and automation must be made “subordinate to other human purposes.”

Art, literature, dreams, dances, songs and play are among the many-sided requirements for full human growth. Instead of liberation from work being the chief contribution of automation, Mr. Mumford suggested that machines could liberate mankind for work, meaning “educative, mind-forming” work that is self-rewarding.

He said there are “serious reasons for reconsidering the whole picture of both human and technical development” upon which Western society is based. Although man has been defined as a tool-using animal for more than a hundred years, there are two “substantial errors” in such an interpretation, Mr. Mumford charged.

The first is that this view encompasses unintentional distortion of evidence, because bones and stones, which presumably were tools, are the only durable remains of early man.

The second is the “tendency to read back into prehistoric times modern man's overwhelming interest in tools and machines.”

Early man possessed one primary, all purpose tool—every part of his mind-activated body—that was more important than any tools developed later, Mr. Mumford said. The invention of language was “incomparably more important to further human development than the chipping of a mountain of hand axes.”

The last five centuries or so have seen a “fundamental departure” from man's early way of life.

This change to work at a single specialized task, segregated from other biological and social activities, has led to the increasing mechanization and automation of all production.

Mr. Mumford's report was an attack on the idea that man's development is a direct consequence of his tool-making heritage.

• *Science News Letter*, 88:216 October 2, 1965

E FIELDS

PUBLIC SAFETY

Falcons Clear Air For Navy Fighters

► THE BRITISH Fleet Air Arm, the flying section of the Navy, has discovered a way in which to rid the runways of the Royal Naval Air Station in Lossiemouth, Scotland, of the flocks of seagulls so hazardous to the Navy's jets. The method utilizes a team of four falcons, the medieval hunting birds, to do the job.

Damage up to about \$50,000 a month has resulted when aircraft collided with the gulls, which can break a bulletproof canopy or be sucked into a jet intake.

Because Lossiemouth is the base for the Navy's newest and fastest jet fighter, the Buccaneer, it was selected for this bird-versus-bird battle.

Four peregrine falcons are now on the Navy's staff.

A hooded falcon is taken by Land Rover out on to the airfield. The vehicle is directed by radio to the part of the runways where gulls are congregating. Then the falcon is released.

After dispersing the gulls, the pursuit-bird is easily traced by the sound of a bell attached to one of its legs.

The falcons cannot be used in very high wind, fog or falling snow, but the gulls do not want to fly then either, and the sound of a land-based vehicle is sufficient to drive them away from the runways.

• Science News Letter, 88:217 October 2, 1965

GENERAL SCIENCE

New Building Houses Health Organizations

See Front Cover

► A NEW CENTER for health and medicine in the Americas has added a novel architectural touch to the U.S. capital skyline, as can be seen on this week's front cover.

The new two-unit headquarters building of the 63-year-old Pan American Health Organization and the World Health Organization is both functional and artistic, showing the practicality as well as the imagination of the Uruguayan architect. It combines the science and art that make up the best modern architecture.

Roman Fresnedo Siri, who won \$10,000 in October 1961 for his design, says of the creation: "Every building should reflect the character of the institution it houses. In this case, characteristic of the two organizations is their mission of raising health standards."

The smaller unit, fashioned in a tight circle, houses a council chamber that seems to float on the surrounding pools. More than 10,000 diamond-like shapes zig-zag vertically over the chamber to form a wavy curtain around a cylindrical glass frame. The

circular unit contrasts strikingly with the 10-story crescent-shaped secretariat that perches about 13 feet over the ground on 20 reinforced white columns.

The columns are vital in making the secretariat stand free, raised skywards, the architect notes. At the same time, the columns also root the secretariat firmly to earth, for a feeling of permanency. Open-air courts in steel blue, lilac and gray stone quarried in Pennsylvania are roofed over. Space not only envelops the structure, but penetrates it, he said.

The new headquarters for hemisphere health stands on a rectangular lot about an acre in size near the Lincoln Memorial and the proposed site for the Kennedy Center for the Performing Arts.

In March 1960, the then President Dwight D. Eisenhower signed the bill making the \$1.1 million land a U.S. gift. The W. K. Kellogg Foundation of Battle Creek, Mich., donated \$5 million which paid for most construction costs.

Twenty-three nations are to repay the grant over 20 years but the Foundation stipulated that repayments be spent on education, training, nutrition and water programs in the Western Hemisphere.

• Science News Letter, 88:217 October 2, 1965

PHYSICS

Latin Americans Trained In Standardized Weights

► THE UNITED STATES has completed the first step toward helping Latin American countries set up national standards for weights and measures.

At a new center in Colombia, built by the United States at the National University in Bogota, officials of at least three countries, Colombia, Ecuador and Venezuela, will be trained in the use of standardized weights and measures. Instruments were provided by the National Bureau of Standards along with two engineers to set up the initial training program.

Latin American countries not only use two systems, metric and English, as does the United States, but they have a plethora of local scales derived from ancient Indian weights and measures. Mr. Wollin expects that the entire continent will eventually adopt the metric system used in most parts of the world.

The United States is seriously considering doing away with the English system in favor of sole use of the simple metric scale.

Both systems will be taught at the Bogota center. However, metric scales form the basic standard, Mr. Wollin noted. Pounds and gallons have been included because they are used in day-to-day commercial exchange. This situation is also true in the United States. Congress adopted the metric scale at the turn of the century, but national custom holds to the English system.

Mr. Wollin noted that the Bureau of Standards, working under the auspices of the Agency for International Development, expects to begin other Latin American programs in this field. Panama is particularly interested, he said.

• Science News Letter, 88:217 October 2, 1965

RADIOLOGY

Neutron Affects Heredity More Than Predicted

► NEUTRON RADIATION from atomic reactors, such as those producing electricity for home use, has been found to be far more powerful in producing hereditary change than believed earlier.

The rates of mutation, the permanent change in offspring, were found to be 20 times greater with fast neutrons than with long-term gamma rays and five times higher than with X-rays, a British team which studied 100,000 mice for three years has found.

Dr. Anthony G. Searle, research scientist of the Medical Research Council, Radiobiological Research Unit, Harwell, England, told SCIENCE SERVICE in Berkeley, Calif., that he irradiated hybrid male mice for 12 weeks with various doses. The animals lived in cages on top of a graphite low-energy experimental pile (GLEEP), a neutron source.

After irradiation, the mice were mated with groups of female mice of a specific test stock, also used in radiation research by Oak Ridge National Laboratory, Oak Ridge, Tenn. The male irradiated mice carried dominant genetic characteristics, such as coat color, whereas the females carried recessive genetic characteristics that the offspring would inherit, such as pink eyes.

All the offspring of the mice were checked by Dr. Searle and his researchers, including his associate, Rita J. S. Phillips, to see if characteristics of permanent mutation had occurred.

This was expressed, for example, as change of coat color from black to brown, spotting of coat, kinking of tail or body hair, change in size of ears or color of eyes, or abnormality of feet.

Dr. Searle said that after mating successive generations showing mutations, when the dominant mutations of the irradiated male mice became doubled in an offspring, they nearly always caused death. The same was true when the recessive mutations were doubled.

As an example of how seldom this happened, however, Dr. Searle said that only about one mouse of each 2,000 carrying the dominant characteristics from the group of male mice irradiated with 200 rads of neutrons showed this lethal effect of dominant characteristic.

From these long-term irradiation exposure experiments it is not possible to predict effects of large doses in a short period of time.

Dr. Searle said he found in another experiment that when he gave very high doses in just a few minutes instead of weeks, the number of mutations was much lower, or only about one-tenth that produced from long-term exposures.

Dr. Searle reported his new findings to a conference on Space Radiation Biology, sponsored jointly by the National Aeronautics and Space Administration and the University of California extension division and Lawrence Radiation Laboratory.

• Science News Letter, 88:217 October 2, 1965