

## ANTHROPOLOGY

**Languages Molded By Experiences**

► THE ESKIMOS have no word for snow. Dr. Harry Hoiyer, professor of anthropology at the University of California at Los Angeles, used this fact as an illustration to demonstrate how experience molds languages and vice versa.

"The Eskimos do have a number of words relating to snow surface," he said, "because their experiences relate more to the structuring of the snowy landscape."

Another example: the Navajos have no word that means specifically "to give."

Dr. Hoiyer pointed out that the Navajos do have three ways to express "give money." The noun, *peso*, which they borrowed from the Spaniards, used with one verb, roughly translates "to move a round solid object competitively from one to another." This obviously involves a single coin. With another verb—"move a fabric-like object," it means a paper bill is involved. With a third verb—"move several objects"—it refers to small change.

"People who speak different languages live in distinct worlds of reality, each, to a considerable extent, organized along lines laid down by its own language," Dr. Hoiyer said.

"Differences between languages are not merely different ways of labeling experiences common to all men. Instead, language functions as a guide to reality in that its words and grammatical categories classify and give meaning to the experiences of those who use it."

Dr. Hoiyer, president of the American Anthropological Association, presented his views on some of the world's 3,000 languages at UCLA's Faculty Research Lecture.

Science News Letter, April 12, 1958

## METEOROLOGY

**Upper Air Observations Aid Hurricane Forecasts**

► UPPER AIR observations, particularly over the oceans where weather information is scarce or totally lacking, are essential to predicting hurricane paths.

This is the conclusion of five weathermen outlined in two reports to the American Meteorological Society meeting in New York. Dr. Lawrence A. Hughes of the University of Chicago said that Hurricane Carrie made three definite changes in direction during the time it steamed northward far out in the Atlantic last September. These changes, he found, were all related to shifts in the high-level, prevailing westerlies. They were related in such a manner that the likelihood of a turn could be predicted a day in advance.

The unique history of one tropical storm, the windy and rainy areas that sometimes turn into hurricanes, was detailed by four tropical weather experts. The stormy Atlantic region developed strong winds, although not the 75-mile-an-hour ones needed to qualify it as a hurricane.

Then suddenly its development ceased and

its intensity decreased. Finally its intensity increased again.

Cause of this start-stop-start cycle was found high in the atmosphere. Observations made from aircraft during the period Sept. 21-23, 1957, showed a low pressure area in the upper air was the controlling factor.

At about 18,000 feet, the low, with winds in a counter-clockwise direction, was overtaking another low pressure area in the atmospheric layers near the ocean surface. When the two systems were one above the other, the surface storm could not develop.

In effect, the potential hurricane could not form because, with the two low pressure areas superimposed, the air tended to flow outward in all directions. It could not make up its "mind" where to go. When the upper air system moved on to the west, the low pressure area near the surface could then develop into the steam-engine type of circulation needed for tropical storm formation.

Drs. R. Cecil Gentry, A. W. Johnson and R. H. Simpson of the U. S. Weather Bureau's National Hurricane Research Project, West Palm Beach, Fla., and Dr. Herbert Riehl of the University of Chicago, made the studies of the tropical storm development.

Science News Letter, April 12, 1958

## MEDICINE

**Sound May Aid in Cancer Cell Removal**

► BEAMS of ultrahigh sound waves, 50 times as high as the human ear can hear, are being used to study cell differentiation and the possibility of future application to shedding cancer cells.

Study of cell differentiation has resulted in the successful transplantation of limb buds onto chicken hosts. These chickens grew third legs and wings, Dr. Eugene Bell, assistant professor of biology at Massachusetts Institute of Technology and an associate biologist in neurosurgery at the Massachusetts General Hospital, Boston, said.

The limb buds were first obtained by treating the outermost layer of skin with these ultrahigh frequency waves. The waves removed the layer of skin which was in turn transplanted between the skin layers of another host chicken.

This study now provides a method by which the cell differentiation process may be studied in relationship to cancer cells.

If the beams can be directed to shed the cancer cells without damaging the surrounding tissues, the effectiveness of tumor removal will be considerably increased. In slides of an embryonic tadpole exposed to these high frequency sounds the outer layer of skin was shed like a glove.

Current work shows the ultrasound beam can hit a tiny target with great accuracy and without destroying the intervening neighboring cells.

This means that it is also very useful for investigating the brain stem of the cerebellum. Methods involving electrical or surgical removal result in damage to surrounding tissue.

Science News Letter, April 12, 1958

**IN SCIEN**

## AGRICULTURE

**Temperature, Humidity Help Predict Plant Blights**

► METEOROLOGISTS have come to the aid of the farmer, a U. S. Department of Agriculture scientist told the American Meteorological Society meeting in Kansas City, Mo.

Spread of the late blight fungus that affects tomato and potato plants can be predicted on the basis of temperature and humidity studies. If weekly weather forecasts are heeded and fungicides applied, Jack R. Wallin of Iowa State College reported, fungus damage can be reduced.

Scientists predicted spread of the fungus for a seven-day period if the mean temperature was between 60 degrees and 80 degrees Fahrenheit for ten or more hours and the relative humidity greater than 90%. Lower temperatures, held for longer periods of time, were also found to coincide with greater spread.

Just one spell of the right temperature-humidity combination per week was found to be enough for new lesions to appear on infested plants. A 21-day break between periods was expected to reduce the fungus to "subsistence level."

Science News Letter, April 12, 1958

## TECHNOLOGY

**Tough Plastic Film Makes Drawings for the Blind**

► A THIN tough film of polyester plastic, produced by the E. I. du Pont de Nemours & Company is now being used to produce drawings which can easily be read by the blind.

The polyester film, called Mylar, is clamped to a writing board covered with a layer of gum rubber. Raised drawings are then made on the plastic by a special inkless pen which creates a series of tiny bumps. These bumps appear as raised lines on the upper surface of the film and can be traced with the fingertips.

Other films had been tried but did not possess the required toughness and stability. They tended to tear if the pen was not used in exactly the right way.

Drawings made on Mylar can be permanently and safely stored since the plastic film does not become brittle or deteriorate with age, the company said.

Before the invention of the plastic film and rubber drawing board method, drawings for the blind were done with a tracing wheel, such as seamstresses use. This was inconvenient since it resulted in a reverse drawing.

The uses of the drawing set include the solution of geometrical problems, drawings of graphs and electrical diagrams, and the preparation of maps.

Science News Letter, April 12, 1958

# CE FIELDS

## PHYSIOLOGY

### Study Color Vision of Girl With One Color-Blind Eye

➤ NOW IT is possible to know how colors as seen by a color-blind person would appear to a person with normal color vision.

This was made possible when Drs. C. H. Graham and Yun Hsia of Columbia University discovered a young woman with a color-blind left eye and normal right eye.

How the world looks to her color-blind eye and to her normal eye is reported by the two psychologists in *Science* (March 28).

For her, the neutral point on the light spectrum, which looks gray to her, occurs at a wavelength of 502 millimicrons. All wavelengths of light below that point are seen by her color-blind eye as a blue equivalent to the way her normal eye sees light of about 470 millimicrons. All wavelengths above the neutral gray point appear to her color-blind eye equivalent to the way her normal eye sees a yellow of about 570 millimicrons.

Scientists distinguish several kinds of color-blindness. Most color-blind persons are called by scientists "dichromats," and the majority of dichromats confuse red with yellow and green.

Scientists divide dichromats into at least three types. "Protanopes" have less sensitivity to light at the red end of the spectrum. Another group is the "deuteranope" whose sensitivity to red is not deficient. A third type of dichromat, the "tritanope," confuses blue with green.

The girl with one color-blind eye belongs to the deuteranope type. But tests conducted by Drs. Graham and Hsia show that although her color-blind eye is sensitive to red light, it is deficient in sensitivity to the blue-green region of the spectrum.

Tests of other deuteranopes showed they, too, are deficient in sensitivity to the blue-green colors, the psychologists report.

Their findings have important implications for theories of how we are able to perceive color. They indicate that the color-blindness defect is in the eye rather than in central brain connections.

*Science News Letter, April 12, 1958*

## VITAL STATISTICS

### Professionals Emigrate To U. S. to Live

➤ ALMOST 60,000 professional workers came to the United States for permanent residence between fiscal years 1953 and 1956, the National Science Foundation has reported.

More than one-fifth of the 60,000 were classified as engineers or natural scientists, including mathematicians.

Engineers constituted the largest occupational segment of the immigrants, the NSF report shows; nurses were second, and

teachers of all kinds below college level were third. Physicians and surgeons were fourth and natural scientists, fifth.

The report from which these figures were drawn is entitled "Immigration of Professional Workers to the United States—1953-1956." It also shows that more than 40% of the professional group came directly from Europe, with the United Kingdom and Germany providing the largest numbers, 6,406 and 6,890 respectively.

Canada, however, outnumbered both of these countries combined as a source of immigrants, although not all the Canadian emigres were citizens of Canada. More than 15,900 professional workers crossed the border between the U. S. and Canada, the reports shows, including one-fourth of all the engineers to come to the U. S. for permanent residence during the four years covered by the report.

New York, California and Illinois were the most popular choices of the 60,000 as their destination.

*Science News Letter, April 12, 1958*

## MATHEMATICS

### Coed With Math Degree Sought by Industry

➤ IF THE NATION'S schools and industries had a choice, the "Most Desirable Girl of 1958" would probably be the coed with a degree in mathematics.

Dr. Vern O. Knudsen, vice-chancellor of the University of California at Los Angeles, said "In 35 years, I have never seen such a demand for college mathematics."

The statistics back him up. Over the last three years, the number of UCLA undergraduate coeds majoring in mathematics has almost doubled, from 56 in 1954 to 104 currently enrolled. Overall enrollment for all students in the department is up 15% from last year.

But the increase is not nearly enough to satisfy the almost staggering demands of our schools and industries.

During the 1956-57 school year, the UCLA Office of Teacher Placement received 616 requests for teachers with backgrounds in mathematics. Only seven mathematics graduates, one a coed, were available to answer the demand.

Industry, although draining off the majority of mathematics graduates through more rapid promotions and salary increases than offered in teaching, faces a severe shortage of its own.

"We get a dozen or more requests for every man or woman we graduate," says Charles B. Tompkins, director of UCLA's Numerical Analysis Research, who trains coders and problem analysts for the mushrooming electronic computing field.

In other industrial and commercial fields the demand for mathematicians, as registered at the UCLA Bureau of Occupations, runs three times heavier than the available supply.

Salary discrimination against women, illegal in the California teaching profession, is rapidly disappearing in industry, as demand increases and women career mathematicians prove their professional skill.

*Science News Letter, April 12, 1958*

## MEDICINE

### Anti-Cancer Neutron Amplifier Planned

➤ PLANS FOR a neutron amplifier that can be used in place of X-ray and gamma ray treatment for cancer therapy have been worked out on paper.

Neutrons have proved to be more penetrating, cause less skin damage and produce a higher biological effect in cancer cases, than either X-rays or gamma rays, Dr. Lyle Borst, professor of physics at New York University, told science writers on the annual American Cancer Society tour. (See p. 230.)

The only adequate neutron source presently available is the uranium fission reactor, which is not appropriate for hospital installation, the physicist said.

The neutron amplifier, called a convergatron, will eliminate the major headache of handling neutrons, the possibility of runaway reaction. The proposed amplifier is not susceptible to full chain reaction. With such a device, neutrons will become available at major cancer hospitals under the same conditions as X-rays, Dr. Borst pointed out.

He predicted that neutrons will be used commonly in cancer therapy within the next ten years.

The American Cancer Society has given the university physics department a grant to purchase beryllium metal, which will be studied in the university's atom smasher to evaluate the efficiency of the convergatron and to develop the now-on-paper construction plans.

*Science News Letter, April 12, 1958*

## ENGINEERING

### Device Shows How New Cars Would Ride

➤ A STEERING wheel linked to an analogue computer is being used to show how new cars, still in the design stage, would behave when driven under actual road conditions.

The computer is linked to an automobile handling simulator, on which stands a miniature car that responds to various kinds of steering just as a full-size vehicle would. The computer-simulator combination gives automobile engineers the same kind of information aircraft designers obtain when they "fly" synthetic airplanes mathematically.

It was built by General Motors research staff engineers at Warren, Mich., to obtain the same kind of information about newly designed automobiles.

A vehicle moving down a highway performs certain lateral motions—yawing, rolling or sideslipping—besides its straight-ahead motion. The lateral motions result from steering displacements made by the driver.

How these affect the car's motion depend on speed, wheelbase, steering gear ratio, weight distribution, tire properties and suspension geometry, the mathematical equations for which are solved by the computer.

*Science News Letter, April 12, 1958*