

PSYCHOLOGY

Brief Glimpse of Object Affects Perception

► THE LENGTH of exposure time in which you can look at an object affects your perception of its shape and brightness, scientists at the University of Wisconsin report in *Science* (April 20).

When you look at a circular object, you tend to see it as a circle even when the disk is turned so that the image on your retina is really more like an ellipse. This is true if you look at the object for as long as a second. If, however, the time in which you can see the object is cut down to 0.01 second, what you see is more like the elliptical image on your retina.

Your perception of size is not affected in the same way. To determine this, subjects were shown a disk at distances from 12 to 192 feet, the disk being adjusted in size to cast the same-sized image on the retina. About the same results were obtained in continuous illumination and in a flash of only 0.0005 second duration.

Perception of brightness was found to be more in agreement with the physical characteristics of the object when viewed in very brief flashes of light than in continuous illumination.

Scientists reporting the experiment are Drs. H. Leibowitz, P. Chinetti and J. Sidowski of the department of psychology.

Science News Letter, May 5, 1956

GENERAL SCIENCE

Engineering Schools Now Nearly Filled

► ENGINEERING COLLEGES are now near capacity and may soon be turning away potential engineering students.

A few have already found themselves unable to admit qualified students.

Many report they are using temporary facilities that make teaching and the campus reminiscent of the late 1940's when veterans from World War II swelled the nation's schools.

Engineering schools may soon have to advertise: engineers — vacancies filled, in contrast to the engineering companies who daily advertise: engineers — wanted. This was hinted in a report by the Engineering Manpower Commission of the Engineers' Joint Council.

At present, the report shows, total college enrollment is far ahead of the peak "G.I. Bulge" years. Engineering enrollment is very close to the highest levels reached in the late 1940's.

Engineering educators say that, although they were able to handle the situation after the Second World War, "they cannot do it again with equal success."

They point to three stumbling blocks making the two situations different:

1. The two groups of students have very different characteristics that tend to make the current group a larger problem.

2. The so-called "G. I. Bulge" had a foreseeable and predictable end, whereas the present increase is only the beginning.

3. Teachers of engineering are hard to come by because they are drawn from the same pool of engineering personnel for which competition is the highest in years.

One dean of a large eastern engineering college summarized the present problems by stating, "we would have to expand in all directions—facilities and manpower—if we were going to take in any more students and at the bottom of all this is money. Costs are going up very rapidly just because the cost of living in general is going up. Engineers are getting more expensive; engineering equipment is getting more expensive; buildings are getting more expensive. Unless we have very large appropriations for expansion I fear we will not be able to take in any larger freshman classes."

Science News Letter, May 5, 1956

MEDICINE

Advise Magnesium Salts for D.T.'s

► MAGNESIUM SULFATE, better known as Epsom salt, may help overcome delirium tremens in chronic alcoholics, the American Medical Association said on the basis of a report by Dr. Edmund B. Flink of Minneapolis to the association's council on foods and nutrition.

The normal adult human body contains less than an ounce of magnesium, but a deficiency can produce muscle twitching, excessive nervousness, tremor, delirium, and even convulsions, Dr. Flink reports.

Chronic alcoholism appears to be an important cause of magnesium deficiency symptoms in humans.

The deficiency can be corrected with recovery from delirium tremens in some patients by giving magnesium sulfate.

Science News Letter, May 5, 1956

ASTRONOMY

Martian Surface Between That of Moon and Earth

► THE SURFACE of Mars has a roughness between that of the moon and earth, two scientists told the National Academy of Sciences meeting in Washington.

Martian temperatures range from 77 degrees Fahrenheit at local noon to 94 degrees below zero Fahrenheit at night, Drs. John Strong and William M. Sinton of Johns Hopkins University reported.

They studied the infrared light given off by the two planets nearest earth, Mars and Venus. Both dark and sunlit parts of Venus, they found, had temperatures about 40 degrees below zero Fahrenheit.

No evidence for water vapor on Venus was uncovered in their survey. The Johns Hopkins scientists also scanned the moon with their equipment in order to eliminate effects due to the earth's atmosphere.

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IN SCIEN

PSYCHOLOGY

Criticizes Branding of Parents as Rejecting

► MOTHERS AND FATHERS of handicapped children are too often branded as "rejecting parents" by counselors who do not fully understand the term and its implications, James J. Gallagher of the University of Illinois' Institute for Research on Exceptional Children, Urbana, charged in a report to the National Education Association, Washington.

All parents, Mr. Gallagher believes, are entitled to be a little dissatisfied with one or more aspects of their offspring's personality, behavior or achievement without having these human feelings labeled as something psychologically revolting.

Some professional workers, Mr. Gallagher says, use the term parental rejection too freely, either because they do not know its real meaning or because they feel uncomfortable with some parents and want an excuse for avoiding contact with them.

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ENTOMOLOGY

Insect-Made Insecticide Turned Against Pest

► MAN may soon be using an insect-manufactured insecticide to fight the same insect that makes it.

This turn in the war against insects results from studies identifying the repellent made by a southern cockroach to ward off its own insect enemies as 2-hexenal.

This same chemical compound gives tea much of its aroma and contributes to the odor of whale oil, Java citronella and lavender oil.

Studies made at the Quartermaster Research and Development Center, Natick, Mass., show that the cockroach, *Eurycotis floridana*, dispenses its insect repellent from a built-in spray gun. Tests also show that the insecticide is powerful enough to kill the same roaches that make it, when in a closed area.

"It is interesting to note," the scientists state in *Science* (April 20), "that *Eurycotis* was using this compound long before man recognized a need for insect repellents."

Tests are being conducted with derivatives of 2-hexenal to determine their worth as insecticides. The studies were made by Louis M. Roth, Walter D. Niegisch and William H. Stahl. *Eurycotis floridana* is a large, wingless cockroach that inhabits Georgia, Florida and Mississippi. It can spray its yellow-colored insecticide or shoot it out in drops that travel several inches.

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CE FIELDS

BIOPHYSICS

Virus Can Enter Cell In Tenth of a Second

► A VIRUS can inject itself into a cell in as little as one-tenth of a second or can take as long as ten seconds. This is among findings by Yale University scientists who are using physics to probe the nature of life.

The virus they studied is a bacteriophage, which preys on bacteria instead of animals and humans.

This virus, scientists generally have agreed, attaches to its host at the tip of its tail and leaves its outer coat outside while the inner part enters the cell and multiplies there.

The injection of the genetic material, which is the important reproducing part of the bacteriophage, or virus, may not be anything "extraordinary," the Yale scientists reported to the American Physical Society meeting in Washington.

They see it as a "restricted Brownian motion of a thread of material in a viscous fluid." Brownian motion is the quick dancing motion of minute particles suspended in a liquid that has been familiar to scientists for over a century.

The virus uncoils after it enters the bacterium, the scientists found from experiments in which the virus and bacterium were bombarded with deuterons just after the virus had entered the bacterium.

The Yale scientists reporting these studies were Drs. Ernest Pollard, Aadne Ore and Jane Setlow. Dr. Ore is on leave from the University of Oslo.

Science News Letter, May 5, 1956

PHYSICS

Atom Smasher to Speed Electrons to Light's Speed

► AN ATOM SMASHER to speed up electrons to the highest energy ever produced in a laboratory, six billion electron volts, very close to the velocity of light, will be built jointly by Harvard University and Massachusetts Institute of Technology.

It will be called the Cambridge Electron Accelerator. If an electron moving at the speed of particles leaving this machine started around the world at the same time as a beam of light, it would be only five inches behind the beam in returning to the starting point.

The accelerator will be largely financed by the Atomic Energy Commission, as will the atom smasher to be built jointly by Princeton University and the University of Pennsylvania at Princeton, which will speed up protons to energies of three billion electron volts.

Protons, or hearts of hydrogen atoms, accelerated in it will have much higher intensities than presently available. When smashed into targets, these accelerated protons will produce many showers of heavy mesons.

Mesons are particles believed to act as the glue that binds atomic nuclei. Their masses are between electrons and protons.

The particles are all unstable and live only for fractions of a second. They occur in nature in cosmic rays but have only recently been produced in sufficient quantity for study in man-made accelerators, the cosmotron at Brookhaven National Laboratory and the bevatron at the University of California's Radiation Laboratory.

The Harvard-MIT electron accelerator is expected to cost the AEC \$6,500,000, and the Princeton-Pennsylvania machine, \$5,800,000.

Both machines will be used for basic research in high-energy nuclear physics, a field fundamental to understanding nuclear structure and forces.

Dr. M. Stanley Livingston, physics professor at Massachusetts Institute of Technology, will be director of the Cambridge Electron Accelerator.

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PHYSIOLOGY

Cover Head in Arctic To Prevent Heat Loss

► IF THE HEAD is not insulated at least as well as the body, a man will get colder faster, the Federation of American Societies for Experimental Biology meeting in Atlantic City, N. J., was told.

In studies conducted for the Defence Research Board of Canada by Canadian physiologists, G. Froese and Dr. Alan C. Burton of the University of Western Ontario, it was found that more than half the body heat can be lost in cold weather when the head is hatless. The tests showed that the lower the outside temperature, the greater was the need for a hat.

A man at rest produces heat equal to that given off by a 100-watt bulb, the Canadians pointed out. When the thermometer reads ten degrees Fahrenheit above zero, about one-half this heat comes off the top of a hatless head.

Beards do not help much, either.

Last spring, using the same device as for testing hatless heads, the two Canadian scientists experimented with ten men from the "Hairy Apes' Club" of London, Canada.

They found a beard could appreciably lower heat loss, but the effect is often canceled out by an increase in the blood flow to the face because the skin under the beard has been kept warmer.

"The total effect was so small," they stated, "that the decision whether or not explorers and military personnel in the Arctic should grow beards will have to be decided by other considerations than just the value of a beard as thermal insulation."

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MEDICINE

See Anti-Cancer Role For Pupation Hormone

► A POSSIBILITY of forging an anti-cancer weapon from the fruit fly's "growing-up" hormone appears in studies by Dr. C. H. Haddox Jr. of Louisiana State University Medical School, New Orleans.

Cancer is generally considered a condition in which cells fail to grow up and become specialized.

The hormone is called pupation hormone by scientists. It is produced in ring glands near the mouth of the fruit fly and changes larvae into the adult stage.

Flies with no growing-up hormone develop large abdominal pigmented masses resembling the black cancers called melanoma in man. Flies with ample production of the hormone do not develop these tumors, Dr. Haddox found. Flies given the hormone during their change to adults built hard restraining capsules around the tumors. Tumors stopped by the hormone grow rapidly when removed from the animals and placed in tissue culture lacking it.

Dr. Haddox is now trying to get enough of the growing-up hormone to test it on mice with cancer. It can be extracted from flies and moths, but it takes several pounds of the insects to yield enough hormone for a few experiments.

The findings were announced by the American Cancer Society, which supported the work. Collaborating with Dr. Haddox was Dr. Walter Burdette, now at the University of Missouri.

Science News Letter, May 5, 1956

MEDICINE

Male to Female Heart Attack Ratio Changed

► WOMEN have lost their advantage over men with regard to heart attacks, it appears from studies by Drs. Kyu Taik Lee and Wilbur A. Thomas of Barnes General Hospital, St. Louis.

Heretofore doctors have reported that myocardial infarction from coronary thrombosis, the kind of heart attack President Eisenhower suffered, hits many more men than women. Ratios of three men to one woman or even seven to one have been reported on the basis of diagnosis of the condition.

A study of autopsies at Barnes Hospital since 1910 shows, however, that from 1940 to 1954 almost as many women as men had myocardial infarction. The ratio of male to female was 1.1 to one. From 1910 to 1939, however, twice as many men as women had myocardial infarctions, the autopsy records showed.

If the ratio has changed since 1940 in the general population as it has in the Barnes Hospital autopsy series, it is "of profound significance," the doctors state in *Archives of Internal Medicine*. (April).

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