ENGINEERING

Average Water Cooler Drink Is Six Seconds

➤ THE AVERAGE length of drinks from a bubble-type water cooler is six seconds, and the average person consumes less than a half pint in an hour during the summer months.

This was one of the conclusions of a study by P. R. Achenbach and C. W. Phillips of 16 water fountains in the Washington, D. C., area that they reported to the American Society of Refrigerating Engineers meeting in Philadelphia.

Concealed movie cameras triggered by the fountain foot pedals were used in the experiments. Water coolers in such places as a bus terminal, an air conditioned office building, an army dormitory, a hospital mess hall, a technical school and a snack bar were studied.

Other conclusions were:

1. The average water usage per person per hour ranges from one-fifth to three-tenths of a quart in hot weather when there is ready access to the cooler and the persons are engaged in relatively light work.

2. The average hourly consumption was below the ten-gallon-per-hour capacity prescribed by the Bureau of Standards for coolers.

3. The ratio of the number of drinks in 15 minutes to the number of persons served approached 100% for the Marine Corps school.

The paper suggested that perhaps the Bureau of Standards regulation is based on too high an estimate. If the capacity of coolers could be lowered, cheaper fountains could be produced, the scientists said.

Science News Letter, January 1, 1955

PSYCHIATRY

Blames Female Ailments On Psychic Conflicts

➤ MANY A woman's so-called female ailments, ranging from pain and excessive functional bleeding to false pregnancy symptoms, are caused by emotional conflicts the woman had as a small child, Dr. Mary E. Giffin, psychiatrist at the Mayo Clinic and Mayo Foundation, Rochester, Minn., told the Sixth American Congress on Obstetrics and Gynecology in Chicago.

Emotional experiences in children that are both confusing and constructive form the basis on which all subsequent interpersonal relationships are developed, Dr. Giffin said.

"During the first three years, it is the relationship with the mother which is of primary significance. Without a truly loving relationship with a mother during these years, there is never proper integration of subsequent experiences," she explained.

"During the ages of four and five, the girl is testing out the very rudimentary sexual feelings toward her father, with the mother as a benevolent competitor. The girl who is comfortable with her mother identifies herself constructively with her. This psychologic process, combined with biologic factors, permits a growing heterosexual orientation, on which pubertal factors can act.

"However, if the mother has been neurotically overprotective, or rejecting, the girl is not free to explore her feelings toward her father. In such an instance, the neurotic relationship between mother and father is equally frustrating."

Science News Letter, January 1, 1955

MEDICINE

Cortisone May Be Useful Against Tropical Diseases

➤ CERTAIN DISEASES of tropical countries caused by parasites may respond to treatment by cortisone, Dr. Edward K. Markell of the Medical School of the University of California at Los Angeles has said.

His report is based on an investigation of the use of cortisone in treatment of elephantiasis in Tahiti. This is an advanced form of the parasite-caused disease, filariasis, and is characterized by enormously swollen tissue. It was found that cortisone eliminated or helped reduce the swelling in almost all patients.

Dr. Markell is going to Mexico to study use of cortisone against another tropical parasite-caused disease, onchocerciasis, a disease borne by the black gnat.

The disease results in formation of nodules over the body and inflammation of eye tissue, frequently leading to blindness. It is particularly prevalent in Mexico and Central America among coffee plantation workers. Infections run as high as 54% of the population in some areas of the tropics.

Because cortisone has been effective in treatment of other eye inflammations and in a similar parasite disease, Dr. Markell hopes it may be useful in treatment of onchocerciasis.

Science News Letter, January 1, 1955

GENERAL SCIENCE

No Time for Weary Retired Scientists

➤ THE SCIENTIST might just as well forget about developing hobbies to take up his leisure time after retirement.

His major problem in his later years, said Dr. Paul D. Foote, former vice president of Gulf Oil Corporation, is not to find ways to use his leisure time but to find a few spare minutes to himself.

"Merely reading the technical literature and catching up with the youngsters is a full time occupation, permitting no leisure whatever," he said. In addition, the retired scientist is hounded to take chairmanships of various government and civic committee activities, some of which he just cannot refuse, and others that are so interesting he will not refuse.

Science News Letter, January 1, 1955

IN SCIEN

CHEMISTRY

Ammonia Can Be Used To Refine Petroleum

➤ LIQUID AMMONIA can be used to refine petroleum, Dr. Merrill R. Fenske of Pennsylvania State University told the meeting of the American Institute of Chemical Engineers in New York.

He said that the chemical, known to housewives as a cleaner, is a good solvent for some hydrocarbons and a poor one for others. Therefore, he said, it can be used to extract useful fractions from a mixture of hydrocarbons. Petroleum fresh from the ground is a complex mixture of carbon compounds that must be separated for use.

Dr. Fenske said that the new liquid ammonia process would permit the production of gasolines and other fuels with better ignition qualities. He also envisioned better lubricating oils and cheap methods of extracting specific petroleum fractions used to make plastics and synthetic fibers.

A further advantage of the process, he said, is that ammonia is relatively cheap.

Ammonia, a compound of nitrogen and hydrogen, is a gas in natural state, but under pressure can be converted to a liquid. Household ammonia is not this liquid, but a weak solution of the gas in water.

Dr. Fenske and his associates, R. H. McCormick, H. Lawroski and R. G. Geier cooperated in working out the ammonia process.

Science News Letter, January 1, 1955

VETERINARY MEDICINE

Atabrine Found as Cure For Canine Tapeworms

➤ DOGS SUFFERING from tape worm infections can be cured with the use of atabrine, skin-yellowing malaria remedy of World War II.

In preliminary studies, made at the University of Illinois, Drs. R. P. Link and Jean C. Smith of the college of veterinary medicine found that atabrine effectively purged infected dogs of two species of tapeworm.

The scientists reported in the *Journal of the American Veterinary Medical Association* (Dec.) that of 12 dogs treated, 91% were free of *Taenia pisiformis* and 85% were free of *Dipylidium caninum* within 23 days of the initial treatment.

However, the drug was not effective in curing the infection of two other parasites, *Ancylostoma caninum* and *Toxocara canis*, the Illinois veterinarians reported.

Previous findings by other scientists have shown that atabrine has been effective in ridding humans and mice of tapeworm infections.

Science News Letter, January 1, 1955

CE FIELDS

OCEANOGRAPHY

Scripps Institution Gets $1,000,000 for Sea Study

➤ THE EVER-INCREASING seriousness of the world food problem may be solved by harvesting the oceans which cover seven-tenths of the globe.

To increase our knowledge and use of the biological productivity of the sea, the Scripps Institution of Oceanography has accepted a grant of $1,000,000 from the Rockefeller Foundation, President Robert G. Sproul of the University of California has announced.

"The availability of this fund," President Sproul said, "will enable the Scripps Institution of the University of California to confirm and strengthen its position as a world leader in the exploration of the present and potential resources of the oceans of the earth to better meet the needs of an expanding world population."

The grant, which is to be expended over an eight-year period, will be used to strengthen present research projects, as well as to initiate new ones. The Institution will also add a visiting professorship and four resident professorships to its staff, in addition to several graduate and post-doctoral fellowships.

Dr. Roger Revelle, director of Scripps, which is located at La Jolla, Calif., stated that, in addition to making a "more intense research" to expand the harvest of the sea, which now represents only a little over one percent of our food supply, the grant would permit marine biology to catch up with other sciences.

Science News Letter, January 1, 1955

BIOCHEMISTRY

Find Enzyme That Controls Aging

➤ DISCOVERY OF what "appears to be the biochemical factor controlling aging" was announced by Drs. Arthur W. Galston and S. M. Siegel of California Institute of Technology, Pasadena, Calif., at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The factor is an enzyme chemical, a peroxidase. The Caltech scientists made their discovery in work with plants but their results, they pointed out, "may have some general biological significance."

Applying the plant growth hormone, indoleacetic acid, to certain plant cells first results in the cells starting to grow.

"Second, the cells are induced to form a specific new enzyme, a peroxidase, which has the capacity in the presence of peroxide for destroying the growth hormone," the scientist reported.

"This new peroxidase appears to be the biochemical factor controlling aging, since by destroying growth hormone in the cell, it prevents further elongation.

"Third, in certain cells, the walls become impregnated with lignin. This lignification is also the result of the activity of the new peroxidase, since lignin is known to be formed by the action of peroxidase on certain hydroxyphenylpropane building blocks.

"Thus, the induced formation of peroxidase by the growth hormone appears to lead directly to cessation of growth and to differentiation of lignified elements."

Science News Letter, January 1, 1955

PHYSICS

Whirling Mirror Used To Track Jet Fuel Flow

➤ A WHIRLING mirror and a one-shot camera have enabled scientists to study the atomization of fuels in jet engines.

The technique, disclosed at the meeting of the American Institute of Chemical Engineers in New York, produces pictures of fuel sprays comparable to those of a movie camera taking 1,000,000,000 frames a second.

The results of the investigation can be used to increase the efficiency of fuel in supersonic flights. Path, shape and size of fuel particles were observed.

Dr. Robert D. Ingebo of the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics reported on the new photographic process.

Science News Letter, January 1, 1955

AERONAUTICS

Scientists Can Never Predict Airplane Life

➤ THERE WILL never be any accurate way to predict how long an aircraft will last before it gives in to fatigue failure. Bo Lundberg, director of the Aeronautical Research Institute of Sweden, told members of the Institute of Aeronautical Sciences meeting in Washington.

There will probably always be an error of several hundred percent, he said.

In the Wright Brothers lecture, he called on the larger countries, primarily the United States, to work out a program to lessen these difficulties. He said that fatigue in fixed-wing airplanes is a highly important matter that must be considered for all types of transport airplanes.

The accumulated effects of repeated, but mostly moderate, structural loads — normally gust loads — could sometimes cause failures of the primary structure before the airplane attains a reasonable service life.

Mr. Lundberg, who designed the Royal Swedish Air Force's J-22 fighter, is the first Swedish scientist ever invited to deliver the Wright Brothers lecture, for which American and foreign scientists are invited to speak in alternate years.

Science News Letter, January 1, 1955

BIOLOGY

Shrew Poison Fatal to Mice, Rabbits and Cats

➤ ADD TO the poisonous snakes, toads, scorpions, spiders and caterpillars of the world the short-tailed shrew, *Blarina brevicauda.*

The glands under the jaws of this animal contain a poison lethal to mice, rabbits and cats, Dr. Oliver P. Pearson of the University of California reported at the first International Conference on Animal Venoms held with the American Association for the Advancement of Science meeting in Berkeley, Calif.

"Injection of minute quantities of saline extract of these glands produces dramatic effects on respiration, pulse and blood pressure," Dr. Pearson reported.

"The poison seems to be produced in a distinctive, granule-filled segment of the submaxillary tubules and is used by these shrews when attacking mice. It has not been detected in several other species of shrews tested."

Science News Letter, January 1, 1955

HERPETOLOGY

Fear in Snake and Victim Makes Snakebite Worse

➤ FEAR IN the rattlesnake and fear in his victim will make the effects of his bite worse, Dr. Laurence M. Klauber of the San Diego (Calif.) Zoological Society declared at the first International Conference on Animal Venoms held with the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

Extreme fear and apprehension will affect the victim's heart action and therefore the speed of venom absorption. The extent of anger or fear that motivates the snake plays its part, because the muscles that wring the venom glands and thus eject the venom are separately controlled from the biting mechanism, Dr. Klauber explained.

A snake that was not very scared might, according to this, bite without wringing its venom glands hard enough to eject much poison.

The age, size, vigor and health of the victim are important in determining his absorptive power and systematic resistance to the venom, Dr. Klauber said. So also are his "allergy complex," susceptibility to protein poisoning and partial immunity from previous snakebites or treatment.

The site of the bite is also important in determining the outcome. Bites in the extremities and in tissues where absorption will be slower because, for example, of fat, will be less dangerous than bites near vital organs or penetrating a blood vessel.

Young snakes are less dangerous because of their smaller size, shorter fangs and production of less venom which is less toxic. Snakes that have passed their prime also may secrete less venom and this of a reduced virulence.

Science News Letter, January 1, 1955