

## TECHNOLOGY

**Electric Light Bulb Is "Hot" Three Ways**

► ONE OF the hottest things in the electric light business today is a new mercury vapor bulb that uses a magnesium germanate coating to give a psychological warmth to its light.

Aside from psychology, the bulb also operates at the fierce temperatures of mercury vapor source. Ordinary fluorescent powders "don't percolate" at these temperatures, Dr. Samuel G. Hibben, director of the Westinghouse applied lighting division, says.

Although the bulbs have been produced commercially just in recent months, it is expected that factory operators, street-lighting officials and baseball park managers also will find them "hot" from an economic standpoint. The popular size consumes 400 watts, gives three times the light of its incandescent brother and has five times the life expectancy.

"It offers the cheapest source of mass white light available today," Dr. Hibben said. Since magnesium germanate fluorescent powder adds red to the blue-green hue of the mercury vapor source, people in its light will not look like walking corpses. Uncorrected mercury vapor light produces a ghostly effect on human flesh.

Dr. Hibben believes the new light will not be suitable for residential use for "quite a number of years" because of its intensity. However, it may be used in large hotel kitchens.

Science News Letter, March 13, 1954

## GERONTOLOGY

**Eat More Protein to Stop Withering of Age**

► EATING MORE protein foods might be the way to stop the withering that comes as people grow old. Even steak, however, loses its appetite appeal for the old folks.

This appears from a report by Dr. Charles S. Davidson of Harvard Medical School and Boston City Hospital, Boston, at a symposium on problems of gerontology held in New York under the auspices of the Johns Hopkins School of Hygiene, Baltimore, and the National Vitamin Foundation, Inc., New York.

The endocrine glands of the body may play a part in the withering and wasting of body tissue in aging, Dr. Davidson said. He pointed to some evidence that not only the sex glands but also the adrenals, pituitary and thyroid glands function at a decreased rate in older persons. This may indirectly change body chemistry so that muscles and other tissues do not get enough protein from the food eaten to keep them up. But, he pointed out, the decreased gland functioning may be not the cause but the result of lack of protein in the body.

Older persons, even when obese, may have a considerable reduction in lean body mass, chiefly muscle. This represents an extensive loss of protein. The percentage

of underweight persons increases with age, however, so that by the age of 80 almost half the population is underweight.

"This marked loss of flesh, of lean body mass, must surely," Dr. Davidson said, "be accompanied by a reduction in body protein content."

Feeling lonely and unwanted and having no job may be one reason older persons do not eat an adequate diet. A second reason is an apparent decrease in the psychological reaction to protein foods which most of us have in youth.

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## GEOLOGY

**Rare Mineral Found In Mexican Tin Mine**

► A NEW mineral, probably one of the rarest in the earth's crust, has been discovered and described by Dr. George Switzer, geologist at the Smithsonian Institution.

Named ordonezite in honor of a Mexican geologist, the late Dr. Ezequiel Ordóñez, the mineral was found in a Mexican tin mine. It is a combination of the elements zinc, antimony and oxygen in the form of tiny glassy-brown crystals.

The rediscovery of an even rarer mineral, mosesite, in Mexico has enabled geologists to analyze the mineral for the first time.

Dr. William F. Foshag, head curator of geology, has found that mosesite is a combination of mercury, nitrogen, chlorine and water in a type of chemical bond never found in nature before.

Mosesite was first found in Texas about 40 years ago, but the quantity was so small geologists could not analyze the sample. The rediscovery was made in a Mexican mercury mine.

Dr. Foshag said that the combination of elements in mosesite has never been found in mineral form before. The nitrogen molecule is an ion hooked to mercury in a bond unique in nature.

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## AGRICULTURE

**5-1 Orange Concentrate For Cloud Stability Urged**

► FUTURE CANS of frozen orange juice may bear the label "dilute with five cans of water" instead of the usual three if research on super-concentrated juice carried on in Pasadena, Calif., by the Department of Agriculture's fruit and vegetable laboratory is followed up.

Chief drawback to quick adoption of the improved orange product is Florida's law freezing the concentration at three to one.

Less settling of the cloudy particles whose presence goes along with acceptable taste is found when the juice is evaporated to the more concentrated form, it is reported by Drs. Randall G. Rice, George J. Keller, R. J. McCulloch and E. A. Beavens in the *Journal of Agricultural and Food Chemistry*.

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**IN SCIENCE**

## BIOPHYSICS

**Discover Energy Need For Bacterial Motion**

► ONE OF the electrons that hit your television picture screen furnishes enough energy to keep a single bacterium moving for about three minutes, Dr. Harold J. Morowitz of the National Heart Institute, Public Health Service, has figured.

In more technical terms, the flicking flagellae, or tiny whips, that move bacteria spend energy to move one bacterium at the rate of about 56 electron volts per second. Put still another way, this is equivalent to the energy from burning two molecules of sugar.

Dr. Morowitz' study, reported in *Science* (Feb. 26), was made as a start toward possible future leads to more knowledge of muscle, such as heart muscle. The flagellae of bacteria can be considered single molecule muscles.

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## GEOPHYSICS

**Suggest Tidal Forces Trigger Hurricanes**

► HURRICANES CAN be triggered by the tidal forces of the sun and the moon acting on a parcel of air near the equator, Dr. Charles H. Smiley, astronomer at Brown University, Providence, R. I., suggests in *Nature* (Feb. 27).

If this idea is right, he states, there should be an increase in the number of hurricanes shortly before Sept. 23 of any year, and a decrease shortly after that date. For the period from 1900 to 1949, Dr. Smiley finds that there were 40 hurricanes during the week of Sept. 8 to 14, only 17.5 during the week of Sept. 23 to 30.

Such a difference, he says, "might happen by chance once in 50 times." Thus, although "the tidal forces are not large," they could act as a trigger in the formation of hurricanes.

In August of any year, he states, the tidal forces of the sun and moon would tend to make a small parcel of air, near but north of the equator, move in a counterclockwise direction as viewed from above. As the sun moves southward in August and early September, the regions where the strongest atmospheric tides would be found would fall alternately north and south of the equator.

The separation of these two regions would, Dr. Smiley believes, at some time correspond to a natural period of vibration of the atmosphere, thus triggering the immense forces of a hurricane.

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# CE FIELDS

## VETERINARY MEDICINE

### Foresees Elimination Of Trichinosis in U. S.

► THE DAY is coming when trichinosis, serious, painful and sometimes fatal disease from eating undercooked wormy pork, will be wiped out in the United States. It will come as a result of recent action by most states requiring sterilization by heat of garbage intended for hog feed.

This was predicted by Dr. Benjamin Schwartz of the U. S. Department of Agriculture's Animal Disease and Parasite Research Branch, Beltsville, Md., at the second national conference on trichinosis in Chicago.

Microscopic examination of hogs to detect the trichinae that cause the disease, practiced in Germany and other European countries, would be prohibitively costly in the U. S., he explained.

Aside from garbage-fed hogs, he said, the extent and degree of infection of farm-raised hogs with trichinae have been more or less steadily declining, and have almost reached the point where there is comparatively little danger of humans getting sick with trichinosis from hogs raised in the Corn Belt and elsewhere on farms.

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## TECHNOLOGY

### Surplus Wheat Puffed Into Building Material

► STANLEY F. REED, Washington research scientist, has developed a construction material made from expanded and compressed wheat. It is strong, light, weatherproof and insulating, and should sell for about 60% to 70% of competitive products of similar properties.

The puffed wheat board can be faced with metal, wood or plastic, looking somewhat like present construction materials made from sugar cane, bagasse, wood chips, paper, resin foam and plaster.

Developed in response to a challenge from Carl Wilken, agricultural economist with the Joint Congressional Committee on Defense Production, Mr. Reed's wheat product is considered by him to be a demonstration that almost any problem can be solved if enough money, brains and incentive are applied to it. Only a fraction of the money expended in supporting farm products with resulting surpluses would allow research that should give a solution, he contended. Raw material for wheat board costs only four cents a pound.

Something like a billion and a half bushels of surplus wheat will be existing in the United States and Canada this year, it was estimated.

Whole wheat is expanded by heat, bonded with plastics, compressed to about a quarter of its volume under about 300 degrees Fahrenheit heat, to form the board material. Chemicals are added to make it proof against rodents and termites. Thus, in case of famine it will not be possible to eat the walls of houses that have been built of wheat board.

How the process will be commercialized has not yet been determined. Reed Laboratories made the demonstration of research application. Members of Congress are now being consulted for advice on how to proceed with the development.

Wheat board can be used as a structural material in airplanes, various structures that now use other materials similar to wall-board and plywood.

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## BIOLOGY

### Tailless Bull, Cow Have Calf Complete With Tail

► THE MATING of a tailless cow and a tailless bull at the Ohio Agricultural Experiment Station, Wooster, produced an apparently normal calf complete with a natural means of switching flies.

The Central Ohio Breeding Association sent the tailless cattle to the Station for mating and observation. The tailless trait in cattle is considered undesirable by dairymen.

The calf proves that tailless cattle are capable of having normal offspring. There is always the possibility, however, that the trait may show up in future generations.

L. O. Gilmore, associate chairman of the Station's dairy science department, pointed out that more matings will be necessary to show that inheritance has a role in producing the tailless abnormality.

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## ENTOMOLOGY

### Slave Traders Carried Chigger Pest to Africa

► THE AFRICAN slave trade is credited with introducing to that continent one of the most irritating of native Western Hemisphere pests, the chigger or jigger.

Prof. M. D. W. Jeffreys of the University of Witwatersrand, Union of South Africa, has reported that the little burrowing insect has spread over much of Africa, causing suffering and even loss of limb and life among the natives.

A tiny flea-like insect, the chigger is a parasite on all warm-blooded animals, including man. It digs into the skin of its victim, a tactic for which it may have been tagged with its scientific name *Pulex penetrans*.

The usually accepted dates for the introduction of the chigger in Africa are 1855 and 1872. Prof. Jeffreys, however, has found evidence for its presence as early as 1678.

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## GERONTOLOGY

### End of Growing Marks Start of Growing Old

► WHEN TEEN-AGED boys and girls stop growing, they are beginning to age. Or, as Dr. A. I. Lansing of Washington University School of Medicine, St. Louis, puts it,

"Aging begins when growth stops."

He proposed this as a general rule in a report to the symposium on problems of gerontology held in New York under the sponsorship of the Johns Hopkins School of Hygiene, Baltimore, and the National Vitamin Foundation, Inc., New York.

The age of the mother conditions the longevity of the offspring. The greater the age of the mother, the shorter is the life of the offspring.

These findings reported by Dr. Lansing were made on rotifers, minute forms of animal life found in pond water. He believes, however, that the rotifer findings apply to all forms of animal life.

The transition from youth to the process of growing old is "very abrupt," Dr. Lansing reported.

A major mistake in many studies of the aging process has been to compare adults with very old, or senile, persons, he charged. Such comparisons only bring out differences between degrees of senility. To find how a young person differs from an old one, he advises comparisons between adolescents and young adults.

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## MEDICINE

### Deafness From Tumor Or Parathyroid Glands

► AN "UNUSUAL" cause of deafness, tumor of the parathyroid glands, is reported by Dr. J. A. Simpson of the University of Glasgow in the *British Medical Journal* (Feb. 26).

The parathyroid glands are situated in the neck close to the thyroid gland. There are four of them, each weighing about two grains. They have an important influence on the body's handling of calcium and phosphorus, and play an important part in keeping the nervous system in a state of best irritability, or excitability, for responding to stimuli.

Increased calcium in the environment of a nerve will lower its excitability. If this happens to the nerve of hearing, the effect would be to decrease the apparent intensity of sound.

Overactivity of the parathyroid glands due to a tumor would increase the calcium in the blood and, presumably, around nerves such as the nerve of hearing. This, Dr. Simpson thinks, is the explanation for the nerve deafness in cases of parathyroid tumor. This nerve deafness is reversible. Removal of the tumor in three cases he reported was followed by return of normal hearing.

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