

ENTOMOLOGY

Flies Shun Light Filtered Through Colored Glass

FLIES and other insects shun the greenish-blue light filtered through a special glass that was devised primarily to make human beings more comfortable, by stopping the infra-red heat rays in sunlight and at the same time passing enough of the visible spectrum to permit normal reading and working. The insect-chasing property of the new glass was discovered in researches conducted by Prof. J. W. Munro at the Imperial College of Science and Technology, London, it is reported in *Nature*.

Flies imprisoned in a box covered half with the new glass and half with ordinary window-glass drifted into the white-lighted area under the latter pane. Similar results were obtained with bees and wasps. It is considered possible that the preference of the insects may have been at least partly influenced by their desire for the greater warmth obtainable in the white-lighted space. Further experiments are in progress.

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AERONAUTICS

Stunt Flying Found to Hurt Airplane Industry

SPECTACULAR flying does the airplane industry no good.

In spite of the fact that races and other events at which attempts are made to break records attract thousands of people and get columns of front page space in newspapers, airplane builders and operators would be better off without this publicity, aviation insurance underwriters have concluded after making observations during the past four years.

The observers circulated freely among crowds at all kinds of spectacular air events to record the comments and general reaction of the spectators rather than to watch the flights themselves, it was explained by Jules Guinotte before the meeting of the American Society of Mechanical Engineers at Kansas City.

"The conclusion is being reached rapidly that spectacular flying has a tendency to create in the minds of the public the idea that the primary purpose of aviation is to thrill and frighten, and places the business on a parity with amusement devices of the more hazardous type," Mr. Guinotte declared.

"The Roman holiday idea comes too

much to the fore," he continued, "and many fine pilots have been a definite loss to the industry through having given their lives in a type of flying which pull a few thousand spectators to an airport for a day or two, but which cannot, by any stretch of the imagination, be termed 'useful flying.'"

Mr. Guinotte also reported that air lines operating through rough and stormy country often have a smaller percentage of accidents than lines flying where the weather is usually good and where there are many landing fields. This paradox he explained by the fact that rough weather aviators usually inspect their planes more frequently and more carefully than fair weather fliers.

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NATURAL RESOURCES

Coal Believed to be Basic Fuel of the Future

ALTHOUGH increasing use is being found for oil and natural gas as fuels, we shall continue to burn more coal than anything else; and when all the oil and gas are exhausted we shall still be burning coal.

For after using coal for nearly three centuries the United States has consumed only one per cent. of its supply, and if this country continues to use coal at the average rate of the past ten years, the known deposits will last about 4,000 years.

Coal will continue to be the basic fuel because it is cheap, widely distributed and is abundant, it is claimed by Henry Kreisinger, combustion engineer of New York City. Mr. Kreisinger declared that prices for oil and natural gas depend largely on the cost of coal.

"Coal," he said, "can be produced at an average cost of one dollar per net ton. It can be delivered in large quantities to steam plants at an average of \$3.50 per net ton. Assuming the average heat value of coal to be 12,500 British thermal units as received, the averaged cost per million B. t. u. at steam plants is 14 cents."

Oil, it was pointed out, has an average heat value of about 18,500 British thermal units per pound. On the basis of heat cost of 14 cents per British thermal unit, a barrel of 336 pounds of fuel oil would cost only 87 cents.

On the same basic cost per million British thermal units, natural gas having a heat value of 1000 B. t. u. would sell at 14 cents per 1,000 cubic feet, Mr. Kreisinger said.

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IN SCIEN

BOTANY

X-Ray Treatment May Affect Plant Evolution

A NEW TOOL of importance in the control of agricultural production of the future, may be in the use of X-rays or similar shortwave vibrations, Dr. W. W. Garner, plant physiologist of the U. S. Department of Agriculture, believes.

Research in this field is so new that some of the most striking effects have not been followed far enough to reveal their ultimate results. Wild corn plants appear to have been changed from annuals to perennials at Cornell University by treating the seeds with X-rays. And in accordance with experiments in various other places, the evidence seems to be that under suitable conditions, X-rays do bring about mutations.

The scientist may therefore be able to take some sort of hand in plant evolution. The importance this could have on crop production cannot be over-estimated, Dr. Garner said. However, the future will show to what extent this new tool can be effectively applied in crop improvement.

Work along these lines upon plants is being done at the Universities of Missouri and California.

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AGRICULTURE

Disease That Stunts Tobacco Blamed on Virus

A DISEASE that curls the leaves of tobacco and stunts its growth is blamed on a virus by H. H. Storey, of the East African Agricultural Research Station at Amani, Tanganyika, who has sent a report to *Nature*.

Other virus diseases of tobacco are known, which, however, produce necrosis of the leaves. The disease investigated at Amani forms leafy outgrowths from the veins on the lower surface of the leaves, or merely thickens sections of the veins. The whole plant is stunted and the leaves curl.

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CE FIELDS

ICHTHYOLOGY

Theory That Loud Talking Scares Fish is Exploded

AFTER FORTY YEARS of study and observation, Henry W. Fowler, curator of fish and reptiles at the Philadelphia Academy of Natural Science, states that loud talking does not disturb fish, and that the old idea that one must keep still while fishing is without scientific foundation.

What really drives the fish off, says Mr. Fowler, is unusual moving shadows upon the surface of the water.

Fish have keen eyes, and moving shadows cause them to flee or seek protection in the depths. What really happens is that people who talk and shout move about. Mr. Fowler has also observed that the black plume of smoke issuing from the funnel of an oil burner will cast shadows that will cause fish to go far below the surface.

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MATHEMATICS

New Simplified Formula Describes Shape of Earth

A SIMPLIFIED formula for the figure of the earth, using no mathematical theory more advanced than calculus, has been devised by Prof. E. V. Huntington of Harvard University, he announced to the American Mathematical Society meeting.

Since every landmark and property boundary depends upon the assumed curvature of the earth and this depends upon the form of the earth, the implications of Prof. Huntington's formula are tremendous.

His formula is developed without any serious assumptions in regard to the distribution of matter inside the earth. By using the concept of the "center of attraction" (variable) of the earth corresponding to any point on the surface, Prof. Huntington obtained a relatively simple formula involving the equatorial radius, the polar radius and quadrantal radius vector of the earth curve and the quadrantal radius vector of an ellipse having the same semi-axes. His paper

gives the necessary formulas for determining these quantities in terms of measurements made on the surface of the earth and also a formula for determining the gravity constant as a function of the latitude.

Although Prof. Huntington's formula gives only the theoretical form which the rotating earth would have if its surface were smooth, this particular form is the important one since the mountains and other surface irregularities are relatively no more significant than the scratches on a billiard ball.

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STATISTICS

More Births Than Deaths Yet Depopulation is Faced

DESPITE the fact that for several years past the births in England have outnumbered the deaths, that country will probably face a diminishing population within a few decades, Dr. S. J. Holmes of the University of California warns in a report to the American Genetic Association.

Dr. Holmes bases this somewhat paradoxical conclusion on statistics of fertility. The birth rate now depends largely upon the number of women of child-bearing age, but the birth rate twenty years from now will depend upon the size of the group who are now children and who will then be of child-bearing age.

"If 1,000 women produce 1,000 women who have the same age distribution as their mothers the stock is reproducing itself," said Dr. Holmes. "What we have been forgetting is that 1,000 women might produce only 900 women and nevertheless our vital statistics might show more births than deaths."

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PALEONTOLOGY

Elephant's Jawbone Shows Likeness to Scoop Shovel

See Front Cover

WHERE the idea of the present-day scoop shovel came from is suggested in the illustration on the cover of this week's SCIENCE NEWS LETTER. When President Henry Fairfield Osborn of the American Museum of Natural History received the weird lower jawbone of an ancient Asian elephant, he was struck by its shape and had it photographed with a scoop shovel of the same width.

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ZOOLOGY

Distressed Doe Summons Help for Entangled Fawn

THE PERSISTENCE and devotion of a female deer for her young saved the life of a little fawn in Glacier National Park recently.

Fanny, the tame deer that has been photographed, petted, and fed by tourists for several years, this summer arrived at the Lake McDonald Hotel with only one fawn. Always before she has had two little ones with her, and has voluntarily entered the hotel corral with her babies.

No sooner had Fanny delivered her lone fawn to the corral at the beginning of this season, than she turned and ran back into the woods. Next day, however, and on succeeding days, she returned, nursed her baby, and then, after stamping and snorting awhile, departed.

Her actions were so strange that Nick Acuri, the hotel gardener, decided she must be trying to tell something to the human beings about, and so followed her. Seeing him coming, the deer evinced great excitement, loping ahead into the woods, turning every few feet, snorting, prancing, and waiting for the gardener to catch up.

Finally, as she led the way, he learned the secret of her uneasiness and of her prolonged absences from the hotel corral. It was her other fawn, badly entangled in wire.

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ENGINEERING

Steam and Water Device Keeps Railroad Car Cool

STEAM AND WATER are the only agents used in a new system of cooling for passenger coaches demonstrated in New York recently before a group of railway and Pullman executives. The method depends on the long-known physical principles, that when water evaporates it absorbs much heat in the process, and that the temperature at which this evaporation will take place can be greatly lowered by reducing the air pressure above the water.

The new mechanism injects steam into a tank of water in such a way as to create a vacuum above it. Evaporation then reduces the water to a temperature of 40 degrees Fahrenheit. The cooled water is circulated through coils, over which air is drawn and then blown into the car.

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