



GLASS, REAL GLASS

CHEMISTRY

New Glass Bends Far Before Breaking

FLEXIBILITY far beyond that of ordinary glass is claimed for a new German safety glass produced by a manufacturing firm at Herzogenrath near Aachen. As a demonstration of its strength and capacity for bending, three full-grown men stand on a sheet about the size of an automobile windshield, which sags under their weight, and then comes back to normal flatness after they get off it.

The glass is a real glass, the manufacturers state; not an organic plastic or artificial resin. Neither is it a laminated or "sandwich" glass, insured against splintering by cementing a layer of plastic material between two sheets of ordinary glass. It is a solid sheet, like plate glass, except that when broken it does not shatter into sharp, daggerlike splinters. If it receives a blow sufficient to break it, it breaks into rounded "crumbs" which are far less dangerous to persons whom they may strike.

Science News Letter, September 2, 1933

In the hope of producing watermelons that will resist wilt, West Virginia experimenters have been crossing two high-flavored varieties susceptible to wilt with Russian watermelons that are not edible but resist the wilt.

PHYSICS

Use of Ultraviolet Light Spreading Rapidly in Industry

Well-Known Producer of Vitamin D Now Bleaches Clothes, Detects Forgeries, Dries Fruits and Tests Paints

THERE is no question about the value of ultraviolet light in producing the anti-rachitic vitamin D, but this application is gradually giving way in importance to other applications of the invisible light. New applications are being made with such rapidity that no one can hope to predict what product will be subjected to ultraviolet treatment next.

Like most new applications of science to industry it is being used to prey upon the credulity of the uninformed purchaser, and he has been persuaded to pay a premium for irradiated goods that are not improved and perhaps partially spoiled by the treatment. It is such practise that has given the ultraviolet treatment a black eye and has caused many people to shy away from it and not take advantage of the many real advantages that it possesses.

Ultraviolet light is now being used extensively to test the deterioration of substances exposed to sunlight. Since ultraviolet sources can be made much more intense than sunlight it is possible to test paints, varnishes, papers, dyes, rubbers, and glasses by very short exposures to this artificial sunlight. Other products that have been tested for spoiling on the exposure to light are gasolines, foods and tar products.

It is now definitely established that dairy cows properly treated with ultraviolet radiation produce milk rich in vitamin D. The radiation is absorbed through the thin skin on the under side of the cow. Agricultural experimental stations are growing crops in the winter in ultraviolet illuminated greenhouses. Seeds that would not otherwise germinate are changed so that a larger percentage will grow.

The use of artificial sunlight in the preparation of various kinds of food is gaining in popularity. Such short wavelengths as are in ultraviolet radiation will kill many kinds of bacteria particularly if they are applied in large doses. The dehydrating industry that dries fruits which keep without the addition

of preservatives have found that irradiation with artificial sunlight is a surer method than exposure to sunlight. Bread that has been treated after wrapping in a transparent paper will keep for at least ten days without molding. This is especially valuable with low carbohydrate breads such as are used by diabetics, for a central bakery can supply this special product to a wider region without spoilage.

Laundries have recently adapted the practise of bleaching by use of sunshine lamps. Many chemical processes that depend upon light are now substituting ultraviolet lamps for sunlight. Legal authorities have seized upon it as one of the surest methods of detecting forgeries and counterfeits. As many engineers have said, there is every reason to believe that the next few years will witness a many-fold increase in the application of radiant energy to the needs of the industrial world.

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ASTRONOMY

Meteors Shower Earth At Increased Rates

THE PERSEID meteor shower kept amateur astronomers throughout the United States and Canada particularly busy this year, it is shown by reports received by Dr. Charles P. Olivier, Director of the Flower Astronomical Observatory of the University of Pennsylvania.

The number of meteors seen from 133 stations located in 31 states and 5 Canadian provinces showed that the earth was in the midst of this meteoric cloud during the night of August 11-12, with a sharp falling off the next night. Meteors were seen at the average rate of more than 40 per hour which is greater than the usual annual average. Some stations reported as high as 82 meteors observed per hour.

Conditions for observations throughout the Eastern States were not favorable due to cloudy weather, but Central

States had clear skies. The number of meteors actually counted does not represent the true number falling into the earth's atmosphere for the moonlight reduced the chances of seeing very faint ones. Astronomers can make allowances for this and arrive at an estimate of the total number of meteors in the shower.

Several local programs for the determination of the heights of the meteors by simultaneous observations from two stations were ruined by clouds but it is the hope of the American Meteor Society that western plans had more success although reports have not yet been received.

The Society believes that many thousands of people observed the Perseid shower this year and points out that popular interest in meteoric astronomy is continually growing.

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PALEOBOTANY

Fern Prints Left In Lava That Killed Them

MOLTEN LAVA, so hot as to destroy in a moment any living thing it flows over, has nevertheless become a record book of ferns that once grew on the slopes of the great volcano Kilauea. The story of these "volcano fossils" is told by John E. Doerr, Jr., naturalist of Hawaii National Park.

One hundred and one years ago, a lava flow broke out on Byron's Ledge, a wall-like isthmus separating the craters of Kilauea and Kilauea Iki. The shallow streams of lava running down the wooded slope into Kilauea Iki destroyed all vegetation in their pathway, leaving them covered with black, shiny tongues of the hardened material.

A recently made trail cuts through some of these century-old lava sheets, the thinner ones of which can be pried up in slabs. On the under sides of the slabs there are abundant hollow moulds of the stems and leaves of ferns, showing many fine details of their structure, even to the long narrow sori or fruiting-bodies. The vegetable tissue of course has long since disappeared, except for small charred flakes in a few impressions.

Mr. Doerr raises the question whether it might not be worth while to explore the deeper lavas left by older eruptions, for the print of a plant once impressed in the lava should be good for indefinitely long periods of time.

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ENGINEERING

Modern Rooms Redecorated By Flip of Light Switch

Three Scenes Are Painted on Same Wall, But, By Skillful Lighting, Only One Shows Up at a Time

VARIETY being the spice of life, modern scientific ultraviolet lighting and special paints have combined to make possible the complete redecoration of a room with a flip of a switch. The usual room setting may be changed at will to that of a luminous Japanese tea garden or again to a dimly lit winter scene in a Swiss chalet.

This is all possible right in the home by the use of special phosphorescent and fluorescent paints illuminated by ultraviolet light. Ordinary non-luminous paints are used for the formal common finish that forms the standard type of decoration. Over these paints it is possible for skilled artists to paint a scene of entirely different design with fluorescent paints of almost any color that will not show in daylight or with ordinary lighting fixtures. Still a third scene may be applied with phosphorescent paints that will glow in the dark.

When the visible light is extinguished and pure ultraviolet light is shone from concealed fixtures the fluorescent and phosphorescent pigments in the special paints begin to shine and the walls are lighted by a soft gentle light. When all the light, both ordinary and ultraviolet, is extinguished the phosphorescent pattern becomes visible. This new home luxury of changing scenes and relaxing atmosphere will soon be in demand.

As usual it is the advertisers who have gone ahead with these schemes. A visitor to the Century of Progress can see many commercial exhibits featuring this new use of the ultraviolet. Wall paper changes its design from a simple geometric pattern in the day to an aquarium design under artificial illumination. A single poster may have three different scenes painted on it. The surroundings of a group of children playing in sunsuits change from a beach in the middle of summer to a modern nursery equipped with sun lamps in the winter.

The development of the "black bulb" ultraviolet lamp brings these properties of certain pigments, known for more

than 300 years, into commercial use. It is similar to the ultraviolet health lamps but is shielded by a dense purple glass that cuts off all the visible light. These lamps may be wired into the ordinary 110 volt electric light circuits and are small enough to be concealed in a hidden fixture. The invisible light that they generate may be directed upon the painted designs.

The phosphorescent paint stores up energy from the invisible ultraviolet light and glows more feebly than the fluorescent paint, so that it does not interfere with the second design. When all the light, both ordinary and ultraviolet, is turned off the phosphorescent paints will continue to shine in the dark in much the same way as luminous dials of watches.

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their atomic hearts are different. The H may be either hydrogen isotope of mass one or hydrogen isotope of mass two and the two common types of oxygen are isotope of mass 16 and isotope of mass 18. Light water or nearly all pure ordinary water is made up of the lightest hydrogen isotope one and the lightest oxygen isotope 16. (See Next Page)

MAINTENANCE OF OUR MENTAL ABILITIES

**R
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an address by

Dr. Walter R. Miles

Professor of Psychology at
Yale University

To be given Friday, Sept. 8, at 1:45 p. m. Eastern Standard Time over stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.