

PHYSICS

New Optical Material Eliminates Headlight Glare

A NEW optical material which promises to save thousands of lives now snuffed out in night driving because of headlight glare is announced by the Land Wheelwright Laboratories, Boston.

Known as polaroid, the new material is also to be used for sun glasses which take away light dazzle without darkening the view, and even more important, make possible motion pictures in three dimensions that have the optical illusion of depth similar to viewing a scene with the naked eye.

Other uses promised include one-way glass for cross-court privacy in apartment buildings, and also for brilliant building exteriors that change color as one walks by.

Polaroid resembles a sheet of glass but has the ability to polarize the light which passes through it. Now ready to be produced in unlimited quantities, the new material is the first practical use of what has formerly been a laboratory and research phenomenon.

Polarized light is light which vibrates only in one direction in contrast to the helter-skelter vibrations at right angles to the line of travel as in the ordinary light ray. Polaroid acts to produce the polarized light.

Best way to think of the complicated phenomenon is to regard ordinary light vibrations as a mass of straws tossed up in a wind. They are blown against a picket fence. All straws are stopped except those parallel to the slats in the fence and all straws coming through are lined up in one direction. The material polaroid acts as the picket fence.

For use in automobiles all headlights would send out polarized light vibrating in one direction and all windshields would be "crossed" so that they would not permit such headlight rays to enter and blind the driver.

The light from one's own headlights would strike the ground ahead, be scattered with a destruction of the polarization and hence such light would enter the car and make possible vision down the road just as headlights act now.

The American Optical Co., Southbridge, Mass., has been licensed to manufacture the new sun glasses, and the Eastman Kodak Co. will produce

polascreens, a special form of the material, which will make possible movies with depth.

The three-dimensional motion pictures are taken with a double camera having two lenses as far apart as the human eyes. When such films are shown the two views are projected on

METALLURGY

Incas Had so Much Gold They Used it For Pins and Nails

GREECE had a Golden Age of fable, the Renaissance had its Golden Age of literature, moderns boast of a Golden Age of science. But South America is one of the few spots in the world that ever had a Golden Age of actual gold.

In Ecuador, the golden ornaments of the natives amazed the first Spanish conquerors who came, saw, and took what they wanted back home. What is not so generally known is that the use of gold was so widespread that not only ornaments but such prosaic articles as fish-hooks, sewing needles, safety pins and hooks and eyes were made of the precious metal. Even gold nails have been found.

More than that, the Indians alloyed platinum with gold to produce a whiter metal. How they did it has long been a mystery because no fire which the natives had yielded a flame with sufficient temperature to reach platinum's melting point, 3,224 degrees Fahrenheit.

New discoveries, however, are piercing the gloom of the mystery, according to the Danish scientist Paul Bergsoe of Copenhagen, who describes how articles have been found, fortunately, in all the various stages of fabrication from start to finish. (*Nature*, Jan. 4)

From this cross section of prehistoric South American metallurgy it is possible to reconstruct the method of making the platinum gold alloy objects.

Grains of platinum were mixed with a little gold dust and the two burned with wood charcoal. A blowpipe supplied the needed draft of air to attain

the same screen through polarizing sheets at right angles to each other. The audience, supplied with glasses fitted with clear colorless polarizing lenses set at corresponding angles, sees one image with the left eye, the other with the right and gets the effect of actual presence at the scene. The world's first three-dimensional color movies have already been produced with the system.

For use in sun glasses the lenses of polaroid material discriminate between glare which is polarized and useful illumination which is not, and so cuts off the glare without obscuring the view.

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the maximum temperature. While the platinum would not melt in the flame the gold did and served as a sort of binding cement to hold the platinum grains.

It is known that melted metal slowly diffuses into the unmelted portion during a long heating. The unmelted metal, in turn, partly dissolves into the melted one. The result is a sinterous mass which under later hammering and cold working becomes so homogeneous that it can be fashioned into plates or other objects.

Gold-platinum wire was also made by drawing small bars down to diameters as little as four one-thousandths of an inch. Such tiny size precludes the use of dies for drawing the wires, states Mr. Bergsoe.

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MATHEMATICS

1936, Square of 44, Last "Square" Year Until 2025

IF YOU tire of writing 1936 after dates during the current year you can instead write 44². Dr. Donald P. LeGalley, of the physics department of Pennsylvania State College, calls attention to the fact that this is the first time since 1849 that the year has resulted from a perfect square, and it will not happen again until 2025 A.D., according to Dr. LeGalley.

Perfect square years also occurred in 1764 and in 1681.

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