

CHEMISTRY

# New Glare-Eliminating Screen 99.99 Per Cent Efficient

## Made of Invisible, Submicroscopic Molecules That Line Up Light Waves to Vibrate in Same Direction

**A** NEW type of glare-eliminating screen for automobiles and other purposes, claimed to be 99.99% efficient, was recently patented by Edwin H. Land, scientist-president of the Polaroid Corporation. It is the first to use invisible, submicroscopic molecules instead of crystals to line up light waves so that they all vibrate in the same direction, and can be partly or wholly cut off by another sheet of the same material set at an angle to the first. It is also the first to be made of wholly synthetic materials, all obtainable in the United States, so that no imaginable accident of war and blockade can cut us off from the supply.

Previous polarizers, used in sun glasses, lamps, etc., have employed minute crystals (usually of quinine) embedded in a plastic sheet. The new one, known as Type H, uses one of the new synthetic, rubber-like plastics known as polyvinyl alcohol. This is stretched out from three to eight times its original length, which gets its molecules all parallel with each other; then it is exposed to an iodine solution, which renders the molecules able to filter the light into all-one-way (polarized) waves.

Use of polarizing sheets as headlight glare eliminators has been contemplated for a considerable time. If the headlights are screened at an angle of 45 degrees so that they will send out only polarized light waves, and if the driver uses a similar screen on his windshield, the blinding glare of oncoming headlights is eliminated. The new kind of Polaroid promises

to bring headlights and eye-screens of this kind closer to realization.

The new Type H Polaroid is said to transmit a third more light than earlier types of polarizing sheets, and yet when two sheets are turned at right angles to each other practically no light at all gets through. In tests with the sheets turned completely at right angles, a hundred-watt lamp behind them became completely invisible.

Almost perfect freedom from color, together with high efficiency and polarizing power, are expected to make the new sheeting especially suitable for scientific and military optical instruments, camera filters for color photography, projection of three-dimensional pictures without color distortion, glareless illumination for stores, desks and art galleries, and for other purposes.

The materials used in the wholly synthetic polarizing sheeting are coke, lime, air, water and iodine.

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unique, because, in the midst of blitzkriegs, British scientists under the sponsorship of the National Physical Society, have succeeded this very year in forming a similar color group in England. That such an organization should be considered worth starting in wartime, and should schedule its meetings ahead, is significant. It indicates the importance which scientists attached to color research problems.

For testing color aptitude, the committee of American scientists has evolved several series of 40 color chips. The first two of these series are graded in such delicately progressive steps from a middle gray to a yellowish red and from gray to a purplish red, that it takes superior color vision to place a duplicate chip below the one chip in the series that it does perfectly match.

Producing these chips called for high technical skill, since the gradations are very uniform, as tested by spectrophotometric measurement. The chips in a series are all of the same brightness, differing only in degree of color.

For workers who test fabrics, or deal in color differences of cotton fiber—which is Miss Nickerson's line of color research in the U. S. Department of Agriculture—it is important to have ability to detect fine color differences.

No one who has tried thus far has achieved 100 percent. success in matching all chips. Among the most skillful have been scientists from the National Bureau of Standards, who have been among the individuals who have taken the test experimentally.

By giving the test to many people, the committee is now standardizing it, that is, finding out accurately what rating an individual should make to be considered excellent, good, poor, at discriminating color differences. When thus scaled, the test will be ready for use.

The color-blindness test, which the Council calls a by-product, consists of certain chips from a series, producing a simplified problem for a tested person to solve. With these chips, color-blindness can be detected in a minute. But finding out how much aptitude an individual has for color discrimination may be a chip-matching problem of an hour, or even longer.

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RADIO

### 'Radio Wave Sprinkler' Aids Forest Fire Fighters

**A** "RADIO wave sprinkler" will be used to aid fire-fighting crews in National Forests this summer. It is an automatic relay station that picks up radio waves from one point, and transmits them to another, using an automatic relay of portable size which is operated by batteries. Thus it permits the short-range, light-weight radios developed for parachute fire-fighters last spring to communicate with headquarters, even at relatively long distances. (*U. S. Forest Service.*)

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