

PHOTOGRAPHY

# Home Color Movies May be Made Without Camera Filters

## "Quintuplet" Film Coated With Five Layers of Emulsion and Gelatine Is Simple to Use

**A** NEW simple "quintuplet" system of color movies for 16 mm. amateur cameras was announced by the Eastman Kodak Company as the invention of two musicians.

The new color film, known as Kodachrome, consists of five layers of emulsion and gelatine. Nicknamed the "quintuplet" film, it takes color motion pictures without the necessity of any special three colored filters on the camera and in the projector. The new film is expected to replace present Kodacolor film now widely used.

At a private advance showing a Science Service representative saw color movies taken with the simplicity of ordinary black and white pictures. Quickly the film was developed and processed in special machines. When screened, delicate pastel shades stood out clearly and the depth of focus was much greater than was formerly possible.

Dr. C. E. Kenneth Mees, Eastman research director, explained that the new color film is the result of an invention some years ago by two musicians, Leopold Mannes and Leo Godowsky, Jr., who studied photography as a hobby. Since 1931 the musicians have been on the Eastman research laboratories staff at Rochester, N. Y., working, with the help of the entire staff, to perfect their work.

The film is coated five times. The resulting quintuplet "sandwich" of gelatine and light-sensitive emulsions separates the light rays entering the camera into the three primary colors, red, green and blue-violet, because of the presence of three layers which absorb these colors only. Under the three layers is the transparent supporting base on the back of which is the customary layer, known as antihalation backing, which prevents any back scattering of light that might over-expose the film.

Taking pictures in color with the new film is simple. As ordinary black and white movies, the light intensity must be judged to determine what aperture or light gathering power of the camera must

be used. The only rule when taking the new color movies is to double the amount of light that would be used for black and white movies.

Because special filters are not needed, the new film is comparatively "fast." Cameras with low-cost lens, such as f4.5, can be used.

Processing the film, said Dr. Mees, is a complicated technique which produces good results only when performed under standardized conditions in the factory. Each of the three layers in the film must be developed and then dyed to the complementary color before projection. Thus the red-sensitive layer is dyed to a blue-green color, the green-sensitive layer to the reddish magenta shade and the blue-sensitive layer to a yellow image.

"Previously, color in photography has involved sacrifices," Dr. Mees said. "More light was needed for taking the pictures, it was difficult to get sufficient depth of focus, some definition was lost, and it was only possible to project pictures on a small screen because of the loss of light on projection.

"When you see the Kodachrome film on the screen you will realize how wonderfully colored the world is. An artist, of course, knows this, but most of us are not artists and we don't realize the subtle colors that occur in everyday scenes—

flowers and foliage, and summer landscapes, where bright colors strike the eye. But the new Kodachrome process has been brought to perfection during the winter, and it has taught us to look for the purple-brown of the winter woodland, and the blue of the ice and the shadows in the snow, so that I realized as everyone will soon realize, that it is only in color that we can make any adequate representation of the world about us."

Price of the new Kodachrome film, it is announced, will be the same as the Kodacolor film now used.

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PHYSIOLOGY

## Vitamin A Researches Split \$5000 Prize

**I**N RECOGNITION of their researches on vitamin A, a \$5000 award offered by Mead Johnson and Co., will be divided between Dr. Karl Mason of Vanderbilt University and Dr. S. B. Wolbach of Harvard Medical School.

Dr. Mason's researches demonstrated specific differences in the way lack of vitamin A and lack of vitamin E affect the tissues of certain reproductive organs. It was already known that lack or deficiency of either vitamin may cause sterility.

Dr. Wolbach has done basic work on changes in the body resulting from deficiency in vitamin A. He has also shown that tissues which become diseased through vitamin A deficiency grow normal again when vitamin A is added to the diet. The award to Dr. Wolbach also recognized his work showing that vitamin A is essential for the normal development of teeth.

Another award of \$15,000 was postponed for two years.

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