

15¢

\$5.50 A YEAR

January 5, 1957

VOL. 71, NO. 1

PAGES 1-16

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



New Nuclear Reaction

See Page 5

A SCIENCE SERVICE PUBLICATION



(Left to right) Dr. John Bardeen\*, Dr. William Shockley\* and Dr. Walter H. Brattain, shown at Bell Telephone Laboratories in 1948 with apparatus used in the early investigations which led to the invention of the transistor.

## *Bell Telephone Laboratories Salutes Three New Nobel Prize Winners*

**Drs. John Bardeen, Walter H. Brattain and William Shockley  
are honored for accomplishments at the Laboratories**

The 1956 Nobel Prize in Physics has been awarded to the three inventors of the transistor, for "investigations on semiconductors and the discovery of the transistor effect."

They made their revolutionary contribution to electronics while working at Bell Telephone Laboratories in Murray Hill, N. J. Discovery of the transistor was announced in 1948. Bell Laboratories is proud to have been able to provide the environment for this great achievement.

This is the second Nobel Prize awarded to Laboratories scientists. In 1937 Dr. C. J. Davisson shared a Nobel Prize for his discovery of electron diffraction.

Such achievements reflect honor on all the scientists and engineers who work at Bell Telephone Laboratories. These men, doing research and development in a wide variety of fields, are contributing every day to the improvement of communications in America.

*\*Dr. Bardeen is now with the University of Illinois, and Dr. Shockley is with the Shockley Semiconductor Laboratory of Beckman Instruments, Inc., Calif.*



**BELL TELEPHONE LABORATORIES**

WORLD CENTER OF COMMUNICATIONS RESEARCH AND DEVELOPMENT

# Kodak reports to laboratories on:

outdoing ourselves on film speed . . . a pH indicator from Alleppey

## S. O. 1177

We have outdone ourselves. We have made a sheet film that is approximately four times as fast as *Kodak Royal Pan Film* when both films are forced equally in the developer. Photography has scarcely had time in two years to adjust itself to the broader potentialities opened to it by *Royal Pan* and its roll film counterpart, *Kodak Tri-X Film*. These films had confounded 20 years of common photographic knowledge about the limits of fast film with respect to exposure time, lighting requirements, and the lens aperture requirements that determine depth of field. Now new and stronger superlatives must be found. Four times as fast as *Royal Pan*!

The new film does not have an official name yet. It is temporarily designated *Kodak Sheet Film S.O. 1177*, the "S.O." standing for the special order which your dealer places for two- to three-week delivery. Limited quantities only are being manufactured so that improvements and modifications, if any, can be effected quickly. News photographers who have tried this film out for us have reported back exposure index figures that some of our people regard as impossibly high by an order of magnitude. So we guess until there is an official determination we had better not mention a figure.

The exposure index is the parameter representing the film in the function that connects light level to the shutter and diaphragm setting on the camera. Well-meaning zealots have taken to quoting index figures as a measure of triumph over luminous insufficiency, forgetting that the index was devised as a guide to an arbitrary ideal, not a record of what you have gotten away with under certain conditions.

Still, what do you think of this shot made on *S.O. 1177* at 1/25 second, *f*/5.6 by the light of nothing more than the ordinary cigarette

lighter with which wives light their husbands' cigarettes?



## A bright, cheerful yellow

About 150 miles up the west coast from Cape Comorin, the tip of India, there stands the town of Alleppey. The farmers around Alleppey raise black peppercorns for the world's pepper shakers. As a sideline they also raise a little ginger, and each year they also set out rhizomes (underground root-like stems) of a plant known to botanists as *Curcuma longa*. From the upper side of the rhizomes leafy shoots develop, and from the lower side, roots. At harvest time the farmers dig up the new crop of



rhizomes. These are then dried and milled to a yellow flour called turmeric, which is used to color the curries of India. Back in the old days a lot of turmeric went into the staining of leather, but chemistry killed that off long ago.

Some of the rhizomes do get shipped to a factory in Rochester, N. Y., which turns out mustard to put on hot dogs and hamburgers. Americans like their mustard to be

a bright, cheerful yellow rather than its greyish-brown self. Turmeric imparts the preferred color and contributes a little flavor as well.

From the mustard people we buy modest amounts of turmeric and percolate hot acetone through it. In this simple manner we obtain sharp melting crystals of *Curcumin* (Eastman 1179), which is nothing more than 1,7-bis(4-hydroxy-3-methoxyphenol)-1,6-heptadiene-3,5-dione.

From an acidified solution containing boric acid and *Curcumin* one can obtain a red, alcohol-soluble reaction product, formed in proportion to the amount of boric acid present. There is a Ph.D. thesis in the archives of one of the midwestern universities which suggests that this red substance represents a loose combination of the borate radical with one of the two hydroxyls in *Curcumin*. At any rate, this reaction is the basis of a method for measuring boron in soils and plant tissue. We shall be pleased to send you an abstract of the method.

The big thing about *Curcumin*, however, is that it changes from yellow to red over the pH range 7.5 to 8.5 and from red to orange over the pH range 10.2 to 11.8. This gives it a place on the list of 52 *Eastman pH Indicators*.

Now, should you care to reveal to us that you are interested in pH indicators, do you know what we are going to do? We are going to send you ABSOLUTELY FREE a brand-new edition of our celebrated chart (suitable for framing) that shows the pH range and color changes of ALL the *Eastman pH Indicators*. That's what we are going to do.

*What's more, we'll not only send you the abstract and/or the wall chart, we'll also, if you like, send you a copy of our new Eastman Organic Chemicals List No. 40, which catalogs some 3500 highly purified organics. Make your requests to Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y. (Division of Eastman Kodak Company).*

**This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are . . . serving laboratories everywhere**

**Kodak**  
TRADE-MARK