

## PHYSICS

## Study Flashes of Light From Adhesive Tape Roll

**H**ERE'S one you can try for yourself: Take a reel of sticky tape (surgeons' adhesive, electricians', or "Scotch") into a completely dark room. Wait until your eyes are "used to the dark"—dark adapted, as physiologists term it. Then quickly strip off a length of the tape. There's a very good chance you will see a flash of greenish light where it is being pulled from the roll.

As a variant, you might pour a film of collodion on a sheet of glass, and after it has hardened suddenly peel it off in the dark.

This curious flashing, which bears the scientific name of triboluminescence, has been investigated by Prof. E. Newton Harvey and Charles Butt at Princeton University, and is the subject of a report by Prof. Harvey (*Science*)

"It is apparent," states Prof. Harvey, "that these phenomena have a decidedly electrical flavor."

The phenomenon, which other observers have noted also, seems to be related to what happens in a neon tube. The electrical discharge excites the gas molecules and causes them to glow. Indeed, Prof. Harvey and Mr. Butt have obtained the characteristic reddish glow of neon by shaking substances known to be triboluminescent with a steel ball in a tube containing low-pressure atmosphere of neon instead of ordinary air.

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## PUBLIC HEALTH

## Millions Ill Fed Yet Plentiful Food Possible

**I**N A world that is spending so much on armament for potential warfare, the problem of feeding its populations might seem to be a minor one. This is particularly so because there is so much reference to food surpluses.

Even in this country where agricultural over-production is particularly troublesome, there is that famous one-third of a nation ill fed.

Science is just beginning to make evident the great and serious damage from malnutrition, not the plain, stark hunger of starvation, but the hidden hunger of the partially fed and the semi-starved. Deficiency diseases, such as pellagra and beriberi, have been known for many years to cause heavy mortality throughout the world. The irony of this is that diseases due to faulty nutrition

are considered the easiest of all to prevent.

Much more is known about the hidden hunger of the world through studies and surveys drawn together by a nutrition committee of the League of Nations. Even if the League can not settle the political problems of the world, it is trying to stimulate adequate use of our food resources to prevent damage being done to the human race by malnutrition.

Facts unearthed, in the opinion of Sir John Boyd Orr, Britain's leader in applying nutrition's newer knowledge, are "sufficiently startling to warrant immediate changes in national food policies."

In Australia 17.9% of some 3,000 children of inland areas and 21.7% of pre-school children in Melbourne showed malnutrition, due largely to lack of dairy products, fruit and vegetables. Yet the Australian government has been searching for an export market for just such products.

If Hungary's nutrition needs were fully met and exports maintained, milk production should be increased 120% and eggs by 470%. The Yugoslavian peasant's diet in winter consists almost solely of bread and beans.

In the United States, a U. S. Department of Agriculture survey showed that half the families of wage earners and low-salaried clerks are not getting adequate nourishment.

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## AERONAUTICS

## Device for Training Planes Simulates Radio Range

**A** PORTABLE device for use in training planes—which will crowd the sky next year as the government program for training 15,000 pilots yearly gets under way and spurs other thousands into aviation—has been invented by Herbert M. Peters, veteran airman and manager of the Ithaca airport.

Because the nearest radio range station is 20 air miles away and because present ground training devices for teaching blind flying are extremely expensive, Mr. Peters, aided by several Cornell University students, built a substitute device which fits into the training plane.

A radio-tube arrangement simulates the signals heard over an actual range, and permits the instructor to vary signals at will to impose problems for the student to solve as well as obtain practice in following the signal. Mr. Peters' invention weighs 18 pounds.

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# IN SCIENCE

## PSYCHOLOGY

## Understanding of Old Age Needed, Not Pity

**S**OME people look on old age with horror, some with veneration and a good many with sentimental pity. Understanding, based on facts, however, is what is really needed, according to Dr. George Lawton, psychological adviser to the Andrew Freedman Home in New York City.

"It is easy enough to grow maudlin over old people and to feel sorry for them and for ourselves who must grow old," Dr. Lawton pointed out.

"It is even easier for us to force premature dependence on men and women, and then, when they are helpless, take care of them in a fit of zealous good-Samaritanism. I think," Dr. Lawton declared, "that the greatest service we can render old age and ourselves is to study it with scientific detachment and then enforce whatever recommendations are called for by such study."

Dr. Lawton outlined a six-point program for attacking the problem of aging in its mental health aspects.

First, he calls for intensive, systematic, long-time studies of the mental abilities, interests, recreational activities, personalities and emotional problems of large groups of men and women in each decade of life from 40 to 80 years.

Second, after all the facts about old age are at hand, and not before, he advises setting up old age guidance clinics similar to the present child guidance clinics.

Third, after the first two steps have been taken, individual psychologists and psychiatrists will begin to include old people in their practice and from this will come knowledge on how to treat the aged.

Fourth, Dr. Lawton wants courses in geriatrics given in medical schools.

Fifth on his program comes social planning and change necessary to effect lasting reduction in the maladjustments of old people.

Sixth, schools and colleges should prepare young people and adults for the problems they will have to face as they grow older.

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# E FIELDS

## PUBLIC HEALTH

### Search For Possible Poison Effects of Fluorine

**S**CIENTISTS of half a dozen University of Chicago departments have launched a cooperative search for possible harmful poisonous effects of fluorine on the human body as a result of growing proof that its occurrence in food, air and water in many parts of the earth is responsible for mottled teeth.

"Black tooth," known in 31 states and in many foreign countries, affects about 5,000,000 people in the United States alone, a National Academy of Sciences committee, headed by Prof. Anton J. Carlson of the University, has already shown.

Large doses of fluorine, which occurs in many commonly used industrial materials and processes, is known to cause changes in the body, or even death.

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## MEDICINE

### Rubbing Tongue With Ice Kills Bitter Taste

**I**F YOU have bitter medicine to take, rub your tongue with ice and you won't know you aren't dining on milk and honey.

This useful advice is based on observations of Dr. Harald Tangl of the University of Budapest, whose recent lecture on the sense of taste is reported in the *Journal of the American Medical Association* (April 22).

However much sugar is put in ice cream it won't taste too sweet because when they are cooled the taste buds on the tongue scarcely function. For this reason warm coffee requires less sugar to sweeten it than iced coffee. Warmth is a stimulant to the taste buds.

These taste buds are unevenly divided in the world of nature. An antelope has 50,000; a man has 3,000; a cow has 15,000. The whale has only a few; he gulps his food so quickly that taste is no object. Among horned cattle, taste is important, and they scrupulously select the grasses they like.

While man tastes only with his tongue, fishes taste with their whole body, according to Dr. Tangl.

A baby tastes with the middle part of his tongue and an adult determines with the sides of his tongue whether food is pleasing or not.

There are four distinct tastes: sweet, salty, bitter and sour. The sweet taste is perceived on the tongue most quickly, because the buds reacting on sweets are located at the tip of the tongue. Next comes salt and then comes sour. Bitter things are tasted at the back of the tongue.

The taste can be trained. Tea tasters can tell the place of origin of a tea after a single tasting. Wine tasters can tell where the grapes were grown and whether they grew in a shady or in a sunny field.

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## MEDICINE

### X-Ray Technique Can Save Mothers' And Babies' Lives

**L**IVES of mothers and babies can be saved by a method of X-ray diagnosis shown in the exhibit by Drs. A. Louis Dipple and Webster H. Brown, of the Johns Hopkins Hospital, Baltimore, which won for them an American Medical Association certificate of merit.

By a special method of taking the X-ray picture of the mother during the last three months before the child is born, the Hopkins doctors can tell whether she is likely to develop the dreaded condition of placenta praevia, in which the "afterbirth" or placenta comes before the baby instead of after. This is one of the most serious complications of pregnancy, Dr. Dippel explained, since there are no premonitory symptoms. The mother suddenly starts bleeding and the hemorrhage is so rapid and severe that there is rarely time to stop it before the mother dies. The condition occurs in about one out of every 250 childbirths. In hospitals under ideal conditions, only about eight out of every hundred of these patients die, but when the hemorrhage starts when the expectant mother is still in her home, as is often the case, half or more of the mothers are lost and nearly half of the babies.

This mortality could be cut to a very low figure, Dr. Dippel believes, if every mother had an X-ray made during the last three months before the child's birth is expected. When the X-ray shows that this condition is present, the doctor can perform a Caesarean operation to deliver the baby before the dangerous hemorrhage starts.

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## PHYSICS

### Store Sun-Energy in Silos, Is Proposal of Scientist

**S**TORE the now-wasted surplus sun-energy in underground silos as trapped heat, to be drawn out and used as needed, is the proposal of Dr. F. G. Cottrell, well-known Washington scientist. Dr. Cottrell's suggestion is incorporated in a new report by Dr. Charles G. Abbot, secretary of the Smithsonian Institution, in which latest developments of Dr. Abbot's many years of research on direct utilization of sun-power are discussed.

The "solar-silo" scheme is exceedingly simple. There would be a deep, cylindrical, concrete-lined pit, filled nearly to the top with loose, dry sand, and "stoppered" with about ten feet of glass wool, an excellent heat insulator. To the top of the sand would run a branched inlet pipe, from a solar heater, of the focusing mirror type invented by Dr. Abbot. An automatically controlled pump would bring in heated air when the sun was shining, and stop at night or in cloudy weather. A second set of pipes, at the bottom, would draw off the heated air as needed. It is believed that the sand, under its thick blanket of glass wool, would retain its high initial temperature for perhaps many months.

Dr. Abbot's latest improvement in the solar heater itself has been an automatic control of the water-stream flowing through it, to be converted into steam by the mirror-focused rays of the sun. It is now arranged to take in water more rapidly as the boiler becomes hotter, and to cut it off when lack of sunlight reduces available heat.

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## GENERAL SCIENCE

### Assets Of Foundations Total \$1,200,000,000

**C**APITAL assets of American foundations now total more than \$1,200,000,000, a survey prepared by the Raymond Rich Associates as a continuation of previous Twentieth Century Fund studies revealed.

Reports from 243 leading foundations are embraced in the study. One hundred and twenty-one of the 243 reported capital assets amounting to \$945,443,637 at the end of 1937, last year for which complete figures are available. Available information on the other 122 indicates that their total assets amount to another \$250,000,000.

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