PHOTOGRAPHY

## To Take Photo Story of Bomb Test in Pacific

➤ BEFORE, DURING and after the atomic bombing of Navy ships at Bikini Atoll in the Pacific, movie, television and still shot cameras will be grinding out a complete picture of this greatest show in history.

An aerial record of the bombing will be made from cameras mounted in planes such as the Boeing F-13 photo ship shown in the Joint Army-Navy photo on the cover of this SCIENCE NEWS LETTER. Four photographic planes will be flown in the different quadrants out from the explosion to "shoot" the bombing from 20 seconds before to six minutes after the bomb is dropped. Supporting these photo aircraft will be four planes standing by in event of casualties.

The F-13 flying camera ship is a converted B-29 with two ultra-high-speed cameras mounted in four turrets. In addition, an observer in the tail position will operate motion picture and still cameras.

*Science News Letter, June 1, 1946*

MEDICINE

## Streptomycin Dosage Must Be Right If Effective

➤ A NEW WORRY over streptomycin, that it may kill rather than cure if the dose is not just right, appears in findings by Drs. Henry Welch, C. W. Price and W. A. Randall, of the U. S. Food and Drug Administration.

When the antibiotic was given at certain dosage levels to mice with typhoid fever, more of the animals died than would have if they had not been given streptomycin.

Although these findings were made on mice, "there is no adequate reason" why this should not also occur in man, the scientists state in their report. (*Journal, American Pharmaceutical Association,* May).

The dosage levels that stimulated the typhoid germs to greater deadliness are the ones usually found in the blood of humans at some time during streptomycin treatment.

Alarming as the findings are, they also hold hope that streptomycin treatment may succeed in more diseases than it does at present. The drug kills the germs of typhoid fever and undulant fever in the test tube, for example, but when used to treat the disease, some patients recover while others do not. Changing the dosage and treatment schedules in the light of these new findings may bring success in more cases treated.

Discovery came about through puzzling inconsistencies in results from routine test tube experiments on streptothricin, a drug closely related to streptomycin. Laboratory workers observed that relatively high concentrations of the drug did not interfere with the activity of germs as much as somewhat lower concentrations did. Substituting streptomycin for streptothricin, and using typhoid organisms for the test, they obtained essentially the same results.

Why streptomycin within a relatively narrow range of dosage, can either stimulate germs to greater deadliness or overpower them has not yet been determined.

*Science News Letter, June 1, 1946*

MEDICINE

## New Chemical Effectively Treats Scrub Typhus

➤ SCRUB TYPHUS, one of the severest diseases encountered by U. S. troops in the Pacific and Asia, can be successfully treated with a chemical, para-aminobenzoic acid, the War Department's U.S.A. Typhus Commission makes known in a recent report (*Journal, American Medical Association*, May 25).

Until carefully controlled clinical tests made by Lieut. Nicholas A. Tierney, Navy surgeon, at Assam, India, demonstrated that the drug in large doses is "an effective therapeutic agent" for tsutsugamushi disease, no successful treatment had been known.

In the test conducted during the building of the Ledo Road through jungle territory where the mites that carry the disease are plentiful, one patient received at the hospital was given PABA, as the drug is called for short, while the next patient was given the best standard treatment without the chemical. In this way 18 patients were given the new treatment and compared with 16 who did not receive it.

Three of the control cases died, while none of the cases treated with para-aminobenzoic acid were fatal. Patients who were given the chemical had fewer days of fever, less severe symptoms and complicating symptoms and a shorter convalescence period. Lieut. Tierney emphasized that the chemical should be administered in the first week of the disease.

*Science News Letter, June 1, 1946*

# IN SCIEN

PHYSICS

## Atomic Science May Be Applied to Glass

➤ AN EXTENSIVE research program to apply findings of wartime atomic science to glass technology is proposed. This is a recommendation of the glass division of the American Ceramic Society.

Dr. Alexander Silverman of the University of Pittsburgh, chairman of the research committee, states that there now is possible a radioactive form of each of the chemical elements.

Those employed in glass manufacture, he says, would tell how raw materials melt, how the glass flows during melting, where the materials are located in the finished glass, and might account for defects in imperfect glass. Some of the newer elements will produce glasses possessing new properties and colors, he adds.

The proposal includes the collection and distribution of funds for glass research in educational and industrial research laboratories throughout America to keep this country in the forefront in glass technology and manufacture.

*Science News Letter, June 1, 1946*

PHYSICS

## 300-Mile Oceanic Layer Reflects Sound Waves

➤ SOUND WAVES sent into the Pacific Ocean off the coast of California by Navy sonar devices will bounce back from 1,000 to 1,500 feet below the surface when they strike a 300-mile wide oceanic layer suspended between the floor of the ocean and the surface, scientists at the Navy Electronics Laboratory of the University of California Division of War Research have reported.

This sound-stopping layer extends from Point Mendocino, 200 miles north of San Francisco, to Cape San Lucas at the tip of Lower California, and is the deepest oceanic layer known.

Scientists are not sure what composes the layer, but one theory is that plankton, small marine animals, make up the sound barrier. Other suggestions are that the echo may be caused by larger fish feeding on plankton or that gas bubbles from the undersea life reverberate sound.

*Science News Letter, June 1, 1946*

# CE FIELDS

ACOUSTICS

## New Instrument Aids Deaf To Use Telephone

➤ DEAF PEOPLE will be able to carry on a telephone conversation with a new instrument demonstrated to the Acoustical Society of America. It is called a sound spectrograph and translates any sound into a visual pattern. With a little training, deaf persons can learn to read the patterns and literally see what the other party has to say.

Drs. W. Koenig, H. K. Dunn, and L. Y. Lacy of the Bell Telephone Laboratories, inventors of the spectrograph, explained that the new instrument would be used first for the rapid and accurate analysis of sound. It is a wave analyzer that produces a permanent visual record of the sound's energy distribution in both frequency and time.

Another session of the acoustical meeting learned that "silent as a fish" is an obsolete expression. Drs. Donald P. Love and Don A. Proudfoot of Columbia University declared that the croaker, among other fish, can make a noise that, if it were in air, "would compare favorably with a boiler factory."

Noisy fish became important during the war when their sounds threatened to interfere with the detection of enemy submarines.

*Science News Letter, June 1, 1946*

NUTRITION

## Vitamin B Complex for Starving Populations

➤ AN INCREASE in the food supplies of the war-ravaged nations of Europe and Asia can be achieved simply by feeding vitamin B complex to the starving populations.

This was suggested at a meeting of the American Gastro-Enterological Association by Dr. T. L. Althausen, associate professor of medicine in the University of California Medical School.

Dr. Althausen reported significant new experiments with animals in which it was shown that maximum utilization of foods can be obtained only if there is an adequate supply of vitamin B complex.

Stating that there is a significant increase in food utilization in rats recovering from a deficiency after administration of the B complex, Dr. Althausen said that no single component of the complex was alone responsible for the increase. While vitamin $B_1$, or thiamin chloride, made the most marked difference, the lack of any one decreased food utilization.

Dr. Althausen said that the administration of the B complex also causes an increased intestinal absorption of glucose, a sugar which contributes to gain in body weight.

Failure to insure that deficient persons are given an adequate supply of all the B complex vitamins in effect results in a waste of food, since it will not be utilized to the maximum.

"Another reason for supplying under the present conditions in devastated countries adequate amounts of vitamin B complex which apparently acts as added food by increasing the efficiency of utilization of available food is its small bulk and low cost," Dr. Althausen stated.

Dr. Althausen's report was prepared in collaboration with Dr. John J. Eiler, associate professor of pharmacy and biochemistry, and Mabel Stockholm, researcher.

*Science News Letter, June 1, 1946*

PHOTOGRAPHY

## Built-In Flash-Blub Holder For Small Camera

➤ A SMALL CAMERA with built-in flash-bulb holder, designed especially for photographing small objects at a few inches' distance, is the invention on which U. S. patent 2,400,483 has just been granted to William J. Cameron of Chicago.

For finding and focussing, a prism is inserted between the lens and the shutter, to throw the image upward to a second reflecting prism, which in turn directs it backward to the eye of the operator. He is thus able to see exactly what he is going to photograph.

When the operator is ready to make his exposure, he moves a lever that lifts the prism out of the way, and at the same time opens the shutter. Simultaneously, the flash-bulb is fired. Then the shutter closes.

The flash-bulb is set into a cylindrical housing beneath the lens barrel, so that it throws its light directly on the object. In front of the bulb is an adjustable diaphragm, so that the amount of light can be controlled at the operator's will. The battery is contained in a downward-projecting cylinder, which also serves as a convenient handle.

The inventor states that the camera was designed especially for the use of physicians, surgeons and dentists; but its application in many other fields is obvious.

*Science News Letter, June 1, 1946*

PHYSICS

## Muzzle Attachment Eliminates Gun Flash

➤ OPTICAL METHODS of studying air streams travelling faster than sound led to the development of a device to eliminate the telltale muzzle flash of a soldier's gun.

The same methods now have an application in airplane design, particularly in the development of craft for supersonic speeds and of efficient orifices for jet propulsion.

The actual elimination of the flash from a discharging gun is due to a muzzle attachment which changes the flow of exploding gases from small caliber arms, but the device is a result of laboratory studies of gases escaping at high pressure from tubes, made possible by the special optical methods.

These optical methods, developed during the war, result from work done at Princeton University by Dr. Rudolf W. Ladenburg, Dr. Cletus C. Van Voorhis and Dr. John R. Winckler. After a beginning had been made, the U. S. Navy became interested and all later work was done under a Navy Ordnance contract.

In carrying out the study of muzzle flash, what scientists call the interferometric technique was used. This employs light rays as a means of measurement. It is an advance over mechanical measurement devices because these cause deformation of the gas stream.

The methods developed here are based on earlier work. The noted physicist Albert A. Michelson demonstrated 60 years ago how light rays might be used to study optical effects in gases. Austrian and German physicists had applied optical methods to the study of supersonic phenomena. No one in this country or in England had ever used an interferometer for studying the behavior of supersonic air streams flowing around objects when the war work was begun at Princeton.

*Science News Letter, June 1, 1946*