

ELECTRONICS-PHOTOGRAPHY

# New Flash-Bulb Timer

Permits photographs to be taken in three ten-thousandths of a second. The unit depends upon a constant rate of electrical voltage increase.

► **SIX PICTURES** in three ten-thousandths of a second is the top speed with which photographs can be taken with a new flash bulb timer. This means that you could take six pictures of a .50-caliber bullet while it moves half its own length, after being fired from a gun.

The timer, developed by the photographic engineers of the Air Technical Service Command at Wright Field, uses microflash bulbs supplied by Dr. Harold E. Edgerton, professor of electrical engineering at Massachusetts Institute of Technology. Each lamp flashes in two millionths of a second. Six microflash lamps may be set off, either in a series or simultaneously.

The unit depends upon a constant rate of electrical voltage increase for the rapid firing of the lamps. Six lamps are connected to voltage amplifiers, so set that each one is a little less sensitive to voltage increases than the one next to it. As current is passed through the amplifiers, and the voltage rises, the lamps are fired.

Technically, the timer uses linear

charging of a condenser through a pentode tube, adapted from television. Linear charging makes it possible to time the pictures exactly by turning simple dials on the controls. The slowest speed at which the lamps can take a picture is six-tenths of a second.

The outfit is now used to study rupturing propeller blades, although it was originally conceived as a means of studying the effects of gunfire on armor plate. The first timer built could only take pictures within a range of six to eight feet. This distance has now been increased, and pictures can be made as far as 50 feet from the subject.

X-ray film and an f/2.5 night aerial camera lens are used to make the pictures. Microflash pictures are taken by opening the camera shutter in total darkness, flashing the lamps, then closing the shutter.

If necessary, the lamps may be set off by sounds which are picked up by microphones transmitting electrical impulses to the circuit. This is used in propeller-

rupture studies where the exact instant of rupture cannot be predetermined.

*Science News Letter, June 2, 1945*

PHYSICS

## Physics Laboratory of Nobelist Found Intact

► **DEPARTING** Nazis have left undamaged the physical laboratory and equipment of Prof. Niels Bohr, world-famous scientist who in 1922 received the Nobel Prize for his researches on the structure of the atom. To the credit of leading German physicists, it is now made known that they refused to take possession of the Institute for Theoretical Physics when their political masters seized it on Dec. 6, 1943.

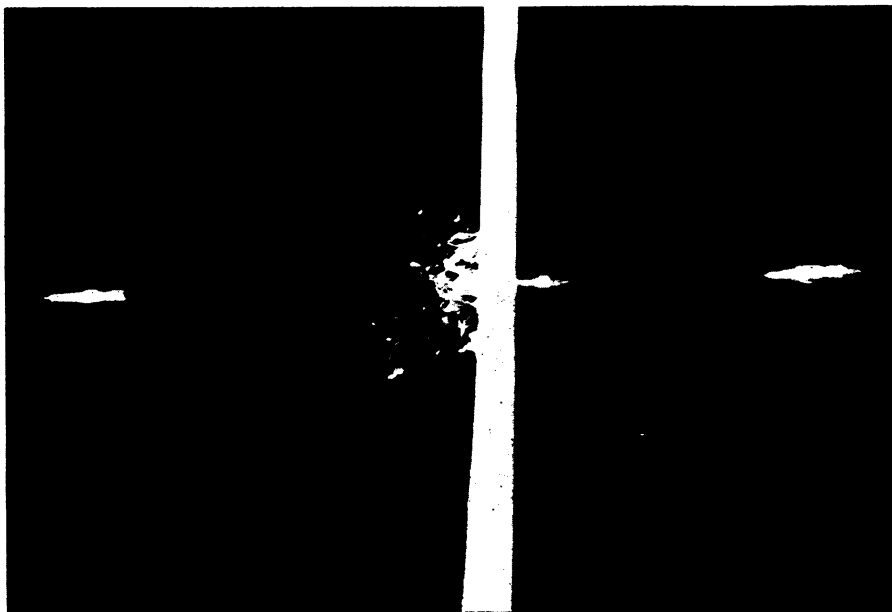
Because Prof. Bohr has Jewish blood in his veins, he expected persecution by the Nazis, and escaped to Sweden in October, 1943. With him went another eminent scientist who also had Jewish ancestors, Hungarian Prof. Georg Hevesey, who in 1943 was awarded the Nobel Prize in chemistry for his pioneer investigations on "heavy water."

Subsequently Prof. Bohr made his way to England, and on the pretext (subsequently proved groundless) that he was there engaging in war work for the Allies, the Nazis took possession of the Institute at Copenhagen, of which he is director. To insure against Danish sabotage of the equipment, Prof. Bohr's first assistant, a Dr. Boeggild, was imprisoned for seven weeks; and even the laboratory foreman was locked up for ten days. When the Nazis were unable to find any competent physicist in Germany willing to act as receiver of this stolen property they finally reluctantly returned the Institute to the University of Copenhagen.

During Prof. Bohr's exile he was able to keep in contact with his fellow-workers in the laboratory by correspondence. He is known to be in the United States at present, though his exact whereabouts remains undisclosed. It is expected that he and Prof. Hevesey will return to Copenhagen before very long.

Another leading Danish scientist still in Sweden is Prof. August Krogh, noted for his researches on vitamins, who is reported to be under threat of assassination by Nazi gangsters. Prof. Krogh was awarded the Nobel Prize in medicine and physiology in 1920, and in 1937 he was made Foreign Associate of the National Academy of Sciences, the highest honor to a foreigner within the gift of that leading American organization.

*Science News Letter, June 2, 1945*



**STANDS STILL!**—Frozen by high speed photography at three points on its journey through an obstruction, this bullet apparently standing still, actually was speeding along its course when overtaken by microflashes at Air Technical Service Command headquarters at Wright Field.