

## PHYSICS

# Man-Made Gamma Rays Six Times As Piercing As Nature's

## Presence of Radiation of 16,000,000 Electron Volts Detected Definitely By Study of Atomic "Debris"

**M**AN-CREATED gamma radiation, of the kind so widely used in the treatment of cancer, and excelling the best efforts of nature over six times, is being studied at California Institute of Technology.

Four scientists, headed by Prof. C. C. Lauritsen, of the Kellogg Radiation Laboratory, report in the *Physical Review* (July 15) that they have unmistakable evidence of laboratory-produced gamma rays having energies of 16,000,000 electron volts. The highest energy found in natural gamma rays—given off by radioactive substances such as radium—is only 2,600,000 electron volts, an energy "record" held by the radioactive element known as thorium C."

Prof. Lauritsen's 16,000,000 electron volt gamma rays were obtained in experiments performed in collaboration with Dr. H. R. Crane, Dr. L. A. Delsasso and W. A. Fowler. The light metal element lithium was bombarded with protons, the positively-charged nuclei of hydro-

gen atoms, to yield the piercing rays.

The proton atomic "bullets" were driven down a special vacuum tube, in the research, by electric voltages which ranged from 400,000 to a million volts. On striking the lithium target, the proton is believed to combine momentarily with lithium atoms.

The lithium atoms, the investigators report, are thought to be the isotopic form of mass seven. When a proton joins them, it adds its mass of one so that the total mass is eight.

The 16,000,000 electron volt gamma rays which emanate from the union are best explained by assuming that the lithium and proton of total mass eight break up into two helium particles, each of mass four. Such helium nuclei are known as alpha particles and, along with gamma rays and electrons, are given off when radium disintegrates.

To balance the queer-looking energy equation, it is necessary to postulate that

17,000,000 electron volt gamma rays come out when the two alpha particles are created.

The presence of 16,000,000 electron volt rays was detected quite definitely by a study of the atomic "debris" knocked out.

Tracks of the flying electrons from the impacted atoms of the lithium target were observed in a Wilson cloud chamber in the investigation of the high energy gamma radiation.

*Science News Letter, July 27, 1935*

## ENGINEERING

## Electrical Device Aids in Measuring Speeds of Cars

**T**HE UNIVERSAL protest of motorists caught speeding, "But officer, I was only doing twenty-five," may soon be a thing of the past. A new portable electrical device, measuring the instantaneous speed of an automobile and lessening the chances of error on the part of traffic officers, has been perfected by Dr. Harry R. DeSilva, head of Massachusetts State College's psychology laboratory.

Two concentrated beams of light are thrown across a road by 50-candle-power lamps operated from an auto storage battery. These activate two photoelectric cells in the indicating instrument. An automobile passing across the light beams, which are only 18 inches apart, cuts off first one light beam, charging a condenser in the recording apparatus, and then a fraction of a second later, cuts the second beam, stopping the charging process. The amount of "charge" in the condenser is translated directly by the instrument into miles per hour. Accuracy within 2 miles per hour at 60 miles auto speed and within a fraction of a mile at 30 is claimed.

By pressing a button, the instrument can be made ready for another speeder. Accuracy is not the only virtue of the device, for it can be carried about in the rear of a car and set up at will to measure speeds on curves, intersections, and places to which other measuring devices are not easily adapted.

Dr. DeSilva plans several additions to his original device. One is the installation of a camera photographing the license number of the car going through the "trap," and the speed dial reading simultaneously.

Whether any such device as this could be used as legal evidence in many states, is problematical. Some state speed laws require proof that a driver has violated the speed regulation over a stretch of road, such as one-half mile, rather than at some



### CHECKING UP

With this device, the motorist's speed can be determined without the expedient of having a policeman give chase and clock him. The time taken for the car to travel the distance between two beams of light is measured and may be read in terms of miles per hour.