PUBLIC SAFETY

Deliberate Crashes May Save Many Lives

➤ BY DELIBERATELY crashing speeding cars, researchers at the University of California at Los Angeles hope to learn facts which may save up to 20,000 lives a year.

The project, part of the long-term collision research program of the Institute of Transportation and Traffic Engineering, is being supported by the Air Research and Development Command, U. S. Air Force. Derwyn M. Severy is project director.

Twenty-five automobiles will be deliberately crashed in head-on and barrier-type collisions at speeds up to 50 miles an hour.

Specially designed guide tracks and remote control devices will be used to assure that the test cars have a precision collision with one another or with the fixed barrier.

Purpose of the UCLA study is to determine engineering and physiological information from which automobile design and construction revisions to reduce injuries may be developed.

More than 40,000 people a year are killed in automobile accidents, Mr. Severy points out. "Half of these deaths could be prevented using safety measures already developed and other features under study," he says.

Specially instrumented dummies will help pinpoint the ways in which injuries occur, he says. These are often more complex than they would seem and precise collision information is essential for development of injury prevention measures.

The Air Force is supporting the project.

Science News Letter, February 2, 1957

BIOCHEMISTRY

Leukemia Fought by Folic Acid Derivative

➤ NEW INSIGHT into the working of the vitamin, folic acid, and its derivatives, has been reported by Dr. David M. Greenberg and James M. Peters of the University of California School of Medicine.

The research may also explain the workings of anti-cancer drugs, specifically aminopterin and amethopterin, in the treatment of chronic leukemia in children.

The two scientists have identified and partially isolated an enzyme that converts folic acid into active materials. The folic acid itself is inert.

The active materials, or derivatives, however, are necessary in the formation of the essential life substances, proteins and nucleic acids.

The enzyme identified by the Berkeley scientists transforms citrovorum factor, one of the folic acid vitamins, into the derivative, tetrahydrofolic acid.

Their role in forming nucleic acids has made folic acid and its derivatives a prime target in the treatment of chronic leukemia in children. Nucleic acid is essential to cancer growth. In the chronic condition in children, medical men have used aminopterin and amethopterin, which are antifolic acid drugs, to block formation of nucleic acid essential to cancer growth.

Dr. Greenberg said it is possible the two drugs block the enzyme discovered in the Berkeley laboratory, interfering with nucleic acid formation. This would explain how the agents slow growth of cancer cells.

The work was supported by grants from the California division of the American Cancer Society.

Science News Letter, February 2, 1957

BIOLOGY

Beneficial Mutations Caused by Radiation

➤ BENEFICIAL mutations that create vigorous new lines of plants can be induced by radiation.

This is the conclusion of Dr. A. B. Buddick, associate professor of genetics, at Purdue University, Lafayette, Ind., and Dr. T. R. Mertens, research associate at the University of Wisconsin.

Using seed from pure lines of tomato plants, Drs. Burdick and Bertens irradiated it with X-rays. Plants grown from this seed were back-crossed to control plants of the same pure line. Thus, any apparent differences between seedlings from irradiated and unirradiated plants were known to be radiation-produced.

Two syb-lines produced from irradiated seed were startlingly early in development, a trait that is beneficial not only to tomato-growers and eaters but to the plants themselves in many environments.

Drs. Burdick and Mertens believe that the mechanism underlying the production of beneficial mutations by irradiation is competition among cell lineages for "a place in the sun", the growing point (or meristem) of the plant. Irradiation of seed affects perhaps 50 or more individual cells of the seed meristem, any one of which is capable of reproducing the whole plant.

Following irradiation, which strikes randomly, each cell has a different genetic makeup. The cell lineages affected adversely by irradiation grow and multiply slowly, while any lineages favorably affected develop rapidly. Thus there is a natural screening process based on competition, with the most vigorous mutants surviving to be included in inflorescences and later branches. Even if the frequency of beneficial mutations is extremely low in the seed, this natural "sieve" should pick them up and include them in the mature plant.

Thus there is promise of a new era in plant (and perhaps animal) improvement in which many slow and laborious breeding procedures could be avoided. In Dr. Burdick's opinion, "The contribution of atomic energy in this area could be of far greater significance than anything that has come to light thus far."

This research was part of a doctoral dissertation by T. R. Mertens under Dr. Burdick's direction, sponsored by the Atomic Energy Commission.

Science News Letter, February 2, 1957