

GENERAL SCIENCE

Operations Research

This new technique is a veritable quiz kid in solving problems ranging from the fastest way to wash mess kits to doubling the number of enemy subs sunk.

► DOWNTOWN traffic jams may soon be solved by scientists doing research on this problem of modern living.

These were the hopeful words of Dr. Philip M. Morse, professor of physics at the Massachusetts Institute of Technology, a leader in the technique called "operations research." He told how it works on the program *Adventures in Science*, presented each Saturday by Watson Davis, director of Science Service, over the Columbia Broadcasting System.

Operations research, said Dr. Morse, was used during the war to solve problems ranging from how to increase the speed of a line of soldiers washing their mess kits to how to double the number of enemy submarines sunk.

Now it is being increasingly used in present-day defense problems. Dr. Morse is on loan from M. I. T. to the Department of Defense where he is Director of Research of the Weapons Systems Evaluation Group.

"This very new field of scientific application," said Dr. Morse, "involves using the methods of science to study and improve the operations of men and machines."

To illustrate how it works, Dr. Morse told how a scientist, noticing that enlisted men were standing in line a long time to wash their mess kits, practically eliminated the waiting line. There were two tubs of water for washing and two for rinsing. Since rinsing took much less time than washing, the scientist suggested that three of the tubs contain soapy water and only one be used for rinsing. The line of soldiers disappeared like magic.

However, the problem of keeping lines of automobiles moving is more complicated. Work on this and allied problems is going on right now.

"The effective routing of a city bus system is being tackled and the operation of a library and of a large restaurant is being studied," he said.

During the war, he explained, our effectiveness against enemy submarines was doubled merely by changing the depth at which underwater charges were detonated.

"That," he said, "required a detailed probability study through the application of mathematics as well as knowledge of the way in which fuses operate."

Real use is being made of these new techniques in the nation's defense effort, Dr. Morse said. The big difficulty now is a shortage of trained scientists to practice the techniques.

Science News Letter, June 10, 1950

INVENTION

Railroad Radar, Can Warn Of Collision Danger

► HIGH frequency radio warning equipment patented recently can give the engineer of a speeding train a continuous indication of whether another train is on the track ahead, and how far away it is.

The radar-like installation was awarded U. S. patent 2,509,331. The inventor, Paul M. Brannen of Duquesne, Pa., assigned the new warning idea to the Union Switch and Signal Co. of Pennsylvania.

The equipment is designed to supplement the usual safety system on U. S. railroads, which divides a given length of track into "blocks" and flashes semaphore or light signals to show whether a train is in the block ahead.

By high-frequency radio transmitters and receivers installed in the locomotive and caboose of each train, Mr. Brannen's equipment would provide an automatic radio echo from one train to another. An indicator in the engineer's cab would translate the time the echo takes to return into a distance reading.

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