

# military research

## Gathered at the meeting of the Association of the United States Army

### OPTICS

#### Lasers spot targets, intruders

The laser is becoming a valuable military tool in tasks ranging from pinpointing targets for tank gunners to spotting intruders.

A rangefinder for tanks using the beam of a ruby laser is being produced for the Army by Hughes Aircraft Co., Culver City, Calif. In operation, the tank commander lines up a target in the rangefinder and flashes the laser at it. The distance to the target in meters appears on an indicator and is fed automatically into the tank's fire control system. Having the exact range reduces the risk of the tank's revealing its position by having to bracket the target.

Another laser rangefinder is being developed by the Army to be carried by two men. Designed for surveys of target areas, the portable version is accurate to within 0.3 millimeters and has a range of up to 50 miles. The instrument, called a geodolite, will also be used to measure the circular path for the particle accelerator at Weston, Ill.; the circle is one kilometer across, and must be perfect to within one millimeter.

An intrusion detector, using a gallium arsenide laser, has been developed by RCA Defense Electronic Products in Camden, N.J. The transmitter and receiver, including self-contained batteries are each about the size of a cigarette pack. Interruption of the beam can trigger either a light or sound alarm.

### DATA PROCESSING

#### Automatic contour scanner

A system that can scan contour map lines automatically and store them in a computer is being developed by the Army Engineer Topographic Laboratories at Ft. Belvoir, Va.

So far the system is no more than twice as fast as tracing the lines by hand with a manual input device, but improvements in hardware and computer programs are expected to increase the advantage to from six to 10 times the manual rate.

### CARTOGRAPHY

#### Moon map for astronaut practice

A hand-carved relief map of one of the planned Apollo lunar landing sites is to be delivered to the space agency this month for astronaut flight simulation training.

The 291-square-foot map, made by the Army Map Service, includes almost half a million craters and is a replica of a site designated II-P-8, located just west of the center of the moon's earth-facing surface. The map, curved on the west side to simulate the horizon, represents an area of about 11 square miles.

The map will be installed at Cape Kennedy, upside down in a flight simulator, with a computer-guided TV camera looking up at it. A TV screen will simulate the view from the window of an approaching spacecraft.

498/science news/vol. 94/16 november 1968

### RADIOLOGY

#### Aminothiols may combat radiation

Test animals exposed to lethal doses of radiation have recovered after treatment with a class of drugs called aminothiols, being investigated by the Army Medical Department in Washington.

Such a drug, Army doctors feel, could reduce the initial effect of radiation from a nuclear attack, as well as provide a margin of safety for maneuvering in a fall-out area.

Several thousand compounds have been tested in a research program that began in 1959. The aminothiols are so far the only family of compounds to afford adequate protection in animal tests, although other individual compounds have shown some value. To be applicable for public or military use, such a drug would have to be easily administerable, effective at low doses without side effects and stable in diverse environments.

### ORDNANCE

#### Smoothing bumps for tank guns

An electronic gun stabilization system, designed for Army tanks, reportedly is capable of enabling effective fire during movement across terrain so rough that accurate fire would formerly have been impossible.

Built by the General Electric Co. in Pittsfield, Mass., the system has been tested on bumpy terrain, during zig-zags and 360-degree turns and against both stationary and moving targets. The heart of the system is a group of gyroscopes which detect motions of the gun and transmit signals to compensating motors.

### CHEMICAL WARFARE

#### Nerve agent alarm

A newly-developed nerve gas detector and alarm system for use in the field is described by Army scientists as "a breakthrough in chemical warfare defense."

Called XM8, the alarm is based on an electrochemical cell which samples the air continuously. If any nerve agents are present they react with chemicals in the cell, producing a current which triggers the alarm.

### STRUCTURAL ENGINEERING

#### Blanket makes quick bridge

A lightweight, portable footbridge consisting of flexible slabs of nylon-encased foam plastic has been developed by the Army for use in Vietnam.

Carried in individual units that open to be 11 feet long and seven feet wide, the bridge can be assembled in lengths of up to 100 feet. To deploy the bridge, an anchor attached to a rope is thrown to the far side of the stream or river. Then the rope is pulled through an eye in the anchor, pulling the bridge across the stream. A 50-foot bridge can be assembled in 15 minutes.