



OPERATION FLARE—A rapid method for control surveys to supply basic data for mapping and field artillery fire control using airborne stations, equipped with signal lights and flares, has been worked out by the Engineer Research and Development Laboratories at Fort Belvoir, Va. Spotted at known and unknown points, simultaneous readings of the target's horizontal angle are taken with theodolites, equipped with recording cameras.

ASTRONOMY

Map Edge of Moon

► THE EDGE of the moon that on clear nights you often see outlined against a background of dark blue sky and pin-point stars is being carefully mapped, C. B. Watts of the U. S. Naval Observatory has reported.

Little is known about the moon's edge. The survey is considered important not because adventuresome tourists may some day plan to rocket their way to the moon, but because travelers here on earth need more exact maps. Variations in the moon's edge are now being used in surveying large areas such as deserts and oceans. They are also valuable in detecting slight changes in the earth's rotation and will improve our time determinations.

The moon takes about as long to travel around the earth as it does to turn around its own axis. Thus the same part of the moon always faces the earth. But the moon's motion in relation to that of the earth is slightly uneven, and as a result sometimes we can peek a bit farther around one edge, sometimes we can see a little more around the other. At one time or another observers here on earth have seen nearly 60% of the moon's surface.

Because of this unevenness in the moon's motion, the outline of the moon against the sky is continually changing. It is this marginal zone of the moon, which at one

time or another will be seen in outline, that is being studied.

Large-scale profiles of the moon are being constructed from photographs taken at the U. S. Naval Observatory, the Yale University Southern Station at Johannesburg, Ariz. Measurements are made by automatic apparatus utilizing a microscope equipped with light-sensitive cells.

The last survey of the moon was completed in 1914 by the late Prof. Friedrich Hayn of the University of Leipzig. The features of the moon, of course, have not changed since then, but a more complete and detailed map is needed to picture all possible outlines of the moon.

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INVENTION

Patent Salt Shaker That Is Free-Flowing

► SALT KEEPS flowing from a new salt shaker no matter how damp and humid the weather may be. James H. Young, Mount Lebanon, Pa., received patent number 2,588,600 for the salt shaker. A desiccant is held within the salt shaker between the cap and the part where the salt is.

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BOTANY

Take First Successful Picture of Plant Cell Wall

See Front Cover

► THE FIRST successful picture of the outside wall of a plant cell was recently taken by University of California College of Agriculture plant pathologists.

Magnified 10,000 times under the electron microscope, the cell wall looks very much like a piece of matted felt. It is shown magnified 57,500 times on the cover of this week's SCIENCE NEWS LETTER.

The wall is made up of tiny fiber-like strands of cellulose, the main components of paper and cotton.

Pieces of turnip root were attacked by an enzyme which decomposes the pectin, or glue-like binding material, holding the cells together. When this pectin is washed away, the cells fall apart as little blocks. Under the electron microscope, the surface of these individual cells shows up clearly as a mass of cellulose strands.

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NAVIGATION

Submarine Log System Makes Navigation Easier

► A NEW "brain" for submarines is currently being developed at the University of Cincinnati's Applied Science Research Laboratory.

Designed to help submarine navigators chart their courses across ocean floors more easily, the log system has certain "classified" refinements which make it more accurate than present-day, dead reckoning analyzer indicators now being used on subs.

(Dead-reckoning analyzer indicators can be compared to automobile speedometers, except the analyzers yield latitude and longitude from which position as well as speed is figured.)

In regard to the new "brain", the Navy Department said:

"It is expected that this new log system will provide extremely accurate measurements of the ship's speed and distance traveled through the water. This information is essential to safe navigation and particularly so during long periods of underwater operations.

"In addition, data supplied automatically by the log equipment to various computers play a vital part in the offensive power of the submarine."

Research work began at the University over six years ago when graduate students in the applied science department tackled the problem as it was presented by the Navy Department.

At present a manufacturing prototype is being developed which will guide manufacturers who later will produce the equipment for the Navy.

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