TECHNOLOGY

Solid Fuels for Rockets

➤ SOLID FUELS will propel most military rockets in the future. This will mean saving the American taxpayers' money and a saving in lives of the personnel who handle rockets.

The current rebirth of interest in solid rocket fuels means many liquid fuels used at present will be replaced by solid propellants, thus completing a cycle started centuries ago with early Chinese use of solid rockets and continuing through the advent of liquid fuels in the 1930's.

A study on solid propellants and the effect of solid rocket motor requirements on the nation's guided missile program is now being initiated by the Defense Department, John J. Crowley, director of guided missile activities in the office of the Assistant Secretary of Defense for Research and Engineering, told SCIENCE SERVICE.

Increased interest in solid propellants, Mr. Crowley said, is based on three prime considerations.

1. The solid fuels, such as those based on plastic, rubber or organo-metallic compounds, are safer than liquid propellants which frequently involve the use of strong acids, liquid oxygen or hard-to-handle hydrogen peroxide.

2. The solid fuels are easier to store and require less handling than the liquid propellants.

3. Solid fuels can cost less than liquid propellants in many cases and there is almost always a dollar saving in storage, transportation and training crews to handle the propellants.

The investigation into the future use of solid fuels, Donald W. Patterson, assistant director of the technical monitoring office, said, will go beyond the mere comparison of solids and liquids.

All the new smaller missiles using rocket engines, now being developed or planned for future development, except the Intercontinental Ballistic Missiles, are of the solid fuel type, Mr. Patterson said. "There probably will always be a place for liquid propellants, particularly in the larger missiles, as well as in possible manned rockets where control over the flow and combustion of fuel is desired."

Solid propellants already in use include, among many, some plastic, natural and synthetic rubber compounds, nitroglycerine and nitrocellulose compounds as well as solidified boron complexes. These solids can be melted and poured into steel cases, which become the motors, and can be stored for years at wide temperature extremes. Liquid fuels do not generally keep well under long storage, and are usually affected by changes in temperature.

Science News Letter, May 11, 1957

OCEANOGRAPHY

Measure Ocean Waves 360 Feet Below Surface

➤ OCEAN WAVES of very low frequency have been measured 360 feet below the surface off Guadalupe Island, Mexico, two oceanographers reported at the National Academy of Sciences meeting in Washington.

Some of the waves may be caused by the movements of giant weather systems in the Southern Hemisphere, Drs. Walter H. Munk and Frank Snodgrass of Scripps Institution of Oceanography, La Jolla, Calif., said. These have frequencies higher than one cycle every 20 seconds. The peaks of frequency increase by about ten percent each day, and the sequences repeat themselves every three or four days.

The cyclone-caused waves are about four-hundredths of an inch high and six-tenths of a mile long. They may have originated in the Indian Ocean and traveled through the Tasman Sea.

Waves having frequencies lower than one cycle every 20 seconds repeat themselves from day to day, the scientists reported, without any changes in essential details.

Science News Letter, May 11, 1957

Questions

BIOLOGY—Where do scientists believe the "pacemaker" for timing brain waves is located? p. 292.

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CHEMISTRY—Why is the "spectral study of free radicals" valuable? p. 292.

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ENDOCRINOLOGY—What effect does the injection of thyroid hormones have on the nervous system of mice if they are injected soon after birth? p. 294.

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TECHNOLOGY—What change was made in producing television tubes so that viewing in bright daylight is now possible? p. 291.

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