

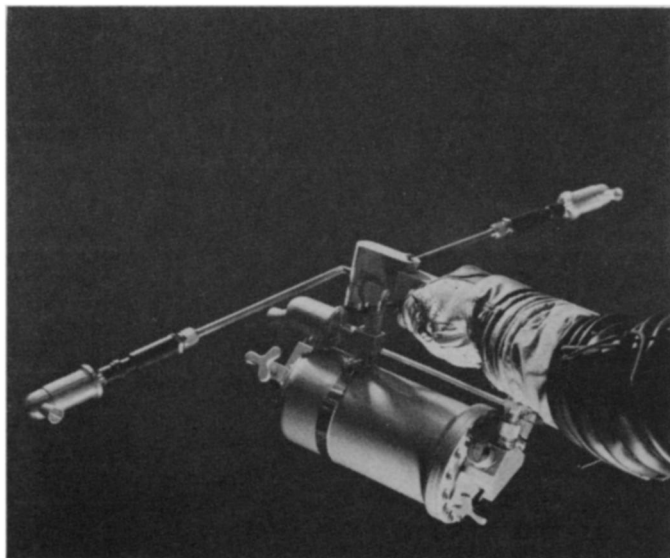
Technology Notes

SPACEWALKING

The Zot Gun Gets More Zap

An improved version of the "zot gun," the hand-held maneuvering unit used by some U.S. astronauts during spacewalks, is being developed for the space agency by Rocket Research Corp., Seattle, Wash.

The original gun got its push from compressed gas; the new one will be a rocket pistol, fueled with hydrazine



and water. It will use three rocket motors, two having one pound of thrust each and one two-pounder.

The unit will provide six times the maneuvering time of the original version, the company says, and the fuel supply can be replaced by an astronaut floating in space. The choice of fuel mixture, together with its catalyst, will keep the operating temperature of the control jets down to about 500 degrees F., so that the unit will do no damage if it accidentally touches the astronaut's space suit.

ADHESIVES

Patching Planes With Glue

Air Force planes hit by small arms fire in Vietnam are being repaired quickly and permanently by a patch-and-glue system devised by the Air Force Systems Command.

The patches can be metal or fiberglass. The glue is a high-strength epoxy that is mixed in the field. The putty-like adhesive remains stable in contact with salt or lubricants and in temperatures from 165 degrees F. down to 65 degrees below zero. A one-inch patch has a holding strength of three tons.

The glue comes in two ready-to-mix packages and can be stored indefinitely before it is mixed. Minnesota Mining and Manufacturing Co. is currently producing eight-ounce kits for the Air Force under contract, at about a dollar apiece.

HOVERCRAFT

Fast Surveys of Ocean Floor

High-speed surveying of the ocean bottom has been demonstrated from hovercraft operating in the English Channel.

Tests conducted by Hoverlloyd, which runs a commercial hovercraft service between England and France, show that surveys can be carried out in as little as a quarter of the usual time, largely due to the speed at which the hovercraft can reach the operational area (40-50 knots) and a surveying speed of up to 35 knots. In addition, continuous surveys can be made moving from deep water to shallow shore areas to dry land.

PRINTING

Electronic Oriental Typesetting

The first electronic type-setting machine to compose Chinese, Japanese and Korean characters directly from a keyboard has been developed for the Army by Radio Corporation of America, Camden, N.J.

For use in setting type for training manuals, the device is the first departure from hand-set type in these languages in their 3,000-year history. It can set up to 100 characters per minute from a storage bank of 10,000. To make these 10,000 characters, the machine has a keyboard consisting of 21 basic strokes (horizontal, vertical, curved), 28 complete symbols (such as circles, squares and triangles), plus 11 punctuation marks, all combined optically to produce either vertical or horizontal lines of type.

IMPACT TESTING

Shockproofing for Space

High speed impact tests at California Institute of Technology's Jet Propulsion Laboratory indicate that it is possible to design delicate spacecraft components capable of withstanding shocks of 10,000 times earth's gravity.

A compressed air gun with an 18-foot barrel and a 22-inch bore and a slingshot using 20-foot rubber bands are typical of the equipment used in the tests.

The slingshot fires an aluminum alloy projectile called a sabot, which weighs more than 250 pounds. Up to 100 pounds of equipment to be tested can be attached to the sabot, which is fired at a redwood block backstop at 500 feet per second, hitting with as much as a million pounds of force.

Early impact testing in the facility for the Ranger moon exploration program led to instruments encased in balsa wood balls capable of withstanding a 2,500-g shock. Recently a small antenna being developed for interplanetary space missions withstood 8,000 g's in the slingshot.

Possible future candidates for such rugged shock tests, according to JPL, include better crash recorders for aircraft and automobiles, air-droppable rescue and fire-fighting equipment and sturdier oil-well instruments.