

Inventors Win an Ally



J. H. Hollomon

Inventors, often popularly thought of as crack-pots working in home-made laboratories, actually make up a vital part of the country's expanding technology. Now they have a new champion in the government.

The research chief of the Department of Commerce says that while the process of research and development is very nice, it can take 10 or 20 years for one company's good idea to spread out to all the others.

Inventors, he says, not researchers, are the thing.

"There are 300 companies doing 90 percent of the research and development in the U.S. . . . they do not have 90 percent of the new ideas," said Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology.

Though the country spends more on R & D each year than the entire cost of the U.S. moon program, Dr. Hollomon noted that R & D "do not create anything in themselves, or solve any problems." Those, he said, are the jobs of invention: "putting what is already known to work."

Project Hindsight

He cited a Government study called Project Hindsight, which revealed that 95 percent of recent technical advances studied came from scientific ideas that were already known before World War II. The useful results came not from basic research, which for years has been touted by the government almost as an end in itself, but from invention inspired by necessity, he said.

"There's so much to-do about how much research we're doing, how much science we're doing, but these other things are important too," he said.

England and Japan represent the two opposite extremes of technological adaptability, Dr. Hollomon said. England is so bogged down and conservative that it often takes years for a new development to enter common use; Japan, however, is so attuned to new scientific techniques and ideas that it was able to launch itself into full-scale exploitation of the transistor faster than many companies in the U.S.

Two special panels of the Department of Commerce have been studying Federal laws related to invention, as well as ways to improve the "national climate for innovation." Reports are expected soon.

The National Bureau of Standards, to which Hollomon is turning to accomplish his purposes, was officially installed in new quarters last week.

SPACE

Lunar

(see p. 441)

WHAT'S TO COME?

A lot has been proven, and much more has been indicated, by the many spacecraft that have been sent to the moon. But there are at least three Lunar Orbiters and seven Surveyors left, each with a contribution to make.

One important experiment, beginning with Surveyor 5, will measure the angles at which alpha particles projected in a stream from the spacecraft bounce back from atomic nuclei on the lunar surface. These angles should indicate whether moon dust is acid, basic or neutral. From that one tidbit, scientists hope to deduce all kinds of things about the moon.

But the biggest prize of all will be the actual samples brought back by Apollo astronauts. Simple analyses should then reveal the age of the moon, what it is made of, and whether it came from the earth.

When the samples arrive, scientists around the world will be champing at the bit. A NASA-appointed committee has already made most of the decisions about which lunar laboratories will get how much of the available material.

Some lunar samples called chondritic meteorites, or chondrites, however, may already be on earth. Current opposing theories are that they may come either from the moon or from the asteroid belt that lies between the orbits of Mars and Jupiter. All it will take is a simple comparison. If the moon samples match the chondrites, "people will probably just throw the asteroid belt into the wastebasket," said NASA's Dr. John O'Keefe. Though of unknown origin, chondrites are presently almost worth their weight in gold—they're worth \$30 an ounce.

ROCKETRY

'Coon Gun' Launcher Saves Fuel

An 80-foot-tall tube that looks like "a big ol' coon gun" two and a half feet across has been used to test rockets that eject themselves into the air automatically before switching to full power.

Hidden among the rocky crags of southern California, the Jules-Vernian launcher is only the little brother of a monster tube—10 feet in diameter—for rockets weighing more than 300,000 pounds.

Rockets fired from the big tube for testing are literally "tied to the ground" as they fly by an inch-thick nylon cord, one third of a mile long, fastened at the other end to a huge dead weight tractor. "The biggest we could find," said an official of Lockheed Propulsion Co., the technique's developer.

This bizarre tie-down system, designed for easy retrieval, was first tried in 1959, when Minuteman missiles were being test-launched from their underground silos (see cover). The recent test flights only travelled about 400 feet up and 400 feet horizontally before being snapped abruptly downwards by the cord.

Only a small amount of propellant is used in the tests—just enough to demonstrate the launch technique for the Air Force, which is supporting the development program to the tune of \$775,000.

The launch tube was mounted above the ground over an engine test stand that has in the past been used to fire engines producing up to 3,000,000 pounds of thrust, almost half that of the Saturn V moon rocket.

Each test rocket was designed to burn at low pressure when first ignited, causing just enough gas pressure inside the tube to push the projectile up along a series of Teflon-coated rails lining the tube. Once out in the open, the engines automatically began developing full thrust.

The advantage of such a technique, according to Lockheed, is that by conserving its fuel during launch, the rocket has enough left to handle a bigger payload or travel farther than a conventionally-launched rocket of the same size and fuel capacity.

Since 1960, when the Minuteman tests ended, the technique has been little used, largely because it is most useful only for tube- or silo-launched rockets. A prime candidate would have been the Titan, except that it was simply too big.