

# Triggering of 'Fastest Gun Alive' To Help Study Of Satellite Reentering Atmosphere

Moffett Naval Air Station, Calif. — The "fastest gun alive" will be triggered here soon to help the U.S. beat the Russians to the draw for an intercontinental ballistic missile.

Ames Aeronautical laboratory scientists will use a new 100-foot long, helium-powered gun to study the problem of satellite and ICBM reentry into the earth's atmosphere.

President Eisenhower said last week that one ICBM back to earth, but the reentry heating problem must be checked out for every new missile design, the scientist said.

"The reheating problem is not solved for every possible ballistic missile and for every one on which we are now at work," they explained.

## 16,000 Miles an Hour

It will shoot a pint-sized missile, roughly the size of a .45 caliber slug, at a speed of 16,000 miles an hour — a speed approaching that of a nuclear warhead missile diving through the atmosphere.

By studying this tiny ball through the photographs taken along its trajectory of several hundred feet, scientists say they will be able to learn about some of the conditions that could incinerate a manned rocket ship or a bomb-carrying missile.

Temperatures on the surface of the bullet range between 8,000 and 10,000 degrees.

The gun, being built by the Naval gun plant at Pocatello, Idaho, will be installed by the National Advisory Committee for Aeronautics at Ames laboratory some time this fall to augment an arsenal of high speed guns that can fire smaller projectiles up to 10,000 miles per hour.

## The Principle

The fuel that propels the bullet is helium compressed to high temperatures by explosion of conventional gunpowder. The compressed helium drives a piston down the "barrel" of the gun, imparting motion to the tiny missile.

Dr. Alfred J. Eggers, chief of one of Ames' wind tunnel branches, says the gun and its bullets can "give us a lot of valuable information about reentry heating problems—right now a key problem in ICBM design.

An intercontinental ballistic

missile must be designed to reenter the earth's atmosphere without burning to a cinder. To shoot an ICBM to a target 5,000 miles away, a missileman would have to sky it to an altitude of about 500 miles, well out of the atmosphere, he said.

In the Ames test lab, the bullet will leave a luminous trail of light as it speeds along at 16,000 miles an hour.

Eggers says it is possible to reduce the amount of heat on the sizzling skin of the missile from the amount of luminescence given off.

The amount of light is determined from photographs that "stop" the bullet with a picture, taken at one ten-millionth of a second.

"This tiny missile heats up

the way a rocket ship or an ICBM will," Eggers says.

Visual studies of the ball itself, which is captured in a closet filled with a soft substance such as a cotton, can reveal scars and pock-marks caused by the heat.

## Design Ready

Eggers has already drawn a design for a recuperable satellite. It is a stubby-nosed missile with swept-back fins projecting from the sides to act as "drags" or built-in brakes to slow it down.

In such a satellite, the pilot and crew would probably spiral down through the atmosphere, gradually slowing before landing," he said.

The firings are also used to determine the amount of drag

on the sphere," Eggers said. "This is important to the design of a recoverable vehicle because the drag plays an integral part in slowing down the projectile or high speed rocket plane."

"If one knows the amount of drag that will be encountered, then he can determine the best trajectory to chart for reentering from space."

The heat studies conducted here also give engineers a good indication of what kind of metal to use to withstand the friction caused by atmospheric heating. One of the best so far, Eggers says, is inconel, which can withstand terrific heating.

Tests are also being run here on the design of the X15, a super rocket plane now being built by North American in Los Angeles to probe the heat "barrier" at speeds about 4,000 miles per hour.

# Quotes From the News

By UNITED PRESS

Cleveland—Gen. Nathan F. Twining, chairman of the Joint Chiefs of Staff:

"Our strategy is built on the policy that we will be prepared to use atomic weapons in any war."

Washington—Former President Truman, on President Eisenhower's missiles speech of last week:

"A right good speech. Now I want to see some action."

Pittsburgh—Navy Capt. Irwin S. Moore, predicting the next war will cost the United States about \$4 trillion:

"There has been a factor of about 10 in the cost of wars. The War Between the States cost about \$3,900,000,000. World War I cost about \$36,900,000,000. World War II cost about \$383 billion.

New Orleans—Rep. F. Edward Hebert (D-La.) on General Motors corporation's offer to repay \$9.7 million which Hebert said they had overcharged the government for jet fighter planes:

"The American people can draw their own conclusions . . . In the history of this committee, it is the first time I have ever heard of a corporation making such an offer in cold cash."

Washington—Yonkers, N.Y., Teamsters Union official Edward Doyle, asked by Sen. John L. McClellan if he were "apprehensive of personal violence":

"Well, you've gotta die sometime, senator. You can't live forever."

Boca Raton, Fla.—John S. Knight, president of the Knight newspaper chain, praising the nation's press for courageous exposes of racketeering in government and labor:

"At no time in the history of journalism have professional standards been so high . . . Never before have . . . editors worked so constructively for community betterment."

Miami Beach—Dr. Mason Trupp, suggesting that many of man's headaches and brain ailments are caused by his lack of a waggable tail (and can be cured by a tail nerve operation):

"Even though evolution has deprived man of his tail, he has not lost the desire and compulsion for wiggling it."

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