

Pioneer IV Experiment Brings Man, Moon Closer, Says Top Missile Expert

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Written For UPI

NUERNBERG, Germany (UPI)—Every unmanned rocket flight is a step in the right direction—the appearance of men in space.

At Huntsville, Ala., where I worked with the title of supervisory physicist, I headed an office whose main duty was to investigate what we could expect in rocket techniques in the next decade.

Some of what we learned is classified, insofar as I can do so without violating security regulations. I propose to discuss in this article some results of our researches. On the basis of our research in this field we made proposals to those who would be working on rocket development in the future.

Let me say at the outset that anyone who thinks human pilots aboard space ships are going to be worthless ballast is dead wrong.

It is, rather, the other way round—automatons cannot replace human beings.

They certainly can't do so when it comes to the correction of directional errors—or if it comes, as it could, to combat with enemy satellites, long-range missiles or anti-missile missiles.

No automaton can do anything its designer has not thought of in advance. Furthermore, the more

versatile an automaton is, the more complex and subject to troubles it is.

Set against these facts, this one: The human brain is universally inventive in unforeseen situations.

Unmanned rockets were developed because, among other things, we wanted to know what dangers future space pilots might face. These rockets have taught us that there are no dangers we cannot overcome, and that is exactly what we had to know.

Let's take a look, first, at some of the things the unmanned rockets have made known to us. Unmanned rockets—like the German V-2 of World War II, the Corporal

and the Viking—long-range missiles under test conditions, the earth satellites and the three attempted lunar shots, were all equipped with a variety of delicate instruments.

These instruments were, in the first instance, set up to record conditions inside the rocket itself, such as acceleration, propellant consumption and the like—and to radio the information back to earth.

In this way we have appreciably bettered our knowledge while radio research, high altitude balloons, jet and rocket planes also came to our aid by providing us with valuable additional knowledge.

These, then, are some of the things now known about the conditions humans will encounter in space.

Cosmic rays are most dangerous between 500 and 900 miles up, a factor which must be taken into account.

Meteorites are another problem and about them, we now have the following information.

The largest are the ones most seldom encountered. The odds on a collision with a meteorite weighing one gram—15 grains—are that a satellite the size of a football could orbit for 100,000 years before it hit one. For the very largest meteors, the collision

odds are no worse than they are on earth.

Meteorites weighing one milligram (1-65th of a grain) would hit the satellite at about the rate of one per century and those of 1-100th of a milligram—size at the rate of about once in ten years.

The smaller they get, though, the tougher the odds. There are dust grains which would hit the sides of the satellite with sufficient force to affect a transmitter and these grains, on the order of a thousandth of a millimeter

(roughly 1-2500th of an inch), would be hitting on an average of four times a day. They would put dents in the walls about 1-300th of a millimeter deep.

There does not seem to be any need to take any special protective measures against these tiny grains, but the bigger ones pose something of a problem.

It would seem that the way to meet that problem is by building ahead in our adventure into space.

Those are just some of the things that we have learned about the problems which accompany the opportunities with which space presents us.

We come now to a consideration of some of the ways that lie ahead in our adventure into space.

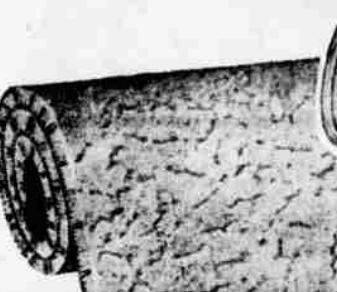


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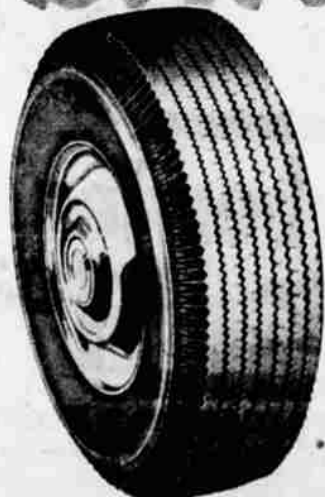
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