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"FROM NOW ON—"

GE Challenge Winter (Dec) 1962

Dr. Wernher von Braun, one of America's foremost authorities on space, inspects the Valley Forge Space Technology Center and offers some personal views about this country's progress toward the moon and beyond.

Question: **How do we really stand in the space race with Russia?**

Dr. von Braun: "Racing" in the area of orbital payload capacity is like a game of leapfrog. It takes five years from the word "Go" until a rocket has attained a reasonable reliability and you can entrust a costly payload to it. What you want in five years, therefore, must be decided upon now. As a result, the race goes in a series of quantum jumps, with first one side and then the other taking a lead. There may be a period of two or three years when one side may be leading and then the other side may pull ahead. In such a leapfrog race it is not economically possible for any one side to retain an absolute lead all the time.

Question: **Is the American public being told the truth about our space progress?**

Dr. von Braun: The American people are being kept up to date very well. Everyone knows what is going on. We are putting all our manned flights on television and we are not hiding a thing. Remember the Russians started developing an Intercontinental Ballistic Missile five years before the United States was committed to a program and since at that time nuclear warheads were still very heavy, they had to build a much bigger rocket to carry them. In 1947 Russia committed herself to a rocket that could orbit a 14,000-pound payload, which means tremendous launch vehicle power. They are cashing in on this advantage now with their space program. The rockets we have under development now are more powerful than the ones they have flight-tested so far.

Question: **Will the Saturn C-5 and Nova put the United States ahead in the booster race when they become operational?**

Dr. von Braun: I will quote some figures. The Atlas has 380,000 pounds of thrust. The Saturn C-1 will develop one and a half million pounds. The Russian rocket that orbited their cosmonauts is capable of 800,000 pounds. The Saturn C-5 will produce seven and a half million pounds of thrust. We don't know what the Russians are doing in the field of more powerful rockets. They may be developing something bigger, may even be bigger than the C-1, and maybe even bigger than the C-5. But I do believe that they won't have it any sooner than five years after they gave the go-ahead—whenever that was.

Question: **Why do you use the name Saturn for both the C-1 and the C-5 when they are different types of rockets?**

Dr. von Braun: Once you get a program started it is easier to hang onto it and grow with it, rather than start something new. You are constantly seeking to build a certain amount of momentum into the program.

Question: **You have said that the Russian rocket used to orbit their cosmonauts is capable of producing 800,000 pounds of thrust and weighs 500,000 pounds. This indicates a high degree of efficiency. You said it can orbit a 14,000-pound payload. Does this mean the Russians have a more efficient rocket than the United States?**

Dr. von Braun: I estimated the 800,000-pound thrust. It may be 700,000 or 900,000. It is the best educated guess I have. With that size and weight, I would expect it could orbit a 14,000-pound payload. Its sheer size should make it capable of orbiting that payload, even without any particular technological refinements beyond our own reach.

Question: **Will the success of Walter Schirra's flight and those of our other astronauts speed up our landing on the moon?**

Dr. von Braun: Schirra's was a very fabulous flight. It was completely flawless. I do not think that it speeded up our moon landing, but the fact that it was a success certainly hasn't retarded our progress. Had something unforeseen happened, the program could have been slowed down.

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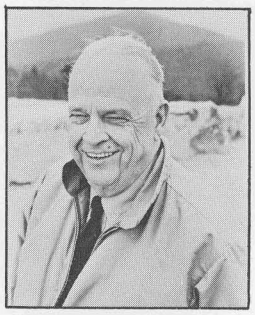

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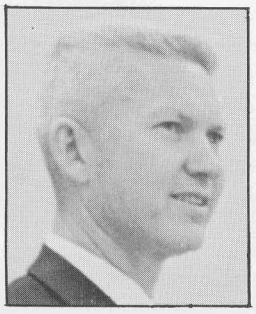

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COVER

Dr. Wernher von Braun, George C. Marshall Space Flight Center, and MSD scientists and engineers tour the Valley Forge Space Technology Center. See story on pages 2 and 3. Cover photos: Ken Fuglein — MSD; NASA; and Franklin Institute.

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Editors
William Haynes Maureen Barry
Manager-Employee Communications
Richard Jackman

Advisory Board
Arthur W. Steinfeldt Howard M. Wittner
Dr. Leo Steg Richard A. Passman
General Manager
Hilliard W. Paige

Question: **Concerning the Man-on-the-Moon project, would you care to comment on your conversion to being an advocate of the lunar rendezvous plan?**

Dr. von Braun: Most of our earlier work at the Marshall Space Flight Center has been on the earth-orbit rendezvous method. We have produced more detailed studies and, in terms of man-years, we have done more work on this method. As a result of these studies we have no doubt whatsoever that the earth orbit rendezvous mode is entirely feasible. However, we planned from the outset to look into other possibilities also. At the end of the studies of three methods (earth-orbit and lunar-orbit as well as direct flight using NOVA) we all came to the same conclusion — that the most promising method, in terms of time and money, was the lunar rendezvous plan. We want to land on the moon within a decade and we must use the method that will give us the greatest assurance of success with the minimum amount of money. As far as those who still dissent from this method, I feel that they are entitled to their opinion. After all, there are various ways of skinning a cat. Our conclusion within NASA (and I speak for all of us on the NASA lunar team) is simply that, everything considered, the lunar-orbit rendezvous method is the most promising at this time.

Question: **After we land on the moon, what will be the next step in space exploration?**

Dr. von Braun: Obviously, the moon landing will be a beginning and what Step 2 or Step 3 will be is a long-range proposition. I will say that 10 years after the first man lands on the moon, chances are that we will have established a permanent observation station there manned by one or two dozen men. It will be an operation similar to the weather stations we now have at the South Pole.

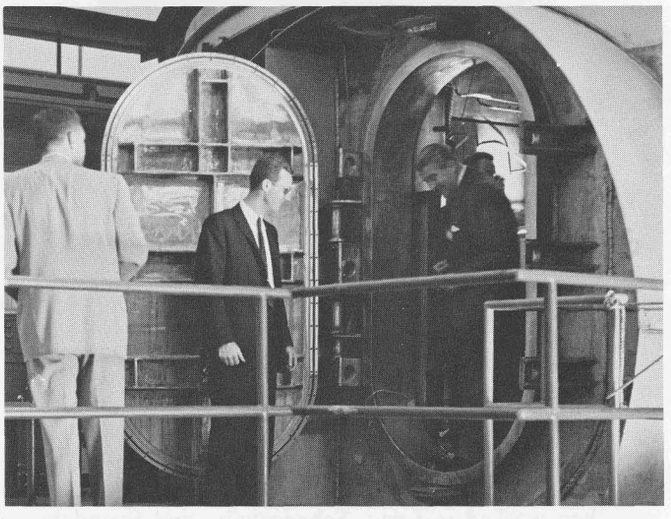
Question: **Are you satisfied with the amount of money being spent on space research and with the efficiency and planning that are now the order of the day in our attempts to achieve our space objectives?**

Dr. von Braun: You can always spend more money and do things faster and more thoroughly. We are spending a lot of it now and are finding improved support from Congress and the White House. We have never had better cooperation or worked in a more pleasant atmosphere.

Question: **What was your impression of MSD's Valley Forge Space Technology Center?**

Dr. von Braun: I was greatly impressed by the far-sighted planning evident in the Center. It's a fine example of how private enterprise has responded to the challenge of the Space Age. Even more impressive than the fabulous equipment is the spirit and enthusiasm pervading the Center. When you see a place like Valley Forge it's obvious the Space Age has "arrived" and is here to stay.

Dr. von Braun, and friends, went on a whirlwind tour of the Valley Forge Space Technology Center during his recent visit. The familiar faces accompanying von Braun, seen both here and on the cover, include: General Manager Hilliard Paige, George Arthur, Carl Cording, Jack Galt, John May, Lou Michelson, Richard Passman and Wilhelm Raithel.



MAN ON THE WAY UP

Elliot See looks and acts like the engineer at the next desk. But the former General Electric employee may be the first man on the moon.

Four months ago, the sandy-haired, 35-year old Texan began a final series of rigorous physical examinations, interviews, and tests. The result: his selection as one of this country's nine new astronauts—a man who will help to point the way to the exploration of another world in this decade.

With GE for 12 Years

His 12 years with General Electric began in 1949 after his graduation from the Merchant Marine Academy. He joined the Company on the test program in Philadelphia and then worked in Lynn, Schenectady, and Evendale—a pattern familiar to many. His Evendale assignment was with Hilliard Paige's J73 project. In 1953, he entered the Navy and became a jet pilot. He was assigned to the U.S.S. Boxer, an aircraft carrier.

Returning to GE in 1956, he joined the Flight Propulsion Division as a test pilot under the direction of Virgil Weaver, who organized the General Electric flight test group in 1952 at Edwards Air Force Base in California. Elliot's last assignment with GE was the testing of the McDonnell F4H supersonic fighter which is powered by Evendale-built J79-8 engines.

Only Astronaut from American Industry

One of two civilians selected for the Program, he says, "I am proud to have the opportunity to participate in the space program in this particular manner. It is very natural to include civilians in this program and I hope that there can be more civilians participating in the future."

The 5'8", 150-lb. spaceman will begin training for Project Gemini. With Gemini, an astronaut will be able to delve deeper into space flight, attempt rendezvous, or docking of vehicles in orbit, and investigate man's reaction to weightlessness for a week or maybe two weeks. He will also be a candidate for Project Apollo, the Man-on-the-Moon Program scheduled for the late 1960's.

The Man Behind the Space Suit . . .

. . . is Elliot See, a boy who was born and grew up in Dallas, Texas, a college student who became an engineer, and then a test pilot, and now an astronaut. He is a husband, a father of three, and a flying engineer. He lives in a community similar to ours, and describes himself as a person who "does some things well and others not so well, just like everybody else."

Since the time he built his first model airplane, Elliot See's one compelling ambition has been to fly. An MSD friend of Elliot's, Jim Polski, put it this way: "Flying has always been more than a way of life for Elliot. He lives for it. He still flies with his Naval Reserve group."

When asked during a recent visit to the Valley Forge Space Technology Center how he felt about the race for space, he said, "Naturally I prefer that we be the first to succeed. I am interested in it as a scientific and engineering program. I don't feel as strong about it as far as the international competition nature of it is concerned. I feel the most important thing is for us to conduct the research and development required for this type of scientific advancement."

About General Electric he said,"It is the finest Company I have ever had any contact with. I have only the highest regard for the Company and the many fine people who are a part of it."

In behalf of GE people everywhere, Board Chairman Ralph J. Cordiner, wired Elliot saying, "Congratulations, I know that all GE employees share my pride that you will be contributing your experience and skill to such an important project. We all wish you success in the months and years ahead."

Then: GE experimental test pilot. Now: NASA astronaut. Says his father, a retired GE engineer, "I wish I were younger and could trade places with my son."