

Article for Annual Review of Lewiston Sun-Journal
Senator Margaret Chase Smith
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In inviting me to write an article for its Annual Review the Lewiston Sun-Journal reminded me in a most complimentary manner of the timeliness and accuracy of my article for it last year when I warned that the greatest danger to our country in 1962 was in Cuba -- and how the events of late October bore out my evaluation and warning.

This year I believe that danger has lessened greatly because of the fact that we did in 1962 very belatedly that which I strongly advocated in my article a year ago -- that we stand up to Khrushchev and Castro and show them that we were willing to fight for our freedom and security.

So this year I am going to write on another subject -- the subject of space. I am prompted to write on this subject not only because I believe that it could well be the subject of greatest progress and interest in 1963 -- but also because the Earth Station at Andover, Maine, puts Maine right up front in this field -- and because this year I have become the highest ranking Republican on the Senate Space Committee.

The first difficulty one encounters in discussing space is to comprehend its dimensions. The distances involved are so enormous, so much greater than those we meet in everyday life, that they are practically meaningless. As speeds of aircraft have increased, so has our sense of distance altered.

In the same way our mental attitude in dealing with interplanetary distances

must change, even if the mind can never really envisage the vastness of it all. Space extends in all directions and has no known limits or outward boundaries. But in this decade we are determined to explore this vast unknown.

Our prime goal of the 1960's is the moon, and while this is extremely ambitious, it is only the beginning. Our ultimate goal will be the stars and to quote the British astronomer Sir James Jeans, "There may be as many stars in the universe as there are grains of sand on the beaches of the world."

Thus it is readily apparent that we are engaged in what can truthfully be described as the greatest of pioneering efforts. I would like to discuss in some detail about the imminent goals we have set for ourselves in this decade and why this effort is necessary.

I am sure it is recognized that the United States needs to lead in space for several reasons, each of which will contribute to the scientific, technological or economic advancement, or to the peace and security of the free world.

We must lead because of our basic responsibility for the broadening of our understanding of the universe and our obligation to make available to ourselves and our descendants the resources of the universe which our expanding knowledge will permit us to utilize.

Second, we need to lead because of our desire to realize the direct and immediate benefits from the application of satellites into operational use, and the technological advances and stimulus to our economy which will emerge from our space effort.

Finally, we need to lead because of the potentially hazardous consequences to ourselves, and free peoples everywhere, were a hostile power to surpass us

in the race in space. These needs are the impetus for what will be the greatest technological achievement man has ever attempted, manned flight to the moon.

The moon is our first objective, mainly because it is our closest neighbor. It is only 240,000 miles away, or a 3 day trip in the Apollo spacecraft. Also, since it is so close to us -- speaking in space terms -- there is much we have already learned about the moon through the astronomers.

Since the moon has no atmosphere the sky around it is black just as it is in space and thus many more stars will be visible from the moon than from the earth. Because of its relatively short distance from the moon, the earth will appear to be very large.

In fact, it is expected the lunar sky will be dominated by the earth and will appear as a huge white globe with patches of color. The surface of the moon is believed to contain mountains six times higher than Mount Washington.

In addition to these towering jagged mountains there are deep craters that may have been formed by volcanoes or by huge meteors which have crashed into the crust of the moon. Not unlike the one which struck in Siberia in 1908, burning up hundreds of square miles of forest.

A day on the moon consists of 14 earth days and since there is no sky to reflect the sun's after glow, night descends suddenly. The temperature variation goes from about 212° fahrenheit, which is equivalent to about that of boiling water, to a night temperature of 200° below zero. This compares with the highest earth temperature ever recorded of 136° fahrenheit and 125° below zero.

It is because of these extreme temperatures and the lack of an atmosphere that it is assumed there is no life on the moon. However, there are some

astronomers who dispute this and believe that some lowly forms of plant life may have adapted themselves to the moon's environment.

In any event we cannot tell with any degree of certainty what the moon is composed of and how it was formed without detailed observation. It is to that end that our Ranger program is addressing itself. The Ranger program consists of 9 flights which will, among other things obtain high resolution television pictures of the lunar surface and perform scientific investigations of the moon's surface.

The Ranger program will be followed up by the Surveyor program, which is designed to land a package of instruments on the moon's surface. These instruments will return information concerning physical, chemical and biological properties of the lunar surface, the general environment as well as pictures of the local terrain.

Additional programs will call for the placing of a space platform to orbit around the moon containing instruments for monitoring radiation, determining the properties of the moon's gravitational field and finally to provide information concerning possible sites for the manned landing on the moon. All of this must be done before we can attempt to land a man on the moon with any degree of safety.

The lunar exploration phase of the manned program will be conducted, as part of Project Apollo, in a capsule carrying a crew of three. The Apollo program requires space techniques far in advance of those that were needed in the Mercury program. The Apollo spacecraft must be built for flights of two weeks duration. It must be capable of guidance toward the moon and a gentle landing on the moon.

For man to land and remain in this hostile environment the establishment of a manned lunar base will be required. Supporting a base on the moon compared to one at the North Pole is almost like comparing apples and oranges. While the conditions are edible the similarity thereafter is less evident. While food, shelter and fuel can be supplied with reasonable ease from the North Pole or any place of the earth's surface the life support requirements on the moon present a problem of far greater magnitude. For example, a specially designed space suit with built in air supply to offset the moon's airlessness and the streams of ultraviolet and infrared radiation from the sun, must be worn by the astronaut. A helmet is also necessary to converse since without air sound cannot travel. There will be many other aids for his protection but those I have mentioned give some idea of his support requirements. One important factor for the astronaut is that he will be able to move about freely with all the equipment. The weight will be only one-sixth of what it would be on earth. Simultaneous with our preparation to explore the moon programs are being developed for way to venture out to Mars and Venus. Ever since astronomers first detected "canals" and polar snowcaps upon Mars it has been the subject of much speculation. Is it a dead planet? Is it strewn with the remnants of ancient civilization? Do life exist there? As for Venus, what mysteries lie behind its swirling clouds. Does it have a lush tropical climate as some believe, or is it a watery world, perhaps a planet swept by dust storms. Venus and Mars though the nearest planets to earth are 100 times further away than the moon. One important factor in planning a trip to either Venus or Mars is proper

of a manned lunar base will be required. Supporting a base on the moon compared with one at the North Pole is almost like comparing pears and potatoes. While both are edible the similarity thereafter is less evident.

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For example, a specially designed space suit with built in air pressure to offset the moon's airlessness and the streams of ultraviolet and x-rays spewed forth by the sun, must be worn by the astronaut. A two-way radio is also necessary to converse since without air sound cannot travel.

There will be many other aids for his protection but those I have mentioned provide some idea of his support requirements. One compensating feature for the astronaut is that he will be able to move about freely with all this equipment for his weight will be only one-sixth of what it would be on earth.

Simultaneous with our preparation to explore the moon, programs are underway to venture out to Mars and Venus. Ever since astronomers first reported "canals" and polar snowcaps upon Mars it has been the subject of much speculation. Is it a dead planet? Is it strewn with the remnants of ancient civilization? Does life exist there?

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equipment, the knowledge and the skill to utilize space as we now utilize the timing. To go to either planet we should plan our departure from earth when seas and the air. those planets will be nearest to us. In the case of Mars that period would

This then is our motive -- our objective. To develop superior competence occur about every two years while Venus comes to within 26 million miles of in space which will be available for any national purpose which may be required, the earth periodically.

whether it be for the peaceful use of space for the benefit of all mankind or to keep the peace. The little we know today regarding these neighbors of ours is from the astronomers. More has been learned about Mars than any of the other planets,

Past experience has shown that the most important benefits of basic since the atmosphere on Mars is thin enough to make telescopic observation easy. research are probably unforeseen. Yet there are many areas in which we can

It is from these observations that some scientists have deduced that there predict direct benefits. The results of materials research -- ceramics, metals, and plastics, for example, will inevitably find their way into industry and that can be compared with that found on earth, because of the scarcity of oxygen. the consumers. The values of new fuels, new methods of power generation,

Venus, though the nearest of our neighboring planets, is called the mystery and supersonic transportation are clear. planet. The Venus' atmosphere is so dense, our astronomers have not been able

Weather satellites have already shown vividly what can be done to aid in to see through it, as they have in the case of Mars. Here again we have relied weather surveillance and forecasting. The improved Nimbus satellite is being on our Mariner program to penetrate some of the enigma that surrounds Venus. developed by the United States to succeed Tiros. This will provide the basis of

From all of this space research and exploration will come knowledge -- an operational weather satellite system. knowledge about the universe and its physical laws; knowledge about the earth

Eventually we will be in a position to predict weather anywhere on the on which we live, and knowledge about life itself.

The space program will stretch the abilities and minds of our people for about approaching hurricanes and typhoons will prove invaluable. It has been years to come. It will provide a continuing, long-term stimulant to our economy. estimated by authorities in this field that in one year alone we could be completely The magnitude of the task will test the resources and cooperative will of all repaid for the initial outlay of the entire program. major elements of our society. Still, space exploration, and manned space flight

Then there is the communications satellite of which we in Maine are in particular, offer the United States the opportunity for unparalleled progress in very cognizant. On July 10, 1962, the whole world knew of Telstar and they also the future.

knew of Maine. The telephone company's ground station at Andover has been Ultimately, within this century, the sum of all our efforts will give us the

equipment, the knowledge and the skill to utilize space as we now utilize the seas and the air.

This then is our motive -- our objective. To develop superior competence in space which will be available for any national purpose which may be required, whether it be for the peaceful use of space for the benefit of all mankind or to keep the peace.

Past experience has shown that the most important benefits of basic research are probably unforeseen. Yet there are many areas in which we can predict direct benefits. The results of materials research -- ceramics, metals, and plastics, for example, will inevitably find their way into industry and to the consumers. The values of new fuels, new methods of power generation, and supersonic transportation are clear.

Weather satellites have already shown vividly what can be done to aid in weather surveillance and forecasting. The improved Nimbus satellite is being developed by the United States to succeed Tiros. This will provide the basis of an operational weather satellite system.

Eventually we will be in a position to predict weather anywhere on the globe with precision. The human and monetary values of being forewarned about approaching hurricanes and typhoons will prove invaluable. It has been estimated by authorities in this field that in one year alone we could be completely repaid for the initial outlay of the entire program.

Then there is the communications satellite of which we in Maine are very cognizant. On July 10, 1962, the whole world knew of Telstar and they also knew of Maine. The telephone company's ground station at Andover has been

described as the granddaddy, the champion of them all.

Eventually, of course, there will be many more, some big and some small, depending upon requirements. But I would always hope that this nation will have not only the grandfather ground station, but the biggest and the best.

Of course, we will take great pride if the Andover ground station continues to be our first and foremost terminal.

What the Telstar can do is only the beginning of what we can expect in improved world-wide communications. Since one of the major problems in the struggle between ideologies is the problem of communication between peoples it is intriguing to contemplate the effect on international understanding and cooperation that could result from instantaneous radio and television presentations.

The communication satellite experts point out that a tremendous increase in global communication capabilities is in the offing. Hundreds of times the number of presently available overseas channels will be opened and service to points where present day cable and microwave systems do not reach will become feasible.

Lower costs for overseas services should be realized, and such techniques as the use of closed circuit television conferences to obviate the need for some transatlantic travel should come into being. The satellite system will also open the possibility of establishing local communications networks centered on a satellite terminal in areas which now have little or no external communications services.

The technology we are developing in our space program is certain to have immense and growing effects on the national economy, the professions and on

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everyday life. Already industry is profiting from new techniques, alloys, plastics, fabrics, and compounds of many kinds, originally created to do space jobs.

We are merely at the beginning of an era of profound technological change, whose end no one can foresee. Today, far more than in the past, scientific progress determines the character of tomorrow's civilization. There are many, many other benefits that will be realized from our space efforts, but basically it will be knowledge, knowledge that will put mankind in a position to develop applications to human progress and welfare, to make new consumer goods, and to build up our standard of living.

We are doing this for ourselves right now with the legacy of knowledge given to us by our forebears. Some of the knowledge that we are now gathering, we will ourselves use for our own gain. But more important than that, it will be our legacy to our children and grandchildren, for them to use in furthering their own welfare.

The United States has sixteen standing committees. The chairmen of these committees are Democrats. They constitute the board of directors, so to speak, of day-to-day legislative business.

In the second session alone, of the 87th Congress, these sixteen Democrat committee chairmen voted against the President on 519 occasions. Here then lies the key to understanding the difficulty the Administration faces in the 88th Congress. The Democrat Party, as we know it in 1963, owes allegiance to many flags. The upcoming tax bill illustrates this fact.

In 1957, we were at the end of a great investment boom. Expenditures for new plant and equipment faltered because the demand for goods grew too slowly