COMMERCIAL SPACE REPORT

# SPACE SEEN AS THE SOURCE OF AMERICA'S FUTURE VITALITY

## Noted Author Discusses Historical Viewpoint In Senate Testimony

Ed. Note: James Michener, author of numerous historical fiction works, such as *The Source, Centennial* and *Hawaii,* was recently a witness before a Senate committee studying future space efforts. We find that his remarks, while not necessarily dealing with the sole topic of the commercial uses of space, are nonetheless a new and important perspective. The remarks reprinted from the *Congressional Record* appear below.

TESTIMONY OF JAMES A. MICHENER ON ADVANTAGES OF A SPACE PROGRAM

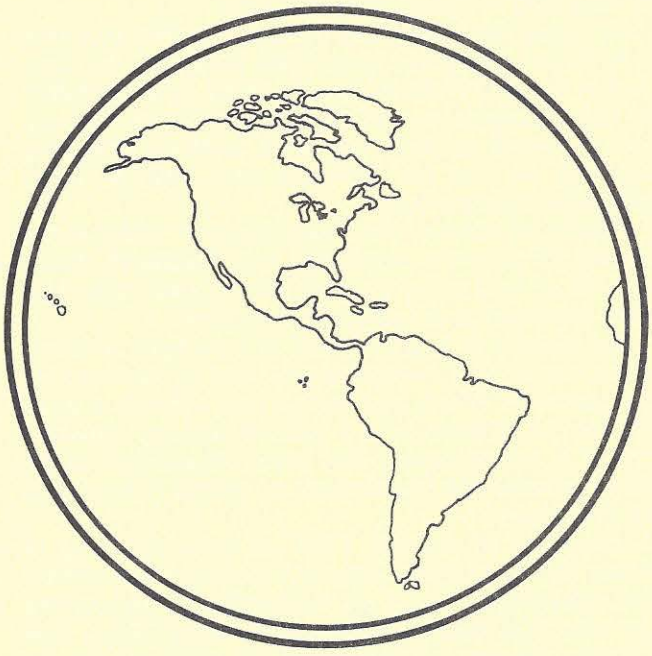
Mr. STEVENSON. Mr. President, in the daily press of business, it is often difficult to step back and view the Nation's progress amidst the long tides of history. James Michener did so in recent testimony before the Senate Subcommittee on Science, Technology, and Space. The large questions he raises about the Nation's spirit and its willingness to respond to challenge and adventure are in part for us to answer—but ultimately for the public. Because the answers are in some doubt, as he implies, I invite my colleagues to step back for a moment and read his eloquent and challenging words. Mr. President, I ask that a statement by James A. Michener be printed in the Record.

The statement follows:

STATEMENT BY JAMES A. MICHENER BEFORE SUBCOMMITTEE ON SCIENCE, TECHNOLOGY, AND SPACE. COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION, FEBRUARY 1, 1979

The only justification for allowing me to appear before your Committee is that for some years I have been studying the rise and fall of nations and in so doing have reached certain conclusions governing that process.

There seem to be great tides which operate in the history of civilization, and nations are prudent if they estimate the force of those tides, their genesis and the extent to which they can be utilized. A nation which guesses wrong on all its estimates is apt to be in serious trouble if not on the brink of



decline. Toward the middle of the Fifteenth Century the minds of sensible men were filled with speculations about the nature of their world, and although not much solid evidence was available, clever minds could piece together the fragments and achieve quite remarkable deductions.

Prince Henry the Navigator of Portugal occupies a curious place in history. He never captained one of his ships; he never sailed on any voyage of exploration; in fact, he stayed at home devouring old books, new rumors and future guesses, and from this melange constructed a view of the world that was extraordinarily accurate, even though he died some thirty years before Portuguese explorers brought proof of his theories.

Christopher Columbus had very little solid data to work with, but he had clever intuitions and a powerful capacity to piece together odd bits of information, leading him to conclusions that resulted in the effective discovery of America.

Nations at that time faced problems comparable to those faced by individuals like Columbus, Vasco da Gama and Sebastian Cabot. They had to decide whether they wanted to participate in the exploration of the world, and if so to what degree of commitment. Those like Portugal and Spain, who made early and fast decisions, gained empires of fantastic richness. Others like disoriented Germany and Italy, who did not perceive the possibilities, suffered grave disadvantages and never caught up. England and France were very tardy, but in the end the first made a stunning recovery, the latter never did.

I am not primarily interested in either the exploits of a few daring captains or the economic advantages of the nations they represented. The more lasting effect was on the spirit of the times, that wonderful enlarging of the human consciousness when it realized that the old definitions no longer applied, when it knew that the world consisted of a great deal more than Europe. To have missed the explorations was regrettable, but to have missed this spiritual awakening would have been disastrous. France and Sweden are excellent examples of nations which did little of the manual work but which reaped the intellectual rewards of the period. One might almost argue that Portugal and Spain dragged home the raw material for France and Sweden to codify and digest, proving that any nation can participate in the great swing of civilization according to its peculiar capabilities. Portugal provided daring sea captains. England provided able administrators. And France provided the philosophers. Those which provided nothing lost an entire cycle of historical experience from which they never fully recovered.

Nor do I think that the rewards resulting from participation in a great cycle need be permanent, reaching down to all generations. I am quite content if my nation gains enlightment or riches or advantages of other kinds for a respectable period. It can't be the hullabaloo of a single day or week, nor the celebration without foundation of some accidental accomplishment with little subsequent meaning. But if a nation responds to a challenge, succeeds in its effort, garners the rewards for a sensible period, and then loses the commanding position, I think no harm has been done. The nation has gleaned from that experience about all that it was destined to achieve, and a great good has been accomplished, because then the nation is prepared psychologically to tackle the next big problem when it comes along. And it surely will, for the life of any nation since the beginning of history has been a record of how it confronted the great challenges that inevitably came its way.

It may be unfortunate that I started these remarks with Portugal and its navigational and colonizing victories, as if they were the only kind that mattered. Actually, I would place them in second position, somewhat down the line in the scale of historical values. It is triumphs in the world of ideas and concepts that loom largest in my thinking, and I would like to stipulate several to give you a clue to my thinking. Today we are witnessing in the Near East the phenomenal vitality of the ideas promulgated some thirteen hundred years ago by Muhammad; these ideas have always been far more powerful than the empire put together by Portugal. The entire civilized world is indebted to the miracles that occurred in England during Elizabeth's reign and that of James I: I mean the extraordinary combination of Shakespeare's plays and the new translation of the Bible into English. These works fixed the English language as a tool of great beauty, great potential, and I often think of the Bible in its King James translation when someone tells me that no committee ever accomplishes anything. Two of the greatest documents of our language were written by committees, our English Bible and our American Constitution. The trick, it seems, is to assemble the right committee.

I would place in this pantheon of great ideas Sigmund Freud's analysis of human behavior and Karl Marx's dissection of production and distribution. For any nation to have missed the significance of these powerful movements was to have missed the meaning of contemporary history.

Certainly the world was changed by that cascade of brilliant industrial inventions produced by England in the late 1700s and early 1800s. We live today on the consequences of that industrial revolution. And I would include our own nation's enviable capacity to finance, organize and manage large industrial corporations.

Finally, of course, the historian must think of the impact of Christ's teachings two thousand years ago. They had a far greater importance than any mere exploration of conquest or empire.

But history is a grand mix of concepts, actions, organizings and commitments which determines the extent to which any nation can achieve a good life for its citizens, and I believe without question that if a nation misses the great movements of its time it misses the foundations on which it can build for the future.

One word of caution. I am not here speaking of either fad or fashion. I am not extolling the attractive ephemeral. And I am certainly not sponsoring the idea that was so fashionable in the 1930s, that German Nazism represented "the wave of the future." Anyone who subscribed to that idea had a very limited view of what the future of the human race could be, and few fashionable ideas have ever

crumbled so fast and so disastrously. The senate of any nation is obligated to discern the merely fashionable when it offers itself and reject it.

Suppose that all I have said is true, which would be a miracle equal to those we've been discussing. Where does that leave the United States in relation to its space program? I am competent to comment on only three aspects, leaving the more technical details to others.

Are there non-military advantages to be gained from a space program? The high technical requirements for success in space are so fundamental that spin-off rewards are almost automatic. Radio, television, medical instrumentation, miniaturizing, watches, new food processes, communications, health advances and improvement in clothing are some of the few advantages which I myself have gained because of the space program, and I am speaking only of small items which can be comprehended and used by the individual.

If one considers the larger items, like intercontinental communications satellites, the mapping of weather patterns, the analysis of soils and forests, the exploration for minerals including oil, the management of fisheries and the like, the potential rewards are multiplied many times.

And the nature of human intelligence is such that no one today can even guess the limits of either the personal items or the industrial which might accrue from the basic scientific work that has to be done in a space program. I have followed our past space adventures about as carefully as an uninstructed layman could, and I have a rather imaginative mind, but I anticipated almost none of these significant by-products and I doubt if any of us in this room today could predict where the next contributions will be made.

I have heard one impressive argument against what I am saying now. A man of some probity said, "If we had applied our scientific brains to these problems, we could have solved them all at one-tenth the cost." He is right. Had the Congress twenty years ago set aside a substantial budget, and had it authorized the assembling of a body of top scientists, and had it provided them with spacious laboratories and told them, "Devise a computerized navigational instrument that will operate regardless of where in space it is stationed," this could surely have been done. But neither Congress nor the human mind works that way. It is only when great felt needs spur the imagination that certain accomplishments become possible. As a project by itself few of the bonuses cited above would have materialized; as part of a national effort with a clearly defined goal they all came into being, and others like them will follow.

Are there military advantages to be gained from a space program? I would be terrified today if only Russian and Chinese vehicles were orbiting in space. Their military advantage would be so tremendous that we might almost suffer as a nation a kind of psychological shock from which we might never recover. For we would certainly be at their mercy.

I fear that the potentials of space warfare have even yet not been impressed upon the American public. We do not realize the overwhelming advantage a nation would enjoy if it alone commanded space, if it alone could direct by radio beam when and where an object or its cargo was to be brought down to earth. Any nation which allowed its enemies such a superiority would be doomed.

But if all nations have the capacity to utilize space defensively, then the peril is diminished and reasonable arrangements can be worked out. But only through parity can this be done.

Therefore, the United States must have a sensible space program, whether it wants one or not. To fail to keep up with new developments in this field would be disastrous, and any administration which permitted a lag should be condemned. We must know what the capabilities of space are, and we must retain our proficiency in using them.

I think we have done a fairly good job in this area so far, and I would suppose that from our strength we would be able to deal intelligently with those other nations who have attained or will attain a comparable capacity. This is the great unknown ocean of the universe and we in 1979 are as obligated to probe it and use it and participate in its control as the nations of Europe were obligated to explore their terrestrial oceans in 1479.

The future and the safety of those nations depended upon their mastery of the seas; ours depends in shocking measure to our cautious control of space, and if we abandon it to others we condemn ourselves.

Are there spiritual advantages to be gained from a space program? The spirit of man, and the resolve of a nation, are tenuous things, to be fortified by the strangest experiences or destroyed by the most unanticipated accidents. Outward events influence them but inner resolves usually determine outcomes. A novelist sees men and women destroy themselves because the will to survive has been lost; the historian watches nations go down because of fatal wrong choices which sap the national energy. Usually the tragedy occurs when inner convictions are lost, or when a sense of general frustration or waning purpose prevails.

It is extremely difficult to keep a human life or the life of a nation moving forward with enough energy and commitment to lift it into the next cycle of experience. My own life has been spent chronicling the rise and fall of human systems, and I am convinced that we are all terribly vulnerable.

Each era of history progresses to a point at which it is eligible to wrestle with the great problems of that period. For the ancient Greeks it was the organization of society; for the Romans it was the organization of empire; for the Medievalists the spelling out of their relationship with God; for the men of the Fifteenth and Sixteenth Centuries the mastery of the oceans; and for us it is the determination of how mankind can live in harmony on this finite globe while establishing relationships to infinite space.

I was not overly impressed when men walked upon the moon, because I knew it to be out there at a specific distance with specific characteristics, and I supposed that we had enough intelligence to devise the necessary machinery to get us there and back. But when we sent an unmanned object hurtling into distant space, and when it began sending back

signals—a chain of numbers to be exact—which could be reassembled here on earth to provide us with a photograph of the surface of Mars, I was struck dumb with wonder. And when computers began adjusting the chain of numbers, augmenting some, diminishing others, so that the photographs became always more clear and defined, I realized that we could accomplish almost anything, there in the farthest reaches of space.

My life changed completely on the day I saw those Mars photographs, for I had participated in that miracle. My tax dollars had helped pay for the project. The universities that I supported had provided the brains to arm the cameras. And the government that I helped nourish had organized the expedition. I saw the universe in a new light, and myself and my nation in a new set of responsibilities. My spirit was enlarged and my willingness to work on future projects fortified.

No one can predict what aspect of space will invigorate a given individual, and there must have been millions of Americans who did not even know Mars had been photographed. But we do know that in previous periods when great explorations were made, they reverberated throughout society. Dante and Shakespeare and Milton responded to the events of their day. Scientists were urged to new discoveries. And nations modified their practices.

All the thoughts of men are interlocked, and success in one area produces unforeseen successes in others. It is for this reason that a nation like ours is obligated to pursue its adventure in space. I am not competent to say how much money should be spent. I am not competent to advise on how the program should be administered. But I am convinced that it must be done.

I do not for a moment believe that the spiritual well-being of our nation depends primarily upon a successful space program. There are, as William James said, moral equivalents to war, moral substitutes for any charismatic national experience. I am sure we could as a nation attain great spiritual reassurance from rebuilding our cities or distributing our farm produce better. And my experience in the arts has taught me to be suspicious of late fashions or high styles. Space programs are stylish today and run the risk of being abused.

But I also believe that there are moments in history when challenges occur of such a compelling nature that to miss them is to miss the whole meaning of an epoch. Space is such a challenge. It is the kind of challenge William Shakespeare sensed nearly four hundred years ago when he wrote:

"There is a tide in the affairs of men,
Which, taken at the flood, leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
On such a full sea we are now afloat,
And we must take the current when it serves,
Or lose our ventures."

We risk great peril if we kill off this spirit of adventure, for we cannot predict how and in what seemingly unrelated fields it will manifest itself. A nation which loses its forward thrust is in danger, and one of the most effective ways to retain that thrust is to keep exploring possibilities. The sense of exploration is intimately bound up with human resolve, and for a nation to believe that it is still committed to forward motion is to ensure its continuance.

I doubt if there is a woman or man in this room who honestly believes that the United States could ever fall backward, as other nations have within our lifetime. Intuitively we feel that we are exempt. Yet for us to think so is to fly in the face of all history, for many nations at their apex were inwardly doomed because their will power had begun to falter, and soon their vulnerability became evident to all. Enemies do not destroy nations; time and the loss of will brings them down.

Therefore we should be most careful about retreating from the specific challenge of our age. We should be reluctant to turn our back upon the frontier of this epoch. Space is indifferent to what we do; it has no feeling, no design, no interest in whether we grapple with it or not. But we cannot be indifferent to space, because the grand slow march of our intelligence has brought us, in our generation, to a point from which we can explore and understand and utilize it. To turn back now would be to deny our history, our capabilities.

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# NEWS NOTES:

**SOVIET GEOSYNCHRONOUS KILLER SATELLITE...**Though there has been no official statement from the United States government, it appears that the USSR has launched a new type killer satellite in the last few days. Orbited at about the same time as the recent Soyuz 24 crew (which has since linked up to the Salyut 6 space station), the Soviets have announced that the killer satellite is a comsat which has failed to make a proper geosynchronous orbit injection. Presently the device is in an epicycle-type orbit with a near earth orbit perigee and a geosynchronous apogee. For each revolution that it makes around the earth, the satellite advances 2 degrees ahead in the point that it touches the high altitude orbit. Since commercial and military geosync satellites are generally spaced about 2 degrees apart in orbit (for technical reasons), this means that the killer satellite bus could "drop off" explosive shrapnel bombs for more than one target satellite. In fact, such bombs may have already been placed in geosynchronous orbit and accelerated to proper velocity to keep them close to targets. In the event of hostilities, a simple radio signal from the ground could trigger the destruction of several target US and NATO satellites at one time. The seriousness of this possible development is underscored by the assumption of US space planners that our sensitive payloads in the 24-hr. orbits were safe for many years to come, and by the value of those payloads. For example, besides valuable military and commercial comsats, there are early warning satellites using infrared detectors in geosynchronous orbit over the Indian Ocean. Those sensors are meant to warn of USSR missile strikes against the US within a minute after the ICBM's leave their silos by sensing the heat of the missile exhausts. Government officials will not comment on the possibility that the "failed comsat" is indeed a killer satellite weapon.

**SHUTTLE DELAY TO 1980...**Washington...It now appears obvious to aerospace insiders that the first manned orbital test flight of the US Space Shuttle will not occur until sometime in 1980. Recently some legislators have been talking tough about providing more than 100 million additional dollars for the Shuttle due to minor cost overruns and engine difficulties. Plans are now being formulated to launch certain payloads on expendable boosters which were originally scheduled for the Shuttle. (Also, two payloads scheduled by Iran have been cancelled.)

**FOUNDATION RECEIVES NASA CONTRACT...**St. Paul...Foundation, Inc. has been awarded a small NASA contract to assist the Commercial Space Processing Development Task Team at the NASA Marshall Space Flight Center. The team is attempting to interest American industry in materials processing in space.

**"LIBRA" DOING WELL...**San Diego...The first film ever done about free enterprise in space, titled "Libra", and produced by World Research in San Diego, California has reportedly sold several hundred copies and has

received awards from film festivals in Miami and elsewhere.

**FORTUNE PUBLISHES SPACE ARTICLES**...New York...Fortune magazine has joined Business Week and Nation's Business in publishing articles about space industry with a business perspective. Unfortunately, the two part Fortune series (Jan 29 and Feb 26, 1979) lacked any relation to the actual facts and realities of the space business movement. Besides several misstatements of fact, the articles implied that a concerted effort is presently being made by NASA to entice industrial firms to consider space activities. With the minor exception of the Marshall team mentioned above, no such effort is being made. In fact, both funds and interest in commercial space activities is very limited at NASA. There is absolutely no policy orientation at the agency which supports the Fortune statement that NASA's new battle cry is "There's gold in them thar stars!". Privately NASA officials have confided to Foundation, Inc. staff that the articles were highly embarassing to them, since they appeared right at the time of budget hearings.

**CHEMICAL ENGINEERING IN SPACE**...Robert Waldron and David Criswell of the Lunar and Planetary Institute and Thomas Erstfeld of Lockheed Electronics have published a fact-filled article entitiled "The Role of Chemical Engineering in Space Manufacturing". It has been printed in the February 12 issue of Chemical Engineering, the leading trade magazine of the chemical industry. The authors have gone into substantial detail concerning processes and plants necessary for converting extraterrestrial materials into useful structural and other components necessary for manufacturing large space structures.

**OTRAG SEEKS UN SUPERVISION**...West Germany...Orbital Transport and Rockets, A.G., of West Germany has requested United Nations supervision of their activites in Zaire, Africa. The OTRAG firm has been subjected to intense propaganda attacks by the USSR and African states who have claimed that OTRAG is developing missiles rather than orbital boosters. The OTRAG strategy is an attempt to moderate the damaging effects of this propaganda on their operation in Zaire. There has been no UN response as yet.