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At present, space science is one of the most vital and productive fields in the United States. There is a brisk flow of fresh data into research laboratories throughout the nation, and our current journals of geophysics, solar physics, planetary science, and astronomy are bulging with reports of discoveries and new insights gained by space techniques. Simultaneously, the high technology of the space industry is being used in a rich variety of utilitarian applications of global scope. The most important of these is rapid worldwide radio communication by satellite relay stations, now flourishing as a commercial enterprise. Others, still primarily in the form of government services, are weather observation and forecasting, military reconnaissance and surveillance, navigation, geodesy, and the survey of earth resources on land and at sea. All of these applications are of pervasive civil and military importance, and many evolutionary improvements in the technology are under development.

Despite all of this, a deep distress is spreading through the community of scientists and engineers who are engaged in space work. This distress is not alone a matter of narrow special interest. Rather it portends a grave slippage in our international stature in yet another area of science and technology. The most immediate concern is with the paucity of opportunities for new initiatives. During 1980, the United States placed only 13 satellites into earth orbit and launched no spacecraft into deep space.* Of the 13 satellites, 8 were primarily for military purposes, 4 were primarily for civil applications, and only 1 was for scientific purposes (the Solar Maximum Mission for refined study of the sun). The corresponding figures for the Soviet Union were 83, 18, and 2, respectively, plus 6 manned flights, for a total of 109. By contrast, in 1966 the United States made 96 launches, including 18 scientific flights and 5 manned missions. As of 1981, it is almost impossible to obtain a go-ahead for a new scientific mission or for an advanced application mission in space. Even previously authorized missions are being terminated or, what may be worse, placed in a status of indefinite postponement on a starvation budget.

It is easy to blame this bleak outlook on shortsighted policy of the Reagan Administration, as many of my colleagues are inclined to do. But I find it difficult to argue that an annual federal expenditure of $6 billion for the National Aeronautics and Space Administration plus an estimated $3 billion for space activities of the Department of Defense is not adequate for a vigorous program of new achievements by the immensely capable cadre of space scientists and engineers using the superb instrumentation and technology that exist in the United States. It is time to recognize that the dominant element of our predicament is the massive national commitment of the past decade to development of the space shuttle and the continuation of manned flight. This commitment has diverse bases but arises largely from a (possibly false) analogy with the history of aeronautics and from vaguely perceived future benefits of vast enterprises, such as manufacturing in space, solar power satellites, human colonies in space, and mining of the moon and asteroids. It may well turn out that the space shuttle is a technical success but a financial monstrosity, as on a smaller scale has proved to be the case with the Concorde supersonic transport. Stated otherwise, the shuttle may be ahead of its time, by perhaps 20 to 50 years. Meanwhile, clearly realizable and important objectives in space are languishing.

I consider that our national policy in space is in desperate need of critical and dispassionate reappraisal. A refreshing start has been made by the Corson committee of the National Research Council in its report on *Electric Power from Orbit: A Critique of a Satellite Power System.*†—JAMES A. VAN ALLEN, *University of Iowa, Iowa City 52242*

**TRW Space Log*, TRW Defense and Space Systems Group (TRW Inc., Redondo Beach, Calif., 1980). †Committee on Satellite Power Systems, Dale R. Corson, chairman (National Academy Press, Washington, D.C., 1981).