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DEPARTMENT OF GENETICS
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March 7, 1962

MEMORANDUM

To: Chairman, PSAC Space Panel
From: J. Lederberg
Subject: Your memorandum 2/21/62.

1. The heavy emphasis on man-in-space is probably responsible for this. I do not quarrel now with NASA's implementation of our program, but many of our colleagues are not so well informed. I hope that the President may have occasion (especially re 4) to stress that m.i.s. is the culmination of a program which will be the thorough, scientific investigation of the solar system. Newspaper publicity that Col. Glenn's re-orientation of Friendship 7 proves the necessity of manned control at this time does not help the understanding appraisal of the significance of manned flight.

2. I still doubt whether science and engineering backup are quite adequately (or sufficiently timely) funded for maximum utilization. But I may be reflecting the biases of a particular echelon of JPL; on the other hand, NASA HQ may well reflect a different bias.

3. My own orientation favors planetary and astronomical study as the most significant aim of space research. There has been startling progress but more is still called for to meet the 1966-7 opportunities for Mars and Venus. These are still given a second rate sort of priority in overall planning.

We should seriously consider mounting an early mission for lunar sample return at a higher priority than circumlunar flight.

The most serious problem in NASA remains the NASA - JPL, which is not easily stated or solved. Something of the order of Dr. Pickering's appointment to a Deputy Administratorship at HQ might be helpful.

4. This is the most urgent issue, but we must first frame realistic and consistent objectives. International cooperation has a definite role in supporting space research and application, but these are not decisive bases of our policy. Far more important is the establishment of extra-terrestrial exploration as an idealistic motif of our technological aspirations with which the entire world can identify itself. These political aims are far more important than the technical ones which have so far dominated our proposals.

I attach a note on the question, which I paraphrase by asking "should we plant the U.S. or the U.N. flag when we land on the moon and planets"? I do not believe we have really resolved this question in policy. (The Panel might profit from access to statements of current

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policy on this issue). We do not need to bargain with the Russians to make important progress; but we have to steer clear of what Szilard aptly calls the meaningless battles of the cold war.

5. NASA has lately shown the most aggressive planning in this area. We have a long ways to go, but the people at NASA seem pointed in the right direction.

Additional Comments:

6. One Way Manned Flight

We must give serious consideration to the probable necessity of planning for one-way manned flight to the moon and planets. If we measure the value of manned flight in terms of its scientific accomplishment, we could probably demonstrate it more humane to take full advantage of payload for the outward trip, than to degrade its reliability and accomplishment by providing for the return, so that an extended series of risky flights becomes necessary for the same results. I do not propose that we implement such plans now, except as constructive anticipations of unplanned mishap. But such mishaps may well occur, and I foresee that they may move us to a new position on one-way flight of which we should at least take account in advance planning.

7. NASA's role in support of science (especially health sciences). There are no foreseeable limits to its legitimate domain of scientific requirements and support. In the health field it can play a specially constructive role in joining engineering to medicine. Explicit collaboration between NASA and NIH in support of general medical engineering programs could do a great deal to further a very promising but poorly developed area, which now suffers from some taint of illegitimacy on both sides. Would the NIH be expected to support development contracts on improving video amplifiers, which might be used in radiology as well as astronomy? Or would NASA be the most obvious source of grant support for work on iodine localization in the body?

8. Government use of space communications. Whichever of the current proposals for communication satellites is adopted, the government should recapture its investment in the development of the program in non-monetary values. These should be the reservation of rights to use 30 per cent of the bandwidth capability for the government's own purposes, including educational functions, inter-library communication, and internal technical communications--e.g. (video links for PSAC committee 'meetings'). See note B, my note to Dr. Wiesner; his reply was perceptive and responsive, and pointed to U.S. general authority in frequency allocation. However, more explicit planning than this may be required in order to project the economics of the systems.