London → NY

1/15/60

PAN AMERICAN

IN FLIGHT AIR LETTER

Dear Bruno

I am just on my way home from the COSPAR conference at Nice. My paper, which might be of some interest to you is enclosed, in a preliminary version. If you have a chance to read it, I would be particularly interested to hear if you have any reactions to the paragraphs marked on pp. 5-6. In fact, this question should be quite relevant to your professional interest in cosmic rays, since these particles should be an important source of information on the cosmic gas whence presumably they originate. One point puzzles me, perhaps because I don't have all the facts straight. As I understand it, the heavier particles in the primary radiation are stripped nuclei of various atoms, whereas the gas purportedly contains neutral atoms (at least H) and therefore also should contain +1, +2 etc. ionization states as well. Such ions would, of course, be accelerated to lower velocities by virtue of their lower e/m ratio and perhaps might only be detectable at some distance from the earth. But where such ions occur, if they do, should we not also see molecule ions, e.g. CH^+, as well? Are these already observed in the radiation, or is there some argument negating this prediction. If it holds, it should be possible to improve our conception of the chemistry of the gas by looking at the relative abundances among the accelerated particles.

(over)

of course — do we have any real knowledge of the state of primary particles before they encounter the polar and terrestrial atmospheres?

I understand you have been appointed to PSAC, which merits both congratulations and condolences. I hope as one of your minor preoccupations you are giving earnest thought to the validity of the man-in-space program. As best I can judge, a large majority of ~~my~~ our colleagues in science and engineering, too are vehemently opposed to the exaggerated emphasis given this program, and this is my own position as well. In these circumstances, isn't Mercury already a serious political blunder as well, or are the views of scientists unimportant? I have also very serious doubts whether the completion of the project, even if (remarkably) it does succeed ~~and~~ in advance of the Russians', will help or hurt our national prestige, as well. If Mercury is a mistake, I feel it is really a shameful position for us to persist in, and certainly one that will give our country no credit in the perspective of history.

Yours cordially

Joshua Lederberg

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