

NATIONAL ACADEMY OF SCIENCES  
NATIONAL RESEARCH COUNCIL  
OF THE UNITED STATES OF AMERICA

SPACE SCIENCE BOARD

February 28, 1962

MEMORANDUM

FOR: Members, Committee 15

FROM: C. S. Pittendrigh, Chairman

I You are due some explanation for the delay in any communication from me since our meeting last Fall. There have been several causes all conspiring to cloud, to some extent, both the exact nature of your task and the time-scale for its completion. The principal things were: (1) the cancellation of all existing programs for orbiting biolaboratories; (which had been in my mind, at least, the focal point of our projected program of symposia); (2) an extensive shakeup in the organization of NASA that left inhouse responsibility for the biosciences unclear for sometime; (3) a nearly complete reorganization within the Space Science Board itself; (4) the announcement of an 8 week Summer Study in the Space Sciences at Iowa City this summer. [ This last item has recently caused some further uncertainty as to how our detailed efforts this coming year should be programmed. ]

The total situation is now much clearer and one can, with this memorandum, now lay out a fairly well-defined task and time schedule. First, something should be said about the reorganizations in SSB and NASA.

II SSB Reorganization

The new committee structure of the Board is laid out in the attached Appendix I from George Derbyshire in the SSB Secretariat. The biological committees have been left as they were; the only change is the addition of an ad hoc committee (Pittendrigh, Chairman; Hartline, Lederberg, Lambertsen) for coordination of the bioscience work, and with the further task of producing an overall Board position paper on the biological effort in the space program.

Incidentally, the Secretariat of the Board is hoping to add a biologist to its permanent staff and they would welcome suggestions from any of us.

III NASA Reorganization

Appendix II is a copy of the new organization in NASA. There are two features of interest to the biologists.

First, the old Office of Life Sciences has been dissolved; it was previously responsible for all "pure" biology and for the biomedical work associated with the Man in Space (MIS) effort. MIS is now a separate office under Holmes; and the biomedical work specifically under General Charles Roadman (U. S. Air Force, on loan to NASA). All the non-MIS biology (Exobiology and so-called Environmental Biology) is the responsibility of the Office of Space Sciences, headed by Homer Newell. Newell's office of course, oversees also all the physical science in space. For some time (November 1 to mid February) Newell's office was without a biologist in charge, and during that period we were therefore uncertain as to where the reorganization would lead and what the program would be. In mid February Orr Reynolds left DOD and joined Newell as Director of the biosciences program in his Office of Space Sciences. This seems a real step forward in getting someone of known ability in charge of the in-house biology thinking at NASA

Second, the separation of biosciences from the MIS effort poses some new problems. It is not yet clear how the new NASA structure is going to handle the biological research needed as a basis for the MIS effort; one cannot pursue this much further here -- but we should note that the efforts of some of our panels (e.g., Zero-G and Closed Ecological Systems) have pertinence now to two distinct branches of the NASA organization, and that organization contains no formal provision for coordination of the efforts at a higher level. It may be that before long there will be further innovation at NASA to meet this obvious gap.

#### IV Overall Biosciences Program for SSB Committees and Committee 15 in particular

Mr. Webb, the Administrator at NASA, has requested the SSB, via Dr. Bronk, to undertake a Space Sciences Summer Study at Iowa City (State University of Iowa) this summer in an 8 week session from June 18 to August 18. The purpose of this operation (under Van Allen's Chairmanship) is to make a rigorous and complete study of the entire scientific (vis-a-vis engineering) program of NASA, and to produce a substantial report that will hopefully be of major assistance in guiding NASA policy on space science for some time.

The question has arisen as to how the biological sciences could be meshed into the project. This problem arises because the permanent biological committees (14, 15, and 16) of the Board were initiated much later than the physical committees and they are still a long way from producing any definitive position papers. Involvement in the full Iowa program would interfere with and further delay the completion of their own special mission.

Discussion with several of the interested people has led to the following program for the biologists.

(1) It is hoped that one or two biologists can be found who will be sufficiently interested, informed, and able to attend the whole Iowa session. Their function will be twofold: (1) to represent, in some sense, the broad interests of the biological community in the formulation of any major policy issues; and (2) to join with the ad hoc Biological Coordinating Committee of the Board on September 5 in Princeton when it meets to complete the general position paper on space biology I referred to earlier. Pittendrigh hopes to attend the Iowa program for a few brief visits and thus keep contact with the biologists going through the whole exercise.

(ii) Apart from the above liaison activity with the Iowa program the biological committees are to go ahead independently with their own programs this summer. The immediate goal is the general position paper on space bio-sciences earlier attended to; and this is to be delivered to NASA by September 12. It will thus reach NASA at essentially the same time as the Iowa Report whose main contents will be concerned with physical sciences.

To meet this schedule the ad hoc Coordinating Committee (Pittendrigh, Hartline, Lambertsen, Lederberg and coopted members) will meet in Princeton September 5 to complete the revision of a draft that will have been prepared by then. To complete the draft we need written reports from all the panels and working groups of the three permanent committees (14 - Exobiology; 15- Environmental Biology; 16 - Man in Space) by August 15th, 1962.

This brings us, then, to the real meat of this memo: you are requested to activate your panel as soon as possible and make arrangements suitable to all concerned for one (or more; your decision) meetings, symposia, or work-sessions, and to submit written reports to me by August 15.

#### V Mission of Individual Panels

The purpose of the panel's written reports is to provide the Biology Coordinating Committee of the Board with all the technical information and judgment they need for the preparation of the Board's overall position paper, on the desirable scale, scope and to some extent -- details of biological effort in the NASA program.

Each panel should address itself to the following items: (1)

- (a) Whatever the panel chairman feels is necessary
- (b) A statement of what scientific issues exist in his designated area that can conceivably be tackled in the space program. Wherever possible, and this is especially true for Magnetic Effects and Zero-G Effects, a theoretical analysis of a possible basis for effects should be included.

The report should then proceed to consider how the work necessary to attack the problems can best be done in terms of:

- (2) Orbiting Biological Laboratories
- (3) Sounding Rockets
- (4) Balloons
- (5) Ground based laboratories

I have recently had several conversations with Dr. Newell about the biological program in general. The principal question he has wanted answered was: Does the biological community need and want a program of orbiting bio-laboratories? You will recall we had earlier thought this was an established

program, and we were going to consider what should be put in them. The position now is that they will only come into existence if we (as the biological community) say we need them and what for. I canvassed a sufficient number of people to get confirmation of my own opinion that the answer to Newell's question was Yes, we do need orbiting labs. I have passed this on to him and he is now looking for our detailed justification and suggested experimental programs by September 15. The character of our final report then will at least greatly affect the size and scope of the program of orbiting biolabs.

Item (2) above is therefore a considerable responsibility we have to discharge.

It will also be useful to have your evaluation of what, in your area, can usefully be pursued in sounding rockets and balloons. And it will be especially helpful to have your full thoughts on what is needed now, and in the near future, in the way of associated ground-based work.

Should any of you wish to have more information on the characteristics -- durations, altitudes, payloads, length of zero-g experience, etc. -- of sounding rockets, etc, please feel free to use the full resources of the SSB's Secretariat. George Derbyshire is your representative there.

I am adding separate personal notes to each panel chairman covering special points on his program. Please let me know (with copy to George Derbyshire), as soon as your plans for expanding your panels and holding working sessions crystalize. In all matters of arranging meetings, travel -- and in finding suitable people for your job -- the SSB Secretariat will give you all the help you need.