



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
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REPLY TO
ATTN OF: DA-74-L328

Charles A. Berry, M.D.
President
University of Texas Health Science Center
P. O. Box 20036
Houston, TX 77025

Chuck:

Dear ~~Dr. Berry:~~

Enclosed is the transcript of your remarks at the Panel Session of the recent Skylab Biomedical Symposium. Please feel at liberty to restructure the transcript to the extent that you feel advisable in order to insure clarity and correctness in the final publication.

We would hope to receive the edited transcript from you within two weeks. If this time period is not realistic in your case, please advise us by phone (483-6291). A franked, addressed envelope is enclosed for your convenience.

Sincerely,

Lawrence

Lawrence F. Dietlein, M.D.
Deputy Director of Life Sciences

Enclosure

SPEAKER Could we ask the panelists to please come up 7
and take a seat at the table? Well, colleagues, ladies and 8
gentlemen, we've reached that point that we've all been
waiting for, to try and decide what it's all meant. That's 10
an awesome task. I think Dr. Dietlein did a fantastic job 11
of trying to pull that material together, and I certainly
think his summary was excellent and did a very good job of 12
telling us where we are. There are a few remarks that I 13
would like to make at the outset, and then I would like to
note how we're going to work the rest of this session. For 15
this period, what we planned to do was, we asked individuals
covering various areas to be a part of this discussion with 16
the idea that they would give their views - And they're not
limited to their area of discussion, but they should give 17
their views concerning what they have heard of these
results. Now we're going to have that fairly limited in 18
time so that we don't end up with a whole series of papers
all over again. The objective is to have some interchange 19
among those of us here and with you out there. And what we 20
want to do then is to - after some initial statements by the
group here with interchange that I'll try and engender among 21
the group, we'll then have people here in the room
participate also. And we particularly want those who have 22
been investigators, who have been carrying out some of these
studies, to address questions to the panelists and ask them 23
how they view it. Do they view it the same way you did, if 24
they have not stated that in their opening statements. Now 25
I think it's very important that we all realize one of the
things that Dr. Dietlein said and well stated in his title, 26
that it is a beginning. It's a culmination, though, of a 27
lot of things, as you saw from the slides that he ran
through; and there are a lot of people in this room that 28
have had a tremendous amount to do with that. There are 29
some people that I think have not been singled out - and
this is always dangerous, once you start doing that - and I 30
want to say at the outset that there is no possible way that
I could single out, in this room, all the people who have 31
something to do with making today possible after the last
roughly 15 years of activity in this field, to get us to the 32
point where we had data to review as has been done today.
The first thing I would like to say is that I think the team 33

here at the Johnson Space Center and the entire NASA team - 34
which was not composed just of people from here; it was
composed of people from other centers and people from 35
outside and people from Headquarters, et cetera, et cetera -
But that entire team - and in particular the Johnson team, 36

for their development of this symposium - I think they're to
be highly congratulated. Now some of the individuals that
are in this audience are people who have formerly worked
with this team in one form or another. They've had
activities tied with the team - trying to get data in one
area or another or worked in the operations teams. And many
of you are here because of those particular interests
engendered at that time, and we're thankful to all of you.
There are some people here, though, who have played a
particular role in some of our activities over the years
because they've taught many of us and led many of us down
these paths. Dr. Stroughold [?] I see sitting over here.
And he's been with us for many, many years and really led us
into space medicine, and I think we owe a particular debt to
him. We also have a couple of people that are in the
audience that were quite active in leading the team of us
who were involved at the very beginning of the program back
in the Mercury days - have since gone out, one of them only
recently, but still very tied to our area of interest - and
that's Stan White and Bill Douglas - are here in the
audience. We have Dr. Hitchcock down here in the very front
of the room, and it's people who have helped to teach us
along the way as he has done that have made great imprints
upon the capability to develop data such as you've seen
here. Dr. Bierstet [?] and Dr. Gauer [?] from across the
oceans are here with us in the room, and you've heard Dr.
Gauer's name mentioned I don't know how many times during
the symposium. Dr. Luft and Sam White from Lovelace - they
started very early in the program working with us, and they
have continued that activity. We could go on and on and on
with people like this. One thing I would like to say, that
there are a number of panelists here who went through some
very trying times with us - and I saw Herb Hulgrom [?] going
out in the audience sometime during the last 3 days - and
I'd like to say a word about that. You've heard a lot of
very fine comments about what great teamwork it was, what a
great job everybody's done, how happily it's all ended.
Everything is bouncing and full of joy. Now I'd like to
tell you that this last year has not been bouncing and full
of joy for the people who have been working on this program.
And at times, I'll tell you very personally, I considered it
hell. And I'm not sure that some other people in the team
didn't consider it that way also. So while it has all

turned out great, I don't want anybody to go away from here
with the idea - thinking that it's easy and that it all just 68
sort of happens, because it doesn't just happen. There were 69
daily problems, and these were alluded to in some of the
opening morning speeches where some of our key people in the 70

program office mentioned that there had been some of these
early problems. Some of the people talking about the
operations mentioned these, and there were - everyday we had
some kind of difficulty trying to work out the problems that
were occurring on a minute-to-minute and hour-by-hour basis.
And they were important to the outcome of these data that
you've heard here. And while some of them may have sounded
not as important at that time, they had great importance;
and those decisions were not always easy, and they always
weren't made to everybody's satisfaction, of course. There
was severe management concern, and Larry, I think, led up to
that very well in some of the things that he was telling you
about past history. I'd like to call to your attention the
fact that the cardiovascular system, while it was the first
system that was ever noted to have problems within the
program, to see any change that we could measure at all,
certainly remained one of concern. And that was added to by
our problems with Apollo 15, the arrhythmias that were
mentioned, and then a lot of data that we obtained from our
Russian cohorts. And I would just make one parenthetical
statement here, that we have come a long way in our dealings
with our Russian colleagues over these years. A lot's
changed in the last 15 years. We've exchanged a lot of data
directly. They're looking at many of the same problems as
we are; they're not looking at them always in the same way,
but they're looking the same way for mechanisms and things.
These management concerns surfaced to the point that we were
required to get weekly decisions made, for medical purposes,
as to whether we would go on or not. And I can tell you
that those were deadly serious, that the administrator was
very, very serious about what he was going to do or not do
and he needed to be reassured. Now it was fine to try and
do that reassurance on a personal basis, backed by a team
such as we had conducting these missions, but we needed
other assistance. And we went to form two particular
groups. One group, that was a cardiovascular group. And
John Shepherd, who's here on the panel, spent a lot of time
with that - and Scott Swisher - and we met a lot of times.
And they came and gave of their time unstintingly to help us
convince management; and I needed that support, and I'm
deeply grateful for it. We also had a team that was put
together to try and look at the vestibular area, and one of
those people is here on the panel, Melvill Jones. And it's

hard to find a lot of vestibular people once you get past
Ash Graybiel, and you start looking down the list. We went 104
to great lengths to try and find vestibular people to come
and help us. I looked at my remarks that I've had a chance 105
to give in trying to sum up this program at the time of the

Fifth-Man-in-Space Symposium last December and then in May 106
again at the Aerospace Medical Association. In December, we 107
were still flying the last mission and in May, we were at
the point that things were completed and we were sort of 108
able to sum up at least with data as it was revealed at that
point in time. I don't think that I would change anything 109
that I said in any of those remarks, and so I'm not going to
repeat it here today. I don't think there's any point to 111
it. I think that Larry has summarized very well the status 112
that we all believe exists and that man is showing adaptive
changes to a unique environment. These, in some cases, are 114
definitely going to have to be considered for
countermeasures. I think in the calcium area we're going to 115
have to do that. I suspect even in the cardiovascular area 116
we're going to still continue to look at that. There is one 117
thing that I would like to leave you with, and that is the
fact that we are defining a lot of new normals here as we 118
look at these things. There's no question about it. We're 120
looking at man, which we consider to be normal man, placed
into this very unique environment; and as we do that, while 121
we can't actually look - as Larry mentioned - at the
absoluteness of weightlessness because man is going about 122
his activity and he's not lying there completely passive -
and we wouldn't want him to - still it is an unparalleled 123
experiment in that regard. And as we get these new normals, 124
we are able to look at the hypothesis that we've developed.
And there are some holes in it, and that leads to the future 125
research that needs to be done. I hope that our panelists 126
are going to bring a good deal of that out in the
discussion. And I'm left with the feeling that while we 127
have come out probably with more questions than answers, we
gained a lot of answers. And certainly, if you look back at 129
the time of the beginning of Mercury, we've come a long way
in deciding what's really happening to man in this very 130
unique environment. And I'd like to start down our panel 131
now. And the cardiovascular system was mentioned first, and 132
so I am not going to run down and introduce everybody here 133
except as we come to them; and it'll save us some time that
way. First, on your program, Neal Bricker is not with us. 134
He was unable to be here; so you'll note that he is not here 135
on your listing. Nor is Ted Cooper. And I'm going to call 137
on Dr. Epstein in a moment, and he is replacing Dr. Cooper
on our panel.

I'd first like to call on John Shepherd, because of the 139
cardiovascular system we've mentioned so frequently here and 140
most recently in our elaborations of the last day and a
half. And so, John, I'd like for you to take a few minutes 141

and tell us your views about how you sum this all up, as far 142
as the cardiovascular system is concerned.