6th September, 1973

Dr. E.I. Hamilton,
Natural Environment Research Council,
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13/14 St. James Terrace,
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Dear Dr. Hamilton,

Thank you for your letter of 20th August and the enclosed papers. I have still not received the Icarus reprints but I will send you one when I get some.

I realize the delivery problem for capsules of microorganisms has to be solved but I don't think that will prove too difficult. However, I think the space-ship would have to be decelerated, which implies that the rocket motors and controls must still work after a long journey in space. As to meteorites, in addition to the prolem you mention I think it rather unlikely that a suitable meteorite could come from another "solar system". At low sppeds the time would tend to be rather long for survival. At high speeds a meteorite is not too likely to be captured by our own solar system. Of course transfers within our own solar system are another matter.

As to Mo, we are now not at all happy with our argument because apart from the reason you give (which is hinted at in our paper) it appears that if one considers the amount in sea-water the argument loses its force. Your point about Si is a good one.

I don't really agree with your remarks about the genetic code. I think the restrictions due to it being frozen are no more serious than those produced by our own frozen alphabet of 26 letters. Whether it evolved here or elsewhere I think it must have become effectively frozen at a relatively early stage in evolution.

Whether technological sophistication oscillates or progresses steadily, we would have to agree that the peak at this "oscillation" is considerably higher than any previous technological peak. I don't see that there is anything to suggest that a higher civilisation might not progress, either steadily or by oscillations, but obviously we know far too little to be certain of this.

Yours sincerely,

F.H.C. Crick