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Are There Bugs on Mars?

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Science and Man

THE QUARANTINE of the planets must work both ways. A spacecraft might carry an accidental spore from Earth to Mars, or the reverse. We are still uncertain whether life can survive on Mars, and whether Mars has indigenous life to send back to the Earth—but if it does, the results are unpredictable.

The introduction of the cactus plant or the rabbit to Australia; of syphilis to Europe; of the English sparrow, the starling, or smallpox to America; of tuberculosis to the Africans, are only a few chapters of a long sorry history. We hardly want to bring Martian diseases or pests back to Earth as the price of space glory.

Since manned flight to the planets is already being seriously discussed, questions of interplanetary hygiene need the gravest consideration.

The most serious criticism against this concern is that we cannot so far detect life at all on any planet. But we have hardly looked closely enough.

It is also argued that any Martian microbes would not attack Earthlings, since they have never been adapted to us. But that argument cuts both ways. We have learned to live with our Earthly microbes by developing antibodies and other defenses to recognize and cope with them. The strangers might be the most insidious of possible saboteurs by the very innocence of their multiplication in our blood stream—or overwhelming of our septic tanks and sewage disposal plants. We just don't know enough to make reliable predictions.

The space engineers want hard answers right now—for missions they are planning for 10 or 20 years hence. But biologists aren't that clever. If we believe in conserving the Earth, we don't want to take even small risks with our posterity. If we had to answer now, we would have to say "Stay away, we cannot give you rigorous assurance that the trip is a safe one for our future."

THIS HARDLY has to stick forever. An orderly program would take safe, distant — but progressively closer—looks at each of the planets. Each such trip would bring us deeper and deeper insight as to what the surface is made of, its history, where any life may be found, and the odds of inadvertently destroying its pristine condition by a premature landing.

When we know enough to predict what we might find, we can move to instrumented landing experiments. There would be landing systems guiding the probes to calculated locations likely to give us the most information. These sophisticated landers would also be able to move about the surface, searching for the most interesting variety of terrain. They could be guided from Earth in their meandering and return television pictures of the terrain.

They would also constitute general purpose laboratories under computerized control, so that many different and sometimes contending investigators on Earth could conduct experiments. The laboratories would be constructed and reprogramable so that new experiments could be quickly devised and implemented on the basis of the results of previous ones.

At a third stage, we plan the return of samples. The selection of material for an automated return journey would first be governed by experimental analysis on Mars. Even so, it might be more desirable to use the moon as an intermediary quarantine station for further laboratory study at a manned base.

Finally, if no danger to the Earth is evident from the preceding steps, we could trust man to the return trip — confident we would not have to face an awful conflict, in case of emergency, between sacrificing the astronaut or the quarantine.

In principle, these precautions might apply to the moon as well, and the Apollo mission is of course nearly upon us to test our thinking. However, the moon lacks an atmosphere and therefore has little chance of carrying moisture where life could persist or flourish.