traveling in the direction of motion and a light beam traveling in the opposite direction by measuring the heat they would generate in a thermoelectric pile. Einstein then remarked that this experiment was similar to Michelson's experiment. Compare the translations of the next sentence by Ogawa and Ono, respectively, with mine.

"I had not carried out the experiment yet to obtain any definite result" (*2*, p. 79).

"I did not put this experiment to the test" (*3*, p. 461).

"I did not yet know this experiment well enough" (my translation).

Note that both Ogawa and Ono assume that Einstein is referring to the experiment that he himself was planning. A more natural reading of the Japanese text, however, is that Einstein is referring to "Michelson's experiment," mentioned at the end of the preceeding sentence. The Japanese text does not say that he "had not carried out" the experiment or that he "did not put to the test," but rather that he did not know about it. The phrase that seems to have caused misunderstanding was likely "klar machen" ("make clear" in German). Immediately following this sentence, Einstein, according to Ishiwara, said (and once again compare the translations),

"When I had these thoughts in my mind, still as a student, I got acquainted with the unaccountable result of the Michelson experiment, and then realized intuitively that it might be our incorrect thinking to take account of the motion of the earth relative to the aether, if we recognize the experimental result as a fact" (*2*, p. 79).

"While I was thinking of this problem in my student days, I came to know the strange result of Michelson's experiment. Soon I came to the conclusion that our idea about the motion of the Earth with respect to the ether is incorrect, if we admit Michelson's null result as a fact" (*3*, p. 46).

"But when, still as a student, I had these thoughts in my mind, if I had known the strange result of this Michelson's experiment and I had acknowledged it as a fact, I probably would have come to realize it intuitively as our mistake to think of the motion of the Earth against the ether" (my translation).

The problem is that Ogawa and Ono do not appear to have taken into account the possibility of a grammatical subjunctive past perfect in the phrase, "if I had known...." What Einstein said, if one assumes that Ishiwara's reconstruction is reliable, is that, as a student, he did, in fact, *not* know the result of the Michelson-Morley experiment. The statement about the Michelson-Morley experiment in the Kyoto lecture then ceases to be anomalous and fits with Einstein's other statements about this topic.

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4. Ishiwara published papers, mainly about the relativity theory and the heat radiation, in, for example, *Phys. Z.* [**13**, 1142 (1912)] and *Ann. Phys.* [**42**, 986 (1913)].
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Arsenic and Drinking Water Contamination

In India, several 100,000 persons are chronically exposed to tube-well water contaminated with arsenic. Besides, drinking water contamination with arsenic is known in some South American and other countries. As described (J. Kaiser, News &

Comment, 20 Mar. 1998, p. 1850; M. L. Biggs *et al.*, Letters, *Science*'s Compass, 7 Aug. 1998, p. 785), in one of these regions, the Andes, there is evidence that ethnic families exist who may have developed resistance against the arsenic-mediated induction of skin cancer (*1*). However, this observation is not finally proved.

Apart from tolerance, other factors possibly influencing the chronic toxicity of arsenic have been discussed. In relation to Blackfoot disease, these were malnutrition (zinc deficiency) (*2*) and the occurrence of humic acids in water contaminated with arsenic (*3*).

With respect to genotoxicity and metabolism, we (*4*) and others (*5*) have shown that antimony is able to modulate arsenic's toxicity. These findings may be important, because several cases are known where soil contamination with arsenic is accompanied by co-contamination with antimony (*6*). In case of contact with aquifers, this could lead to co-contamination of drinking water with the two metalloids. This may be the case in at least some of the regions where the drinking water is contaminated with arsenic, but, to our knowledge, it has not been investigated so far.

It therefore seems necessary to check for a possible antimony co-contamination in the case of arsenic drinking water contamination and to include antimony as a putative confounding variable in the chronic toxicity of arsenic in future investigations.

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Crystal-Growing in Space

Recently, the American Society for Cell Biology (ACSB) issued an unsolicited declaration calling for the abandonment of all research on macromolecular crystal growth in microgravity, a major NASA program (J. Couzin, News of the Week, 24 July 1998, p. 497). Ostensibly, the society took this initiative because of what they perceived to be a weakness of the science. The society was guided to this unprecedented act by a subcommittee of diverse biologists that included a single individual with crystallographic experience. He claimed, however, to have taken a poll. This assault on a peer-reviewed research program of a federal agency, in effect recommending that an entire area of research be terminated forthwith, is not only peculiar, given that microgravity crystallization is hardly a core component of cell biology, but ominous. It represents a dangerous threat to the research support of all American scientists.

What a small group of individuals within the ASCB has done is to intrude into a scientific controversy, the focus of active research and debate by hundreds of reputable scientists, and attempt to impose their narrow view.

I would like to advance a solution to this controversy. It uses an approach that has been time-tested by scientists over many centuries. My challenge to the adversaries of the microgravity research is simple: Prove us wrong. Do experiments in space and gather the requisite data to demonstrate unequivocally that gravity exerts *no* influence on macromolecular crystal growth and can have *no* impact on the crystalline products. Make observations and measurements, analyze your data, gather the facts, and make your arguments based on those findings. Taking a poll of colleagues who share your views is hardly a substitute.

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CORRECTIONS AND CLARIFICATIONS

The caption for the photograph of Mars accompanying the Perspective "Water, climate, and life" by B. M. Jakosky (*Science*'s Compass, 29 Jan., p. 648) was incorrect. The caption should have read: "**Reading the lines on Mars.** A spur of Hebes Chasma (part of the Valles Marineris system), showing a theater-shaped head of the valley. The shape and appearance indicate that it was formed by sapping by groundwater rather than by runoff of surface water. The image is centered at 2.1 degrees latitude and 75.6 degrees longitude and has a resolution of 6 m/pixel."