

acterized by their falsifiability, then the proposed radio search is not a scientific experiment at all because it cannot falsify the hypothesis being tested, namely that extraterrestrial civilizations exist. SETI will become a science only when its proponents tell us what observations will convince them that it is reasonable to assume we are alone.

FRANK J. TIPLER

Department of Mathematics
and Physics, Tulane University,
New Orleans, Louisiana 70118

References

1. J. H. Wolfe, R. E. Edelson, J. Billingham, R. B. Crow, S. Gulkis, E. T. Olson, B. M. Oliver, A. M. Peterson, C. L. Seeger, J. C. Tarter, in *Life in the Universe*, J. Billingham, Ed. (MIT Press, Cambridge, Mass., 1981).
2. W. T. Sullivan III, S. Brown, C. Wetherill, *Science* **199**, 377 (1978).
3. F. J. Tipler, *Q. J. R. Astron. Soc.* **21**, 267 (1980); *ibid.*, **22**, 133 and 279 (1981); *Mercury* (January-February 1982), p. 5; *Phys. Today* **35**, 26 (1982); *New Sci.* **96**, 33 (1982).
4. C. Sagan, *Science* **202**, 374 (1978).

Calcium Intake and Hypertension

On the basis of our experience with dietary histories and food-frequency reports, particularly with respect to dietary calcium (1, 2), we wish to raise some objections to the report by McCarron *et al.* (16 July, p. 267) suggesting a lower calcium intake as a factor in hypertension.

We are concerned about the small sample size (< 50 each) and the apparent mixture of males and females and blacks and whites. Although males have a higher caloric intake, the male consumption of milk products is often less (3). Blacks consume less milk and other dairy products, not necessarily because of lactose intolerance. Moreover, black women tend to be fatter than white women, a function of their lower socioeconomic status. We are also concerned about the extent to which the 46 hypertensives had engaged in dietary restriction, as a result of medical advice or on their own initiative, since a sodium-restricted or calorie-restricted diet generally limits the intake of fluid milk and cheese.

But calcium intake is notoriously difficult to ascertain in short-term dietary data, and when extradietary sources of calcium are not considered, as in drinking water, beer, and antacids (1). Calcium intakes are also correlated with caloric intakes, and a lower (reported) caloric intake on the part of the hypertensives could also explain the apparent difference. Even under optimum conditions short-term food-intake data may provide inaccurate indications of individual

intakes, even for the same week and the same season (4).

A final problem arises from the fact that the calcium intakes reported for both normotensives and hypertensives fall well above values for most of the world, except where yellow maize is the staple. Yet the very countries where calcium intakes are lowest tend to be countries where blood pressures are also low and where hypertension is uncommon.

Under these circumstances we find it difficult to accept the proposition that an apparent lowering of calcium intake by 200 milligrams per day is causally related to hypertension.

STANLEY M. GARN
FRANCES A. LARKIN

Center for Human Growth and
Development, and School of Public
Health, University of Michigan,
Ann Arbor 48109

References

1. S. M. Garn, *The Earlier Gain and Later Loss of Cortical Bone* (Thomas, Springfield, Ill., 1970).
2. — and M. A. Solomon, *Ecol. Food Nutr.* **10**, 195 (1981).
3. R. L. Rizek and E. M. Jackson, *Current Food Consumption Practices and Nutrient Sources in the American Diet* (Consumer Nutrition Center-Human Nutrition, Science and Education Administration, Department of Agriculture, Hyattsville, Md., 1980).
4. S. M. Garn, F. A. Larkin, P. E. Cole, *Ecol. Food Nutr.* **5**, 245 (1976); *Am. J. Clin. Nutr.* **31**, 1114 (1978).

Many of the expressed concerns of Garn and Larkin were addressed in our report. Our study compared a population of normotensives and hypertensives and, as defined in the report, our subjects were groups matched for age, sex, and race; this, in itself, would control for the effects of these variables. As we noted, average weight was not different for the two groups. In contrast to the stated concerns of Garn and Larkin, both of our populations had fewer males and only several black subjects in each group. As mentioned in our report, our subjects did not know previously that they were hypertensive and were excluded if they gave a history of diet modification. Since both groups came from the same close geographical region, extradietary sources of calcium, such as water, would not have explained the overall differences. As shown in figure 1 of our report, caloric intake was virtually identical for the two study populations and could not, therefore, explain the dietary differences.

We concur that dietary recalls are inaccurate for estimating lifetime individual intakes of nutrients but, as noted in our reference 14, recalls are valid for cross-sectional population studies such

as ours. We agree that the hypertensive's Ca^{2+} intake is well above that in many countries where hypertension may be less prevalent. However, Garn and Larkin do not acknowledge that dietary Ca^{2+} requirements vary depending on level of physical activity, protein intake, sodium balance, alcohol exposure, and phosphate intake (1), all of which make the obligate Ca^{2+} intake required to stay in balance higher in more developed societies, where hypertension is more prevalent.

DAVID A. MCCARRON
CYNTHIA D. MORRIS
CLARICE COLE

Department of Medicine,
Division of Nephrology and
Hypertension, Oregon Health
Sciences University, Portland 97201

Reference

1. L. H. Allen, *Am. J. Clin. Nutr.* **35**, 783 (1982).

Heptachlor Exposure in Hawaii

R. Jeffrey Smith's article about heptachlor exposure (News and Comment, 9 July, p. 137) points out the concern of potential carcinogenic effect in the infants of Hawaii. Also of concern is the potential teratogenic effect for the 15,000 infants known to have been exposed prenatally. Although no human studies have been done, researchers have shown that organochlorine pesticides are a subtle teratogen in mice, resulting in behavioral differences in the animals exposed (1).

RICHARD A. DUBANOSKI

Department of Psychology,
University of Hawaii, Honolulu 96822

ROBERT ANDERSON

John A. Burns School of Medicine,
University of Hawaii

YI-CHUAN CHING

Department of Pediatrics,
Kaiser Foundation Hospital,
Honolulu 96815

JEANNE SWICKARD HOFFMAN

Department of Psychology,
University of Hawaii

References

1. G. M. Al-Hachim, *Psychopharmacologia* **21**, 370 (1971); — and A. Al-Baker, *Br. J. Pharmacol.* **49**, 311 (1973); G. M. Al-Hachim and G. B. Fink, *Psychopharmacologia* **12**, 424 (1968).

Erratum: In the article "The 1982 Nobel Prize in Physiology or Medicine" (19 Nov., p. 765), the last full sentence in column 2 on page 765 should have read, "In the 1930's, Raphael Kurzrok and Charles Leib at Columbia University discovered that human seminal plasma contracted uterine smooth muscle." In the first sentence of the last paragraph in column 1 on page 768, "Calloway" should have been "Kellaway."