After these procedures, the reaction of 5 ml (0.05 mole) CCl_4 with excess of Na in the autoclave is not unusually dangerous. Of course, all procedures dealing with high pressure reaction should be performed carefully. Experiments on a larger scale with regard to reaction between CCl^4 with Na may be dangerous and need further investigation.

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The Advanced Tokamak We disagree with Alexander J. Glass's assertion (Letters, 19 June, p. 1817) that the tokamak must be as large as the International Thermonuclear Experimental Reactor (ITER) to achieve sustained thermonuclear burn and that this does not bode well for the tokamak as a potential power-plant concept. In fact, recent advances worldwide indicate that smaller tokamak power plants should be feasible. In current, few-second experiments, heat transport within the plasma has been reduced by suppressing turbulence, plasma pressure limits have been increased, the potential for steady-state operation by naturally driven currents has been demonstrated, and concerns about handling exhaust heat have been mitigated. Integrating and extending these advances toward steady state is now a focus of international tokamak research. With such advanced tokamak physics, a smaller ITER, now being pursued internationally, would likely produce sustained plasma burn, and the tokamak power plant of the future becomes much more attractive.

After several decades of intensively competitive research on a broad range of magnetic fusion concepts, the tokamak emerged and matured into the only concept that is ready to produce the plasma conditions required to explore the next fusion science frontier, the physics of sustained burning plasmas. This is not to say that other concepts should not be investigated. On the contrary, they should be pursued to further optimize fusion power systems; physics understanding is transferable both ways. Our conclusion is that a strong experimental and computational tokamak research program with a healthy alternative concept program is the optimum fusion research strategy. We strongly support the international construction of a tokamak burning plasma experiment as soon as possible. Fusion research is ready to enter the burning plasma era.

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Indian Science I read with interest the letter from G. Padmanaban about "The Indian psyche" (10 July, p. 175). I fail to understand the correlation between general euphoria among Indians over recent nuclear tests and a feeling of Western alienation and bias among Indian scientists. The general public in India has little or no idea how the Western press depicts India. Hence, one cannot attribute the euphoria over nuclear explosions to Western alienation. Various points and personal experiences mentioned by Padmanaban are not specific to India or to any Indian scientist. They are common for anyone from a developing country.

The feeling of alienation and the sense of purposelessness among Indian scientists and academics have their historical roots in the policies pursued by post-independence India. After taking over the baton from the British, instead of revamping the educational system to meet India's societal needs, successive governments made few changes in the colonial legacy, mainly for political reasons. Under the British, a system was developed to produce lower-level Indian bureaucrats and technicians who would administer British rule and pursue British economic interests. Average Indians believed that an English education was the only passport to a successful job. Eventually, there was a "brain drain," with a mass movement of scientists and professionals to the West. With few exceptions, the kind of research undertaken by leading Indian universities and institutes today has nothing to do with the immediate societal, economic, or scientific needs of India. With meager funding and bureaucratic controls, it is definitely not easy for Indian scientists to compete with their Western counterparts. Against this backdrop, an average Indian scientist can neither relate what he is doing to the immediate needs of his society, nor can he show his Western peers that he can do what they are doing in the West. India is fighting a relentless battle to eliminate social inequalities. The progress is quite impressive among illiterates, the semiliterate, and the middle-class public that span every sphere of Indian society. But there is something terribly wrong with a system that alienates a truly spirited Indian scientist both from the West and from his own society. True democratization and accountability to both government and society are needed.

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Response

I have so far received about 250 e-mails, mostly from Indians in the United States, to my letter of 10 July. I would like to respond in a broad sense. Nearly 95% of the messages agree with my analysis and state that India's image in the West is in general unfairly negative and that there is a feeling of alienation and discrimination even among scientists and professionals settled in the United States. About half a dozen letters from Indians in United States are critical of my analysis and state that it shows a defeatist mentality.

I was at the University of Chicago between 1973 and 1986 as a visiting scientist, and my visits are still continuing, so I can claim to have some understanding of the United States and Western society. In my letter, I was trying to emphasize that despite all its problems and defects, India has a certain resilience and inner spirit to make progress. Indian science, notwithstanding the existence of several substandard institutions, has started focusing on indigenous needs and the alleviation of human suffering. India has launched indigenous commercial recombinant hepatitis B vaccine production. An indigenous AIDS diagnosis kit is available, and three more are in the pipeline. A leprosy vaccine has been released for commercial use. A recombinant cholera vaccine is on the way. The Indo–U.S. Vaccine Action Program has led to a candidate rotavirus vaccine. India is a world leader in plant breeding and a major exporter of bulk drugs.

Does not India deserve a better representation in the West, supporting its struggle for progress?

A few American nationals expressed warm feelings for India and Indians and stated that on the basis of press reports that re-

flect vested interests and the bureaucratic dealings of Indians with the West, I should not conclude that Western society has a poor image of India. I respect and appreciate these sentiments and wish they were the reality. Most of these individuals cannot reconcile themselves with the nuclear tests.

I believe that the purpose of the nuclear tests is to remind the world that India is not a pushover. At times, force is the only language that is taken note of. But most intellectuals in India would like to put the tests behind them, and the general feeling (to the extent I can gauge) is that India cannot afford an arms race or nuclear stockpiling and that it should get on with its other priorities.

My letter does seem to have touched a sensitive chord among intellectuals concerned about India. Can this be put to a positive use? May I suggest an international conference in India with nonresident and resident Indians as well as other intellectuals who have a concern for India to set an agenda for the 21st century?

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Arsenic-Laced Water in Chile

We read with interest the Meeting Brief "Toxicologists shed new light on old poisons" by Jocelyn Kaiser (20 Mar., p. 1850). The section on arsenic was accompanied by a photo captioned, "Picture of health. These Chilean villagers drink arsenic-laced water, yet don't have elevated cancer rates," which raised serious concerns among us. An anecdotal claim such as this appearing in *Science* could result in the villagers continuing to drink water containing dangerously high levels of arsenic and could thwart efforts to provide the town with an alternative water supply.

We have been conducting arsenic studies in the same village since 1992. Those with serious illnesses often move to the cities for treatment. To determine actual cancer rates, a cohort study with carefully designed case ascertainment methods would be needed, and even then, precision would be poor because of small numbers. Nevertheless, a recent case-control study of lung and bladder cancer conducted by one of us (C.F.) identified two patients with bladder cancer and six with lung cancer in individuals who had lived in the village, about twice as many of these cancers combined as would be expected. In fact, both lung and bladder cancer mortality are markedly elevated as a result of arsenic in drinking water in Chile's Region II, which includes the village in question (*1*).

In reference to the suggestion that the villagers metabolize arsenic differently from others, our studies of urinary methylation patterns found minor differences, but suggested that, overall, arsenic metabolism is similar to that of other populations (*2*). We also found an increased frequency of micronuclei in exfoliated bladder cells, providing evidence of arsenic-induced genetic damage (*3*).

While it remains possible that these villagers are less susceptible to some arsenic effects, such as skin lesions, it should be assumed that they have the same cancer risks as other arsenic-exposed populations studied unless evidence to the contrary becomes available. High priority should be given to providing the village with low-arsenic water.

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Household Antibiotic Storage

In their commentary "Containment of antibiotic resistance" (*Science*'s Compass, 20 Feb., p. 1153), Rosamund J. Williams and David L. Heymann rightly state that a comprehensive implementation of a strategy for containment of antibiotic resistance is lacking not only in developing countries but also in developed ones. They point out that implementation of strategic elements should be aimed at promoting rational use of antibiotics through treatment guidelines and lists of essential drugs along with a better education of prescribers, pharmacists, health care workers, and the public.

A good example of antibiotic misuse and potential resistance development can be found in a recent study from Spain, the goal of which was to determine the storage of antibiotics in Spanish households and their sources (*1*). A quantitative survey carried out with housewives or family heads from 1000 randomly selected households revealed that one (88%) or more antibiotic bottles were present in 42% of households. In two-thirds (64%) of the cases, a physician's prescription from the primary care network constituted the primary source of the drug. Amoxicillin accounted for most cases (72%), followed by amoxicillin with clavulanic acid (17%), a macrolide (6%), a cephalosporin (2.5%), and others (2.5%). Only oral prescriptions were found.

In only 19% of households containing antibiotic bottles (8% of the total) was there a family member under treatment. The major reason suggested (*1*) for such antibiotic storage was underuse or nonfulfillment, mainly as a result of early withdrawal, and the patient thinking about a forthcoming reuse. Self-perceived clinical improvement, commonly occurring within the first 5 days of therapy, accounts for many cases of early antibiotic withdrawal (*2*). Also, people in Spain appear to have a rather unworried attitude toward antibiotic use (*3*).

Potential consequences of widespread household antibiotic storages are protean. For instance, if one of the parameters defining drug quality is efficiency, then storage of antibiotic bottles in households is an important factor in decreasing it through increasing costs and reduction of therapeutic effectiveness in the larger community. As Williams and Heymarm mention, antibiotics should be available only when prescribed by a trained and registered health care professional. Finally, as suggested, studies of behaviors that encourage misuse of antibiotics, such as the aforementioned, should be encouraged at the same time that ways to modify these behaviors are proposed.

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Response

The study Bosch describes (1) provides an excellent example of practices known to be widespread, which leads us to conclude that there has not been an adequate effort to educate the consumer about the use, value, and potential dangers of antbiotics.

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