bers of the organizing committee, who seem to have been left in the dark concerning the criteria to be applied to the selection of scientists to be invited to this "international" meeting. Prospective participants caring about the integrity of the world's scientific enterprise, however, may wish to be aware of the exclusionary policy governing attendance at that meeting. In view of the unsettled conditions in that part of the world, prospects for this meeting seem doubtful in any event, but that is an altogether different issue.

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Human Genome Initiative

Bernard D. Davis and colleagues (Perspective, 27 July, p. 342) are plainly wrong. They simply cannot "see the forest for the trees."

The crisis in funding for younger scientists is very real. But this is not a consequence of the Human Genome Initiative. Rather, it is largely an unplanned result of well-intentioned but poorly analyzed policies of the National Institutes of Health.

Yes, we should sequence the human genome because "it is there." Just as we explore the solar system because "it is there" or the world of quarks because "they are there."

In this case, "it" is the complete biological inheritance of our species—that marvelous message, evolved for 3 billion years or more, that gives rise to each one of us. For *Homo sapiens* there can be no more important script in the universe. That some (Davis not included) call 95% of the message "junk" is only the fault of their perspective.

We should seek to know and comprehend every byte of this text. Our generation of biologists should be grateful that we are the ones to have this opportunity.

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Females at Work

Worker ants are females, not "he's" (P. W. Sherwood, Letters, 10 Aug., p. 612). An individual ant is far from resembling "a ganglion on legs"; she has a wealth of complicated, inherited behavior patterns (*1*). The juxtaposition of the letters by Sherwood and Cheryl K. Olson, "Shoehorning men into studies," is an interesting coincidence. Let's not shoehorn ants into computers. Remember, any worker can be a queen if she gets enough of the right food when she's young.

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REFERENCES

1. E. O. Wilson *Sociobiology* (Harvard Univ. Press, Cambridge, MA, 1975).

Energy from Solar Cells

As I was quoted in Jeremy Cherfas' article "Greenpeace and science" (News & Comment, 16 Mar., p. 1288) and have received some criticism, I would like to clarify my point. This was that the amount of solar energy falling per year on (just over) 2 square meters of collector could provide all the domestic, electrical energy needs (excluding space heating), of the average U.K. household per year if 50% efficient solar cells were available. This is, I believe, a correct statement. The average solar energy flux in the United Kingdom is about 900 kilowatt-hours per square meter per year (*1*), and domestic electrical equipment, excluding space heaters, in the average British home consumes 1000 kilowatt-hours per year (*2*).

The first conclusion I draw from this is that research into higher efficiency solar cells is important even for use in the United Kingdom, and it makes even more sense for lower latitudes. As Cherfas' article reports, I am starting such research with the help of a Greenpeace grant. I should make clear that the Greenpeace Fellow receives less than one-third of the salary quoted in Cherfas' article.

My second conclusion, not reported in the article, is that research into cheaper and more efficient energy storage is also important, as much of this energy arrives at the wrong time. There should be a major research effort into more efficient and cheaper batteries for short-term, local storage and into larger systems (for example, pumped water, compressed air, superconductors, and hydrogen generation) for long-term, central storage. These larger systems could be exploited by developing the grid to run backward. The prospects for all the renewable energy sources would then be considerably enhanced.

Finally, another figure can be given to stimulate thinking about funding priorities. There was great excitement a year ago when it was thought that a source of cold fusion had been found that produced *heat* at a power density of about 10 watts per cubic centimeter. There was already available at that time a renewable technology that produces *electricity* at a power density greater than that. A 20%-efficient gallium-arsenide solar cell with a 5-micrometer active region generates electricity with a power density of 34 watts per cubic centimeter when in a solar flux [the solar power per square meter at sea level on a clear day when the sun is at an angle of 48° with the vertical (*3*)] of 844 watts per square meter. The search for cheaper and more efficient solar cells and batteries might not be helped by the kind of media hype that surrounded cold fusion, but it would certainly benefit from the sort of funding both cold and hot fusion have attracted.

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REFERENCES

1. B. J. Brinkworth, *Solar Energy for Man* (Compton, New York, 1972).
2. P. M. S. Jones, *Atom* **392**, 39 (1989).
3. S. M. Sze, *Physics of Semiconductor Devices* (Wiley, New York, 1981).

U.K. Physics Proposal

For the record, the statement in the 6 July Briefings that the content of English undergraduate physics courses should be cut "by at least two-thirds" (p. 21) goes a little too far. The proposal of our working party is that the content should be reduced by *one*-third only—still quite a substantial reduction.

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Erratum: The report "Protein crystal growth in microgravity" by L. J. DeLucas *et al.* (3 Nov. 1989, p. 651) contained a typographical error regarding the *B* values of space- and Earth-growth crystals. The last sentence of the first paragraph on page 652 should have read, "The slopes of these plots are directly related to the difference in overall *B* values for two different crystals, b (Earth-grown) and a (space-grown)."

Erratum: In the Research Article "Three-dimensional structure of cellobiohydrolase II from *Trichoderma reesei*" by J. Rouvinen *et al.* (27 July, p. 380), the strand tilt in TIM barrels was misstated. The last sentence of the first column on page 382 (continuing in the second column) should have read, "Neighboring strands are commonly tilted to each other by about −26°, and have a shear of 8 in encircling the barrel (*37, 38*)."