

SOLAR ENERGY IN AMERICA

William D. Metz
Allen L. Hammond

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could have profound effects on public health. Surely, these risks must transcend those which may be associated with the development of various domestic energy sources.

Not included, of course, is the jeopardy in which the security of our nation itself would be placed if we were deprived of substantial volumes of imported petroleum over an extended period.

The point is, we as a nation must move ahead aggressively with the development domestically of *both* conventional and nonconventional energy sources and reduce our reliance on imported petroleum. The seemingly endless discussions as to which energy source may be preferable or appear unacceptable and how best to tackle the problem are strictly counter to overall national interests. Time is short, and we must get our act together before it's too late. Many of us would like to see the scientific community in the vanguard of this effort.

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Heavy Crude Oil

Eliot Marshall's article "OPEC prices make heavy oil look profitable" (News and Comment, 22 June, p. 1283), which is concerned with the conference on Heavy Crude Oil and Tar Sands organized by the United Nations Institute for Training and Research (UNITAR), the U.S. Department of Energy (DOE), and the Alberta Oil Sands Technology and Research Administration (AOSTRA), contains a statement which, I believe, should be clarified. Referring to me he writes: "Apparently he found the major

American oil companies inimical to his vision, for he said he consciously chose not to invite them. He did not explain further. The companies' Canadian affiliates and subsidiaries did attend, however."

There was no anti-American bias in the selection of the participants. The largest number of participants came from the United States. However, we wanted oil companies interested in attending to write papers and share their knowledge and experience with other participants at the conference. That principle was applied to companies from all of the industrial countries. We were especially interested in obtaining papers on the occurrence of heavy crude from the major international oil companies, because most of them have some knowledge of its occurrence in practically all countries of the world. We failed in this attempt; not one single paper was submitted by any of the oil companies on the occurrence and potential of heavy crude for any country outside of Canada. The papers we had on occurrences were written by academics or government experts and were very incomplete, including the paper from the United States. A vice president of one company told me at an early stage of preparation for the conference that no company would be willing to release such data, and his observations proved correct. Finally, we compromised and accepted papers from such companies dealing with other aspects of heavy crude and tar sands. Thus, in effect, all companies interested in the conference were able to participate. There were only two European companies who refused to write any papers, and they did not attend.

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Erratum: In the Research News article "Tournament competition fuels computer chess" (29 June, p. 1396), the figure was reproduced incorrectly. Black has a third pawn on the black square immediately in front of the black king. The figure and its legend are reproduced herewith.

One limitation of full-width search methods in computer chess is called the horizon effect. A human easily sees that white, although it has one less pawn, can win the game by advancing its leftmost pawn across the board, whereupon it is promoted, by the rules of chess, to a queen. The computer, if it does not search enough moves into the future, will not see this outcome and will be excessively concerned about black's apparent material advantage. [Drawing by Eleanor Warner]

