Letters

Tar Sand Technology

As Philip Abelson seems to imply in his editorial of 14 December 1973 (p. 1087), world relationships, not world supplies, are more likely to provide the key to resolving the energy "crisis"—now and in the future. Self-sufficiency may be a popular interim measure, but it could be a dangerous precedent for both those that can afford it and those than cannot. Isolation, on the one hand, and devastation on the other, are not worthy pursuits.

In a perverse sense, the crisis on the politico-economic scene may have been beneficial in that the aims and roles of the consumers and the suppliers have undergone considerable scrutiny and irreversible change. These days it is almost superfluous to point out that global resources are finite, with or without growth. Perhaps, then, we might have anticipated a reappraisal of the corresponding consumer-supplier relationships. The challenge which has arisen lies in the development of mutually satisfactory adjustments. In essence, this challenge is one of international cooperation and can only be met through constructive discussion and thoughtful negotiation.

Against this backdrop, the Engineering Institute of Canada has scheduled a conference in Edmonton, Alberta, (17 to 19 April 1974) to provide both intensive and extensive discussion of the Athabasca Tar Sands—their potential, problems, and prospects. Tar sand technology is not as well developed as many believe. True, "conventional" mining methods can be used, but it would be grossly misleading to suggest that the technology is well developed for anything other than small accessible areas. It is reported, for example, that treatment of the tailings has yet to meet Albertan environmental standards.

The conference is intended to be technical and will include discussions of engineering, finance, and management; but it will be difficult to exclude political problems, which are, in a sense, the most important problems at this stage. I do not agree with Abelson's statement that "a combination of rigorous conservation and additional sources of hydrocarbons could free the world of the threat of chaos," but I do agree that intelligent development of resources such as the Athabasca Tar Sands is more than timely. Such a development could be the first example of international cooperation for large-scale energy or feedstock production, or it could be the last.

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Aid to Indochina

Scientific Aid to Indochina (News and Comment, 14 Dec. 1973, p. 1109) is the greatest thing that anyone could do for the people of that region next to bringing them a real and just peace.

It is disappointing, however, to read that North Vietnam alone is to benefit from such generous aid organized by highly reputed scientists. Other countries in Indochina, namely Laos, the Khmer Republic (Cambodia), and South Vietnam have suffered and continue to suffer from the war. Do not these people deserve the same help?

It is hard to understand why aid from a scientific community that is supposed to be politically neutral cannot be given in an unbiased manner to all people who desperately need it, whether they have asked for it or not. In the type of war that is ravaging Indochina, people have no time to read every announcement; they haven't even the time to protect their own lives.

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Copernican Observations

Allen L. Hammond (Research News, 28 Dec. 1973, p. 1329) states: "That the solar system is heliocentric and not geocentric was first proposed by the Polish astronomer Nicolaus Copernicus on the basis of telescope observations." In fact, Copernicus was far from the first to propose a heliocentric theory, his thesis did not rest upon new observations, and the telescope was not even invented until over half a century after his death.

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Berendzen is correct. It was Aristarchus of Samos who first proposed a true heliocentric theory. Copernicus, who reintroduced the theory into Western scientific thought, based his work in part on the lack of agreement between geocentric models and (non-telescopic) observations.—A.L.H.

Multinational Corporations

I read with interest the editorial by Philip Abelson "Corporations and the less developed countries" (30 Nov. 1973, p. 873). The international scientific community has long recognized that the developing nations ought to be in command of their own destinies (*1*). However, self-determination means economic emancipation. To foster their development and economy, the less developed countries have been advised to promote the science and technology that would suit their own resources and problems, instead of imitating the more developed countries. They also need to foster broader education and to encourage the formation of scientific and technological cadres. The problem, however, appears to be a circular one in that the planning and implementation of scientific and technological goals require a substantial amount of money which these nations do not have. Some foreign enterprises have not been willing to make this investment; rather than contributing to the development of the less developed countries, they have done their best to slow down technical and economic progress in the recipient countries. Thus, Abelson's statement that "the corporations have not con-