

Dear Editor...

We have many environmental problems: some seem insoluble, some are difficult to solve, but some we should at least attempt to do better at than we have thus far. One of the problems we can solve better than we have yet done is that related to the warming of our atmosphere by the so-called 'greenhouse effect'. We cannot go on polluting the atmosphere with carbon dioxide without courting disaster. And how does the United States' Environmental Protection Agency (EPA) react to this? By saying we had *better get used to it*. This is unrealistic, unscientific, and in fact ridiculous.

I have a Bachelor's degree in Atmospheric Science from the University of Michigan (I am about to complete my Master's degree programme), and I refuse to accept the EPA's assertion that it is too late for a ban on fossil fuels to have any greater effect than simply to delay the atmospheric warming. The EPA's prediction is based on only one radiative mechanism; there are many other atmospheric effects (changes in the global circulation, for example) that have been neglected in their analysis, and are in fact too poorly understood to be adequately taken into account. Thus, I find the EPA's prediction pretentious on account of the incompleteness of their analysis.

Another relevant scientific fact involves the general properties of natural systems in some sort of equilibrium: such systems have a capacity to react to temporary changes, but when once they are driven too far out of equilibrium, they tend to break down very rapidly and unpredictably. Such a breakdown of the atmosphere would undoubtedly be catastrophic. On the other hand, one can get a feel for the atmosphere's tolerance of climatic change by taking note of the many Ice Ages and warm interglacial periods of its geologically recent history; indeed, the Earth has shown a great degree of climatic resilience.

Therefore, I find it likely that the various atmospheric processes will interact to keep the climate in some tolerable balance *if* we do not continue persistently to feed the 'greenhouse effect' with pollution from fossil fuels. However, if we do continue this pollution, most of the continental land-masses will eventually become vast deserts, and coastal areas and islands (such as New York, Los Angeles, and much of Scandinavia and the British Isles) will be flooded, owing to the melting of the polar ice-caps. And this may occur much sooner than the EPA has predicted.

Environmental Education Needed

Regrettably, there are still many scientists who refuse to acknowledge this grave possibility, and some who actually claim that the CO₂ buildup might be beneficial to farming, as plants require CO₂ for photosynthesis. The latter scientists have obviously neglected the fact that plants also require water in order to survive: desert lands have never proven very useful for farming!

Thus, it becomes clear that dissemination of worthwhile and technically accurate information to the general public must be an early priority in our present efforts to bring about the eventual elimination of fossil-fuel use. My own efforts—letters and telephone calls to newspaper editors, classroom discussions at the University, and day-to-day talk about the issue—have been effective in proportion to their distance from 'the establishment'. This issue truly calls for 'grass-roots' action. I cannot

accept the claims of newspaper editors and government officials that people 'will not be able to do without fossil fuels', when the people themselves are very responsive to arguments for natural sources of energy. Of course, most people's thoughts tend to be thoroughly clouded by the nasty short-term cost and 'implementation' considerations which are too often the only major factors that are taken into account in our leaders' policy-decisions.

Similarly, the power wielded by the fossil fuel industry will have a more direct effect on our leaders than it will have on the general public. The fossil fuel industry will continue to feed the public inaccurate information (such as the EPA report, which was released under the auspices of the present administration, that certainly has a strong interest in the fossil fuel industry in the US), but I do not expect most people to be so easily fooled. After all, we have realized a considerable awareness of many environmental issues (such as the nuclear arms-race) in spite of the dubious technical information that is apt to be put forth by those with vested interests.

Natural Energy Possibilities

Even the purely economic arguments that are advanced by sceptics of natural energy are apt to be shallow and short-sighted. Would not the economic harm brought about by massive flooding of coastal lands and desertification of the continents be great? Furthermore, the long-term cost of electricity and heating from natural sources would not be excessive: when once they are operative, the generators require no expensive mining operations to obtain fuel. The fuel is free. This is quite the opposite of another energy option—nuclear power, the long-term cost of which (in both environmental and monetary terms) would be beyond the scope of imagination if we considered the matters of waste disposal and accumulation of disused power-plants. We cannot present a case for natural energy with petty short-term economic arguments; rather, we must appeal to the best instincts of all people before any major damage to our climate occurs.

But there have not been any noticeable climatic changes yet. This fact, and the scientific principles I have mentioned in my first few paragraphs, have led me to believe that our magnificent planet can and will heal itself *if given a fair chance*. A conversion to clean, natural sources of energy (such as solar, hydroelectric, geothermal, tidal, and wave- and wind-power), and a re-establishment of productive plant life in desert and other deforested areas, will give the Earth this chance.

It has been said that there is nothing so strong as an idea whose time has come: natural energy is an idea for our time; we must now act towards its implementation. If individuals and industries can make a special effort for war, why should they not make such an effort for peace and permanence? I speak not only as a trained atmospheric scientist, but, more importantly, as an inhabitant of the living Earth. After all, we will have to live with the priorities which we set for the future: we must re-examine these priorities with our minds and our hearts. A positive effort can produce incredible results.

FRANK BARTLO
14307 Wooderest Drive
Rockville
Maryland 20853
USA.