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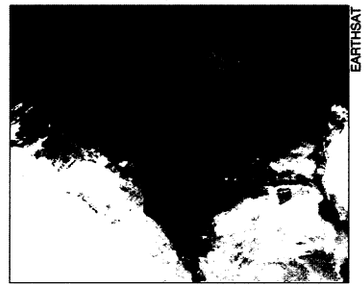
LETTERS

Sentiments and sediments



Two readers jump to the defense of Vice President Al Gore (in response to an earlier, critical letter), who is described as showing "concern for the environment" and "support for research." The cause of erosion of the Nile delta (at right) is debated: Are irrigation canals or dams the "main reason for erosion of the [delta] coast?" The implications of hookups to the Internet around the world (to Africa, Australia, Indonesia, the Netherlands, Russia, and the United States) are discussed. A plea is made for contributions to (and suggestions about) a proposed database of human immunodeficiency virus (HIV) protease structures to be sponsored by the U.S. National Institutes of Health.

Politics and *Science*

Shame on you for publishing such a transparent, politically motivated letter as that by U.S. Representative Dana Rohrabacher (15 Mar., p. 1479). After reading the complete text of U.S. Vice President Al Gore's speech to the recent AAAS annual meeting (http://www.aaas.org/spp/dspp/re/gore.htm), as well as Andrew Lawler's well-worded commentary on Gore's speech (News & Comment, 16 Feb., p. 903), it became disturbingly clear to me that Rohrabacher's criticisms of Gore were not based on anything Gore said at the AAAS meeting, or that was summarized in Lawler's article, but rather on Rohrabacher's own preset political agenda. Having been a full-time scientist and part-time political observer for the past 30 years, I am amazed that so many in Congress still think that the American public wants to hear and believe their transparent election-speak rhetoric and their disinformation-filled opponent bashing.

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Every paragraph of Rohrabacher's distorted summary of Vice President Gore's speech at the AAAS annual meeting can be countered with facts that prove Gore's concern for the environment and his continued support for research. Such documentation, however, could also be termed political.

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Internet Access

Susumu Wakai's concerns about inequality in Internet access (Letters, 8 Mar., p. 1347) stem from a principal phenomenon: high cost for most current technologies, computer or otherwise. Before the Internet, the same arguments about inequality were made for personal computer access in general, an inequality that has been magnified by networking. With the Internet in a rapid growth phase, financial resources determine expertise in Internet skills. Those skills are determined by the quality of the computer used to access the Internet, the speed of connectivity, and the duration spent on the Internet. Enhancement of these factors are proportionate to cost.

Historically, sustainable services available to all citizens were those fully subsidized. While costs may drop because of communication deregulation, users will still be responsible for subscriptions and hardware. Some costs will always be involved. As in many services in a democracy, constituents supporting nonsocialist policies need to decide how much inequality to tolerate. Before we all write our congressmen asking for an "Internet Bill of Rights," and another bureaucracy to enforce it, we should reflect on Medicaid costs, the quality of our public schools, and Social Security.

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We have just completed a feasibility assessment of the potential of information technology for development in sub-Saharan Africa, the world's most materially deprived region, and also the region most lacking in access to knowledge (*1*). Seventy to 80% of the world's educational deficit is found there, and girls in rural areas make up 80% of it (*2*).

Two networked high-capacity clusters of communications satellites are scheduled to arrive over Africa before the year 2000. These satellites can offer economical channels for a range of socially productive purposes essential for the future, including education, food security, and water conservation. Parts of Africa already have the capability to produce CD-ROMs, and people there are eager to produce instructional materials in the hundreds of village and market languages acquired at home. Portable, digital telephones will speed up creating local organizations.

Microenterprises and nongovernmental organizations (NGOs) can be expected to proliferate in villages and towns. Women will increasingly participate in those activities and in growing numbers will be organizers and managers (*3*).

Recent studies in sub-Saharan Africa show that secondary school education can dramatically reduce human fertility (*4*). Local organization and crop-growing simulations, reinforced by mobile telephone connections to experts, can greatly enhance crop yields. In addition, governments are stabilized by diverse organizations.

Strong acceleration of this process is critical for Africa. The Internet has demonstrated exponential growth that is unprecedented. The same forces that have created the Internet can be used for ecological planning that addresses problems of education, food, water, and political stability.

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2. ———, *Futures*, in press.
3. R. Standish, paper presented at the Third Eco-City Conference, Dakar, Senegal (5 to 9 January 1996).
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Wakai suggests that technologically expensive enhanced information access such as Enhanced Perspectives "could further widen disparities between the privileged and the underprivileged."

However, scientific communities may be privileged or underprivileged by virtue of different factors. Australia's scientific community, like others, has been disadvantaged by the barrier of distance. Geographical isolation has presented problems of expense in travel (to international conferences) and delays in receipt of the latest international journals. The latter barrier has been steadily eroded by electronic discourse. Enhanced Perspectives can only add to the removal of such barriers. Thus, while inequities based on economic barriers may, as Wakai suggests, be exacerbated by such developments, inequities based on geographic barriers are reduced.

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I am very much impressed by the impact of modern computer and communication techniques, especially in "low-income" conditions, not only in our country, but also in

contacts with colleagues from "underprivileged" countries. I have just returned from a visit to Russia, where computer technology is essential for scientific survival and where they have e-mail contact with colleagues all over the world, but have no money for sending fax letters. My colleagues at Indonesian universities do not have yet e-mail connections because their institutes have no reliable telephone connections. But in every city quarter and on every university campus there are private telephone offices with 24-hour service for telephone and telefax connections all over the world. It is just a matter of time before e-mail and other Internet connections will be used as much as in current high-income countries.

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Nile Delta Erosion

The main reason for the erosion of the coast of the Nile delta is even more simple than that presented in the Random Samples item "Irrigation speeds Nile delta erosion" (8 Mar., p. 1369) and is known in Egypt. In 1983, I was on a United Nations advisory panel that looked into the shore erosion of the Nile delta. Our activities included a site visit, the review of many studies, and discussions with Egyptian engineers and scientists. It was known at that time that the causes were not directly related to the Aswan high dam. Many years ago, a low dam was built a few miles upstream from the Nile's Damietta mouth, and another one was built a few miles upstream from its other mouth (Rosetta). We were told that no water flows into the Mediterranean Sea through either of the two mouths, except for a week or so each year when water is discharged to flush wastes from the river in this region. Thus, very little sediment can be transported to the littoral. It was our understanding that all of the water in the Nile River is either used or lost as a result of evaporation or leakage through the bottom and sides of the irrigation systems (*1*).

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New Database

The development and approval by the Food and Drug Administration of several drugs that are inhibitors of human immunodeficiency virus–1 (HIV-1) protease (J. Cohen, News, 9 Feb., p. 755) (*1*) is arguably the most significant success of structure-assisted drug design thus far. The initial, and very crucial, step of this process was the determination of the structure of HIV-1 protease in complex with inhibitors. The first such structure was published just over 6 years ago (*2*), and the extent of involvement of protein crystallographers in subsequent studies has been unprecedented. It was estimated that more than 160 structures of such complexes were solved in at least 20 laboratories by the end of 1993 (*3*), and the number of structures has probably tripled by now. Because the vast majority of these structures were solved in pharmaceutical companies, only a small fraction of them are publicly available. This extraordinary collection of structures of a single protein [and of its variants, such as HIV-2 and simian immunodeficiency virus (SIV) database proteases, as well as drug-resistant mutants] could provide a unique source of information about ligand-enzyme interactions that might be useful in future drug design efforts.