

Consider the Armadillo

By Barry R. Bloom

Try to imagine the quality of life of the people of New York City if every man, woman and child suffered from malaria, 40 per cent had tuberculosis, one in 30 were afflicted with leprosy, and 4 in 10 children died before age 5 from measles. This is the quality of life, differing only in detail, endured by 500 million people in parts of Africa, Asia and Latin America.

In large areas of Africa, half the population suffers from schistosomiasis, a chronic disease caused by a parasite harbored in snails that thrive as arid lands are irrigated.

One in ten might suffer from filariasis, caused by tiny worms that clog the circulation, thereby leading to elephantiasis of the limbs. Or the worms, which are water-borne, may invade the eye, causing what is known as river blindness. And then there is sleeping sickness and yellow fever spread by insect bites.

In Latin America, Chagas disease, caused by a parasite that invades heart tissue, causes death at an early age. There is also the disease called *espundia* in Spanish (the scientific name is leishmaniasis), in which the soft tissues such as the nose and mouth are progressively eaten away until the victims are literally faceless. Cures for most of these diseases are yet unknown.

In recognition of the tremendous medical problems in developing countries, the General Assembly of the World Health Organization, an agency of the United Nations, has voted to undertake a unique experiment, a Special Program in Tropical Diseases, designed to improve methods to control some of these diseases based on greater scientific knowledge. This will require basic research by scientists in developed countries, training in sophisticated medical techniques in developing countries, and ultimately a network of collaboration linking the basic laboratories and the patients.

If awareness can be awakened in developed countries and the priorities for research on tropical diseases can be raised, real hope exists for the development of effective vaccines and drugs. The annual cost will be about \$15 million, less than the price of a single jet fighter.

The United States has the most advanced biochemical research establishment in the world and the capacity to make enormous contributions toward eliminating communicable diseases.

The National Institute for Allergy and Infectious Diseases could be given more funds to support research on immunity and infectious diseases; the

Agency for International Development should contribute to the World Health Organization special program. What is needed is the support of the Administration, the Congress and the public.

From some quarters there is bound to come the objection that such a program will only exacerbate the population problem. The fact is that the six major diseases identified by the World Health Organization are primarily debilitating diseases, the elimination of which could lead to significant improvement in economic productivity and quality of life. Improvement in the standard of living is a crucial element in acceptance of population-control measures.

Even more fundamental, perhaps, is a kind of myopia that dictates that we commit only a negligible fraction of our expertise and wealth to support research on diseases that do not afflict Americans. It is common sport both in and out of the Congress to be skeptical of research programs that appear to have no "relevance" to targeted goals or American problems. But the essence of fundamental research is that no one can predict what area of knowledge may contribute crucially to long-range progress in another.

A case in point is the armadillo. Absurd as it may seem to believe that study of the armadillo could have any practical relevance, it has become clear that the lowly armadillo holds the key to the possible eradication of leprosy.

Probably because of its low body temperature, the armadillo is the only animal in which the human lepra bacillus grows in sufficient quantities to be potentially useful for the production of a vaccine against leprosy.

For those who demand relevance closer to home, it may be added that cancer researchers believe that leprosy patients will provide insights into the failure of cancer patients to reject their tumors.

Why should the United States give of its intellectual, technical and financial resources? Because it is right, and because we have the opportunity—to at a cost far lower than providing arms—to ease the suffering of the poor.

The question of "relevance," as we should by now have discovered, is as problematical at the level of national policy as it is in science. One has only to reflect on our failures in foreign and domestic policy in recent years to appreciate that commitments made on a moral basis may well be of greater and more enduring relevance than those based on perceptions of immediate self-interest.

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