dren's Hospital group may have distorted the study's findings by failing to include in their analysis nutrition research funded by the U.S. Department of Agriculture (presumably the critics believe that government-supported investigations are more likely to be free of industry influence).

The realization that all organizations—including the government, as well as industry and activist groups—tend to finance research that is aligned with their interests seems to lead to a straightforward solution. Because nutrition research is important to helping the public make healthy food choices, it only makes sense to find public monies with which to support the independent studies needed to develop the necessary guidelines. People, we think, are likely to deem it worthwhile to pay a bit to find out whatever science can legitimately say about what to eat. ■

THE EDITORS' BLOG

Posts from SciAm Observations, see *www.SciAm.com/blog*

Raiders of the Lost Beech Veneer

Posted by Gary Stix, July 6, 2007

According to Wikipedia, IKEA purports to be a "pioneering force in sustainable approaches to mass consumer culture." Once construction of its store in Nanjing, China, is finished, consumers there will be able to share, along with the rest of the globalized world, the experience of puzzling over hieroglyphic assembly instructions supplied by the McDonald's of modular assembly.

While joining the "sustainable" mass consumer culture, they will miss the chance to enjoy a piece of their own culture. In constructing the Nanjing store, the workers destroyed about 10 ancient tombs that date back 1,800 years and encompass six dynasties, notes a report in a city newspaper that was picked up by Reuters.

In their place, the citizens of Nanjing will now be able to line up for a Ramberg three-door wardrobe or Aneboda drawers that you can be certain will last another 2,000 years.

Bat Flu

Posted by Christopher Mims, June 28, 2007

You're sitting at home watching television, when suddenly a bat flies in the open door of your home, flutters about frantically for a few minutes, then leaves. Days later you develop a high fever and acute respiratory illness—a week after that your children are sick, too.

Such was the predicament of a Malaysian man who appears to be the first ever recorded case of a bat-to-human transmission of a bat virus—frightening stuff, given that bats can carry the SARS, Nipah and Hendra viruses.

Dubbed "Melaka" by its discoverer, Lin-Fa Wang of the Australian Commonwealth Scientific and Research Organization, the respiratory infection causes a severe reaction in humans but is not lethal. It does appear, however, to possess the one trait that experts fear will arise in bird flu—Melaka is transmissible between humans.

Wang's results appear in the July 3 issue of the *Proceedings of the National Academy of Sciences USA*.

Sustainable Developments

Breaking the Poverty Trap

Targeted investments can trump a region's geographic disadvantages

BY JEFFREY D. SACHS

The most destitute regions of the planet—in Africa, Central Asia, the Andes and a few other places—are not merely poor: they are seemingly trapped in poverty and prone to internal violence and political collapse. The regional distribution of these poverty traps is not random. None are in Europe or North America. Asia now has only a few. Most of tropical Africa is in a poverty trap or barely emerging from one, but northern Africa and South Africa are not. What can we learn from these geographic patterns?

Africa is primed for a green revolution breakthrough.

As noted in previous columns, the primary problem in most impoverished places is low food productivity, typically as a result of dependence on irregular rainfall rather than irrigation; on weak and easily weathered soils; and often on steeply mountainous, degraded land. The second problem is a heavy burden of disease. The tropics, especially in Africa, are home to lethal and debilitating diseases that are nonexistent or easily controlled in temperate zones. Malnutrition also raises the disease burden markedly. The third obstacle is physical isolation. Many impoverished states are landlocked, with no easy access to sea-based trade. And even countries with seaports can face extreme transport problems because of mountainous terrain, large inland populations and overall remoteness from world trade routes.

These problems, rooted in geography, set the poverty traps. Food insecurity leads to malnutrition, sickness, hunger-induced violence, and zero- or low-cash incomes for farm households, which are stuck without the means or creditworthiness to invest in agricultural improvements. The poor may have to "mine" the local environment unsustainably by depleting the soil, overfishing, overhunting and cutting down forests. They are in-

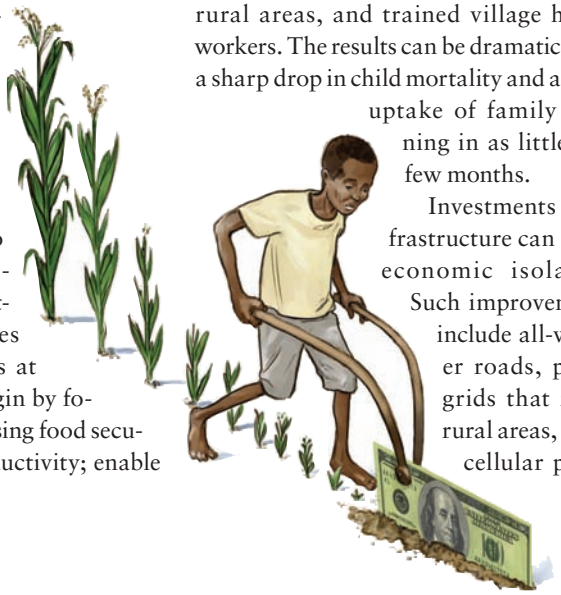
BRUCE GILBERT/EARTH INSTITUTE

creasingly affected by climate change.

The political consequences are equally stark. In his book *States, Scarcity, and Civil Strife in the Developing World* (Princeton University Press, 2006), political scientist Colin H. Kahl of the University of Minnesota describes two main paths by which extreme poverty raises the likelihood of violent conflict and the collapse of a state into lawlessness. First, when deepening poverty leaves the population desperate and the government unable to respond, groups may "self help" by fighting for resources with other groups. Somalia has experienced such a collapse in the past 20 years. Alternatively, if a government takes sides, it may use the state apparatus, even violently, to favor one group against another. The Rwandan genocide was such a phenomenon.

Geographic factors do not change easily. Yet programs of targeted investments by outside sources can break poverty traps at surprisingly low cost. Begin by focusing investments on raising food security and agriculture productivity; enable farmers to gain access to fertilizers, high-yield seeds, small-scale water management technologies and improved livestock management. The result can be a rapid boost in food production and farm incomes, commonly called a green revolution. Africa is primed for such a breakthrough, if donors support it.

The tropical diseases, especially malaria, worm infections and many other water-borne and insect-borne diseases, are readily preventable and often completely treatable. What is needed is a supply chain of crucial commodities, the construction and availability of primary health units in rural areas, and trained village health workers. The results can be dramatic, with a sharp drop in child mortality and a rapid uptake of family planning in as little as a few months.



Investments in infrastructure can break economic isolation. Such improvements include all-weather roads, power grids that reach rural areas, wider cellular phone coverage, and even broadband Internet services obtained through fiber-optic cables or satellite connections. Linking formerly remote villages to regional and world markets enables them to earn much more cash income through sales of agricultural commodities, processed goods and services.

The Earth Institute at Columbia University, in partnership with the United Nations and the nongovernmental organization Millennium Promise, is putting targeted investments to work in Africa, Asia and Latin America. The early results are enormously positive (learn more at www.millenniumvillages.org). Governments around Africa, including some in former war zones, are now requesting such projects. The World Bank and other donors would be wise to respond favorably, because such investment is the best hope for peace, security and long-term prosperity in impoverished regions. ■

Jeffrey D. Sachs is director of the Earth Institute at Columbia University (www.earth.columbia.edu).

SCI AM An expanded version of this essay is available at **www.SciAm.com/ontheweb**

MATT COLLINS

Forum

Full Speed Ahead for an Accelerator

The U.S. must stay competitive in nuclear science

BY C. KONRAD GELBKE

This item probably did not make the front page of your local newspaper, but researchers at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University recently produced the heaviest silicon isotope ever observed. After slamming a beam of calcium ions into a tungsten target, scientists analyzed the reaction products and identified three silicon 44 ions, each with 14 protons and 30 neutrons. (Ordinary silicon has 14 neutrons.) Given that the hefty nuclei survived for only a tiny fraction of a second before decaying, the achievement may not sound earth-shaking, but this kind of nuclear research is vitally important. Studying the properties of rare isotopes can help astrophysicists explain how the reactions in exploding stars generated the elements that make up Earth and all the other planets. Isotopes with the appropriate chemical and radiological characteristics could be incorporated into new cancer treatments. And a better understanding of exotic nuclei could even explain why the universe is rich in matter but almost devoid of antimatter.

For the past several years, scientists at the NSCL (where I have been the director since 1992) and the Argonne National Laboratory in DuPage County, Illinois,

NSCL