

Which Students Are Worst At Science?

Critics say comparisons among nations are flawed.

By GINA KOLATA

EVERY few years, a new study rolls out announcing once again that American students know less math and science than even students in the poorest countries. And every time, the reports result in a national orgy of self-flagellation and cries for new rounds of reform in American schools.

The latest comparison, conducted by the Educational Testing Service of Princeton, N.J., and involving 20 countries, will be reported on Feb. 3. The betting is that the United States will, as always, rank at or near the bottom.

But this time, a growing and vocal collection of revisionists has begun arguing that the comparisons are invalid. The entire United States population, they contend, is consistently being compared with other countries' elites. No wonder Americans are found wanting.

These critics stress that they in no way mean they find nothing to improve in American schools. But, they say, it is disingenuous to use international comparisons to whip up the population to demand school reforms.

"The rankings of nations in international test comparisons are meaningless," said Dr. Iris Rotberg, a program administrator at the National Science Foundation who is on leave to work as a senior scientist at the RAND Corporation's Institute on Education and Training in Washington.

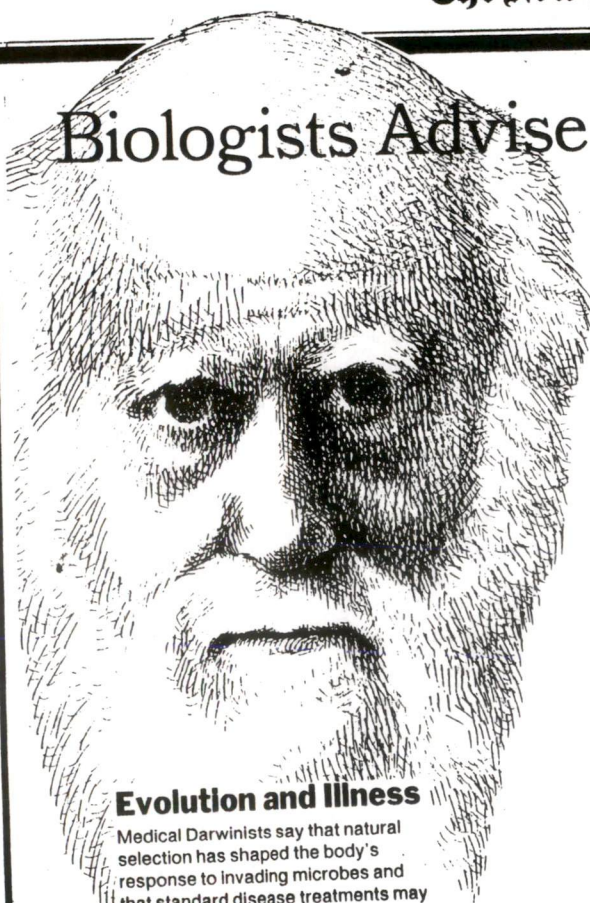
Dr. Harold Hodgkinson, the director of the Center for Demographic Policy in Washington and a former director of the National Institute of Education, said that the tests were flawed and not very helpful.

Dr. Daryl Chubin, a senior associate at the Congressional Office of Technology Assessment in Washington, said, "The international comparisons have been over-interpreted."

"In this country and in particular in this era of educational ferment, anyone who has new numbers will use them to champion an argument," he added. "We're talking about the rhetorical use of rank numbers. In the absence of good data, you get along with whatever you can."

Proponents of the tests argue that the comparisons are useful benchmarks and that it would be a mistake to throw away discomfiting findings because of methodological obstacles.

Archie Lapointe, the director of assessment at the Educational Testing Service, said that the criticisms have "a kernel of truth." But, he said, the data show what sort of achievement is possible, albeit often among the very best, selected students, and give us goals to aim for. And the



Biologists Advise Doctors to Think Like Darwin

Symptoms like fever may have evolved to fight infection, theorists suggest.

By NATALIE ANGIER

FOR many biologists, Charles Darwin is a hero of near-godlike proportions whose ideas are as powerful and piquant today as they were when they were conceived. Whether tracking the mating behavior of frogs in the field, or comparing a gene in a fruit fly with a gene in a human, biologists bear in mind the naturalist's grand theory of how and why all creatures evolve.

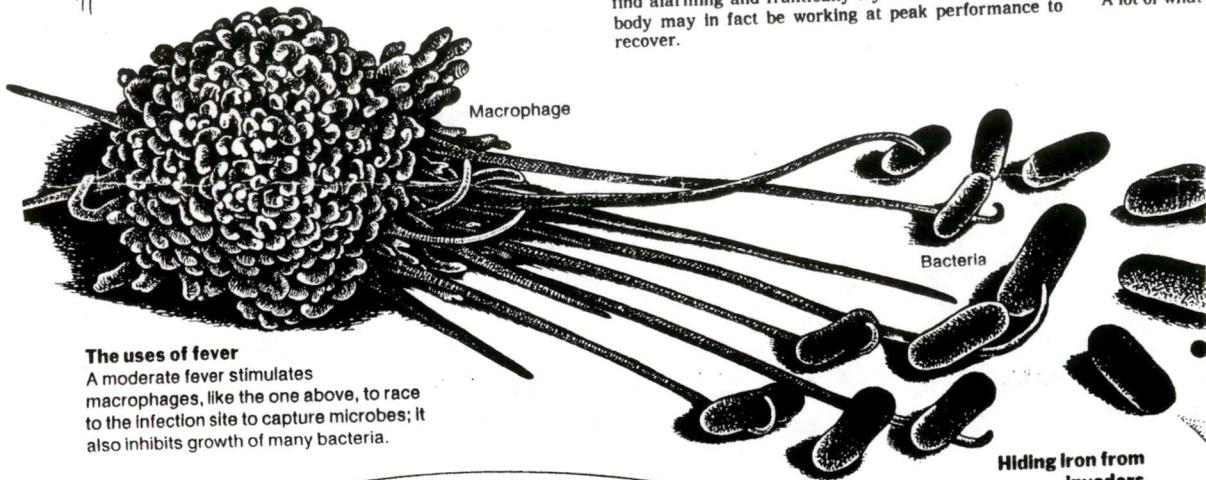
Now some biologists are proposing that physicians, too, would do well to heed the wisdom of Darwin, and to take the principles of evolution and natural selection into account as they seek to cure their patients. Biologists argue that clinicians often ignore the fundamental concepts of evolution, as when they treat a fever with aspirin, even though fever is a highly effective method that mammals have evolved for combating invasive bacteria.

Proponents of the fledgling and iconoclastic subspecialty, called Darwinian medicine, insist that an evolutionary perspective will cast a brilliant new light on human disease and help resolve any number of medical conundrums. Darwinists argue, for example, that the wretched morning sickness familiar to pregnant women is not an unfortunate hormonal side effect of childbearing, as had long been believed, but the best possible thing that can happen to a woman and her baby.

In another instance, Darwinists say that when a patient with an infectious illness suffers a seemingly dangerous dip in iron levels, a symptom some doctors find alarming and frantically try to treat, the patient's body may in fact be working at peak performance to recover.

Evolution and illness

Medical Darwinists say that natural selection has shaped the body's response to invading microbes and that standard disease treatments may interfere with these defenses.



The uses of fever

A moderate fever stimulates macrophages, like the one above, to race to the infection site to capture microbes; it also inhibits growth of many bacteria.

Hiding iron from invaders

Low levels of iron in the blood, which many doctors hurry to treat, can result when the body sequesters iron in the liver to starve the bacteria. A complex series of enzymatic reactions sops up the iron from the bloodstream so it can be hidden until the invader disappears.



Disease transmission and virulence

How a microbe is transmitted from host to host may determine its level of virulence. Theoretically, some microbes that require human-to-human contact to

Evolutionary nations for why malaria and cholera like the cold virus. The research dilemmas as with intolerable level body inevitably.

Many of the Dawn of Darwin in a recent issue report was written by Stony Brook and at the University of Arbo, who are popular book, te year.

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