

SCIENCE & TECHNOLOGY

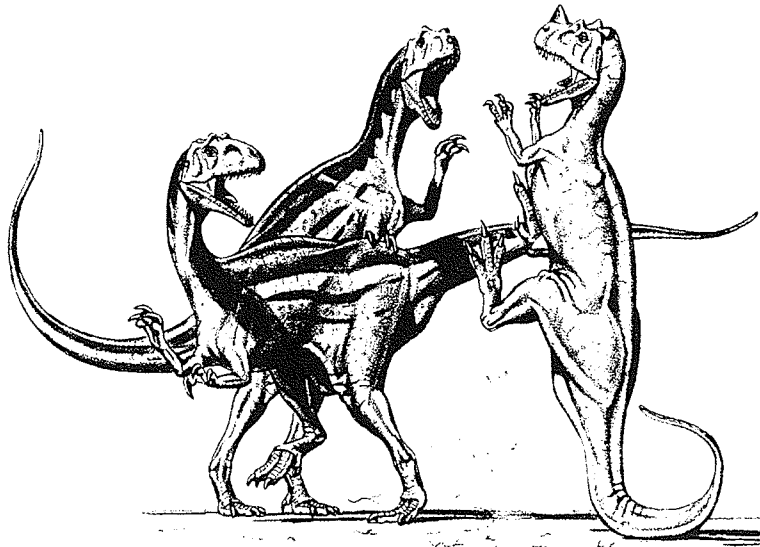


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Ceratosaurus, on the right, 15 feet long and weighing two tons, balances on its powerful tail to slash with clawed hind feet at a pair of agile allosaurs (averaging 25 feet in length and weighing three tons).

large heat-storage capacity to reduce the changes in body temperature brought about by environmental temperature changes. Uncertainty surrounds other aspects of the endotherm-ectotherm controversy, which may never be resolved because of the need to rely on an incomplete fossil record and analogies with modern creatures.

Trouble Brewing for Basic Science

"Suspicion: Basic Research and Scientific Freedom" by Robert C. Cowen, in *Technology Review* (Jan. 1978), Massachusetts Institute of Technology, Room 10-140, Cambridge, Mass. 02139.

Sputnik I, the first Soviet satellite, launched just over 20 years ago, was an "angel of deliverance" for hard-pressed American scientists who then faced the loss of vital federal funding for research. American scientists could use another Sputnik today, writes Cowen, science editor of the *Christian Science Monitor*.

American research and development is hardly starved for money; yet, on the whole, funding for it has reached a plateau. Federal support for basic science is uneven, and faltering in such fields as high energy physics and astronomy. According to the National Science Foundation,

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the United States spent about \$40.8 billion in public and private funds for research and development in 1977, up 9 percent from the \$37.3 billion spent in 1976, or an increase of 3 percent in constant dollars. The federal government's share was about \$21.8 billion.

These figures may inspire complacency, says Cowen. But the NSF has warned that the limited growth of basic research support in constant dollars (up an average of only 1 percent per year from 1968 through 1975) threatens the well-being of American science, especially when declining college enrollments mean a shrinking pool of scientific talent.

There are other problems besides insufficient funding. "Excessive caution, overregulation and anti-intellectualism also undermine our technological enterprise," Cowen contends. There is suspicion of scientific and technological activities not just from the public (e.g., community efforts to regulate research on recombinant DNA) but from the ranks of science itself (e.g., the efforts of so-called "concerned" scientists to restrict research on the possible connection between intelligence and genetics). All in all, there is trouble ahead for basic science and technical innovation in America.

Protesting Abuse of Scientists

"Science, World Politics, and Human Rights" by Richard J. Seltzer, in *Chemical and Engineering News* (Feb. 20, 1978), 1155 16th St. N.W., Washington, D.C. 20036.

The abuse of science and scientists for political ends, and the backlash this has provoked, threaten to disrupt international scientific relations.

Among the most glaring issues are the denial of scientific freedom and human rights to scientists, especially in the Soviet Union and Argentina; the banning of Taiwanese, Israeli, and South African researchers from world scientific meetings; the politicization of UNESCO and other science-oriented UN bodies; and the use of psychiatry and mind-altering drugs for political repression.

These abuses, says *Chemical and Engineering News* staff writer Seltzer, have provoked a fundamental shift in attitude and behavior by many scientists and some scientific organizations. Sporadic and sometimes largely symbolic measures such as letters of protest or petitions are giving way to systematic efforts to monitor and correct repressive policies. Both the U.S. National Academy of Sciences and the American Association for the Advancement of Science are organizing on-site investigative visits to countries accused of denying human rights to scientists. The American Psychiatric Association is setting up a permanent committee to deal with abuses of psychiatry or psychiatrists anywhere in the world.

The effects of such moves on international scientific relations may be substantial. Already an estimated 10 percent of U.S. scientists refuse to participate in exchange programs with the Soviet Union. The 35,000-member Association for Computing Machinery, for example, cut ties