

Structure, an ongoing compilation of protein sequence data. She has also collected DNA sequences, not least because they now often serve as the source for determining protein sequences. Other DNA bankers, however, have concentrated less on the collection of data from the literature, more on ways to manipulate it. Laurence Kedes and colleagues

at Stanford University have established a computerized data system, accessible through telecommunications networks, which now has some 200 regular users from among the molecular genetics community. The intent of the NIH is to combine the advantages of both approaches in the national nucleic acid data bank.

The notion of cataloging every human

protein or sequencing the entire human genome appeals to the sense of completeness. Both are doubtless worthy goals that will be attained sooner or later. Yet it would be a reductionist fallacy to suppose that even knowledge of the complete molecular anatomy of man will tell but a fraction of the story.

—NICHOLAS WADE

Dinosaur Battle Erupts in British Museum

Anti-cladist sees reds under fossil beds in alliance with creationists to subvert the Establishment

In the solemn halls of the British Museum of Natural History, where the curious come to gape at the bones of creatures long since extinct, the sounds of a rude contemporary fracas are perturbing the Cretaceous stillness.

What has jolted the fossils to life is the charge that the new arrangement in which they have been exhibited to the public conceals, or at least makes only subliminally manifest, a pernicious political doctrine.

The new exhibits, according to zoologist L. B. Halstead of the University of Reading, are designed to favor a Marxist view of the world at the expense of conservatism. Worse, they give comfort not just to Marxists but also to creationists, the Bible-packing fundamentalists who are always trying to lose the theory of evolution down a gap in the fossil record.

The authorities at the British Museum have elected to maintain a dignified silence in the face of these charges, which first appeared in a letter from Halstead to *Nature*. A museum scientist wrote to impart his view that Halstead was "simply mistaken," and there the matter rests.

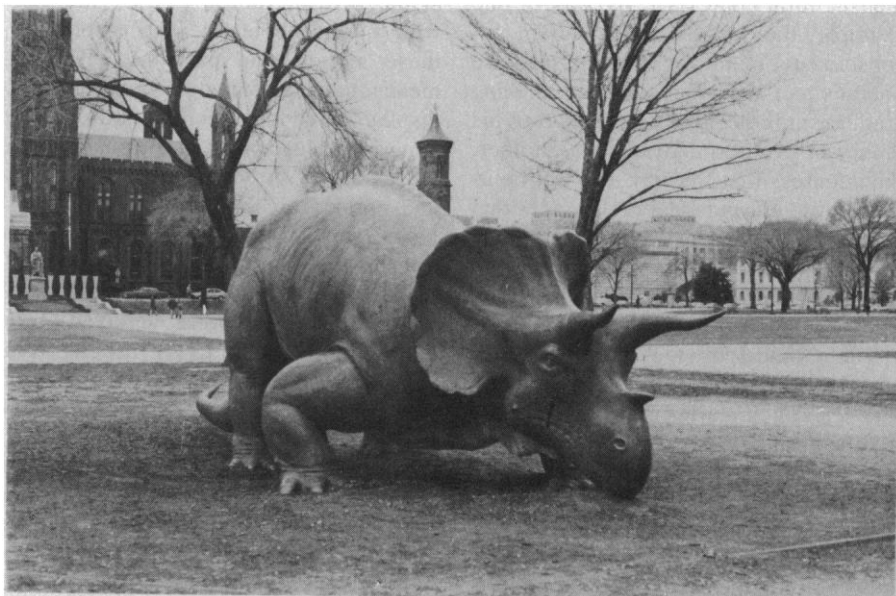
The dinosaurs that constitute the bones of contention have been downgraded in their claim on exhibition space. But what has provoked Halstead to outrage is that they are displayed according to the principles of cladistics, a system of classifying relationships among objects. As an analytical tool, cladistics has been intensively used among paleontologists and evolutionary biologists for the last 10 years or so. For some, cladistics has become more of a creed than a tool. Like the reds and the greens in Byzantium, or the Guelfs and the Ghibellines in Dante's Italy, the cladists and their op-

ponents have on occasion turned departments of paleontology into fields of passionate but obscure dispute. An early battle zone was the American Museum of Natural History in New York.

The cladist wars reached a peak of intensity in the mid-1970's, and have since subsided. What is new about Halstead's onslaught is his belief that cladism has a political dimension. Cladistics, in his view, leads to the assumption that evolution has not proceeded by gradual change, as envisaged by Darwin and his successors, but rather by sudden leaps and discontinuities. "If it could be established that the pattern of evolution was a saltatory one after all, then at long last

the Marxists would indeed be able to claim that the theoretical basis of their approach was supported by scientific evidence. . . . What is going on at the Natural History Museum needs to be seen in context. If the cladistic approach becomes established as the received wisdom, then a fundamentally Marxist view of the history of life will have been incorporated into a key element of the educational system of this country," wrote Halstead in his letter to *Nature*.

"I think Halstead is completely mistaken," remarks museum paleontologist Colin Patterson. In Patterson's view, cladistics is not even about evolution: it is merely a tool for studying patterns and



Scherraine Mack

Can dinosaurs express political opinions?

This Triceratops, caught midway between Congress and the White House, said it had been around Washington too long to care one way or the other.

has nothing to say about the process whereby the pattern came about. Cladists, far from drawing political inferences from their view of evolution, are not deriving any necessary conclusions from cladism about evolution itself. Patterson is a "transformed cladist," scoffs Halstead, who maintains that there is a correlation between cladists' scientific and political beliefs.

It is true that scientific debates are sometimes shaped by extraneous influences, politics included, as was evident in the recent discussion of sociobiology. Paleontologists both in the United States and England, however, say that this has not been the case with cladistics. Halstead disagrees, citing in evidence a well-known article which appeared in the spring 1977 issue of *Paleobiology*. In it, two leading evolutionary biologists contrast the Marxist penchant for abrupt change in both nature and society with

the notion of punctuated equilibria comes from prior acceptance of Marxism is ridiculous, and in any case, cladistics and punctuated equilibria have no necessary relation," remarks Eldredge.

Behind the present clash over cladism lies a dispute of long standing between Halstead and R. S. Miles, the strong-willed head of the public services department of the museum. At a symposium held in 1978 in Reading, on Halstead's home turf, Miles mentioned, with perhaps a touch of disparagement, that the public would always expect the museum to provide "halls of monsters" and the aim was to satisfy both that and more intellectual thirsts. Miles was explaining the new exhibition schemes at the museum which had caused a certain amount of consternation among those attached to the traditional displays. The "late lamented dinosaur gallery," responded Halstead, was a victim of those who saw

Darwin may have imbued his theory with the political gradualism of Victorian England, but today's theorists claim immunity from contemporary political passions.

the Western preference for gradualism. The authors of the elegantly assertive tract, Stephen Gould and Niles Eldredge, contend that "even the greatest scientific achievements are rooted in their cultural contexts." By way of one example, they suggest that Darwin unconsciously mimicked the laissez-faire liberalism of Victorian society in making gradualism the central mechanism of his theory of evolution. By way of another, they confess that "it may also not be irrelevant to our personal preferences that one of us learned his Marxism, literally at his daddy's knee." (The parent in question is understood to have been daddy Gould.)

The Gould-Eldredge paper certainly corroborates Halstead's implicit premise that scientific theories may be influenced by their authors' political beliefs. But with respect to his specific assertion that cladism is linked to Marxism, the paper offers less support, in as far as Gould is not a cladist and Eldredge is not a Marxist. Their theme is that evolution proceeds not by a continuum of small changes but by "punctuated equilibria"—long periods of stasis interrupted by bursts of rapid speciation. "The idea that

the role of the museum as one of social engineering rather than as a national repository.

Museum officials on the American side of the Atlantic are watching the shindig at the British Natural History Museum with a touch of envy. The eruption of these monumental passions, after all, means that at least people care. Cladistic displays have long been a feature of the American Museum of Natural History in New York. "We have done this for years and nobody gives a damn," says a paleontologist there. At the British museum, on the other hand, when some paleontologically worthless bones of elephants and tigers were removed from exhibit on, an outcry ensued from Londoners who had fond memories of them from childhood. The elephants and tigers remained.

As for the dinosaurs, contrary to the impression that might be given by the present clamor, they still grace the London museum's halls, as large as extinct life can be. Yes, grumbles Halstead, but they are not there in their own right any more, merely to demonstrate the principles of cladists.

—NICHOLAS WADE

Joint Research Guidelines for Industry

As part of the Carter Administration's drive to encourage industrial innovation, the Justice Department Antitrust Division has produced a 114-page booklet to clarify what kinds of joint research ventures by industry are acceptable in light of antitrust laws.

In addition to general guidelines, the document presents and analyzes eight hypothetical cases of joint research, and discusses a number of ventures on which the Justice Department has bestowed its blessing over the past 2 years.

Basically, the department says a joint venture is in accord with the laws if it stimulates rather than stifles competition. Circumstances in which joint projects are favored include a venture so costly or risky that it would not be undertaken at all by a single company; collaboration that would serve to strengthen a weak company and thus increase the number of competitors in a field; partnerships in projects aimed at developing a new product for which the parties would have different end uses. Joint ventures are frowned on if the result would impede progress or competition by committing several major rival firms to the same approach to a problem. For example, in the late 1960's, the Justice Department brought suit against four auto companies that proposed a research venture on emission control devices, mainly because the agreement would not have allowed any company to use the resulting technology without the consent of the others. Such a venture could actually impede the development of a new technology. By contrast, early this year the Justice Department approved a "cooperative automotive research program" within the industry as a positive basic research program that no company could have conducted individually and that would enhance the science base of the whole industry.

Businessmen have complained that antitrust laws make it impossible to engage in the kinds of joint research endeavors that have made Japan such a formidable competitor in high-technology products. Joel Davidow of the antitrust department says, how-