discovery. With the advent of major new NASA research missions and increased research and analysis dollars, there may be an infusion of funds in fiscal year 1990 above the "keep alive" level. Without this the university, commercial, and NASA center scientists are going to continue scrapping over the bits of money left after the hardware bills are paid. Then, tragically, the full scientific potential of the NASA space projects will not even be approached.

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Superconductivity Applications

Robert Pool's Research News article "Superconductivity: Is the party over?" (26 May, p. 914) summarized some unique properties of the high-temperature oxide superconductors. The article focused on two newly discovered effects, giant flux creep and flux lattice melting, that may present major obstacles to the achievement of high critical current capability in these materials. Both these phenomena lead to energy dissipation during high-current transport, especially in large magnetic fields and high temperatures. The article briefly mentioned the hopes, but current confusion, over a rigid flux line glass state and the commonly observed but unidentified flux pinning.

Recently, researchers at Oak Ridge National Laboratory (ORNL) have determined experimentally that dissipation due to current flow in a large magnetic field was strongly reduced when the field was applied parallel to the Cu-O planes of epitaxially oriented, single-crystal films of $Y_1Ba_2Cu_3O_{7-\delta}$ (*1*). The observed critical current density, J_c, exceeds 10^5 amperes per square centimeter at 77 K in fields up to 8 teslas. Rotating the field to the crystalline c-direction, perpendicular to the Cu-O planes, led to a rapidly decreasing J_c above 4 teslas that vanished near 6 teslas. The latter results are similar to those observed in flux melting experiments and were confirmed on the thin film samples by ac magnetic loss measurements at ORNL. At present it is unclear whether the onset of high-field dissipation is due to flux lattice melting (*2*), field-enhanced flux creep (*3*), or a breakdown of three-dimensional superconductivity (*4*). The experiments are being extended to ascertain whether the high critical current observed for fields parallel to the copper-oxygen planes arises from the newly predicted phenomenon of intrinsic flux pinning that occurs due to the short coherence length and the layered crystal structure (*5*), or from a simpler effect originating from the planar, quasi-two-dimensional film geometry. Preliminary measurements on a series of films having different cross-sectional areas point to the confirmation of a bulk flux-pinning phenomemon. This result provides a demonstration of the existence of high critical current densities at liquid nitrogen temperatures and in substantial magnetic fields, an important step in establishing feasibility for applications in high-field, high-current systems.

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REFERENCES

1. D. K. Christen *et al.*, *Physica C*, in press; paper presented at the conference on Materials and Mechanisms of High Temperature Superconductivity, Stanford University, Stanford, CA, 25 July 1989.
2. D. R. Nelson and S. Seung, *Phys. Rev. B* **39**, 9153 (1989).
3. M. Tinkham, *Phys. Lett. Rev.* **61**, 1658 (1988).
4. L. J. deJongh, *Solid State Commun.* **70**, 955 (1989).
5. M. Tachiki and S. Takahashi, *ibid.*, p. 291.

The "Misplaced" Fossils

Heinrich K. Erben (Letters, 15 Sept., p. 1165) seems to have misconstrued the fundamental thrust of our monograph (*1*) and its shortened version (*2*)—that scores of reports coauthored by Vishwa Jit Gupta happen to be based on items that can be purchased for nominal sums from curio counters and fossil dealers all over the globe and are often found in collections of amateur paleontologists, universities, and research laboratories. Such items include the springboard for Erben's critique, the Late Devonian ammonoids "said to have come from the vicinity of Erfoud, Morocco" [(*1*), explanation of figure 6; omitted in (*2*), figure 3] bought at a rock shop in Paris. The words "said to have come from" should be noted, as Erben asserts that I stated "without qualifications" that the ammonoids were from "the vicinity of Erfoud." He then uses this as basis for throwing a mud pie: that I "appear to have trusted" information from a shopkeeper and have therefore been delinquent as regards my primary facts.

Erben overlooks the element of farce in the original monograph and the occasional tongue-in-cheek style. To emphasize the ease of obtaining such materials (from highly specific localities) and the ease with which we believe an unscrupulous individual could have emulated Gupta's activities, we quoted prices from recent fossil-dealer catalogs for many of the items we flagged as spurious or dubious. In the case of the Late Devonian ammonoids, we gave the addresses and telephone numbers of the fossil dealers from whom the particular specimens were purchased. That such items could be readily purchased from Alain Carion in Paris or from Stella's Rocks and Minerals, a stall in the weekend Paddington Market in Sydney, underlines not only the ease with which such material might be obtained but the near impossibility of determining the origin of Gupta's "Khimokul La" specimens.

The apparent 25-year pattern of Gupta's activities has been described (*3*) as a "cumulative joke": a joke that, although it backfired, has injured scores of innocent scientists, among whom Erben would be one of the most eminent. Few scientists have the inclination to "blow the whistle" on fellow scientists' obviously spurious data, or do they have the necessary expertise with which to indulge in psychiatric explanations of research behavior. They choose to ignore such problems, as my colleagues and I did for 16 years after discovering in 1971 that some of the published reports by Gupta and his coauthors did not match up with what we found in the field. Our reluctance to go public earlier, regrettably, allowed the edifice of disinformation to reach monstrous proportions before being confronted.

Gupta's coauthors surely were victims, but the "unwitting" of our phrase "unwitting participants' implies innocence even where obvious incongruities in Gupta's contributions to joint papers passed unnoticed. That Erben and so many other "unwitting participants" were misled is a commendable demonstration of the trust that most scientists have in one another.

Erben insists that whistle-blowers should "refrain from overzealous exaggerations," implying that we have erred in this regard. No one would disagree with this general principle, but in our case we (*1, 2*) deliberately *underplayed* the situation, giving only a sample of the disinformation known to us at that time. Recycling—using the same specimens as underpinning for reports from widely separated areas—is, however, more pervasive than we did realized (*4*). That we (*1, 2*) were examining only the tip of an iceberg of vastly greater dimensions and having perhaps more serious implications than we imagined is also brought out clearly by evidence from four of Gupta's coauthors (*4*) and materials in an avalanche of correspondence we have received since publication of our monograph (*1*).

Erben plays down our position by asserting that "really cogent evidence is indeed lacking" and that our "circumstantial evidence. . *.seems to be* rather convincing" (empha-

sis added). The cumulative evidence of recycling (unacceptable economy of materials), the plethora of phantom localities, the absence of appropriate stratigraphy at so many specified localities, and the assertion of incredible associations of fossils never found associated elsewhere in the world, implying age-differences of 15 to 30 million years between faunal elements having high age resolution, must surely rank as something more compelling than "seems to be rather convincing." Especially so when considered in conjunction with the clear evidence from registers at a security checkpoint that there is no record of Gupta's visiting some of the localities in question. [In fairness, it should be pointed out that some of this evidence and especially the last item (*4, 5*) would not have been available to Erben at the time he wrote his apologia.]

We did, incidentally, provide Gupta with a loophole—"laboratory misfortune: mislabelling, accidental contamination, or peripatetic locality labels" (*1*, p. 20). To date he has declined to accept this as a way out (*6*).

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REFERENCES

1. J. A. Talent, R. K. Goel, A. K. Jain, J. W. Pickett, *Cour. Forschungsinst. Senckenb.* **106** (1988).
2. J. A. Talent, *Nature* **338**, 613 (1989).
3. Anonymous, *ibid.*, p. 604.
4. J. A. Talent *et al.*, in preparation.
5. A. D. Ahluwahlia, S. B. Bhatia, U. K. Bassi, P. Janvier, *Nature* **341**, 13 (1989).
6. K. S. Jayaraman, *ibid.* **338**, 694 (1989); V. J. Gupta, *ibid.* **341**, 11 (1989).

Early Man Site Visits

Tom D. Dillehay (Letters, 29 Sept., p. 1436), in responding to Roger Lewin, points out that neither I nor anyone else has approached him about having a team of concerned scientists visit the Monte Verde archeological site in Chile to assess it and to offer outside opinions. I have not done so because such an effort would require a considerable expenditure of funds as well as time, and preliminary inquiries indicate that funding agencies would not be inclined to financially support such efforts. However, I have long believed that controversial yet critically important sites for understanding the peopling of the New World, such as Monte Verde, need independent verification.

Archeology, being an inexact science, needs on-site second opinions and has had a tradition of having them. The acceptance of the original Folsom discovery was the result of verification by a team of concerned archeologists, a paleontologist, and a geologist. Subsequently other interdisciplinary teams have visited such sites as Santa Rosa Island and Calico Hills in California and Tule Springs, Nevada. The latter was thoroughly reinvestigated in the field and in the laboratory over a 4-month period funded largely by private sources plus some NSF support, which included an NSF-sponsored team that made monthly visits to evaluate the procedures and to observe the findings.

There are now four or five sites in South America that suggest a pre-Clovis entry of early man into the New World. These need independent verification before the textbooks are rewritten. Dillehay is to be commended for his willingness to have this done. Alan Bryan has also expressed similar thoughts regarding the Taima Taima site in Venezuela. If grant-giving organizations would support such an effort, New World archeology could move on to greater understanding.

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Erratum: The caption for figure 1 (p. 1497) of the report "Transformation by v-*sis* occurs by an internal autoactivation mechanism" by B. E. Bejcek *et al.* (29 Sept., p. 1496) was inadvertently not printed. The caption should have read, "**Fig. 1.** (**A**) Plasmid pSEB3. (**B**) Mutations used."

NOTICE

Ballots for the 1989 American Association for the Advancement of Science (AAAS) election of officers were mailed to all AAAS members on 18 August 1989. The contractor, who managed AAAS elections for the past 2 years, has informed AAAS that due to an error by them, members with institutional addresses may have received ballots in envelopes for which one line in the address, typically the departmental affiliation, was missing. This error could result in delays in members' receipt of ballots or, in some cases, nonreceipt. Thus, the AAAS Board of Directors has extended the deadline for receipt of completed ballots to 8 December. In addition, the Board has arranged for a replacement ballot to be issued to any member who claims nonreceipt by calling the contractor toll free at 1-800-247-4322. All candidates in the general election have been contacted and have registered their approval of this notification.