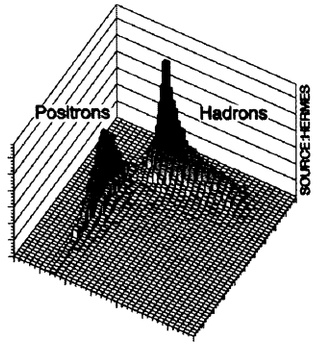
LETTERS

Ups and downs

Recent successes in measuring the "spin structure of the neutron" (right) give physicists hope that they can "track down the missing spin." The consequences of restructuring biology departments at large universities are discussed. A reader proposes that institutions that grant Ph.D.'s also guarantee employment for their graduates. Researchers at the Food and Drug Administration are said to bring "the latest research findings to bear" on regulating vaccines and drugs. And it is said that "many sources" indicate German science recovered slowly after World War II.



Spin Studies

We applaud our colleagues at the Deutsches Electronen-Synchrotron (DESY) in Hamburg, Germany, for their successful operation of the HERMES detector (A. Watson, Research News, 21 Mar., p. 1742), which reconfirmed results on the spin structure of the neutron that had previously been measured at the European center for particle physics (CERN) and the Stanford Linear Accelerator Center (SLAC). The experiments described by Watson are of a kind called "inclusive," where the inelastically scattered lepton (mu-meson at CERN, electron at SLAC, positron at DESY) is detected and the nucleon final state system is not analyzed. This is what has been done at CERN and SLAC for more than a decade in a wider kinematic range than is accessible in HERMES. The precision of the most recent SLAC data is far better than has been achieved at HERMES.

The real power of HERMES lies in its potential to capture the debris of the protons and neutrons after they are struck by high energy positrons from the HERA ring. If all goes as hoped, analysis of these fragments should provide additional information about the spin content of these particles. HERMES might even "track down the missing spin" and help resolve a conundrum (I would hardly call it a "crisis") that has been intriguing the particle physics community since the late 1980s.

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Mergers of Botany and Biology Departments

In the article "Biology departments restructure" by Wade Roush (News & Comment, 14 Mar., p. 1556), Rytas Vilgalys of Duke University is quoted as saying that botany at several schools, including Indiana University (IU), has "gone into eclipse" or has lost influence as a result of its merger with zoology. Although the merger of taxon-based departments may have injured botanical studies at other universities, botany at IU has been strengthened by its integration with other disciplines after the interdepartmental merger in 1978. The merged department was replaced by the Plant Sciences Graduate Program, which currently includes 18 faculty members, representing an increase of four plant scientists since the merger. Faculty hires since the merger represent all levels of analysis, ranging from molecular to organismal. In addition, IU plant sciences faculty do not appear to have lost influence in the Department of Biology. The department chair and directors of three of the six graduate programs in biology are plant science faculty. Further evidence of continued excellence in botanical studies at IU includes a recent graduate research traineeship award in the plant sciences from the U.S. Department of Agriculture and a "top 10%" ranking by the 1996 Gourman Report. The continued success of botany at IU suggests that departmental realignments need not weaken taxon-specific disciplines, but that instead they may serve to invigorate research areas that might otherwise decline.

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Vilgalys is quoted as saying that, at schools "where botany and zoology have merged," including at the University of Michigan, "botany has gone into eclipse." In fact, it may be argued that the botanical sciences at the University of Michigan have never been stronger. In 1974, shortly before the two departments merged, 27% of the biologists in the departments of botany and zoology were plant scientists. Today that figure is 31%. Of course, I am including in "botanical sciences" such disciplines as plant ecology and plant physiology, whereas Vilgalys appears to define botany as the traditional fields of plant taxonomy and systematics. But even in 1974, a minority of the faculty in the botany department fell into those categories. From the mid-1960s until 1974, the botany department had in place a progressive faculty hiring program; during this time only two "traditional" botanists (out of a total of 12) were hired. The rewards of the foresight of the early administrators of botany may be seen today in the University of Michigan's thriving programs in such fields as plant ecology, plant molecular biology, and cell and molecular biology in general.

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In this era of increasing budget constraints and forced restructuring of academic departments as reported by Roush, one wonders whether graduate education and graduate students will be lost in the shuffle. Because graduate students represent an investment, and many of the solutions seem to depend on economics, their worth needs to be clearly defined and reinforced among administrators, faculty, and the students themselves.

Graduate students are the life force of an academic department: they perform most of the hands-on research that goes on in research universities; their use as teaching assistants allows faculty the time to pursue research-related activities; and they are routinely called on to provide data and conceptual background to grant proposals "written" by their mentors. Published research done by graduate students is often co-authored by faculty, thus bolstering publication records; presentations of such research at meetings provides critical "advertising" for a laboratory, department, or university. All this while they are paid a minimal salary with few benefits, no sick leave or compensation, and often with no guarantees of funding for the next year.

The lack of recognition of such contributions has led graduate students at some schools to unionize. When graduate students are empowered with the attention and respect they deserve, however, the intellectual and economic returns a university can expect far outweigh the original investment.

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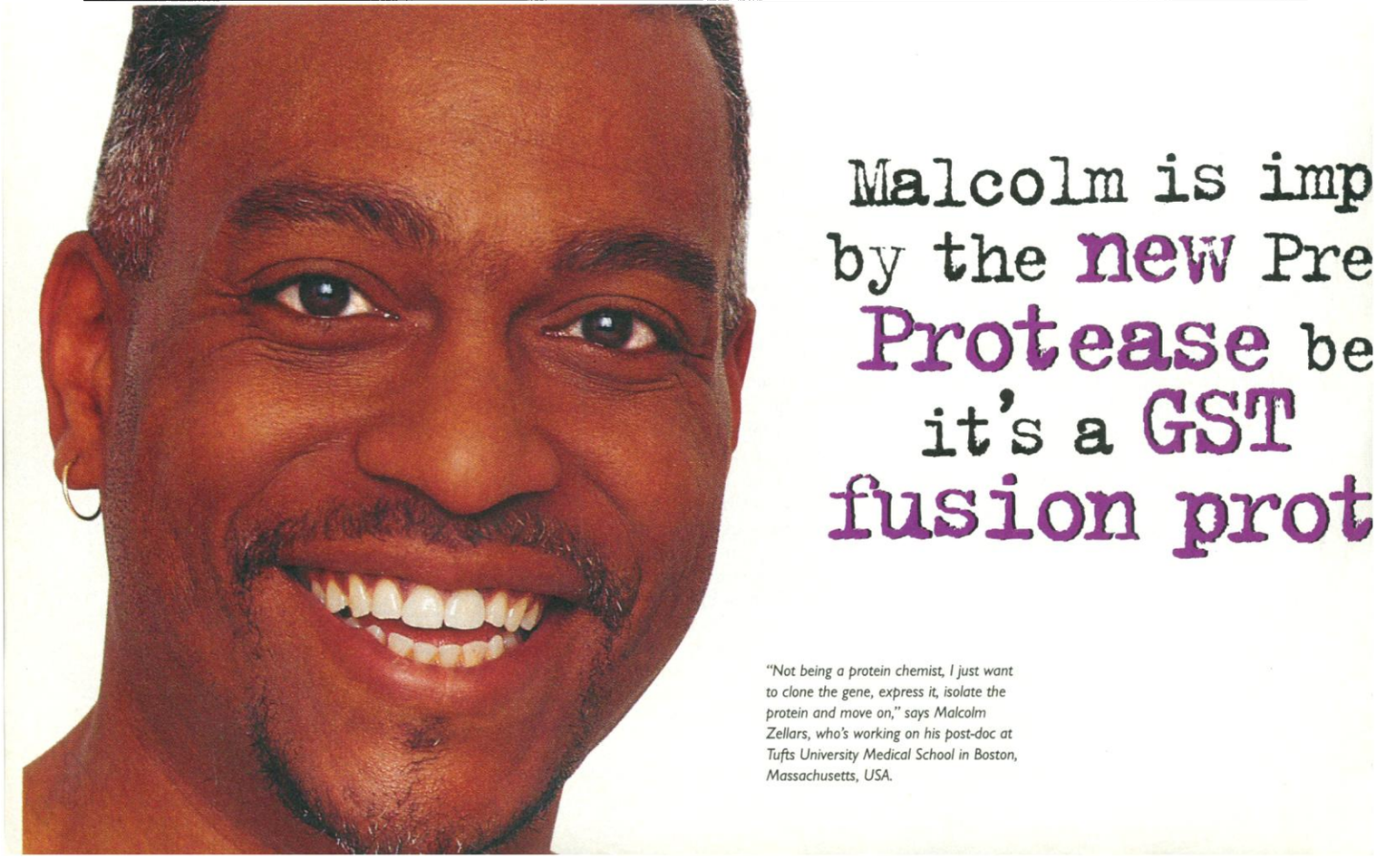

"Not being a protein chemist, I just want to clone the gene, express it, isolate the protein and move on," says Malcolm Zellars, who's working on his post-doc at Tufts University Medical School in Boston, Massachusetts, USA.