A Long-Disputed Paper Goes to Press

It came to be called the most famous unpublished paper in science. During the last three years, hundreds of scientists, a half-dozen lawyers, several journalists and two congressional subcommittees read the report on scientific misconduct written by National Institutes of Health (NIH) scientists Walter W. Stewart and Ned Feder. But the paper had never officially been published until it appeared in the Jan. 15 NATURE.

Now, the public may read not only the controversial article itself – which purports to describe hundreds of errors and misstatements in the publications of 35 biomedical researchers at Harvard University and at Emory University in Atlanta – but also a two-page rebuttal by one of the physicians whose research methods are criticized in the paper. In addition, the same issue of NATURE carries an editorial in which John Maddox, the editor of the British journal, states that he finally agreed to publish the study, in spite of what he calls its "disputable" methods and conclusions, partly because of the notoriety it already has acquired.

Maddox writes that he discussed the paper with a number of the researchers criticized in it, and they agreed it should be published " . . . so as to bring out into the open an issue of which Stewart and Feder have recently made much."

Indeed, Stewart and Feder – who usually do research in organic chemistry and neurophysiology at the National Institute of Diabetes and Digestive and Kidney Diseases – have, in the last year, given their paper public exposure. They appeared, by invitation, before the U.S. House Subcommittee on Civil and Constitutional Rights (last February) and the House science task force (last May) to testify about their struggle to publish. In the fall, they sent draft copies to all 1,800 members of the National Academy of Sciences, and also wrote a guest editorial in the Boston Globe describing their difficulties getting the paper published.

Stewart and Feder told each of these audiences that in this case, lawyers improperly had interfered with the usual scientific review process. They asserted that their paper would have been published in NATURE the first time it was submitted, in 1983, if lawyers representing two of the Harvard researchers had not sent letters to Maddox threatening lawsuits. Stewart and Feder also claimed that similar letters from the same lawyers led the editor of CELL, a journal of molecular biology, to reject the article in 1985, after spending 10 months considering it.

In his current editorial, Maddox argues that Stewart and Feder make this assertion "injudiciously" – that although the published version of the study is not defamatory, earlier drafts were unwarrantably damaging to the reputations of the Harvard and Emory researchers, according to NATURE's own lawyers. Stewart and Feder "have not understood that the unfettered right to publish scientific data does not equate with a right to denigrate others' characters," Maddox writes.

However, both Maddox and the two NIH researchers now say they are glad the debate can shift from the question of libel to the issues of scientific misconduct Stewart and Feder raise.

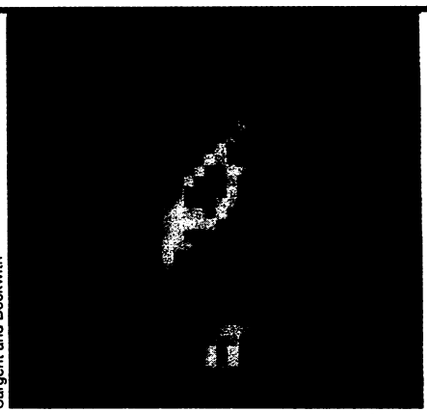
The study was designed to measure how well coauthors take responsibility for the accuracy of scientific publications. Stewart and Feder chose for their sample the 109 publications, including

Glimpses of alien comets and planets?

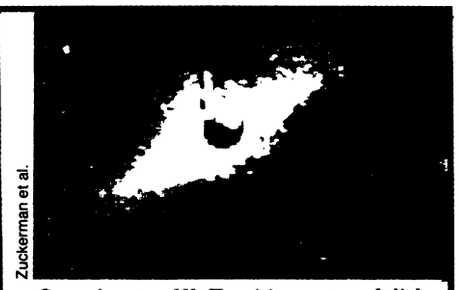
Looking for evidence of planetary systems other than our own, astronomers search nebulas that surround various stars for evidence that the material follows Keplerian orbits. Solid material – comets, planets, etc. – should move according to Kepler's laws; the gas that is more common in circumstellar nebulas generally does not. In Pasadena, Calif., at the recent meeting of the American Astronomical Society, scientists reported three such nebulas in the form of disks around the stars Beta Pictoris, HL Tauri and T Tauri.

Two groups presented new images of the Beta Pictoris disk. Francesco Paresce and Christopher Burrows of the Space Telescope Science Institute in Baltimore and the European Space Agency claim that their image is the first picture of the Beta Pictoris disk in visible light. Benjamin Zuckerman of the University of California at Los Angeles, whose group worked at a wavelength of 9,000 angstroms, on the edge of visible light (between infrared and red), held a similar claim.

Whoever was first, both groups find evidence for cometary material in the disk. Paresce refers to "pebble-sized particles," 10 times as large as anything found in interstellar space. Zuckerman speaks of a giant Oort cloud surrounding Beta Pictoris. Our solar system's Oort cloud consists of cometary material orbiting the sun far beyond the outermost planets. Occasionally an object separates from it and enters the inner solar system as a comet. Zuckerman, whose group includes Harland W. Epps of UCLA, Colin R. Masson of Caltech in Pasadena, Jonathan C. Gradie and Joan N. Hayashi of the University of Hawaii in Manoa and Robert Howell of the University of Wyoming in Laramie, calculates the mass of the cometary material encircling Beta Pictoris as equal to that of Jupiter.



Sargent and Beckwith



Zuckerman et al.

Cross locates HL Tauri in center of disk of matter shown in false-color image at left. Above, view of Beta Pictoris disk in 9,000-angstrom light.

In addition, David Weintraub of UCLA, Zuckerman, Masson and James Benson of the University of Wyoming did the observations of T Tauri, a binary star system, in which two stars orbit each other. This group finds material equal to a few times the mass of Jupiter orbiting the whole binary system.

Anneila I. Sargent of Caltech and Steven Beckwith of Cornell University did the observations of HL Tauri. They find Keplerian motion in a disk extending to 500 astronomical units (500 times the earth's distance from the sun, or about 50 billion miles) out from the star. This could contain gas plus comets with dust nearby. Sargent suggests that this is how a solar system might look before planets begin to coalesce.

– D. E. Thomsen

journal articles, abstracts and textbook chapters, that were coauthored by John Darsee, the young medical researcher who, in 1980, was found to have fabricated much of his laboratory data. A total of 47 medical researchers—24 from Emory and 23 from Harvard — coauthored Darsee's publications between 1978 and 1981. The Darsee affair provided a handy opportunity to look at the conduct of coauthors, Stewart told SCIENCE NEWS, because it generated investigative reports from three separate committees — from Harvard, Emory and NIH — which analyzed the problems in all of Darsee's publications.

In reviewing the papers and committee reports, Stewart and Feder say that aside from Darsee's improprieties, they found no instances of "wholesale forgery" on the parts of his collaborators. But they say they did find many lesser offenses. The "most striking" example, they say, is in an Emory paper describing a family with a high incidence of heart disease. A family tree in the paper shows one 17-year-old man with four children ranging in age from 4 to 8, suggesting that he was 8 or 9 years old when he fathered his first child. The same family tree shows a woman in the preceding generation who had her last child at the age of 52.

Stewart and Feder report that 31 of Darsee's 47 coauthors were similarly "careless." Examples include failing to check that graphs matched measurements cited in the text, failing to retain identifying information on human subjects and accepting coauthorship on studies to which they did not significantly contribute. In addition, Stewart and Feder charge that 13 of the coauthors were guilty of "more serious" misconduct, such as publishing statements they knew or should have known were false or misleading, failing to acknowledge outside sources of important research data or publishing the same paper twice — under different titles and with slightly different information — so as to make it seem that there were two distinct studies.

Although Stewart and Feder do not directly identify Darsee's coauthors, most of their names can be tracked down by following the list of references to the Darsee papers, which were published in such journals as the NEW ENGLAND JOURNAL OF MEDICINE, ANNALS OF INTERNAL MEDICINE and AMERICAN JOURNAL OF CARDIOLOGY.

One of Darsee's regular coauthors, Harvard medical school professor Eugene Braunwald, wrote the rebuttal that follows the Stewart and Feder paper in NATURE. Braunwald charges that Stewart and Feder did not fully separate Darsee's practices from those of the coauthors. "In fact," Braunwald writes, "the paper repeatedly and unfairly connects Darsee's fraud at Harvard to his coauthors there through a process of guilt by association."

Braunwald also defends himself and his laboratory against specific charges. For example, to Stewart and Feder's contention that Braunwald did not contribute enough to the research to warrant his being listed as a coauthor on some Darsee papers, Braunwald asserts that, in fact, he "participated actively in the design of the protocols, reviewed the results on a frequent, usually biweekly basis and participated actively in the interpretation of the data." Braunwald says it would have been misleading not to make himself a coauthor.

Feder (left) and Stewart

Stewart and Feder also note that Darsee's coinvestigators at Harvard, in a study of heart tissue recovery in dogs, used data from a past experiment for the control group, rather than establishing their own controls. Braunwald defends the practice as a way to avoid needless sacrifice of dogs and says that it did not influence the results of the study. He allows that it would have been better to explain in the research paper the use of "historical controls," but says it was Darsee who omitted this explanation.

Stewart and Feder also charge that the Harvard researchers twice published the same data about the experiment on dogs' hearts. The first publication described the dogs' condition after three days of recovery from heart tissue damage, and the second described the same dogs after 14 days, Stewart and Feder say. To this, Braunwald responds that because of its "important clinical implications," the first paper had to be published quickly, before there was time to review the 14-day data. Furthermore, Braunwald writes, the second paper included "substantial new information," including data on 20 additional dogs.

Braunwald reproaches Stewart and Feder for failing to reveal all of the errors they claim to find in the Darsee papers, and he remarks that some of the mistakes they do specify are "insignificant" and can be easily explained. "The general understanding of scientific fraud is hardly advanced by a discussion which hinges upon typographical errors and similar quibblings," Braunwald writes.

Maddox similarly takes Stewart and Feder to task for being "unforgiving" in stating that Darsee's coauthors should have been able to spot small errors and for suspecting the coauthors' motives. "The recipe implicit in the Stewart and Feder argument, that zealous suspicion of everybody within sight is the way to ensure the integrity of the scientific literature, is of course a recipe for disaster, a road to general mistrust, a license for every would-be whistle-blower and a means by which the literature would be made yet more solemn," Maddox writes.

Stewart argues that he and Feder were not "heavy handed." He acknowledges that small mistakes are likely to appear in any scientific paper, and that the minor errors in the Darsee papers "are just examples of things that more care should have been spent on." However, he says, the substantial errors and misstatements that creep into the scientific literature may be more damaging even than instances of outright fraud, because errors are more numerous and more likely to pass unnoticed.

In spite of his criticisms of Stewart and Feder, Maddox ultimately applauds their effort to illuminate the problem of errors, inconsistences and misstatements in the scientific literature. " . . . [T]he experience of those concerned with management of the literature is that errors of all the kinds listed are far from being rare," he writes.

Maddox largely attributes such problems to the pressure on scientists to publish in great quantity. "It does seem to be that people's promotions have come to depend far too much on what they've published," he told SCIENCE NEWS. "I think some decoupling of the two is urgently needed." — *Mary Murray*

Celebration on a volcano

The Kilauea volcano sure knows how to prepare for a party. During the two months prior to last week's festivities commemorating the 75th anniversary of the nearby Hawaiian Volcano Observatory (HVO) and the opening of its new facilities, the volcano added 18 acres of lava to the island of Hawaii. And since the current eruption began three years ago, Kilauea has produced a record-breaking 850 million cubic yards of lava. That amount would cover, to a depth of almost 31 feet, four lanes of an interstate highway from New York to San Francisco, according to Dallas L. Peck, director of the U.S. Geological Survey (USGS), which manages the HVO.

The new HVO building, perched on Kilauea's rim, is equipped with an elevated tower from which both Kilauea and the neighboring Mauna Loa volcano can be observed. Peck says the HVO, which is the United States' first and oldest volcano observatory, has been responsible for the development of most of the volcano monitoring techniques now used worldwide. After dedication ceremonies Jan. 16, volcanologists were meeting Jan. 19 — 25 for a USGS symposium entitled "How Volcanoes Work." □