

Patents and Publication

Eliot Marshall's article "The patent game: Raising the ante" (News & Comment, 5 July, p. 20) is an accurate depiction of the U.S. Patent and Trademark Office (PTO) as it is about to enter the 21st century. A point made near the end of this article should be given more consideration, as it may go a long way toward resolving the conflict between publishing and applying for a patent. That point is that peer-reviewed journals could be used as a form of official notice for securing the rights to an invention before a formal patent application is filed.

This excellent idea should be seriously considered and adopted as official policy by the PTO. Papers published in the leading peer-reviewed journals have a great deal in common with patents as far as the format is concerned (1). A scientific paper is composed of an abstract, an introduction, a materials and methods section, a discussion section, references, and illustrations. This is very similar to the arrangement found in patents. The peer review itself is in many ways similar to the examination of a patent application by the PTO. In fact in some cases patents (especially those in biotechnology) greatly resemble scientific papers.

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The "D0 Syndrome"

As spokesman for the D0 experiment at Fermilab, I was interested in the new term the "D0 syndrome," minted in the 21 June article "Ad hoc team revives SSC competition" by David Hamilton (News & Comment, p. 1610).

Hamilton notes correctly that D0 will finish nearly 5 years behind the other main detector at the Tevatron. He does not mention that the D0 detector was started nearly 5 years after the other detector—and that it benefited from the experience gained both at Fermilab and at the CERN proton-antiproton collider. Although Hamilton is correct that funds have not come as rapidly as we would have liked, most of the

physics menu envisioned for D0 at its inception still remains. In particular, the top quark awaits discovery, precision measurements of the W and Z bosons need to be made, and searches for new very heavy objects such as supersymmetric particles have yet to be rewarded. Since the D0 experiment was designed with just these objectives in mind, we may expect that the phrase "D0 syndrome" will come to stand for projects that arrive at the right moment, with the right stuff, to make crucial discoveries.

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Cancer and Poverty

Ann Gibbons writes in her article "Does war on cancer equal war on poverty?" (News & Comment, 19 July, p. 260),

But only now have researchers begun to disentangle the effects of poverty from those of race—and they're discovering that poverty is a more powerful determinant of cancer risk than race is.

She also states that,

[n]o comprehensive research on low-income or minority populations have been published—other than the straightforward studies that simply characterize the incidence of cancer.

From 1965 through 1973, at the request of the National Cancer Institute (NCI), I conducted a search for the causes of esophageal cancer among the people, predominantly black, of the island of Curacao, in the Netherlands Antilles. This study yielded abundant evidence of the popular ingestion of decoctions of local folk-medicine plants of high tannin content and bioassays of some of the most used species showed them to be carcinogenic.

To test the evidence, NCI proposed a similar study in coastal South Carolina, where esophageal cancer was rife among the black residents of eight coastal counties—the "Low Country." After 3 years of investigating the diet and plant use, I reported that my "search for causes other than racial susceptibility" (1) revealed a high intake of tannin-rich folk remedies and its historical basis: the blockade of Charleston, South Carolina, during the Civil War, which stopped the importation of European drugs and forced a return to local plants for medication. The people were taught to go out and gather the needed leaves, roots, barks, and berries, and a black "nurse" was assigned to dispense the remedies on each plantation. The physicians found high-tannin plant materials quite useful in combating

diarrhea and dysentery suffered especially by the military. I verified that the people of the Low Country were still following the practices of their parents and grandparents (2).

In 1974 I prepared a medicinal plant guide for the use of health professionals (2), the introduction of which relates in detail the revival of folk medicine and its continuation into the 20th century and states

If the "teas" were imbibed discreetly on rare occasions for specific ills as originally intended, they might not be a cause of concern. But in South Carolina, as in the Netherlands Antilles, the very poor, having little else in their lives, tend to indulge in them excessively, as daily beverages.

The botanist Alice Lounsberry, wrote in 1901 (3)

even in parts of the South where the natives seem to know the most about the practical uses of plants, they drink these decoctions in almost unlimited quantities, by the gallon, in fact, and therefore incur an ill, rather than good, result.

As I was finishing my survey, the Regional Medical Program had begun, free clinics were appearing in the Low Country, and I am sure that conventional medical care is replacing the local lore and that the devastating hurricane of 1989 greatly depleted the supply of native medicinal plants.

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Prescription Drug Prices

P. Roy Vagelos, in his article "Are prescription drug prices high?" (24 May, p. 1080), states that, in view of the enormous cost of developing a new drug (\$231 million, which includes the cost of failed compounds) and the need for proper production incentives, the price paid by the consumer is indeed reasonable. As an example, he chronologically details the research leading to the approval by the Food and Drug Administration and the subsequent introduction of the highly successful cholesterol-lowering drug lovastatin. He concludes that the initial average patient cost of \$1.57 per day is justified. However, at this price the average patient would pay \$573 per year, which would require approximately 400,000 pa-

tients to generate \$231 million. Because lovastatin is so popular with physicians, it is quite probable that in the United States alone at least this many patients take this medication regularly. Although Vagelos does not provide the percentage of the retail price returned to the pharmaceutical company, the payback period to his company for lovastatin is probably an incredibly short two or so years. Therefore, this drug, I would argue, is priced too high.

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Response: It is true that breakthrough medicines such as lovastatin return their costs of research and development (R&D) in a relatively short period of time. But breakthrough medicines must fund much of the ongoing research of an innovative pharmaceutical firm and sustain it through the so-called "dry" research periods.

Only three of ten marketed medicines return their average costs of R&D. The other seven medicines ride on the success of those three (1).

It took 23 years to recoup the R&D cost of the average new medicine introduced in

the 1970s. This means that a rare commercial success, such as lovastatin, makes possible the entire pharmaceutical research and development enterprise.

For example, if the economic performance of the anti-ulcer drug Tagamet (cimetidine) were removed from the performance of the 100 new medicines introduced in the 1970s, the remaining 99 would not even recover their total R&D costs.

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Surgeon-Warriors?

My recent anthropological researches on surgeons (1) illuminate the problem of the distinguished neurosurgeon Frances Conley, whose resignation from the Stanford Medical School was profiled on 14 June (News

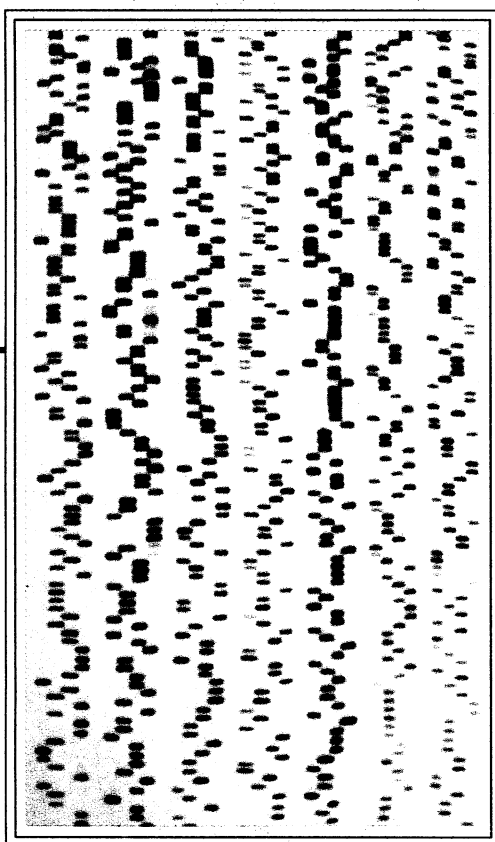
& Comment, p. 1484). Surgery is the most macho and masculine of the medical specialties, and male surgeons tend to view themselves as engaged in battle with disease and death (2). A significant proportion of them—but by no means all!—therefore believe themselves entitled to the perquisites of warriors, including admiring and subservient women, and they have no space in their lives for women as peers and colleagues.

Recently I extended my researches to women surgeons, a group growing in number. I have observed that some have had to cope with problems similar to those of Conley. What is significant and hopeful, however, is the proportion of them who, nevertheless, maintain the highest technical standards of performance yet combine these with compassion and an ability to engage in human dialogue with their patients.

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