claims for compensation painlessly in a plaintiff-friendly legal environment. It is often difficult or impossible to locate experts willing to testify, even in well-founded cases. And the expense of employing such experts—as well as other staggering costs of litigation—poses a formidable obstacle to claiming damages.

Huber relies on Thomas Kuhn to support his view that it is scientific consensus, not the views of some new Galileo, that should count. One of Kuhn's key insights, however, is that the scientific community is stubbornly resistant to the new Galileo who presents valid evidence that challenges an existing scientific paradigm. Moreover, a central fact of contemporary legal/scientific controversies is the massive array of industry-supported research and political clout supporting the status quo in opposition to the new Galileo. In this regard we have our own anecdote, drawn from J. E. Krier and E. Ursin, *Pollution and Policy* (1977). In 1950 A. J. Haagen-Smit, a professor of biochemistry at the California Institute of Technology, discovered that smog was produced by a photochemical process, thus linking it to oil refineries and the automobile. In a period when the nation's pioneering air pollution control agency, the Los Angeles Air Pollution Control District, had discounted the automobile as a principal source of smog, one wonders whether Haagen-Smit would qualify as an expert under *Frye* or would be rejected in a regime giving "much less attention to the self-proclaimed new Galileo." Even more interesting, however, is the response to Haagen-Smit of scientists funded by the oil companies and auto manufacturers. From the start, the petroleum industry tried to shoot his findings down, funding research at the Stanford Research Institute that concluded that Haagen-Smit was all wet. By 1954, SRI's conclusion appeared to be the prevailing view. In the end, of course, Haagen-Smit's view prevailed in both the scientific and the political communities. But it took an extraordinary use of governmental and extragovernmental mechanisms to achieve this result. In 1953 a special committee appointed by the governor affirmed Haagen-Smit's research. At the same time, a group of civic leaders organized the Air Pollution Foundation, which funded research that by 1957 established that auto exhaust is the major factor in Los Angeles smog. Even then, however, it would be years until the auto companies admitted they were convinced. With its own well-financed scientists, the auto industry strategy was to insist that the automobile's role be clearly proved and to construe any proof as narrowly as possible.

In our view, the Haagen-Smit episode casts doubt on Huber's views as to proof requirements in tort cases and his proposal to reinstate the *Frye* rule. Like the victim of a defective pharmaceutical product, Haagen-Smit was confronted by an industry's well-financed cadre of scientists and political operatives whose goal was to depict his theory as junk science. The personal injury victim, however, cannot avail herself of the sort of governmental and quasi-governmental machinery that eventually vindicated Haagen-Smit. The governmental institutions available to serve as the equivalent of the Air Pollution Foundation for such a person are the judge and jury. The Federal Rule to which Huber objects simply allows a jury to *hear* from the victim's expert witness. Juries are not required to, and often do not, believe the plaintiff's witness in the face of the barrage of conflicting expert testimony offered by a well-financed defense team.

The undesirable consequences of adopting Huber's approach can be illustrated in the area of medical malpractice, where he writes that "medical experts can be screened along the same lines as all others." For one who demands "systematic empirical evidence" from others, Huber himself seems peculiarly immune to the implications of such evidence. Studies have indicated, for example, that about 1 percent of patients admitted to hospitals incur negligently caused injuries. Of these only a small fraction file lawsuits, and most of those who do file suit receive no compensation through the tort system. These studies have been widely reported, most recently in the excellent two-volume *Reporters' Study on Enterprise Responsibility for Personal Injury* (American Law Institute, 1991). One might well conclude from this evidence that the problem is too few, not too many, malpractice suits. It has long been recognized that the difficulty of bringing and winning malpractice cases is due in large part to the notorious conspiracy of silence among doctors and the difficulty of finding *any* expert willing to testify against a negligent colleague. Huber, however, finds it "encouraging" that some state legislatures have recently made it even more difficult for plaintiffs to obtain expert testimony, barring for example "any malpractice expert who spends more than 20 percent of his time in court" and "academics who do not practice at all." Such "reforms," in our view, go in the wrong direction, unless one's goal is to restore to doctors the virtual immunity to tort liability that they enjoyed as recently as the 1950s.

Our criticisms of *Galileo's Revenge* are not meant as a complacent endorsement of the present tort system. Indeed, we saw promise in Huber's earlier *Liability*, despite its biting attack on the tort system as a "poisonous swamp." Calling for courts to "rediscover the respect they once had for contract," Huber there assured readers that such a respect would not "require us to return to a legal world in which every provider can flatly disclaim liability and leave things at that." The legal world Huber envisioned was based on proposals for a contractual "neo-no-fault," derived from the path-breaking work of Jeffrey O'Connell, under which victims of particular types of accidents would receive compensation similar to that available under no-fault auto insurance. Contract in this view would "prescribe how reasonable compensation for well defined contingencies could best be expedited," with compensation "severed from questions of negligence, defect, or fault" and not including "open-ended damages for pain and suffering." That proposal met the criterion of balanced reform widely accepted among tort reformers, trading off amount of tort benefits for an assurance of compensation. *Galileo's Revenge*, in contrast, is a blueprint for the denial of benefits conferred by the tort system, with no trade-off. In *Liability*, Huber wrote that the "measure of a Society's decency is how well it takes care of those most in need of help." The approach to tort reform of *Galileo's Revenge* would not take care of such persons well at all.

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The New Genetics

Genes and Genomes. A Changing Perspective. MAXINE SINGER and PAUL BERG. University Science Books, Mill Valley, CA, 1990. xxx, 929 pp., illus. $52.

Genes and Genomes, the new textbook by Singer and Berg, provides a well-directed excursion into the realms of modern-day molecular genetics with all the excitement of new discoveries clearly and succinctly presented to the reader. As I progressed through this comprehensive volume, I had the feeling of being on a well-guided, step-by-step tour showing me how current concepts of the eukaryotic genome have painstakingly been arrived at in a surprisingly short span of time. The book is divided into four main sections, each beginning with a perspective of what is to come in the chapters immediately following. Although somewhat redundant in that much of the information in them is repeated later, these short introductions are well written and provide an integration of the more detailed material to follow. The first 215 pages of the book present a review of basic genetic concepts that laid the groundwork for the approaches and techniques that have led to an explosion of knowledge in

the field of molecular genetics—namely, to the recombinant DNA era. The second part is an extensive and valuable guide to tools and experimental systems that are being used to explore the mysteries of the eukaryotic genome. With these tools in hand, the authors now launch the reader into a 400-page account of current understanding of the anatomy, the expression, and the regulation of eukaryotic genes. The final section of the book is an introduction to more complex biological systems and a preview of things to come in a projected second volume. Each section includes a series of references extensive enough to direct a student to more primary literature.

Clearly the emphasis of *Genes and Genomes* is on modern molecular genetics, that is, the recombinant DNA approach. In spite of the generality of its title, this book is not suitable for a course that concentrates on classical prokaryotic and eukaryotic genetics. On the other hand, it is ideal for a course in molecular genetics and molecular biology or even one that encompasses both classical and molecular genetics. One aspect of the subject glossed over by the authors is the impact of mutational studies on many genetic concepts. The isolation and characterization of random mutations in living organisms have contributed to numerous important findings in genetics. The operon concept and all of its variations leading to an understanding of positive and negative control, the model of DNA replication and the requirement for products of many genes, and the role multiple gene products play in DNA repair pathways are a few that come to mind. Truly this is the era of the new genetics, and the mutational approach may be out of vogue (as evidenced by the authors' statement on p. 886: "Rather than depending on random mutations, the amino acid sequence of a protein can now be systematically changed by site-specific mutagenesis of its cloned gene or cDNA"), but the older approach deserves more appreciation.

Overall, this is a superb textbook suitable for college seniors and first-year graduate students. Its quality derives from the authors' ability to discuss complex concepts in ways that make the very difficult clear, coupled with excellent illustrations that are invaluable for following many of the detailed discussions. This book provides a perspective on what we know, what we don't know, and what we need to find out. In pointing out our ignorance in many areas of genetics the authors open new vistas and present new questions to be answered by future scientists now entering into their graduate careers. The excitement of the authors about science and their awe and respect for nature and her way of creating and changing the genome pervade the chapters and are transferred to the reader. Even though some of the information presented will be, and probably already has been, made out of date by the rapidity with which this field is moving, the basic approach of the use of recombinant DNA technology to explore genetic questions will prevail, and this book, which presents the field so well, should provide a valuable resource for students in the coming years.

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Basin Formation

Tectonic Evolution of the North Sea Rifts. D. J. BLUNDELL AND A. D. GIBBS, Eds. Clarendon (Oxford University Press), New York, 1990. xiv, 272 pp., illus. $125. International Lithosphere Programme Publication no. 181.

As a result of two decades of intense oil exploration a considerable quantity of data have been amassed on the North Sea rift basins, with the consequence that these basins are comparatively well understood. Owing to this ample documentation, these basins have attracted the attention of basin modelers ever since the seminal work of McKenzie in 1978 on the development of sedimentary basins. This volume is a useful guide to the present understanding of basin formation beneath the North Sea. The research papers cover a diverse suite of topics and approaches to describing and interpreting the tectonic framework. These include paleogeographic reconstructions, gravity, crustal structure recorded in deep seismic reflection profiles, basin architecture, rift-related magmatism, quantitative basin models, and the nature of extension.

The North Sea rifts developed along the suture where three continental plates came together in the early Paleozoic. Two subsequent periods of lithospheric extension are recognized (Permo-Triassic and Late Jurassic-Early Cretaceous) followed by a period of lithospheric cooling. Several authors have stressed the importance of older structures in guiding the course of Mesozoic extension and magmatism. Each episode of basin subsidence tends to cannibalize the previous one, thus limiting somewhat the assumptions in attempts at basin modelling. A complete understanding of the post-Jurassic evolution, for example, requires an appreciation of Triassic extension. There are several worthwhile contributions on gravity observations and supporting seismic data. A new and coherent gravity map for the North Sea is presented. For both the Viking and the Central grabens there is a correspondence between gravity and seismic data in describing the Moho.

At the core of this book is a dialogue on the nature of extension. It is here that understanding tends to founder. Two extremes are argued: symmetrical, coaxial stretching