

Superconductors and baseballs

Robert J. Cava

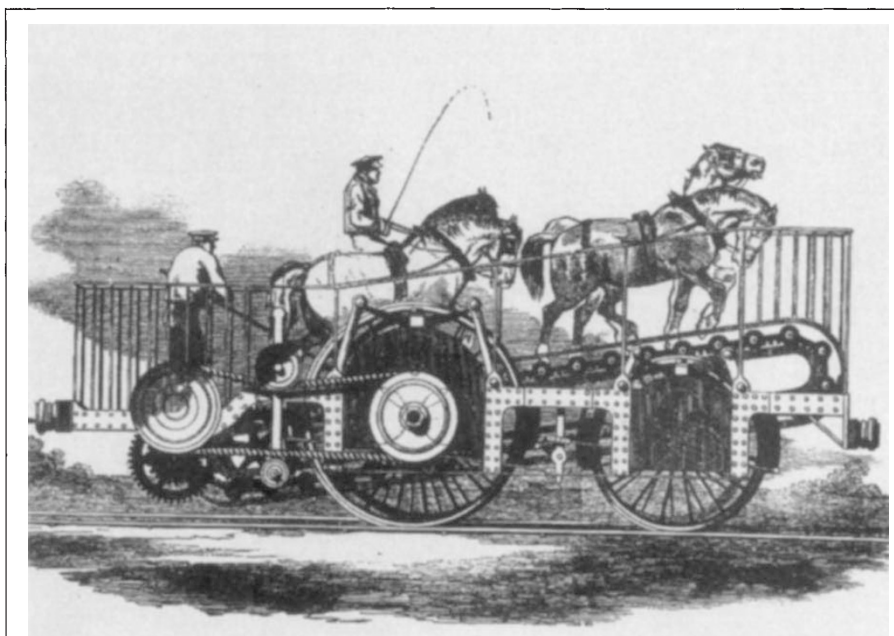
Superconductivity: The Next Revolution?

By Gianfrance Vidali. Cambridge University Press: 1992. Pp. 165. £25, \$49.95 (hbk); £9.95, \$16.95 (pbk).

I CAN still remember the strange recurring dream I was having in late 1986 and early 1987, when we first began working on high- T_c superconductors, of standing at the threshold of a vast, dark room, with the door open barely a crack, sending a narrow shaft of light onto the floor. I would try to open the door further to illuminate the whole room, but it would not move: I could only put my head inside and see what was directly lit, not what was hidden in the darkness. The feeling was one of longing, fear and expectation, for I desperately wanted to see what was inside but was afraid of what it might be and how I might respond. My subconscious was clearly grappling with what many were probably feeling at the time — that we were on the verge of a great moment — and that we would be part of, or at least direct observers of, a historic time in solid-state physics and materials science.

In 1993, after six years of intensive research, the dream (long gone) would show a room swarming with people, every corner being inspected in the cold light of day. Now that the early days are behind us, with the intellectual vigour still fresh in our minds, it is a good time to reflect on how far we have come in high- T_c superconductivity, and to begin to put our generation's contributions to the field into the context of the earlier work. It is in this spirit that Vidali's work is written.

With everything that has been published about superconductivity since 1987, could we possibly need another book on the subject? The answer is yes: one written at a level more detailed and with greater scope than an encyclopaedia or *Scientific American*-style article, more intellectually accessible to interested — but not specialist — readers knowledgeable in physical science than are the professional-level books and articles on the subject. It is this niche that this book has been written to fill, which it does with considerable success. Despite the assertion on the jacket that the book will “fascinate general reader and scientist alike”, a knowledge of elementary physics, including some solid-state or atomic physics, would make a big difference to how rewarding the book is. Superconductivity, after all, is a complicated phenomenon, the appreciation of which requires some background and explanation. Vidali does very well in explaining and describing the basic



HORSES for courses — *Impulsoria*, invented in Italy in the mid-nineteenth century, was a locomotive powered by horses and promoted as a means of “extending the advantage of the railway for locations hitherto impracticable”. This wood engraving is one of more than a hundred images of science and technology that appear in *Victorian Science and Engineering* by Kenneth Chew and Anthony Wilson. The book reproduces contemporary illustrations from *The Illustrated London News*. Alan Sutton, £12.99, \$25.99 (pbk).

phenomena, concepts and possible technological applications.

The title, preface, jacket and conclusion, however, seem to belong to a different book. Perhaps a straight historical and technical account was not thought to be of sufficient interest to sell the book, resulting in the ‘dressing up’ of the story as an afterthought. Maybe so, but the book is sufficiently well written and interesting for its intended audience, and the added jazz gets the author into some trouble. The title and some related statements are misleading. Take, for example, the comment on the post-high- T_c world: “suddenly all kinds of applications of superconductivity, from magnetically levitated trains to lossless power lines, became possible”. There are, in fact, few in the field today who believe that the high- T_c revolution will change the quality of people's lives the way the semiconductor revolution has. This does not detract from the importance of high- T_c superconductivity. It has truly opened our eyes to part of the physical world we barely knew existed. The body of the book, by contrast, is free from hyperbole. Technical material is presented not in the style of a dry science textbook, subject by subject, but as a historical narrative that leads one along the path of intellectual and technological development in the order in which it unfolded, making the education of the reader virtually painless.

Yet it is in this aspect of the high- T_c story that I find my only real objection to the book. In his essay “The Creation Myths of Cooperstown” on the invention

of baseball, Stephen Jay Gould writes about the conflict between the need for historical accuracy and the strong human craving for ‘creation myths’ — the belief that truly great inventions must be conceived in creative bursts by god-like figures, rather than through the evolution of ideas involving mistakes, dead ends and the accumulation of both small and large advances. I learned in Gould's essay that Abner Doubleday, the supposed inventor of the great American National Pastime, “didn't know a baseball from a kumquat”. I was stunned. Like all gods, the gods of high- T_c have clay feet, and the field has relied for its success a great deal on those who came before and after. Vidali's high- T_c story is less flawed in this regard than its predecessors, but will nevertheless leave the reader with misconceptions. Gould's point, as I read it, is that the popular history of great inventions is not so much recorded as codified — with the need of the human psyche for creation myths playing a pivotal role. Having been witness to the events and now the codification of high- T_c superconductivity, I cannot help wondering whether the chronicle of any great invention has been faithful to the actual process of discovery. □

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■ Kluwer has recently published *Ten Years of Superconductivity: 1980–1990* edited by H. R. Ott, a collection of reprinted articles covering the development of the field. DFL210, \$127, £85.