

the collapse of this key British industry. Middle-class Englishmen are chided repeatedly for their status-seeking and failure to buy the most utilitarian models on offer, but working-class Britons continue to get a free ride from these cultural historians. Quick to condemn middle-class snobbery, the authors are remarkably indulgent when it comes to auto workers who cheated the time clock, drank or gambled on the job, stole parts, or repeatedly went out on strike against the advice of their own unions.

Women also get a free ride in this book. Oddly, but predictably, they are never chastised for their role in the asphaltting of England. Instead, it is social progress each time a woman builds, buys, or drives a motor car. Those interested in gender as a category of analysis will find intriguing Kathleen Bell's observation that "one of the motor car's chief functions" in *The Wind and the Willows* (a classic tale about a joy-riding, aristocratic toad) is "to bring Toad's feminine side into the open... so that it can... be dispensed with, reclaiming Toad for masculine values."

Is the motor car feminine? Not according to the postwar car songs analysed by Duncan Heining,

for they generally equated the car with money, sex and male potency. Heining, however, makes the same error as the editors, in assuming that one culture, American in his case, sums up the gender implications of the motor car for popular culture. It is unlikely that the males who purchased American muscle cars viewed the automobile's gender in the same way as did the males who bought British mini cars. It is probable that gender had a different social dynamic in England than in North America.

In English car culture, women have traditionally been expected to prefer small cars and cycles. In the essay that makes the most use of semiotics in this collection, Jenny Rice and Carol Saunders complain that "gendered advertising discourse" still tries to confine women "to the small car market." As Rice and Saunders urge British car companies to target women as potential buyers for their bigger, more expensive models (in order to "offer female car consumers, a marginalised group, access to more positive images"), one cannot help but be struck that the most abiding aspect of England's car culture has been its social snobbery.

Witold Rybczynski, *One Good Turn: A Natural History of the Screwdriver and the Screw*

RANDALL C. BROOKS

Rybczynski, Witold. *One Good Turn: A Natural History of the Screwdriver and the Screw*. Toronto: Harper Flamingo Canada, 2000. 173 pp., cloth, \$24, ISBN 0-00-2000031-8 or 0-00-638603-2.

I was asked to write this review because my Ph.D. thesis was on the scientific applications of precision screws. Hence, when I received this diminutive book my first reaction on scanning it was that it was going to be a bit of fluff. However, on sitting down and reading Rybczynski's *One Good Turn*, I was surprised at how readable and entertaining it was. Though an academic, Rybczynski has employed a journalistic writing style but he has also documented his work well though not as fully as a dissertation. He and his researchers have done a remarkably good job at ferreting out and referencing interesting and relevant facts that anyone interested in technology will find

fascinating. The references he cites are standard works but for someone not familiar with the literature of tools and craftsmanship, Rybczynski's work will provide a useful entrance to and a bibliography for the topic of screws and screw drivers. However, it is clear he did not do a thorough on-line search for recent studies on the topic and, as a result, he has missed some interesting materials and modern applications. As well, he missed the one essential and beautifully illustrated 1962 reference on screws, Rudolf Kellermann and Wilhelm Treue's *Die Kulturgeschichte der Schraube*.

The starting point of Rybczynski's book was an editor's request to write a contribution to the *New York Times* special millennium issue. On pondering the "best tool of the millennium" the author goes through the merits of everything from the hammer, to the level, to the brace and bit but when it comes to making the decision, the obvious choice — but one to which his

wife drew his attention — was the lowly screw driver. When it comes down to it, the screw is the most widely used mechanical device, bar none, except the lowly nail. Though its origins predate the millennium, the screw has been used in everything from armaments, to clocks, to furniture, to tools, to the space shuttle, to scientific instruments, and was fundamental to the underpinnings of the technological revolution of the last half millennium. Threads can be from almost microscopic to metres across, and for most of that range, a screw driver is the tool of choice to drive a screw home. Until the advent of a wide array of speciality glues in the last 20 years, the screw has been the most reliable holding device since the middle ages.

Rybczynski has searched the origins of the term screw driver, not being satisfied with the *Oxford English Dictionary's* conclusions and he indeed found that the term in its earlier English form, turnscrew, evolved from the French term *tournevis* which appeared in 1723, almost a full century before the OED indicates. The author describes his path through various avenues to find the origins of screws and screwdrivers, and the style is entertaining rather than academic. In the tale one discovers how one fired an arquebus, a very early type of gun to which a match had to be held to the firing chamber — a task almost as risky as being in the line of sight! The vibration and stresses on guns made them a natural early application after Archimede's screws for lifting water and, of course, screws used in wine presses. One significant fact Rybczynski missed was that in fifteenth-century guns, screws were made precisely to bottom as the head contacted the surface thereby ensuring they were tightly fitted and would not come loose. Their heads were round with simple slots for a flat-bladed screw driver.

Though hardly precision-made by modern standards, screws of this period were rare and made by the best workmen and it is not too surprising that clockmakers were the next craftsmen to apply screws to their products. For carpenters, all that was necessary to make a wood screw was a flat or triangular file but that was time consuming and not worth the expense until, as Rybczynski points out, makers appeared with specialist tools. For instance, for metal applications, a screw plate with different sized holes was required to make the threads — one forced the screw blank through a succession of holes deforming the metal to form the thread. One important device the author missed was

the thread tap to form internal threads, which evolved in nineteenth century Britain. Rybczynski does recount some of the advances and early British and American patents that relate to screw making, to demonstrate how the cost dropped and the applications multiplied. He even discusses at some length the Canadian patent of Peter Robertson for the square slotted screw — arguably and demonstrably the most effective screw and screwdriver where power is required though they are still rarely seen outside Canada. Rybczynski relates that the crossed-style Phillips head screw gained favour over the Robertson in the United States because, on Ford assembly lines, the screwdriver slipped out of the head when driven fully home without damaging either the screw head or stripping the sheet metal. This was considered a major advantage but, for hand work, is a major flaw.

In *One Good Turn* you will learn that the screw is the basis of many key machine tools and their products. Screw lathes using carefully made lead screws were envisioned by Leonardo da Vinci and were soon used by wood turners for ornamental work and were made by craftsmen in Nürnberg for precision devices used by scientists. Henry Maudslay in London made the most precise screw lathe in his time at the beginning of the nineteenth century and it is said that every precision screw made in the nineteenth century could be traced back to that machine. Rybczynski describes Maudslay's impact and his successor, William Whitworth, the person who first attempted to standardize the elements of a screw thread, that is, the thread pitch, thread angles, and rounding of the crest and trough of the thread. He also describes the alternate standards and the reasons why they appeared in the United States (Sellers) and Europe (metric or *Filère Suisse*).

In the final chapter of *One Good Turn*, Rybczynski brings us full circle looking at devices from antiquity that are related to screws summarizing some of the results of research by twentieth century historians and archaeologists. By so doing, he completes our image of the place and role of the screw in shaping our millennium though it would have rounded out the work had Rybczynski described some of the innovative designs and applications of screws in modern technology. However, as I indicated at the outset, this is not a scholarly work but it is competently written and is entertaining. For anyone who studies or works in the history of technology, a few hours with *One Good Turn* will prove useful.