

composting, and the breathing of plants. The experiment on degradation of different kinds of toilet paper in water gives a misleading picture, since in a sewer, all kinds of paper would break down much more quickly. The projects on track hunts, hatching brine shrimp, and making different kinds of bird and squirrel feeders, and some of the "amazing facts" such as the squirrels' obstacle course are mainly space-fillers. This attractive and interesting book would have profited from more care and focus.

The serendipity effect is an account of important discoveries and inventions triggered by a chance observation or an accident. The title comes, as we should have been told, from a Persian fairy tale, about three princes of Serendip who had "the faculty of finding valuable or agreeable things not sought for." The discoveries include pendular motion (Galileo), penicillin (Fleming), the phonograph (Edison), radioactivity (Becquerel), immunity (Pasteur), and some fifty others. The author might well also have quoted Pasteur: "Chance favours the prepared mind." The book is lively, informative, very well-referenced and should give its young readers a knowledge of how scientists and inventors actually make discoveries.

The title, *The architecture of animals*, refers not to the forms of the animals themselves, but to what they build. Some fascinating structures are illustrated with beautiful photographs: turtle, fish, and birds' nests, the last in amazing abundance; snail shells, moles' and ants' tunnels, beaver dams, and other structures. The text is usually interesting, though it could have used some editing. For example, it is mentioned that "the body begins to twist" during the larval stage of growth of a snail, but what does this mean? Elsewhere, it is stated that "Their [the ant] colonies...can be seen almost anywhere on a city sidewalk. When you sweep the surface sand away, there appears to be nothing underneath." I am still trying to figure this one out. Is there something underneath the surface sand (which I don't see that often in Toronto, anyway)? Outside of these niggling criticisms, the book can be well-recommended as a guide to animal ingenuity and apparent aesthetic sense.

Donn Kushner, a Professor of Microbiology at the University of Toronto, has also published a book of short stories and three children's books.

A HUGE HERO

Incredible Jumbo: A novel. Barbara Smucker. Viking (Penguin), 1990. 177 pp., \$14.95 cloth. ISBN 0-670-82970-6.

Jumbo, the African elephant who fascinated thousands, especially children, on both sides of the Atlantic in the late nineteenth century, and whose name has entered the English language in such terms as *jumbo jet*, is one of the major

characters in Barbara Smucker's latest novel. Unfortunately for narrative vitality, Jumbo's single incredible attribute was his staggering size; reputedly he weighed seven tons when full grown and was twelve feet from shoulder to ground and fourteen feet long. Otherwise he lacked distinctive characteristics, and he had no special talents. Consequently, he is a rather dull though huge presence at the centre of this partly factual novel.

There was nothing dull about the British reaction in 1882 when the management of London's Royal Zoological Gardens announced the sale of much-loved Jumbo to the American circus owner P.T. Barnum. In his book *Elephants*, Richard Carrington says the English "horror and dismay...could only have been exceeded by the sale to the Americans of Queen Victoria herself." Smucker does describe some of the uproar, especially the hilarious episode in which crowds cheered as Jumbo thwarted Barnum's first attempt to ship him by simply lying down in the street. But her focus is upon her fictitious protagonist, zoo employee Tod Tolliver, a good-natured youngster with a Dickensian load of troubles who stows away on the *Assyrian Monarch* to accompany Jumbo to the United States.

Tod and his widowed, tubercular mother enter the story late in Chapter Four. Before their advent, Jumbo's is the main centre of consciousness, and it is preoccupied by elementary needs and emotions. But the details of elephant physiology and habits in this well-researched book and the sketch of Jumbo's capture and early ordeals at men's hands make compelling reading. In fact, the first chapters are the strongest section of the book. The rest is necessarily episodic, even though Smucker concentrates on only the last four of Jumbo's twenty-seven years. (He died in 1885 in St. Thomas, Ontario, after being struck by a train.)

The chief weakness of the foreground story is lack of character development. Tod is a wholly nice, brave boy without an original or complex thought. Smucker treats her versions of real people, such as Jumbo's famous trainer Matthew Scott, with scrupulous respect for authoritative testimony and no life-giving invention. The rest of her cast occasionally flash provocative traits. One sneers promisingly; another is alternately generous and nepotistic. But the suggestions lead nowhere. It is as if inside this thin, pleasant novel there were a fatter, richer one pining to get out.

Frances Frazer is a professor of English at the University of Prince Edward Island and author of the chapter on children's literature in the Literary history of Canada, second edition, volume four.