

The Quest for the Perfect Hive

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KRITSKY, G. 2010. *The Quest for the Perfect Hive*. Oxford Univ. Press, Oxford. xii + 198 pp. ISBN 978-0-19-538544-1, hardback, \$24.95.

Mankind and the honey bee, *Apis mellifera*, have been entwined in a delicate partnership for at least five thousand years. After a long history of robbing bee nests for honey, humans began offering wild honey bees various crafted hives in hopes of coaxing them to take up residence and provide their custodians with a manageable source of honey. Honey bees, the more reluctant partners, often frustrated their would-be keepers by rejecting hives or by swarming away when the colony outgrew the hive or conditions became otherwise unsuitable. The earliest hives were hollow logs or bark cylinders that imitated natural nest sites. Hives in Africa were later crafted as cylinders of molded materials such as clay or cattle dung, while in Europe wicker or straw was woven into domed baskets called skeps. A bas-relief in ancient Egypt from 4,500 years ago depicts beekeepers harvesting honey from molded cylinder hives similar to those that persist today in parts of Africa. Skeps were used in Europe for the past 2,000 years and their popularity endured alongside a diversity of other hives. Until the invention of truly movable frames in the mid nineteenth century, combs had to be cut from the hive to harvest honey and bees had to divert time and energy from honey production to rebuild them. Ultimately, wooden box hives with movable comb frames were developed in Europe and America and remain the modern standard. These appeared to be optimal for the European honey bee, satisfying its nesting needs and easing the beekeeper's job of monitoring the colony, adjusting hive size, and harvesting pure honey untainted by pollen or bee brood. With increasing use of centrifugal honey extractors toward the end of the nineteenth century and economic pressure to improve efficiency, hive experimentation and diversity were doomed as streamlining and standardization swept from the factory into the realm of the apiary.

The quest for the perfect hive was apparently over. But should it remain so? The European honey bee is facing dire new threats from diseases and other menaces such as colony collapse disorder. In 1782 an English beekeeper's colonies vanished from their skeps, stores of honey intact, a scenario typical for what is now called colony collapse disorder. The beekeeper replenished his skeps and soon his apiary thrived again. Should modern beekeepers take a fresh look at old hives to find clues to banishing current threats? The skep remained popular for over 1,500 years despite yielding less honey than other types of hives. Did it perhaps impart some protection against maladies? What about the diversity of other hive materials and designs tried in the past? The book details these experiments, focus-

ing on beekeeping in the Western world. A distillation of centuries of written, illustrated, and archaeological records of hives and beekeeping practices, the book is remarkably concise and very informative.

The first chapter provides a useful overview of honey bees and the origins of beekeeping. Chapters 2 through 5 describe the structure and utility of older European hives in order of appearance (log hives, skeps, and early box hives) and give an account of bee niches used for housing skeps in Scottish garden and castle walls between the sixteenth and nineteenth centuries. These niches, or "bee boles", were built into garden and castle walls to house skeps, although by many accounts of the time niches were detrimental to the hive. Kritsky provides a compelling argument for why niche construction flourished nonetheless for several centuries. Chapter 6 tells the early history of honey bees and wooden box hives in North America, and is followed by a chapter on glass-jar beekeeping, which was popular on both sides of the Atlantic during the eighteenth and nineteenth centuries. The next four chapters describe the great explosion in hive ingenuity that was sparked by the Industrial Revolution, and the people who influenced the spread of advancing apicultural technology in Europe. By 1851, a year that marks "a milestone that separates the old from the new" in hive technology, there were hives of fixed sizes and others that could be expanded in one or two directions to improve control of swarming. Some were designed with movable combs to facilitate examination and harvest. By this time an understanding of "bee space" began filtering slowly through the Western world, a traditional Greek top-bar hive was influencing the development of modern movable frames, and the first patent for a hive with bee space completely surrounding the frames was filed in 1852 by the American cleric Lorenzo Langstroth. Kritsky convincingly argues that though Langstroth described bee space (not by that name) in his patent for a truly movable-frame hive, he intentionally understated it to prevent patent infringement. The significance of Langstroth's hive design was therefore slow to spread. In contrast, the Englishman Alfred Neighbour, who owned a "bee furniture" (hive) manufacturing business, vigorously promoted the best in beekeeping during the mid to late nineteenth century by exhibiting noteworthy European hives and innovations at the London Zoo, at the first two World's Fairs (held in London and across the Atlantic in Philadelphia), and at other exhibits in London and Paris. Beside dependable skeps and ornate wooden hives meant to excite interest in beekeeping, he exhibited a moveable-frame hive designed by Thomas

Woodbury that used bee space, his own wax foundation based on a German innovation from the 1840s, and a honey extractor that allowed combs to be returned to the hive after the honey harvest. He also founded a more productive bee race throughout England by introducing the Ligurian bee. Transition to modern hives was inevitable, and is illustrated in Chapter 12 along with the diversity of wooden box hives and frames that existed around the turn of the twentieth century. Chapters 13 through 15 are devoted to the history of other aspects of beekeeping including bee houses for sheltering multiple hives, bee calendars for guiding beekeepers through their year-round activities, and the evolution of beekeeping accessories. The book ends with a chapter portentously titled "The end of Innovation", which describes the role of economics in collapsing hive and frame diversity to the few standard types that endure today.

The book admirably fulfills the goal of illustrating the diversity of past and present bee hives. The concise text is perfectly complemented by a profusion of black and white illustrations that appear on nearly every page. There are dozens of etchings and woodcut prints, text from ancient books, and old and recent photographs. Among the photographs are several remarkable magic lantern slides that depict bee-

keeping during the late nineteenth century. Although some of the etchings and woodcut prints also are found in Eva Crane's monumental tome (1999, *The World History of Beekeeping and Honey Hunting*, Routledge, New York, NY), this far more affordable book places them within reach of a much wider readership. The book is far more than descriptive, however. It also gives rare insight into the motives and activities of some of the more important characters that influenced the spread of beekeeping technology as it transitioned into modernity. Although the reader gets a glimpse of traditional hives from Africa and the Middle East, the book focuses on culture of the European honey bee in the Western world.

This compact and affordable book should be useful to anyone interested in apiculture, archaeology, industrial design, and the challenges facing modern beekeeping. As the European honey bee faces alarming declines in population, this timely work should inspire at least a few useful new ideas for solutions.

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