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## HISTORY OF BEEKEEPING

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- Humans hunted for wild nests of bees and took their honey during the whole time of their existence.
- The practice continues today.
- Why? Honey is the most concentrated source of sugar found in nature.
- Mammals other than humans also raid bee nests.
- Honeyguide birds and mammals have an interesting relationship in seeking honey bee nests.
- The greater honeyguide (*Indicator indiator*), having found a honey bee nest, seeks a larger mammal, often man, then flutters, perches and calls for attention.
- After the mammal raids the nest the bird consumes remaining adult bees, immatures, pollen, and honey.

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## ARCHEOLOGICAL EVIDENCE OF HONEY HUNTING

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- Earliest evidence of honey hunting on *Apis mellifera* is a rock painting found in Spain, dated between 6,000 to 12,000 BC during the Mesolithic period (middle stone age).
- Many other post-Mesolithic rock painting have been found in South Africa and other parts of Africa.
- A post-Mesolithic rock painting in India depicts humans raiding *A. dorsata* for combs of honey.

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## BEEKEEPING IN ANCIENT EGYPT

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- The earliest wall showing a honey-harvesting scene, was found in an Egyptian sun temple near the lower Nile, dated 2450 BC.
- By 2500 BC fully fledged beekeeping was in practice.
- Other wall paintings, depicting honey combs being removed from mud hives in stacks, and storing honey in clay pots, have also been found.

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## DEVELOPMENT OF MODERN BEEKEEPING 1600 TO 1851

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- Bees were spread over the new world.
- Great expansion of honey bee biology knowledge.
- Development of upright top-bar hives.
- 1851 it was understood how “bee space” could be exploited was discovered.

## BEE SPACE

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The space (9.53 mm or 3/8") through which bees can readily pass, but not fill with wax comb or propolis.

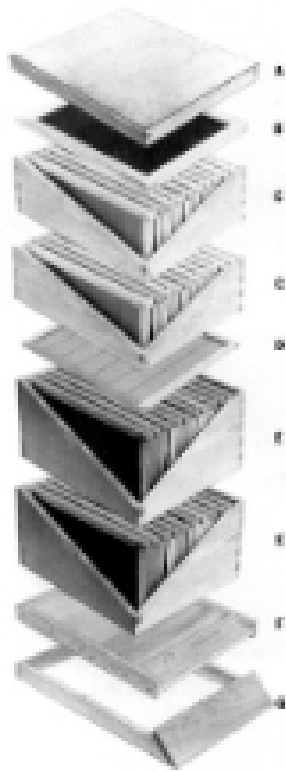
## LANGSTROTH

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- Modern beekeeping began in 1851 when L.L. Langstroth of Philadelphia designed a hive with movable frames.
- Natural spacing between combs in feral colonies was spaced at intervals of 9.53 mm (3/8 inch).
- When wooden frames are given to a colony spaced 9.53 mm apart bees will not bridge the gap with wax or propolis.

## MODERN "LANGSTROTH" BEE HIVE

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- Frames can be removed for: 1) examination, 2) manipulation, 3) honey extraction then replaced, and 4) reused.
- More frames may be added in boxes on top of full frames allowing colonies to grow abnormally large resulting in surplus honey and bee production.
- Whole colonies are easily moved allowing easy transport of colonies to honey producing or areas in need of pollination – migratory beekeeping.

## "LANGSTROTH" HIVE & HONEY EXTRACTION

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1. Permitted the mechanization of honey extraction: 1) standardized wax cappings removal, 2) centrifugal honey separation.
2. First radial extractors were developed around 1851.

## WAX FOUNDATION

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1. ~ 1851 a way to produce comb foundation was discovered.
2. Thin sheet of wax embossed on both sides with bee sized hexagonal cells.

3. Foundation is wired into frames and makes very durable combs.
4. Few simple modifications derived from a basic understanding of biology ("bee space") led to fundamental change in the relationship of bees and people.