



Photo from lobby of hotel at the 2011 American Beekeeping Federation Conference & Trade Show in Galveston, TX.

January 2021  
Northeastern Kansas Beekeepers  
Beginning Beekeeper Program  
Robert Burns

## EQUIPMENT FOR BEGINNING BEEKEEPERS



2

Equipment that should make beekeeping easy and fun, for even the inexperienced beginner. Thousands of people in all walks of life have become enthusiastic beekeepers. Whether it is in your own backyard, small town garden or farm, beekeeping can fit nearly anywhere.

# Contents

- **Objective**
- Founding Fathers of Modern Beekeeping
- The Langstroth Hive
- Seven (7) Hive Components
- Equipment for Safe Practices

The contents for this presentation are 1) the objective of today's presentation 2) a little history with some very important people that you should know about 3) a definition and description of the Langstroth hive, and 4) the seven (7) hive components of the modern Langstroth bee hive.

## **TODAY'S OBJECTIVE:**

**HISTORY  
CONFIDENCE WITH A LANGSTROTH HIVE**

### **ALSO:**

**ENCOURAGE SAFE PRACTICES  
TRAINING & EDUCATION  
WEAR APPROPRIATE PROTECTIVE CLOTHING  
UTILIZE A SMOKER & TOOLS IN A SAFE MANNER  
USE GOOD JUDGMENT & COMMON SENSE  
WITH GOOD EQUIPMENT  
BEST BEEKEEPERS IN OUR AREA HERE FOR YOU**

Why are you here? Today's Objective: The goal is to give you some history and confidence of keeping bees with a Langstroth hive. We want to encourage people working with honeybees to engage in safe practices at all times. This means that we want you to get training & education, and assistance when needed. We want you to know some of the history of the modern Langstroth hive. We want you to wear appropriate protective clothing, utilize a smoker and tools in a safe manner. Most of all, we want beekeepers to use good judgment and common sense, and use good equipment. Some of the best beekeepers in our area are right here in touch for you.

# Contents

- Objective
- **Founding Fathers of Modern Beekeeping**
- The Langstroth Hive
- Seven (7) Hive Components
- Equipment for Safe Practices

But first, a little bit of beekeeping history. Let's get started with learning about three of the founding fathers of modern beekeeping.

## HISTORY: THREE FOUNDING FATHERS OF MODERN BEEKEEPING AND WHAT THEY CONTRIBUTED



LL Langstroth (1810-1895) Charles Dadant (1817-1902) J. Dzierzon (1811-1906)  
Photo credits: FindaGrave.com

There is actually a third man in the historical world of beekeeping that you should know, Johann Dzierzon, in addition to LL (Lorenzo Lorraine) Langstroth and monsieur Charles Dadant.

## THE LANGSTROTH HIVE & CHARLES DADANT

Our History American Bee Journal Dadant Candies Find A Location Near You

Dadant HOME SHOP LEARNING CENTER NEWS RESOURCES CATALOG CONTACT

**FREE SHIPPING**  
ON QUALIFYING ORDERS OVER \$100\* [SHOP NOW](#)

AMERICAN BEE JOURNAL

“The Hive & the Honey Bee”, book, originally published in 1853 with subsequent editions (4) by 1899 and a translation into French by Charles Dadant.

<https://www.dadant.com/learn/charles-dadant-a-founding-father-of-modern-beekeeping/>

The most commonly known and used style of hive used by Australian and US beekeepers is the Langstroth hive. But first, who was Lorenzo Lorrain Langstroth? And secondly, who was Charles Dadant? You will see this image when you go to the Dadant website. 1. Lorenzo Lorrain Langstroth (1810 – 1895), Dayton, OH died while delivering a sermon) 84yrs 9 mos. 2. Charles Louis Dadant (20 May 1817 France – 26 July 1902 Hamilton, IL) 85yrs 2 mos.



Lorenzo Lorraine Langstroth

[http://en.wikipedia.org/wiki/Langstroth\\_hive](http://en.wikipedia.org/wiki/Langstroth_hive)

The **Langstroth bee hive**, patented in October 1852, is the standard beehive used in many parts of the world for beekeeping.

The advantage of this hive is that the **bees build honeycomb into frames**, which can be moved with ease.

The frames are designed to **prevent bees from attaching honeycombs** where they would either connect adjacent frames, or connect frames to the walls of the hive, using the **concept of 'bee space'**.

The movable frames allow the **beekeeper to manage** the bees in a way which was previously impossible.

Lorenzo Lorraine Langstroth was born in 1810 in Philadelphia, PA. Lorenzo had a keen interest in insects at an early age. His well-to-do parents thought he wasted his time on his interest in insects. As an adult, he took up beekeeping as an antidote to combat bouts of depression. It was his bee hive design that is the cornerstone of all modern beekeeping. In 1848, with the help of his wife, the Langstroth's began experimenting with different hive styles. They invented a 'better' beehive. The final version or what we call the Langstroth style has withstood the test of time since 1851 and it was special due to the movable frames. His wife was Anne Tucker (1812-1873) He had three children: James, Anna, and Harriett (1837, 1840, 1847). The Langstroth hive design is 170 years old in 2021. (1851-2021)



CHAS. DADANT.  
**Charles Dadant (1817-1902)**

[https://en.wikipedia.org/wiki/Charles\\_Dadant](https://en.wikipedia.org/wiki/Charles_Dadant)

Born in France, **Charles L. Dadant** at 46 years of age moved to the US and **settled in Hamilton, Illinois** in 1863.

He **profited in the business of bees** during the US Civil War. Grape growing was a flop; family broke him.

Went to Italy in 1872 to **import Italian honeybees** to the US and had 250 Italian queens shipped to the US in 1874.

Responsible for **rules on importing queen bees** from over-seas.

Responsible for **manufacturing comb foundation** with his son, Charles P.

Became famous for his French writings in European bee journals started in 1870. **Spread LL Langstroth's contributions around the world.** Was not skilled in English.

2. Charles Louis Dadant (20 May 1817 France – 26 July 1902 Hamilton, IL) 85yrs 2 mos Two years after Napoleon Bonaparte's last reign, Charles Dadant was born in Burgundy, France in 1817 and immigrated to the US. He settled in Hamilton, IL to begin his profitable bee business in 1863, at the age of 46 and during the US Civil War. He went to Italy in 1872 to begin the business of importing Italian honeybees to the US. In 1874, he was successful in getting 250 Italian queens shipped to the US. He is responsible for the rules on importing queen bees from over-seas. In partnership with his son, Camille Pierre Dadant, they began manufacturing comb foundation. He was well known for his writings for European bee journals that he started in 1870, making his name well known throughout the world. He wasn't very good at English but his French translation of "The Hive & The Honey-Bee" helped the rest of the world learn of Langstroth's contributions in beekeeping.

<p style="text-align: center;"><b>Johann Dzierzon</b></p>  <p style="text-align: center;">Jan Dzierzon in 1905</p>	<p><b>Born January 1811</b> in Kingdom of Prussia, today's Poland, of Polish ethnicity but educated in German.</p> <p>Roman Catholic Priest (1835, 24 yrs), Beekeeper</p> <p>He <b>discovered haploid (single set) parthenogenesis</b> in queen bees or that drones are produced from un-fertilized eggs (1835); published a paper in 1845.</p> <p><b>Devised a movable comb beehive</b> in 1838. Introduced top bars in 1848 with exact spacing. (Bee space concept).</p> <p>In 1854 he <b>discovered</b> the mechanism of secretion of <b>royal jelly and its role</b> in the development of queen bees.</p> <p>He was un-aware of Langstroth's works, but Langstroth had access to Dzierzon's works.</p>
<p><a href="https://en.wikipedia.org/wiki/Johann_Dzierzon">https://en.wikipedia.org/wiki/Johann_Dzierzon</a></p>	<p>10</p>

3. Johann or Jan or John Dzierzon. All the same name, Johann Dzierzon or Jan or John (16 January 1811 in Silesia Lowkowitz, Kingdom of Prussia - 26 October 1906) 95 yrs 09 months

Occupation: Roman Catholic Priest, Beekeeper He discovered that drones come from unfertilized eggs in 1835-virgin births (published in 1845) AND he designed the first movable bee frames. (Haploid parthenogenesis process in queen bees.)

“The improved hive, based on the Langstroth system, has been adopted all over the world.” Charles Pierre Dadant, *Hamilton, Illinois, June, 1906*. The large majority of beekeeping books are based on Langstroth beekeeping. Langstroth equipment is the easiest for the beginner to manipulate and maneuver. Therefore, it's highly recommended to start with a Langstroth hive and we'll be going over the parts of that hive.

# FOUNDING FATHERS OF MODERN BEEKEEPING



L.L. Langstroth (1810-1895) Charles Dadant (1817-1902) J. Dzierzon (1811-1906)  
Photo credits: FindaGrave.com

Here, once again, the three (3) Founding Fathers of modern beekeeping.

## Contents

- Objective
- Founding Fathers of Modern Beekeeping
- **The Langstroth Hive**
- Seven (7) Hive Components
- Equipment for Safe Practices

Next, we'll talk about the Langstroth hive. What is it and what made it so innovative?



### The Langstroth hive:

By definition, any **vertically modular beehive** that has the key features of

- 1) vertically hung frames,
- 2) a bottom board entrance,
- 3) boxes of removable frames for
  - a) brood and
  - b) honey,
- 4) inner cover,
- 5) 'top cap' for weather protection.

The bees build their **combs into removable frames** for easy management. The frames are designed to prevent the bees from attaching their combs to the walls of the hive.

**Bee space innovation:** gap size of 6-9mm (1/4-3/8") in which the bees would not build wax comb nor close with propolis.

[https://en.wikipedia.org/wiki/Langstroth\\_hive](https://en.wikipedia.org/wiki/Langstroth_hive)

"Does not violate the bee space."

13

"The improved hive, based on the Langstroth system, has been adopted all over the world. " Charles Pierre Dadant, *Hamilton, Illinois, June, 1906*. The large majority of beekeeping books are based on Langstroth beekeeping. Langstroth equipment is the easiest for the beginner to manipulate and maneuver. Therefore, it's highly recommended to start with a Langstroth hive and we'll be going over the parts of that hive. This style of hive accommodates growth!

Skep Hive (not legal).



Combs on removable frames.

14

**Combs on removable frames** for easy management designed to prevent the bees from attaching their combs to the walls of the hive. **Bee space innovation:** gap size of 6-9mm (1/4-3/8") in which the bees would not build wax comb nor close with propolis. **Do not violate the bee space.**

Langstroth Hive




Which one of these is not like the others?

Warre Top Bar Hives





Skep Hive

Horizontal Top Bar Hive

Skep Hive with Top Bars

15

Which one of these is not like the others? 1) Langstroth 2) Skep 3) Warre 4) Kenyan Top Bar 5) Skep (tilted for view).

## **SEVEN (7) HIVE COMPONENTS:**

- 1) HIVE STAND**
- 2) BOTTOM BOARD WITH ENTRANCE REDUCER  
OPTIONAL: SLATTED RACK**
- 3) BROOD BOX (2) 9-5/8" WITH FRAMES & FOUNDATION**
- 4) QUEEN EXCLUDER –\*WOOD BOUND/METAL/PLASTIC**
- 5) ONE OR MORE HONEY SUPERS 6-5/8"  
OR WESTERN-SIZE OF 7-5/8" WITH FRAMES & FOUNDATION**
- 6) INNER COVER**
- 7) TOP CAP - TELESCOPING OR COMMERCIAL OR GARDEN**

What makes up the seven (7) components of the modern Langstroth hive?

**The Langstroth hive:**

Vertically modular beehive that has the key features of

- 1) vertically hung frames,
- 2) a bottom board entrance,
- 3) boxes of removable frames for
  - a) brood and
  - b) honey, an
- 4) inner cover and
- 5) 'top cap' for weather protection.

[https://en.wikipedia.org/wiki/Langstroth\\_hive](https://en.wikipedia.org/wiki/Langstroth_hive)

17

We'll be going over the parts of the Langstroth hive. Again, here is the definition and parts (listed from the bottom up).

## Contents

- Objective
- Founding Fathers of Modern Beekeeping
- The Langstroth Hive
- **Seven (7) Hive Components**
- Equipment for Safe Practices

This section: Contents: Seven (7) Hive Components

## HIVE COMPONENTS:

### 1) HIVE STAND



A sturdy and strong foundation that supports the bee hive.

### Hive Stands

Like a home, a foundation that supports the home of your bee colony will be essential. It is the bottom foundation that your hive will sit on. It will need to be strong and sturdy for supporting several hundred pounds of weight. Avoid low-lying areas, damp conditions, and soft soils. A stand can be made of simple wood or of blocks of cinder or something else.

It's recommended to keep hives elevated off the ground to keep them out of reach of predators and other problems that could irritate the bees; better protection from termites and ants; reduces negative impact of moisture and humidity; improves air circulation; make it easier on the beekeeper's back. Per Certified Naturally Grown, it's recommended that hives be placed at least 12" off the ground; that they be placed in an area with at least 4 hours of sunshine; level from side-to-side with a slight tilt forward to allow water runoff with solid bottom boards. Provide some wind break or protection and a clean water source within ½ mile. Hives should face East or South and out of low-lying or damp areas.

## HIVE COMPONENTS:

### 2) BOTTOM BOARD WITH ENTRANCE REDUCER OPTIONAL: SLATTED RACK



Reversible, solid bottom board with entrance reducer. Slatted rack.

Bottom Board(s), entrance reducer, and (optional piece) slatted rack. There are basically two styles of bottom boards – solid and screened. My personal preference is for solid bottom boards, so you may hear my preference throughout my talks. The screen bottom board has a screen on the bottom and usually comes with an insertable bottom called a sticky board. People also use screened bottoms for ventilation. I used screened bottoms for nearly 10 years but went back to solids as the mite control on screened bottoms is not as effective as it was intended to be for mite control. Entrance Reducers – are used in a variety of situations including protecting weak colonies and the entrance from rodents and robber bee situations. A slatted rack is optional but recommended. Reverse it for the seasons of spring/summer (shallow-side down) and fall/winter (deep-side-down), just like the reversible inner cover, if has a shallow and a deep depth to it.

## HIVE COMPONENTS:

### OPTIONAL: SLATTED RACK



### Slatted Rack benefits:

**Dead air space below brood chamber** keeps the colony cooler in summer and warmer in winter, and gives bees a place to accumulate outside of the nesting area but still inside the hive. This **alleviates crowding**, and makes fanning more efficient while **improving ventilation** and promoting the curing of nectar into honey.

The board in front reduces possible drafts. I recommend trying them and see how they work for you. While not designed for mite control, I like them for the dead-air space when I treat with OA sublimation for mites.

They usually come fully assembled but the outside needs to be painted.

Slatted Rack – is optional but I highly recommend this piece. They have been around nearly 100 years and have been more popular on either the East or West coast. The benefits are that they give bees more room to get air into the hive. A slatted rack gives the bees additional cluster space below the brood nest area. It is placed between the bottom board and the lowest brood box. The dimensions are the same as a standard Langstroth for 8-frame or 10-frame. They are generally not used on nucleus hives but my sister did make at least one for me and a nuc hive. The rack helps bees as they regulate the temperature within the hive during the summer and as they ventilate to dry out wet nectar. It can be used all year round. In winter, slatted racks give your hive adequate ventilation to rid the interior of condensation, preventing your bees from getting wet. The slats now are positioned to run parallel to the frames but in the past they used to run perpendicular. This change is due to IPM for possible better mite control.

## HIVE COMPONENTS:

### 3) BROOD BOX (2) 9-5/8" WITH FRAMES & FOUNDATION



Wood glue, and nails or screws needed to assemble.

22

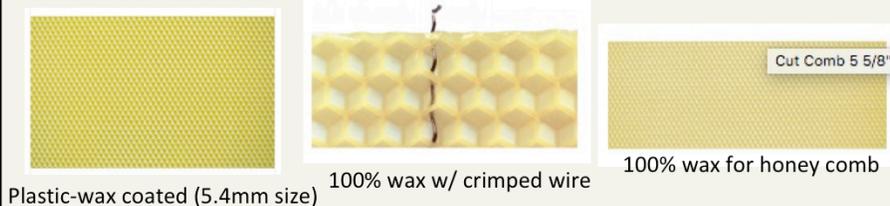
Again, the most commonly known and used style of hive used by US beekeepers is the Langstroth hive. The material can be White Pine, Cyprus, or even Eastern Cedar. There are some new plastic hives, too, but if you want to keep it more natural.... It's common practice to use two deep brood boxes with ten frames each (total of 20 frames) for our beekeeping region. In the South, like Texas, beekeepers may over-winter in one (1) single deep, whereas they over-winter in three (3) deeps in Minnesota.

### 3) BROOD BOX 9-5/8" WITH FRAMES & FOUNDATION

#### Different frame top-bars for different foundation types:

Not using any foundation increases the chance for comb-building problems and may impede colony inspections and manipulations. Be sure to match the type of frame top-bar with the type of foundation you are using. I recommend avoiding 100% plastic frames & foundation. I recommend wooden frames with foundation. The frame's top-bar can be different for the plastic foundation vs the crimp-wired or 100% wax foundation. Avoid small-cell (4.9mm) size

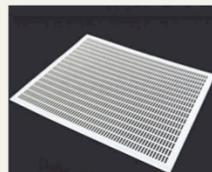
1) Grooved-top bar vs 2) Wedge-top bar – both with grooved- bottom frames.



It is also common to use a type of foundation to have orderly comb building. That would be one sheet of foundation per frame. This most commonly used is plastic with a light spray of wax coating but there is also crimp-wired 100% beeswax, and also un-wired foundation, as well as Duragilt. The basic cell size is 5.4 mm. There is a smaller cell size that can be purchased (small-cell size), seemingly for mite control, but studies have shown that small-cell-sized foundation is not a deterrent for mites. (Jennifer Berry, Bee Culture November 2009). The types of frames are: 1) Wood with no foundation 2) Wood with Plastic foundation 3) Wood with wired wax (Crimp Wired Foundation) 4) Plastic one-piece molded.

## SEVEN (7) HIVE COMPONENTS:

### 4) QUEEN EXCLUDER – WOOD BOUND/METAL/PLASTIC



Queen excluders are essential in keeping your supers available for honey production. Use them seasonally.

Queen excluders are essential in keeping your supers available for honey production but are not always 100% guaranteed to keep the queen down where she belongs in the brood boxes.

Metal bound excluders are best and will last the longest. The wooden-bound excluders can be preserved and stained or painted but eventually will need to have the wooden frame replaced when they breakdown or rot. The plastic excluders can warp and sag and deform, giving them a shorter life span than the metal excluders. Excluders are used only seasonally and not for year-round usage.



By their very design, queen excluders are designed to obstruct the larger queens from getting through. They also keep out or exclude the much larger male bees or drones, the 3<sup>rd</sup> caste.