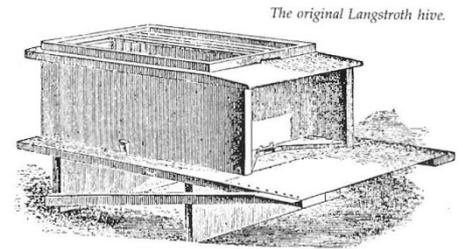


Movable frame hives - re-inventing the wheel.

In 1852 the Revd Langstroth, *the father of modern beekeeping*, patented the movable frame hive, based on his discovery of the *bee space* in 1851. The Langstroth hive is still today the most universally popular hive. Since 1852 there have been numerous hives based on Langstroth's basic design. In the U.K. the double-walled WBC¹ hive was popular for many years and a similar design, the CDB² hive was promoted in Ireland. The National hive replaced the WBC hive. In the north of England & Scotland, the Smith hive is favoured. Brother Adam chose the 12 frame Dadant hive for his more prolific *Buckfast* bees. Some of these hives were redesigned e.g. the *modified* National & *modified* Dadant hives. Nearly 200 years since Langstroth designed the first movable frame hive, new designs continue to appear e.g. the *Rose* hive. Beekeepers who advocate *natural beekeeping* have returned to earlier designs such as the Warré hive.

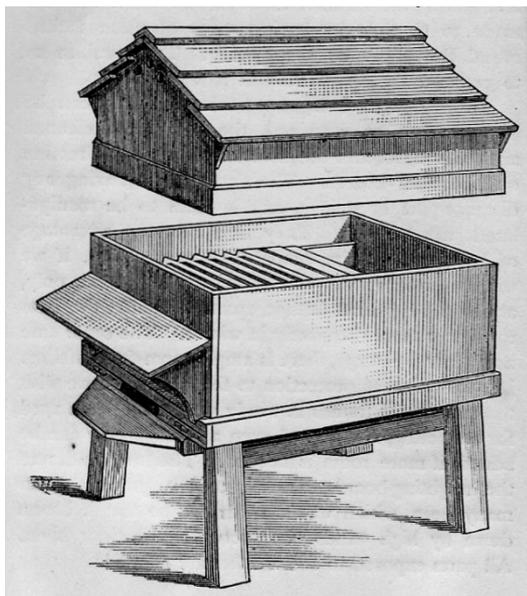


Some hives have survived and are still available: the WBC, National, Dadant, Smith, Commercial & Langstroth hives. But most other variations have disappeared.

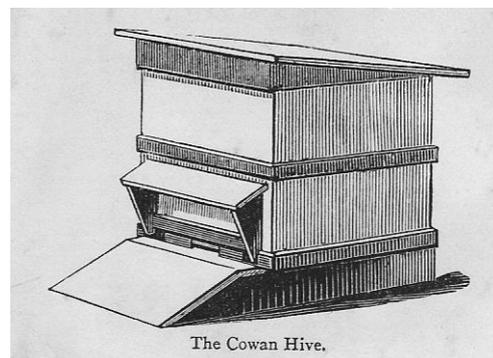
Before commencing bee-keeping it will be necessary to settle what kind of hive is to be used. This is of great importance, and should be well considered before finally deciding, because a mistake at the beginning will cause much annoyance and trouble afterwards. Bees will work in almost any sort of hive, but succeed better in those which we can from time to time adjust to their requirements.

T.W. Cowan – *The British Bee-Keeper's Guide* (1886)

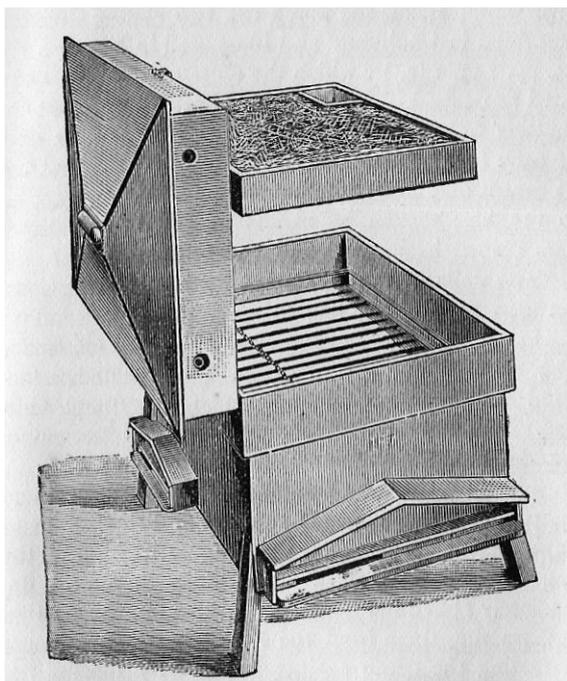
T.W. Cowan describes the following hives (Ibid.).³



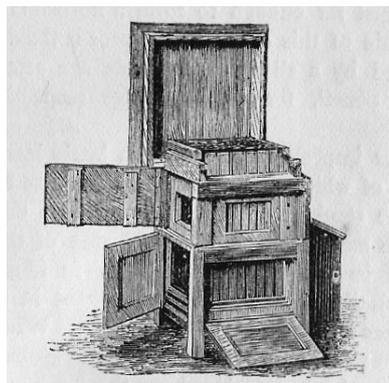
Abbot's Combination Hive [1878]



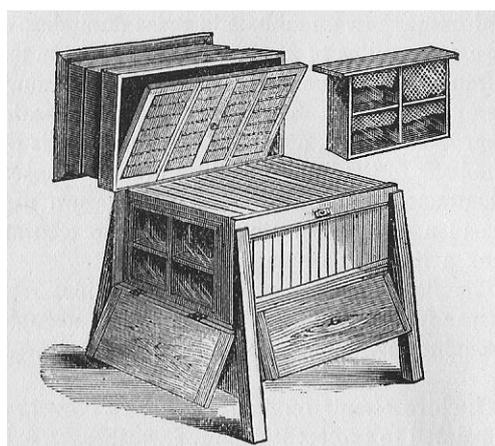
[< 1886]



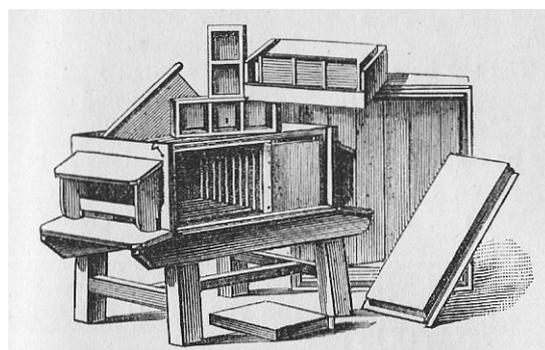
Cheshire Hive [1874]



Alexandra Hive [1879]



Kilburn Collateral Hive
Neighbour & Sons [1879]

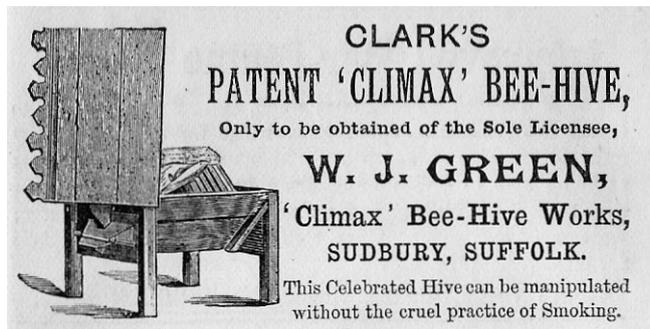


Raynor Eclectic Hive [1882]

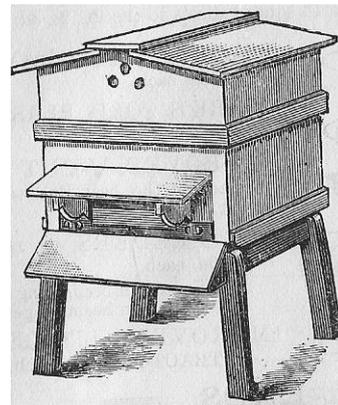
In *Bee-Keeping New And Old*, W. Herrod-Hempsall shows pictures of hives, taken from catalogues and books, designed during the evolution of the movable comb hive. The hives depicted are:

Lee's Octagonal, Berkshire, Improved Huber, Pettitt's Canadian, Pettitt's Temple, Hooker's Collateral, Ayton, Raitt, Sussex Bar-Frame, Taylor's, Keddington, Dr Bevan's, Times Bee-Master's, Simmin's Divisional, White's Collateral (1756), Sibert-On-The Wold, Alexandra (q.v.), Cheshire's (q.v.).

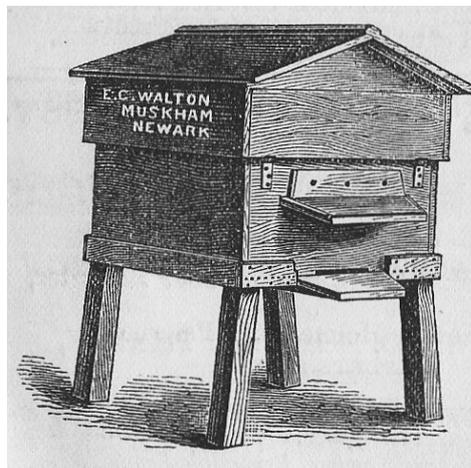
The Bee-Keeper's Guide (Ibid) advertised other hives.



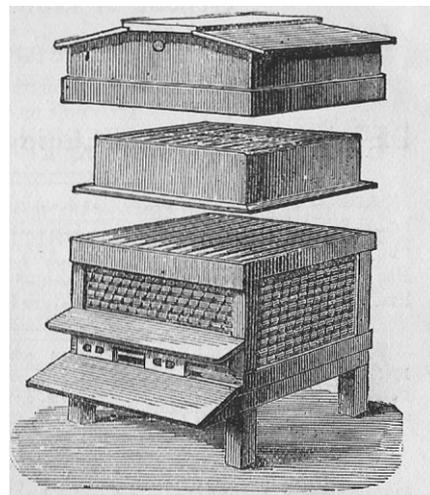
[< 1886]



Bridgewater Silver Medal Hive No 10
S.J. Baldwin [< 1886]

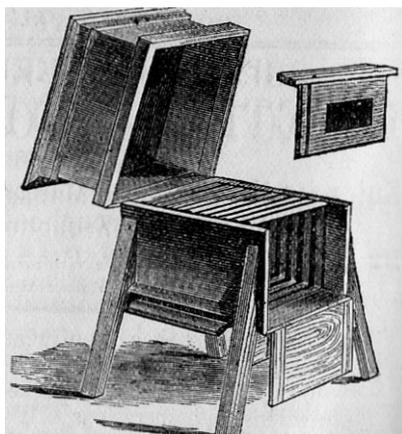


Cottage Hive - E.C. Walton [< 1886]



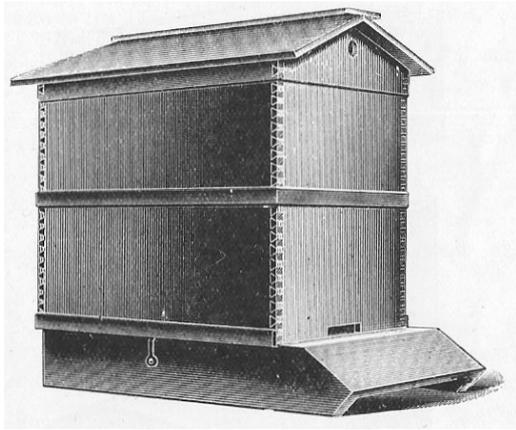
Neighbour's Fifteen-Shilling Frame-Hive

with straw walls.

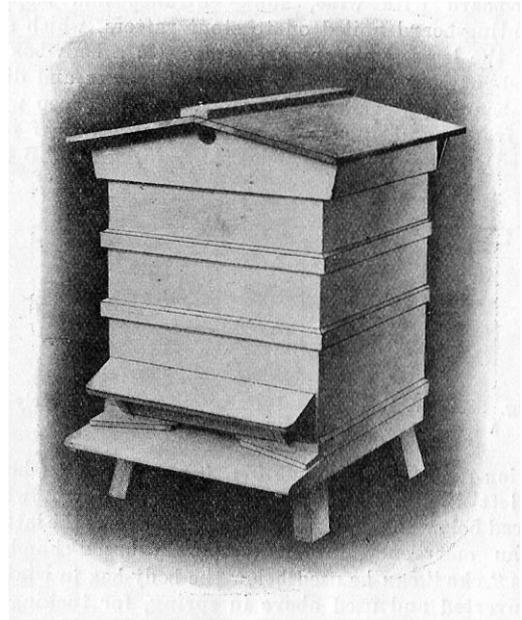


Philadelphia Bar-Frame Hive
G.W. Neighbour [< 1886]

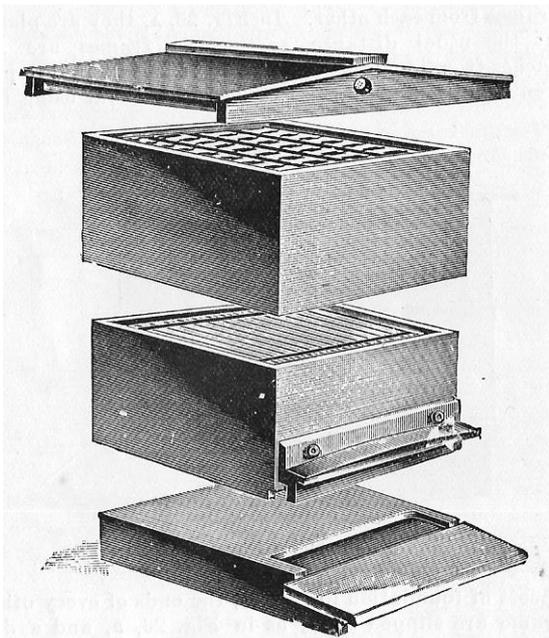
By 1924, all these have disappeared from *The Bee-Keeper's Guide* except, not surprisingly, Cowan's hive, to be replaced by the WBC hive (improved Cowan Hive^{d.g}) and three other designs.



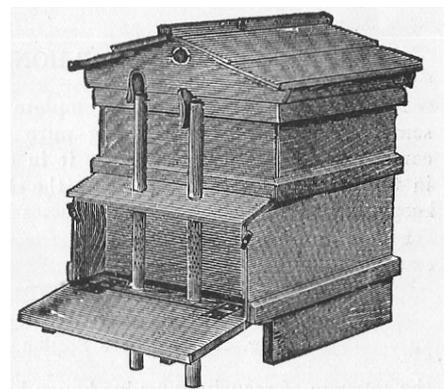
E.H. Taylor's Dovetailed Hive [< 1924]



The WBC Hive [1884]
The straight 'lifts' later become telescopic.



Robert Lee's Holborn Hive [< 1924]

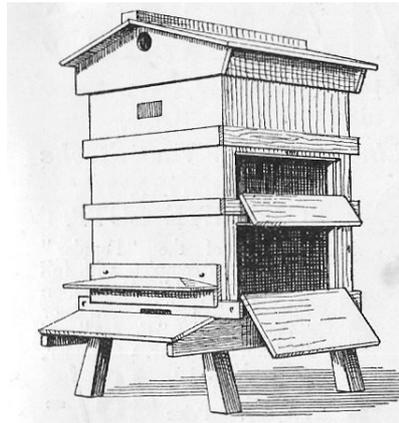


Abbé Goutte-fangeas' Claustral Hive [< 1924]

Advertisements in *The Bee-Keeper's Guide* (1924)



Gamages' Popular Hive [< 1924]



Overton's Outdoor Observation Hive [< 1924]

The only design to have survived is the WBC hive. The Simplicity Hive became the most popular alternative to the WBC. The forerunner of this type of hive was the Economic Hive which was championed by Samuel Simmins and was subsequently adopted by the Ministry of Agriculture as the National Brood Box & Super [1920].

In 1946, the Improved National Hive was introduced, which became known as the Modified National Hive that we know today.^f

In *Bees And Bee-Keeping*, Frank Cheshire describes not only the Cheshire hive, but also the Sandringham, Bingham, Quinby, Heddon & Holme Wood hives.

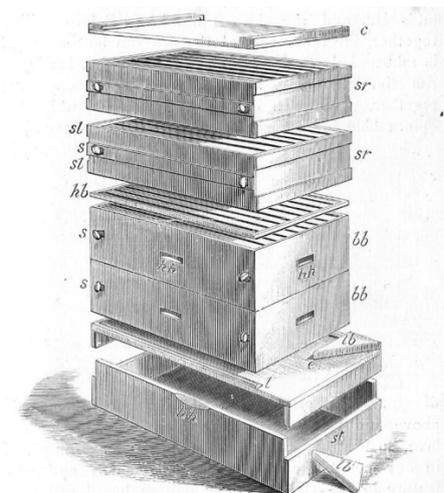


FIG. 33.—THE HEDDON HIVE (Scale, $\frac{1}{4}$).
st, Stand; *bb*, *bb*, Body or Breeding-boxes; *hb*, Honey-board; *sr*, *sr*, Section Racks; *c*, Cover; *hh*, *hh*, Hand Holds; *lb*, *lb*, Langstroth Blocks; *e*, Entrance; *l*, Lath, or Cleat, giving Bee-space; *s*, *s*, Screws; *sl*, *sl*, Strengthening Slats.

Heddon Hive [1885]^c

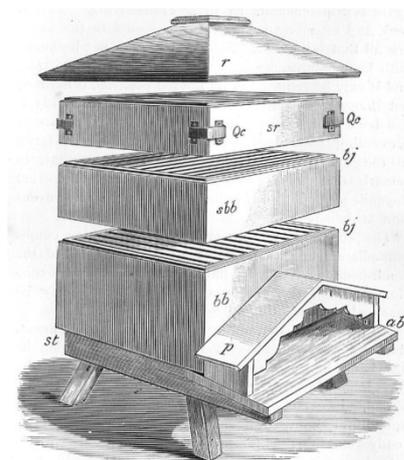


FIG. 37.—HOWARD'S "HOLME WOOD" HIVE (Scale, $\frac{1}{4}$).
st, Stand; *ab*, Alighting-board; *p*, Porch; *bb*, Body-box; *sb*, Shallow Body-box; *sr*, Section-rack; *r*, Roof; *Qc*, *Qc*, Quinby Clips; *bj*, *bj*, Break-joint.

Howard's Holme Wood Hive [< 1888]^c

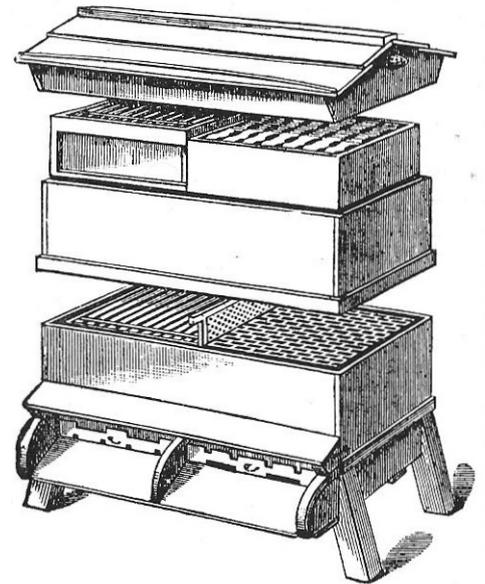
In America, the *ABC and XYZ of Bee Culture* (1947) includes the Bingham, Danzenbaker, Dadant, Heddon, Langstroth, Root Double-Walled and the Root Simplicity hives and patents for numerous other hives, including the Moth Killing Hive.

In the *British Bee Journal* (April 1902) there is correspondence about the Ford-Wells hive and the journal gave glowing accounts of the results obtained from this double-queened hive.

Mr. Wells could ... work this system, but he was the only man who ever succeeded in doing so ... those who purchased Wells' hives very quickly adapted them for chicken coops or dog kennels.

W. Herrod-Hempsall – *Bee-Keeping New And Old*.

Obviously, W. Herrod-Hempsall did not agree with the *BBJ* readers.



Wells Double-Hive or Two-Queen System [1892]^g
[Presumably the Ford-Wells Hive was an improved version]

Another *BBJ* reader enquired in 1930 about the popularity of the Tickner Edwardes hive.



Tickner Edwardes Hive [< 1930]^h



Revd. Castleden's Rotary Hive^g

'With all the galaxy of hives invented by novices and cranks in this country, and the wonderful specimens imported from abroad, it is curious that we old fogies, who, after years of experience, continue to use the simple and efficient double-walled hive designed by Mr. T.W. Cowan, and improved by Mr. W. Broughton-Carr, can make a profit from our bees when the clerk of the weather is kind, whereas those who use these monstrosities are mainly occupied in buying sugar to keep their colonies in existence.'

'We could write a whole chapter on our experience of new inventions ... hives with trap doors, winding and straight staircases, floor-boards that rise and fall automatically for cleaning (except when the hives are occupied by bees), self-acting ventilators that give bees stiff necks, reversible floor-boards, for winter and summer ... hives having drawers like a bureau, that slaughtered thousands of bees when they were either withdrawn or pushed in. The most amusing ... (was) one without a door-way.'

W. Herrod-Hempsall [Ibid.]

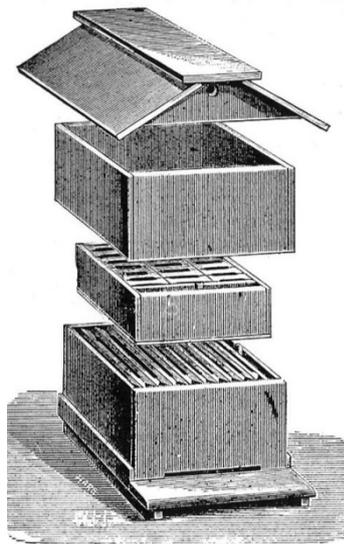
The change from keeping bees in skeps to movable frame hives was not immediate. As late as 1875, Pettigrew, who promoted the large straw skep & *let alone beekeeping*, wrote *'Straw hives, well sewed with split canes or bramble-briars, are incomparably better for bees than any other kind of hive yet introduced. Nothing better is needed, and we believe nothing better will ever be found out.'* Although he did not use wooden hives, he went on to give reasons why they were not suitable.¹

In 1861 Mr. T.W. Woodbury designed the first economic movable frame hive – the Woodbury Hive.

The first movable frame hives were made mainly from straw.⁴ They were single walled and designed for the production of section honey to save the beekeeper the expense of purchasing an extractor.⁵



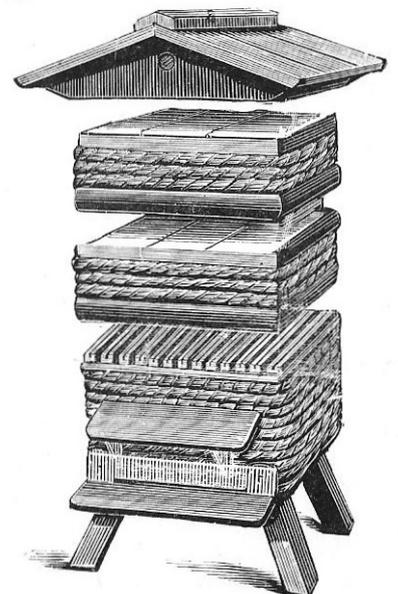
Woodbury hive with straw sides^d



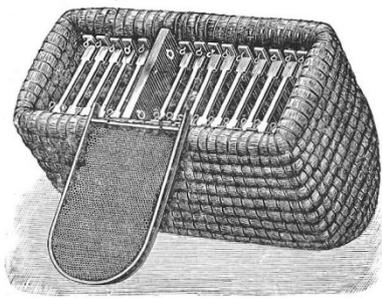
Cottager's single walled hive for section honey⁵



Lee's Carr-Stewarton hive with straw covered sides^d

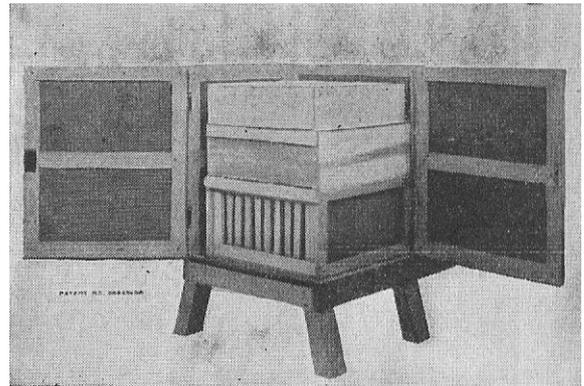


Movable frame hive made from straw⁵



Even the straw skep was fitted with frames.

Gravenhorst's Bogenstulper Hive [1865]⁸



Lee's Whitlam Hive [flyer in *Bee Craft* 1935]



Glen Hive [1918]⁸

The Glen hive was produced by Dr John Anderson in Scotland. The hive is double-walled & the brood box holds 15 BS deeps to produce larger colonies for the moors. The bees enter through a wide passage under the floor. The Beaton hive, designed by JK Beaton, is a smaller version with 12 frames.¹¹

The Catenary Hive. The Catenary hive was designed by Bill Bielby in 1968, when he was County Beekeeping Lecturer for West Yorkshire. The design allowed the bees to build natural comb from 11 short lugged movable bars arranged 'warm ways' – the shape of the comb being a Catenary curve. The frames were made to fit the curve of the box, but top bars alone were used when it was realised that the bees did not fasten the combs to the sloping side walls. The entrance was through a plastic disc mounted high up on one flat side. The main problem was the accumulation of debris and condensed water on the floor, which the bees were unable to remove, causing the floor to rot.

The Skyscraper Hive. In *The Skyscraper Hive* [about 1946], Father M. Dugat (a monk of the Trappist community of Notre Dame des Dombes, France) describes the joining of two, three or four hives together, each with a queen – there is a photo of a seven-queen Skyscraper hive. This is a method rather than a hive design. The author describes the Dugat-Standard hive to be used with the Skyscraper.

The development of the movable frame has continued until the present day. The following hives are available today:

BS = British Standard.
TBS = top bee space.
LL – Long lug frames.

NS = Non-standard.
BBS = bottom bee space.
SL = Short frame lugs.

- Commercial Hive.^j BS/BBS/SL. The Commercial hive was originally developed by Samuel Simmins as the National Major hive in about 1884. It has 16" x 10" frames in the brood box, hence the alternative name of "16x10", with 16" x 6" frames in the supers, both with short lugs. The British Standard allowed for top or bottom bee space, but bottom bee space is preferred by most manufacturers. This allows National supers to be used, since the cross-section dimensions are the same. The short frame lugs, large frame size and shallow hand holds make handling difficult. The hive is too large for non-prolific bees, but is suitable for prolific bees.
- Modified National Hive.^k BS/BBS/LL. The National hive is the most commonly used beehive in the U.K. and Ireland. The original was straight sided with hand holds machined in the sides of the boxes & double-walled at each end. The Modified National hive has the same internal and external dimensions as the original, but has a different method of construction to give larger hand holds – it is no longer double-walled. It is well-suited to non-prolific bees. The relatively small size of the British standard frame was fixed in 1882 by the *British Beekeepers Association (BBKA)* when the non-prolific English black bee was the common bee. To accommodate more prolific queens, beekeepers resort to using two brood boxes - *double brood* - or a brood box and a shallow box - *brood and a half* - to provide a greater brood rearing area. This complicates routine inspections. Alternatively, a deep brood box fitted with 14"x12" frames may be used.

There are three standard depths of frame:

Shallow frames: 5.5" (140mm) for supers.

Brood frames: 8.5" (215mm) for standard depth brood boxes.

Deep frames: 12.0" (304mm) for deep brood boxes and known as "14 x 12" or *B.S. deeps*.

The Wormit hive was manufactured by *Steele and Brodie* in Wormit, Fife, Scotland. It was a National hive, but had rebated joints between the boxes. The boxes locked on to one another making it more waterproof and preventing movement during transport. The problem was the bees propolised the joints and damage was caused when using a hive tool to separate the boxes. There are references to the Wormit Commercial hive.

- Smith Hive.^m BS/TBS/SL. The Smith hive (also known as the National minorⁿ) is popular in Scotland & the north of England. Willie Smith, a commercial beekeeper in Scotland, developed this top bee space bee hive with standard frames that have shorter lugs.
- Langstroth Hive.^l NS/TBS/SL. The Langstroth is the most popular hive world-wide. The modern Langstroth hive bears very little resemblance to the hive that Langstroth designed. The original design was a set of crates that carried the frames, the crates being inserted into a box-like outer cover. There is much variation in dimensions, some are incompatible with each other.

- Dadant Hive.^o NS/TBS/SL. These hives are the largest in common use and are far too big for beekeeping in the U.K. unless very prolific bees are kept. The Buckfast Dadant is a twelve frame version. Other variations are the Jumbo & Modified Dadant. The Dadant-Blatt seems to be a name only used in Europe. Some sources say it is simply another name for the Modified Dadant. Rucher Dadant-Blatt appears to be a Swiss variation. Dadant-Quinby is another version.
- WBC Hive. BS/BBS/LL. The WBC hive was designed by William Broughton Carr (WBC) in 1894 and was an improved version of the Cowan hive. It is the classic hive, usually painted white, as depicted in pictures and paintings. It is a double-walled hive with external housing [‘lifts’] that encloses a 10-frame brood box and supers. Originally the sides were straight but became telescopic. Despite the extra level of insulation for the bees offered by its double-walled design, many beekeepers avoid it, owing to the inconvenience of having to remove the lifts before the hive can be examined – and the extra cost of manufacture. The smaller brood box is also a disadvantage. Although the frames are interchangeable with National hives, many WBC brood boxes & supers were home-made and are often poorly constructed. The WBC is the only double-walled hive now in general use.
- Warré Hive. Abbé Émile Warré (d. 1951) developed *The People’s Hive* (‘ruche populaire’), which he wrote about in *Beekeeping for All* (L’Apiculture Pour Tous 1948).⁷ The hive comprises tiers of identical boxes containing, usually, top bars fitted with strips of wax. Unlike conventional hives, as the colony expands, the new box is *nadired* rather than *supered* i.e. placed underneath the existing boxes. This is thought to retain the heat within the brood nest considered vital to colony health. The honey is harvested by draining, or pressing, or by centrifuging combs in special baskets. It is stated that the hive need be opened, in the strict sense, only once a year when harvesting.⁹
- Dartington Long Deep Hive^f. The hive was developed in the 1970s by Robin Dartington to enable him to keep bees on his London roof top. It holds up to 21 BS deep 14”x12” frames with an insulated dummy frame front and back. The body is raised to a convenient working height on long legs and supports four half-size honey boxes each holding 5 Manley or 6 BS shallow frames. To reduce weight, the long roof can be made in two pieces. The expansion of the colony is horizontal rather than vertical. Launched in 2009, the *Omlet Beehaus* is based on the same principles as the Dartington hive and is made from MDPE plastic. It was reported that *Natural England*, the UK government conservation agency, would be installing a *Beehaus* hive on its roof in central London.
- Top Bar Hive. The top bar hive or Kenya/Tanzanian was developed as a low cost alternative to the standard hive in developing countries. They are popular with *natural* beekeepers. The TBH is so named because the bees draw their combs from wooden bars placed across the top of the hive and not inside a rectangular frame. Unlike standard hives, the colony expands horizontally.

- Zest Hive. In recent years, the Zest hive (www.thezesthive.com) has been developed using concrete blocks for use in developing countries.
- Rose Hive. The hive was developed by Tim Rowe in Ireland and uses one size box for both brood and supers, containing 12 frames (196 mm/7²³/₃₂" deep).
- Hedgecoe Hive. *Thorne Beehives* sell the Hedgecoe hive. Designed by Roger Hedgecoe it is made from marine ply & has a 12" depth brood box with top bee space. The hive stands on 4 adjustable legs. It has been reported as unstable in windy conditions.
- Flow™ Hive. The latest hive design (February 2015) is the Flow™ hive, invented by Cedar & Stuart Anderson in Australia. The hive uses special frames with partially formed honeycomb cells. A tap on the outside of the hive splits the cells when it is turned on. The honey flows through channels and drains into containers. It is not a new hive – it is a Langstroth hive that has been adapted.

Notes

1. William Broughton Carr.
2. The Congested Districts Board (CDB) was established in 1891 to help struggling tenant farmers in the west of Ireland & provided funding for beekeeping. In 1894, *Abbots Bros.* in Dublin designed the *CDB* hive for the production of section honey. Each box overlaps the one underneath & has straight sides (as did the original *WBC* hive) – consequently, the hive gets wider as it goes up. The brood box is double-walled on two sides.
3. I have not included details of how the hives were constructed or managed, since they are no longer in use. The purpose is show how beekeepers attempted to improve Langstroth's original hive, something that beekeepers continue to do! Compared with Langstroth's simple design, these 'improvements' appear complicated & more costly to manufacture – probably contributing to their demise. How many were sold & used – and for how long? It is doubtful that they were affordable by most hobbyist beekeepers.
4. Eventually straw was discarded since it was perishable & needed frequent repairs and replacements – it was not possible to disinfect following foul brood. The Woodbury hive in *Bee-Keeping New And Old* has wooden sides.
5. Bogen = a bow or arch; Stulper = that which may be tilted.
6. In 1882 the British Standard Frame was agreed. This was to be a 14" x 8¹/₂" frame with a 17" top bar & 1¹/₂" lugs. No mention was made at the time to this being a brood frame, since there was no need for a super frame; most honey, at that time, was gathered in sections. One of the reasons for the selection of this frame was the fact that it occupied a similar space to six

4¹/₄" square sections. A special hanging section frame was used to put six new sections in the brood nest to get the comb drawn earlier than would have happened if they had been placed above the brood nest in the normal crate. *History of British Standards in Beekeeping* – David Cushman: www.dave-cushman.net/bee/hist.html

7. Abbé Warré's book has been translated from the French in 2010 by Dr. David and Patricia Heaf and is available as a free download: www.users.callnetuk.com/~heaf/beekeeping_for_all.pdf [or www.natural-beekeeping.co.uk/wp-content/uploads/2010/11/beekeeping_for_all.pdf] More information is available at <http://warre.biobees.com/bfa.htm>

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- b. *The British Bee-Keeper's Guide* (24th ed.), 1924.
- c. *Bees and Bee-Keeping* - Frank R. Cheshire, 1888.
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- f. *History of British Standards in Beekeeping* – David Cushman:
www.dave-cushman.net/bee/hist.html
- g. *Bee-Keeping New And Old* – W. Herrod-Hempsall [Vol. I. 1930]
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- s. *Glen Hive* David Cushman: www.dave-cushman.net/bee/glenhive.

Copyright issues

W. Herrod-Hempsall died in 1951. *Bee-keeping New And Old* copyright until 2021?

Published by *BBJ*, now defunct.

T.W. Cowan died in 1926. *The Bee-Keeper's Guide* copyright until 1996?

Revd. Tickner Edwardes died in 1944. *Bee-Keeping For All* copyright until 2014?

The photo of the Woodbury hive is from *The Bee Book* – Daphne More – the hive is in the *IBRA* collection. Copyright?

Brian P. Dennis

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