

Beekeeping: natural, simple and ecological

by Johann Thür, Beekeeper

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Part I Thriving

The principle of retention of nest scent and heat: the basis of health, thriving and yield

In order to thrive and produce, bees depend completely on heat. It is as important for them as nourishment.

Science has established that bees require various temperatures. During overwintering with no brood, the average temperature of the middle of the cluster is 22–25°C. In contrast, the normal brood temperature is 34–35°C. To ripen honey, even 40°C is necessary.

But the average air temperature is well below these limits. Brood and bees are essentially without their own bodily warmth. The difference between the temperature of the air and that required by the bees has to be produced by the bees themselves throughout the entire year, summer and winter. Their fuel is honey which they have to consume greatly in excess of their bodily needs in order to produce heat. For example, in accommodation with enclosed natural comb, the winter consumption in the six months from 1 October to 1 April comprises about 2 kilograms, whereas in the conventional, heat-dissipating framed hives, 6 to 8 kg or more are needed. This excess consumption within six months of, on average, 5 kg per colony is purely excess consumption in maintaining the very essential minimum temperature. In order efficiently to utilise this costly, life-supporting and life-giving heat, nature has enabled the bee, a super-organism comprising colony and comb, to keep the heat in, to retain it. This retained heat is a mass of warm air, impregnated with scent, and thus germ-free. It suppresses harmful bacterial activity and hinders the occurrence of diseases.

The whole issue of this multi-faceted heating effect culminates in the principle of germ-free retention of nest scent and heat

Since a deficiency of retention of nest scent and heat calls for significantly increased food consumption and inopportune effort by the bees, and causes the hitherto seemingly inexplicable emergence of particularly infectious diseases, especially Nosema, which appreciably damages beekeeping, it is of great importance that we give paramount attention to the retention of nest scent and heat. This has become even more important as the development of bee culture since the invention of the frame has acquired characteristics determined by the frame that are in direct contradiction of the retention of nest scent and heat required by nature. This leads to serious harm for the bees, to wasting sugar and to a generally far-reaching deterioration of beekeeping. Frames, and the hives based on them, suppress natural comb construction and, with this, the retention of the nest scent and heat. Modern artificial bee breeding has barely any inkling of this.

As early as 1936 Weippl wrote in *Bienen-Vater (Beekeeper)*: 'The combs in hollow trunks of trees, the homes of bees since Creation, as well as in skeps, are fixed to the walls. Each corridor between the combs forms a closed space, like a room. Thus, in winter, the heat of the cluster cannot flow away through the many gaps between the frames and the hive walls. This avoids not only loss of heat, but also draughts, condensation in the hive and excessive consumption of stores.' To this, I would add the following: If the bees cannot build the combs to the walls on all sides they close such gaps with brace comb. The warm air is not lost downwards, because it is lighter. And it is kept in at the sides and above through the cul-de-sacs in the naturally constructed comb. Only the used air of respiration drops downwards, laden with carbon dioxide, and at the open bottom margins of the comb it is exchanged with fresh circulating air. These open comb lower margins can be regarded as the mouth of a central breathing process that, with the help of the

bees sealing the margins, breathes just the right amount of fresh air and organically prevents an excess penetration of cold air.

The principle of retention of nest scent and heat in the spaces between the combs is so perfectly adapted to nature that it even enables bees to live in comb constructed out in the open air, provided they can protectively model their comb structure without being hindered by beekeepers and can stay protected from predators and damage.

But it is equally clear that even in the most ingenious of framed hives, however thick their walls are, bees cannot properly flourish if in the spaces between the combs the principle of retention of nest scent and heat is not fulfilled. And artificial beekeeping, with its framed hives, is very far from fulfilling this principle.

Since frames were introduced, at the time of writing about a hundred years ago, progressive beekeepers have all turned to framed hives. This is the most significant milestone in the development of bee culture. The natural beekeeping that has been carried on successfully since the dim and distant past in a very simple, albeit laborious way, with only natural equipment and unarmed with specialist knowledge has been eclipsed by the rise of artificial beekeeping using frames.

The knowledge possessed by a few in the past, and natural beekeeping itself, have been forgotten and have given way to the most glaring errors and misinformation based on frames. Frames facilitated insight into the secrets of the bees and thus constantly created new concepts, viewpoints, hives and methods of management. Natural simplicity was replaced with multiplicity and contradiction shrouded in artifice, and beekeepers, not to mention beginners, could no longer find their way. The search for new types of hives and methods of management continued unabated and is the best evidence that none of them were satisfactory. (Indeed, something was lacking and that is retention of nest scent and heat.) Each beekeeper held that his particular hive was the best, provided he still remained faithful to it. However, that all existing framed hives give rise to significant shortcomings and harm the bees, and appreciably reduce yields, is almost completely unknown because modern beekeepers, almost without exception, no longer have any idea of the natural requirements of bees.

The element of life, the retention of nest scent and heat, is fundamentally destroyed by the heat dissipating and draughty framed comb that is open on all sides. The disastrous consequences are a feature of this artificial beekeeping and must lead to the realisation that all existing framed hives go against nature and are dispensable. The realisation that our little songbird, the bee, needs warmth, must sink in such that we are clear that the nest scent and heat promoted by honey has to be retained and that management and equipment such as hives must be strictly suited to and subject to it. And ongoing developments, the phase of artificial beekeeping, have taken us on dangerous detours from this requirement.

It is incontrovertibly established that with framed hives, and their lack of consideration of the principle of germ-free retention of nest scent and heat, bee epidemics have developed and spread. Since then, they have become a constant and ineradicable phenomenon – above all, Nosema, which in Germany alone has destroyed 800,000 colonies according to statistical estimates. The USA has conducted an unsuccessful campaign with the expenditure of significant resources against foul brood. In 1932 in Russia, of 18,000 colonies investigated, Nosema was found in all stages. At the 1936 Karlsbad beekeepers' conference special praise was given for the Gerstung method and hive which brought the end of old types of hive with natural comb, yet in the same breath it was reported that, for a number of years, diseases gaining the upper hand are causing beekeepers a lot of concern and that numerous diseases are reducing the harvests year on year. All other countries with framed hives constantly report significant losses. In contrast, areas with their natural beekeeping still intact report healthy colonies with satisfactory yields.

Do not such facts eloquently tell us something? In search of help, isolated calls that pop up saying 'back to nature' fade away without effect because they are interpreted to mean a return to the primitive conditions of our grandfathers' time. That at that time honey was harvested in excess so that it met not only the entire demand for sweetening but also so much remained over that various drinks, especially mead, could be made, is overlooked or dismissed with the assertion that bee forage has declined since then. Certainly alterations have taken place in agriculture, but 'flowering' as an eternal force of nature remains, and incredible quantities of nectar have to dry up each year because not all the available nectar is collected.

Twenty years ago, at the 1925 conference of beekeepers in Vienna, Weippl, an economic adviser and at that time the head of the Austrian School of Beekeeping, gave a lecture in which he said, inter alia:

Over and over again in lectures and in the specialist press there is reference to the wild bees of the woods, that are wholly self-supporting, without any assistance, be it through feeding, foundation, comb or other care, yet they flourish magnificently, for, if the aforementioned assertion is justified, then they would have died out long ago.

And ultimately the home of wild bees in the woods that was assigned to them since Creation is far more appropriate and better than the most ingenious and best constructed hive. It is the hollow tree trunk, rotten inside, therefore incredibly warmth retaining, not getting wet, impenetrable in summer to excessive heat, with combs built to the walls on all sides, not hanging free like backdrops as in frames, admittedly not the most convenient for the beekeeper, but for the bees unbeatably the best home. The living conditions for the wild bees in the woods are far better than those of our domesticated bees and the disadvantages for the latter can only at least partly, but never fully and completely, be removed by the most careful management, greatest possible protection and appropriate feeding.

These apposite comments were not to bear fruit because neither Weippl nor the whole body of the other beekeepers were able to find a way out – and yet it lay so close at hand!

To summarise, I argue that the unnaturalness of the framed hive rests in the following: as a result of the spaces between the combs being open on all sides, the nest scent and heat escapes, and with it the germ-free, disease-inhibiting scent-substances. The honey supers situated above multiply the wastage of the nest scent and heat. Each time they are extended more is wasted. And when on top of that the hive is opened, the nest scent and heat floods out. Certainly in naturally constructed nests – for example in hollow tree trunks – there is comb a metre long on occasion, but never empty honeycomb above the brood.

The repeated loss of heat from framed hives means that it has to be constantly replaced by increased food consumption by the bees. This costs a lot in honey and does not always succeed when there are unexpected setbacks due to weather. It results in abandoned brood, infection foci and diseases. Crippled bees, weakened replacement generations, delayed development, increased numbers of heating bees tied up, shortage of foraging bees are all, however, unavoidable even with the best management and favourable weather, and they reduce the harvest.

The loss of heat causes granulation of the winter stores and the significantly increased consumption of heat makes necessary an unnatural introduction of sugar that is consumed as a supplement, and represents an irresponsible burden on a beekeeping economy. Furthermore, prematurely exhausted colonies hold back the spring development and are a link in the chain of harvest diminution.

The unprotected spaces between the combs allow bad weather and the cold and wetness of winter from the entrance to pass into the combs that hang free like theatre backdrops. The heat of the nest as it flows away from these open inter-comb spaces cools down and there forms winter condensation, causes mould formation etc, and the valuable nest scent and heat escape from the nest. What use here is the best winter cladding of the hive and the most careful closing up when the living bees and their stores remain surrounded by such gaps that introduce cold and wetness to disturb their warmth? In such framed hives the bees cannot be protected by any precautions taken by beekeepers. The most insightful beekeeper can hardly conceive what the bees have to suffer under these conditions. Yet this harm is alien to the natural comb method. These two indications alone should suffice to rule out these artificial hives. But the beekeeping fraternity lets itself be deceived by the apparent successes it has achieved.

The crowning achievement of this work of destruction comes with the beekeeper's dearest hive component, the honey super! It can never be big enough if it is not also full and frequently opened too soon, without heeding the fact that every empty cell draws the heat out of the brood nest.

The so-called honey supers also contradict the natural arrangements, the bee's method of construction, their instincts as well as the extension of the colony, which under natural conditions takes place from above downwards or from the front to the back, but not the other way around. The bees only hesitatingly let themselves be driven in such a way, which is usually forced on them by the most unnatural means, such as brood rearrangement. The bees instinctively sense this unhealthy arrangement and try to diminish it. Their initial efforts go into connecting the honeycomb in the supers with the brood comb by

means of bridge comb, in order to get rid of the thermally disrupting comb interruption. It is taken for granted that a beekeeper who likes tidiness must not tolerate such misplaced constructions. They are removed because otherwise they would impede the mobility of the frames and even in beekeeping schools it is taught that such messy comb should be eliminated in beekeeping.

Such beekeeper interventions ignore even the most primitive natural requirements of the bee. It is a call for help that demands an answer. The bees even try to fill the gaps between top-bars and quilt or crown-board, in order to counter to some extent the loss of heat, i.e. in order to get closer to the principle of retention of the nest scent and heat. But the beekeeper, with his lack of understanding reinforced by bad teaching, removes it.

Good, it hinders mobility, then that shows that the construction of the hive is incorrect. The bee cannot become something different, so it is a matter for the beekeeper to adapt himself to the unchangeable demands of nature – above all the principle of retention of the nest scent and heat – by constructing the hive in the right way.

These briefly presented harms are incontrovertible facts.

Failure to recognise their origin justifies the assertion that the frames with their inter-comb gaps that are open on all sides and let heat flow out have become the curse of beekeeping.

They give rise to the faulty construction of all framed hives. As a result of this, the technology has been led astray and it can only lead to the failure of beekeeping.

From then on, bees and beekeepers have stood powerless before the collapse of the noble art of beekeeping, which ultimately must lead to a decrease in our cultivated flowering plants. In this lies a great responsibility for the beekeeper.

And there is a way out!

In the bee's natural way of constructing comb, retained over millions of years, in which comb and container form an enclosed unit, in which the principle of retention of nest scent and heat rules and protects all, is where there are healthy colonies capable of productivity without intervention – even without human management or sugar. It is there that the solution can be found!

It culminates in the principle of retention of nest scent and heat that gives life to all.

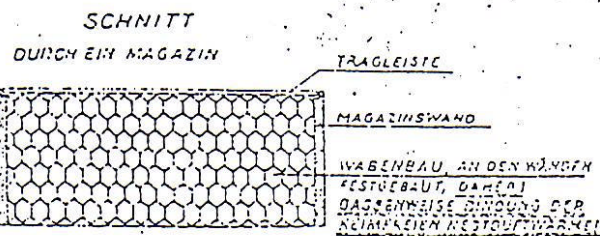
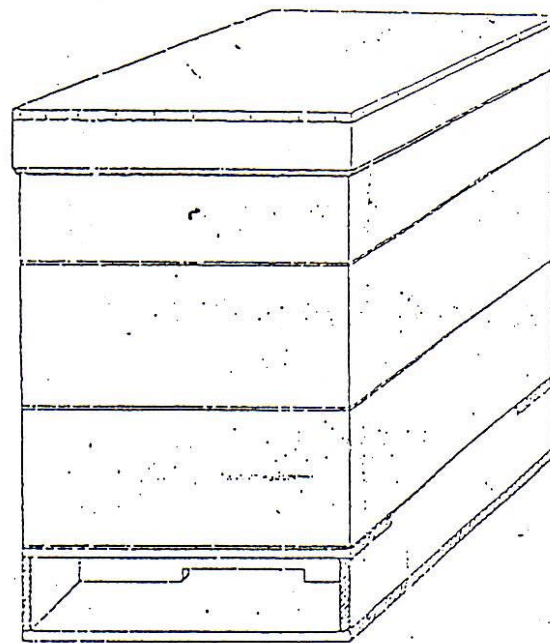
Beekeepers: learn to read the book of nature! There, written in bold lettering are the wisely conceived and unchangeable laws of creation. To heed them, to act according to them and to implement them at the right time must be the beekeeper's greatest commandment, so that the drink of the gods, the flowing nectar from the cornucopia of blessing, becomes pure honey.

Part II

The new natural comb hive with moveable layers – 'The natural-comb brood-box hive'

About 200 years ago the Nassau preacher Christ distributed the tiered box hive named after him, which is apparently still in use today (1945) in several places.

The most essential things about it are its hive body box or brood box, 28 x 28 x 14 cm in size (please see note on page 11, *Tr.*), equipped with comb; the removable floorboard and a kind of box roof to close it up. The number of these boxes is matched to the strength of the colony at any particular time by placing them underneath and by the time of the main nectar flow they are stacked up to seven high. Even 200 years ago they formed a transportable hive of mobile layers in which the principle of retention of nest scent and heat was fully observed. Christ estimated the productivity of his box hives to be fivefold greater than that of the simple straw skep.



The natural-comb brood-box hive

In fact there was a stroke of genius about this hive. The box required four boards, seasoned, nailed together, and eight bars for the comb support. Managing it requires practically no beekeeping knowledge or work; in the main it comprises putting empty boxes underneath and removing the filled honey boxes at the end of the main nectar flow. The normal annual beekeeping work was done with a few manipulations and, in the cheapest and simplest way, a superior, successful and totally natural beekeeping was possible, free from disturbing interventions and measures. Christ successfully campaigned against the kind of skep beekeeping that involved asphyxiating bees with sulphur or taking the harvest in various hives that, through inappropriate construction, impaired the retention of nest scent and heat and thus caused the occurrence and spreading of diseases. Regarding diseases themselves, Christ wrote that he knew of no true bee diseases. He recommended: 'that people should keep only populous stocks and always leave them with large stores of honey. That way they will, to their advantage, remain a stranger to bee diseases. Their simple food from the best juices of plants and flowers would completely protect them from diseases'.

But Schiller's words: 'But we weave no eternal bond with the powers of fate...' came true with this hive too. It was whirled away in the march of progress. After 100 years, the frame was resurrected, filled the whole beekeeping fraternity with admiration, heedlessly drove aside everything that stood in its way as a hindrance and also led directly to the demise of this superior hive.

If you compare what our framed beekeeping demands in knowledge, equipment, interventions and work, what failures constantly accompany it and what quantities of sugar are used as supplements, then it can only make your hair stand on end and convince you with all clarity what false path developments have taken since then.

Christ's box hive also contributed a lot once again to restoring beekeeping to an impressive level after it was almost destroyed as a result of the Thirty Years' War.

As we look back today, 200 years later, filled with respectful admiration, it should be an incentive to us to make something similar happen in our fatherlands so severely afflicted and impoverished by the results of war. This is our hour of need and absolutely demands:

'That simple, profitable beekeeping should replace the costly, artificial beekeeping that has degenerated into a hobby.'

Smallholders and farmers capable of keeping bees should be enabled to keep bees successfully with this simple hive that they can easily make themselves, without significant outlay on materials, without specialist knowledge, money or labour, without machines or gadgets, without using sugar or foundation, and in a purely natural manner.

This demand cannot be met by any of the existing hives. Even the skep so readily sent into battle is eliminated because it is not suited to the present size of colonies. Its volume of bee space is insufficient for it to contain a strong colony. It would have to swarm. If it does not swarm then its development is not optimal.

The often recommended arrangement with a separate super on top of it is unnatural and harmful because the empty super draws out the warmth of the brood nest. Putting an empty eke underneath naturally encourages the bees to make brood comb below, fills the skep with honey which then prevents the bees from using the skep as their actual home. Such recommended arrangements are uneconomic and detrimental. The only workable method of harvesting, namely asphyxiating with sulphur, is barbaric and wasteful. Cutting the comb out is damaging and awkward. But Christ's box hive gives us a suitable model that has been tried and tested. With the following minor alterations it is adequate to meet the demand we have issued:

'The unframed floor board' must contain: an adjustable flight hole with an alighting niche; the space between the floor and the box should comprise six centimetres as an essential comb-free space for bee chains to form, for surplus young bees to keep clear of the comb and for resting foragers. Together they form a flexible heat regulator for the nest. This floor is eventually given an intermediate floor for winter. Towards the back, over the whole width, a cleaning wedge (*Putzkeil*), through which a non-intrusive observation of the colony and adequate inspection is possible at any time without disturbance, even in winter.

Each box should have the internal dimensions 28 x 28 x 14 cm and, for several reasons, this should be strictly observed. The wall thickness should be at least two centimetres. Eight top-bars for comb, two centimetres wide and six millimetres thick are seated in rebates or on battens with appropriate spacing for the bees, exactly forming a plane with the upper rim of the box.

A box roof with a weatherproof and watertight covering concludes the construction.

Normally three boxes are used. The bees actually live in two of them. The third is needed as space for the honey. The brood box space of two superimposed boxes when filled with comb comprises, in a cubic shape of 28 x 28 x 28 centimetres in size, eight naturally constructed combs that retain the nest scent and heat. This has 60 square decimetres of comb surface with approximately 50,000 cells. That is as much as seven Austrian broad-combs. The intermediate top-bars automatically built into the comb by the bees effectively strengthen the construction. The cubic shape corresponds to the spherical clustering of the bees and is the most economic shape to use. A brood nest comb of 28 x 28 centimetres extending through two boxes, with seven and a half square decimetres of comb surface, is the ideal size for tried and tested square comb. Together with the deepened floor, the volume of these two boxes comprises 26 litres, which is the same as a large skep. With two boxes, this hive is big enough until the start of the nectar flow for housing the winter stores, for overwintering a strong colony and for brood development of a vigorous laying queen.

The third box placed empty underneath at the right time in spring offers sufficient space for brood and colony expansion. Filling it with comb requires about 300 grammes of wax which corresponds to the yield sought in comb frames of mobile hives and completely and naturally satisfies the bee's instinct to build. The generally held idea that continuation of comb construction without foundation will produce only drone cells, is a silly fable that is repeated parrot-fashion. Indeed, if it were true then feral colonies would long since have comprised mostly drones. Only providing space incorrectly favours drone cell construction. The bees of course expand in accordance with their development into the box placed underneath and with

them the brood nest. They know how to organise their construction properly and certainly do not need any foundation or intervention by the beekeeper.

The topmost box, that automatically becomes a honey super as the bees develop, contains about ten kilograms of surplus honey. Placing more boxes underneath according to demand allows one to house colonies and harvests of unlimited size.

Christ's hive has its renaissance in a new form as a natural-comb box hive with moveable layers. It fulfils the demands required of it, especially that of retaining the nest scent and heat in its natural completeness and effectiveness, and thus takes its place as a hive that is right for our time and of the best quality and productivity.

Beekeeping with natural comb in moveable layers is not a retrograde step, but a timely progression that works with nature and is based on real success, whilst avoiding everything that goes against nature.

In contrast, strange fancies have killed the artificial beekeeping that has degenerated into a hobby. In it the queen is artificially hatched in artificial incubators. She may be escorted to her mating in a select crowd of largely foreign subjects. Every male member of her own colony is carefully kept away. At this isolated place a male of the beekeeper's choice and alien to her colony is forced on her. A free choice of drones is denied her. She bears an unnatural marker on her back for the rest of her life. Her royal highness now awaits the beekeeper's intervention. In cool calculation the old queen is forcibly removed and killed beforehand. A colony robbed of its queen suffers greatly. An interminable moan, a wail audible at a distance, makes known their pain. And before the colony finds its way back to the ordinary demands of everyday life, before it can manage to replace its queen in the way provided for by nature, the beekeeper foists on it this artefact of a queen, without any evidence of her suitability, supported only by the success of the beekeeper. Yet only too often the bees lose their patience and throw such royal blood at the beekeeper's feet. And if for once all is successful, it happens without consideration of phenomena that are as yet unknown. We know this much; that such means do not serve nature and that human intervention in this way produces only limited success together with serious degeneration.

In artificial hives – a joy to beekeepers, but a pain to bees – the brood is moved around, divided, rehung, covered up, hung in between, sometimes compacted, sometimes spread out – largely without reason or understanding. Yes – everything is so convenient with frames!

One innovation follows on the tail of another. Then again there is stimulatory feeding, saturation feeding, emergency feeding. The males, the 'mood-makers', are killed in their thousands in their cells. They are to be denied the food. Honey is valued as a life-giving substance for children and invalids but for bees, these delicate organisms, it is replaced with sugar which is supposed to be better than honey. Unnatural hives and principles are forced on bees. Natural requirements, above all the all-enlivening retention of nest scent and heat, is inconvenient for the beekeeper. Otherwise he would have to consign to the fire his framed hives that cost him so dear. It is true that he has an inkling about heat, and prefers to heat his bees electrically, or wraps them inadequately in rags like beggars.

The gadgets he needs fill whole catalogues. The variety and features of hives are without bounds. The 'Beekeeping Advisory Committee of the Third Reich' found it necessary in 1940 to put a stop to this interminable development. Based on a knowledge that none of the existing hives did justice to requirements, it invented a new hive, the *Einheitsblätterbeute*, which comprised 'only' 74 moveable parts. They were so convinced about the perfection of their new 'standard hive' that they outlawed any further creation or invention of other types of hive. The natural requirements of the bees – above all the principle of warmth, the retention of germ-free nest scent and heat – was given no consideration. What wonder that the hopes placed in this hive could not be fulfilled. They had to take account of this unexpected fact, this fiasco, and within two years three new secret designs were installed in various Nazi administrative districts for secret trials. They remained unknown to the beekeeping fraternity, and will remain so, as the problem was still unsolved.

It cannot be denied that beekeepers using artificial methods exercise a great deal of care. No price is too great for their avowed dear ones. For their nature-deprived, feebly born and thus often sick children, disease quarantine stations are set up, disease inspection services established and every suspect bee sent for investigation. Research, investigation and testing goes on all over the world. Bacteria have been discovered

and named so that they cannot be confused with each other. But the actual causes are still shrouded in darkness and so many more colonies will die out, until ...Yes, until people finally realise that this pitiful creature cannot flourish in this unnaturalness and that nothing is able to replace the retention of germ-free nest scent and heat.

When we realise, what level of theoretical knowledge this artificial beekeeping requires just to keep it alive artificially, then we are forced seriously to reconsider and steer onto the route indicated by nature.

In contrast, in the natural comb box hive, how easily the entire operation runs its yearly course. Beginning with overwintering: the two lowest fully occupied boxes remain undisturbed as winter accommodation of normal construction. The honey box on top is taken away as harvest. A box stuck down with bridge comb can easily be lifted by cutting across the surface it is resting on by means of a thin steel wire. The remaining normal housing should be clad for winter and the entrance narrowed against mice. An intermediate floor can perhaps be inserted. The combs are sufficiently filled with honey to last until the next flow thanks to the size of the box and the limited consumption resulting from natural retention of the nest scent and heat, and because it remains protected from interference by the beekeeper.

The combination of natural comb and retention of nest scent and heat saves sugar, inhibits diseases and a healthy colony sees in spring. Natural development takes place without intervention, and by the time of the main flow the colonies are ready to go.

The spring work comprises removing the winter cladding and the intermediate floor, enlarging the entrance and placing an empty box underneath. Nature herself gives the cue through her flowering and the increase in strength of the colony. Honey is stored in each cell that becomes empty. The circle of brood is pushed naturally downwards as the colony develops onto newly constructed comb, and the bees grow into the box placed underneath. The upper storeys of honey get bigger and finally fill an entire box. Brood, construction and foraging can develop naturally and unhindered as long as the nectar flow holds out and as long as the beekeeper provides more space when required, by putting further boxes underneath, which if he wants can be done well in advance. Swarming, as an emergency situation resulting from lack of space, is prevented because there is never a lack of space. Restless life fills the hive; the drones hum beautiful love-melodies and set the mood. Harmony and production reigns everywhere, free from interfering beekeepers. This continues until the flow abates. The resulting removal of full honey boxes relieve the bees of excess. The winter cladding of the two remaining boxes left as habitation and the reduction of the entrance, conclude the beekeeper's work for the year, the execution of which requires no special knowledge. The occasional taking of a swarm or dealing with the occasional emergency are soon learnt by practice or by asking a neighbouring beekeeper.

The extraction of honey can be done without a centrifuge by melting the honeycombs on the low heat of a cooker. The wax collects at the surface and is lifted off when cool. Underneath is the ripe honey, which when bottled, capped and kept in a dry place keeps indefinitely. The most appropriate containers are tinned, enamelled or glazed ceramic. One is relieved of even this work if comb honey is preferred. It goes without saying that combs fixed to the top bars and separated from the walls can also be centrifuged and even reused in the hive.

Constructing this hive, preferably according to the pattern already described, is undoubtedly possible by anyone who has the will. And if a little care is exercised it will completely satisfy both bees and beekeeper. Genuine smallholders make far more difficult things. The main thing to watch is that the inner dimensions are exactly 28 x 28 x 14 centimetres and the corners are square. In no case should anyone be tempted to use some sort of frame instead of top bars. That would make impossible the retention of the nest scent and warmth in the gaps between the combs and would once again unavoidably bring about the many harms.

The entire timber requirement comprises about one square metre of board of at least two centimetres thickness. It can be used without planing. Small pieces of scrap board, discarded beehives etc., can be used.

Populating the hive can be done by installing a swarm of appropriate size during the main flow and represents the main capital expenditure. Foundation is not used. Inserting starter strips or guiding beads of wax is helpful, though not absolutely necessary.

The hive can be installed in the open, in a sunny, quiet, sheltered spot that is shaded from the hot sun, protected from disturbance and at an appropriate distance from neighbours. It is important to ensure that the hive is precisely vertical.

The retention of nest scent and warmth inherent in the natural construction of comb saves having to feed sugar.

And what profit accompanies beekeeping? We know that in artificial beekeeping – and this has to be admitted by any honest beekeeper – that the costs, effort, labour and sugar consumption in this kind of beekeeping is disproportionate to the average yield and that the profit aimed for is only an illusory profit. The few professional beekeepers go their own ways. But the large majority of beekeepers are those who constantly feed more sugar than the honey they harvest, those who harvest nothing at all and only maintain their colonies by letting them go hungry or by buying in to replace colonies that, through their own fault, they have let die from diseases and epidemics. These beekeepers are the economic backbone of the natural bee breeder in the Kärnter region (of Austria, *Tr.*).

If you read about the net profit of the Austrian Beekeeping School in *Bienen-Vater (Beekeeper)* then you discover that the model apiary of this institution, despite migratory beekeeping and even with good harvests, almost always feeds more sugar than it harvests honey. This is not the fault of the people in charge – these apiaries are the model example for training new beekeepers. These training centres for modern artificial beekeeping, the main items on the curriculum of which are artificial queen breeding and treating bee diseases and epidemics caused by beekeepers, regard themselves as above nature, try to fly in the face of nature ... hence their lack of success.

And what are the prospects for beekeeping that is allied to nature, such as with the box hive with natural comb? Regarding figures for yield ... yes, we should take care not to chatter about them. We shall give away only so much, namely that such a properly installed colony, as a result of the comprehensive life-giving and supporting retention of the nest scent and heat which is based on natural comb construction and has worked for millions of years, ensures a timely colony development and with it its yield at harvest. It is exceptionally rare that in a whole season the flowers are completely ruined by rain. But at the time of the main nectar flow a colony that is ready on time, even in areas of average forage, is in a position in a few days to fill a honey box with honey that is surplus to its own annual requirement, which comprises about 60 kilograms. This surplus for the beekeeper is at least 10 kilograms of honey and a quarter of a kilogram of wax. In good areas and seasons for foraging it can be many times this amount.

As dependable as these figures are, they do not justify taking out a pencil and calculating 10 x 10 colonies gives at least 100 kg honey and such and such amount ... etc. No, this calculation, despite all its accuracy is false if the foraging area – four kilometres radius, the flight-range of foraging bees – is overpopulated with colonies. All overpopulation is to be avoided, something any prospective beekeeper has to take into account in order to protect himself and others from harm.

The creation of surpluses, and thus the yield at harvest, is in a high degree influenced by the type of hive. Arguments against this are only an indication of disregard of natural processes.

Creation made bees for pollinating flowers and not for gathering honey for human beings. Only the extravagant abundance that nature provides for the certain success of her objectives allows the bee to gather honey in excess.

The 'emerging and fading' of all earthly things is fulfilled by the bee through the formation of colonies and through the ageing and destruction of cells.

Comb and bee form an organic unit; the individual bee is only a freely mobile member of it. It cannot survive alone, just as little as can the colony without the cells of the comb.

This natural course can be influenced with appropriate means to the benefit of an increased storage of honey, and this is possible first and foremost by means of the hive.

In studying the natural home of the bee we notice that the cavity, however big it is, has its boundaries. The bee forages to fill this space with brood, bees and stores, and in this process arises its ripeness for starting new colonies. Swarming follows as a natural 'emerging' or developing.

The brood cells gradually age and become thick and black. It is comparable with calcification of the arteries. The organic unity of comb and bee ages, loses its productivity, and finally this leads to dying out, to natural 'fading'.

A beehive, that hinders filling according to need by spatial expansion, hinders the ripeness of the bees for swarming. As long as this ripeness, and thus swarming, stays hindered, the surplus of honey increases through the maintenance of the continued undivided efforts of the bees. The feeling of abundance, the restriction of space, must be denied the bees early on, otherwise it will trigger the swarming instinct, which, once triggered by delayed provision of space, can no longer be stopped.

Ageing can be held back by renewal of comb.

With these two permitted means the natural 'emerging and fading' is held in balance and with it the maximum increase in strength of the bees. The resulting damming up achieves a surplus of honey beyond the natural limit.

The means to this is the beehive which must be elastically adaptable to the space requirements of the moment and permit comb to be renewed, i.e. the opposite, so to speak, of the home of a feral colony.

Equipping a hive only serves the convenience of the beekeeper; the bees need only the empty space. A hive should never go against the nature of the bee, but this has hitherto unfortunately been little heeded and so much damage done, as for example with the comb frames that are open on all sides with the consequent violation of the retention of nest scent and heat that is so essential for life.

Observation of nature shows that the habitation of the bees exerts a decisive influence on the honey yield and has to be considered by the beekeeper if he wants to make a full and lasting success of beekeeping. He should not let himself be confused by semblance of success.

The new box hive, with natural comb in moveable layers, takes full account of this by providing the most harmonious situation for bee existence. In the centre are the bees forming a winter cluster richly surrounded, above and at the sides, by their own stores which remain digestible through a gentle inflow of heat from the nest and which form a protective cushion of warmth for the bees; the honeycombs thickly drawn out so as to make the reduced gaps between them easier to keep warm; the combs fixed to the walls at the sides and top, forming cul-de-sacs to keep hold of, to retain the germ-free nest scent and heat that is essential for life. Above the bee cluster there is never an empty cell to waste the heat. Such a well protected winter colony moves from the bottom upwards according to its consumption of honey. And then at the top, in the warmest zone, the brood activity begins. Initially it comprises small patches, but becomes ever bigger as the sun climbs in the sky, forms a sphere, so as finally to fill with brood all the cells not taken by stores. The nectar flow begins and all surplus honey is stored over the brood, each cell filled with it as it becomes free. The brood is pushed down into the box placed underneath, onto freshly drawn comb. There the instinct to build finds its fulfilment within limits determined by the nectar supply and the development of the colony, free from compulsion or restriction by the beekeeper, thus any reduction of the yield is avoided while at the same time the comb is automatically renewed. No queen excluder is used.

The last brood to emerge in autumn provides the space necessary for the winter cluster that is forming and the upwards movement makes a successful start once again.

The retention of germ-free nest scent and heat resulting from the naturally constructed comb suppresses bacterial life, hinders the emergence of diseases, keeps the stores digestible and the loss of heat within narrow bounds. This saves having to feed and thereby the increase in the cost of the operation through the expense of sugar. No foundation is used, so wax harvested is surplus. Wax starter strips are permitted.

The bees normally remain protected from disturbances and interventions by the beekeeper, although if necessary, inspection by means of moveable layers and also through a limited mobility of combs is easily possible at any place of choice.

The removal of filled honey boxes supports nature because this surplus should not have to be kept warm by the bees in winter.

The timely insertion of empty boxes underneath hinders the restriction of space that must take place in a natural bee habitation and thus be the cause of undesirable swarming. No limits are set to the storage of honey, the expansion of the colony, or the instinct to build.

The insertion underneath of further boxes enables harvests of any size to be made. The constant automatic renewal of comb prevents the combs from becoming excessively old, so comb and bees remain young. Unlimited harmony increases the yields.

Through the advantage of having mobile layers with unlimited addition of space and automatic renewal of comb this new box hive with naturally constructed comb is superior to any other natural comb hive.

The management of this is so simple that with it, smallholders and farmers – people in the best position to keep bees – can carry on a natural, simple and really successful beekeeping, without any specialist knowledge and without significant expenditure of labour or cost. Any beginner who can assemble a few boards from a plan into this easily self-built hive that is unprotected by patents – assuming he does not prefer to buy it – and who obtains possession of a good swarm, can with the least amount of knowledge keep bees and thereby help improve the food supply situation.

The hive's up-to-date shape and appearance extensively fulfils all the demands that may ever be made of a beehive that accords with nature. The high degree of yield security makes this natural-comb box hive, that has been tried and tested for centuries and is now improved, stand out as a home for bees that can completely satisfy both bee and keeper, and which takes account of the demands of our time.

Translator's note regarding box dimensions

It is likely that the dimensions are not quite right because conversion may have been based on the wrong 'pouce' (inch). It is almost certain that L' Abbé Christ used the 'pied du roi', a French unit. In his book the boxes externally measure 13 pouces. So this means about 11 pouces for the interior. The French 'pouce' converts to 2.7069 cm. This would make the interior size 298 mm, or only 2 mm smaller than that of the Abbé Warré hive (300 mm). (*Tr.* – based on a personal communication from Eric Zeissloff; see also http://en.wikipedia.org/wiki/French_units_of_measurement).

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