



L. L. LANGSTROTH

***LANGSTROTH
ON THE HIVE
AND THE HONEY-
BEE: A BEE
KEEPER'S
MANUAL***

L. L. Langstroth

Langstroth on the Hive and the Honey-Bee: A Bee Keeper's Manual

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L. L. LANGSTROTH'S MOVABLE COMB HIVE. Patented October 5, 1862.

Each comb in this hive is attached to a separate, movable frame, and in less than five minutes they may all be taken out, without cutting or injuring them, or at all enraging the bees. Weak stocks may be quickly strengthened by helping them to honey and maturing brood from stronger ones; queenless colonies may be rescued from certain ruin by supplying them with the means of obtaining another queen; and the ravages of the moth effectually prevented, as at any time the hive may be readily examined and all the worms, &c., removed from the combs. New colonies may be formed in less time than is usually required to hive a natural swarm; or the hive may be used as a non-swarmers, or managed on the common swarming plan. The surplus honey may be taken from the interior of the hive on the frames or in upper boxes or glasses, in the most convenient, beautiful and saleable forms. Colonies may be safely transferred from any other hive to this, at any season of the year, from April to October, as the brood, combs, honey and all the contents of the hive are transferred with them, and securely fastened in the frames. That the combs can always be removed from this hive with ease and safety, and that the new system, by giving the perfect control over all the combs, effects a complete revolution in practical bee-keeping, the subscriber prefers to *prove* rather than assert. Practical Apiarians and all who wish to purchase rights and hives, are invited to visit

his Apiary, where combs, honey and bees will be taken from the hives; colonies which may be brought to him for that purpose, transferred from any old hive; queens, and the whole process of rearing them constantly exhibited; new colonies formed, and all processes connected with the practical management of an Apiary fully illustrated and explained.

Those who have any considerable number of bees, will find it to their interest to have at least one movable comb-hive in their Apiary, from which they may, in a few minutes, supply any colony which has lost its queen, with the means of rearing another.

The hive and right will be furnished on the following terms. For an individual or farm right, five dollars. This will entitle the purchaser to use and construct for his own use on his own premises, as many hives as he chooses. The hives are manufactured by machinery, and can probably be delivered, freight included, at any Railroad Station in New England, or New York, cheaper than they could be made in small quantities on the spot. On receipt of a hive, the purchaser can decide for himself, whether he prefers to make them, or to order them of the Patentee. For one dollar, postage paid, the book will be sent free by mail. On receipt of ten dollars, a beautiful hive showing all the combs, (with glass on four sides,) will be sent with right, freight paid to any railroad station in New England or New York: a right and hive which will accommodate *two* colonies, with glass on each side, for twelve dollars; for seven dollars, a right and a well made hive that any one can construct who can handle the simplest tools. In all cases where the hives are sent out of New England or New York, as the freight will not be prepaid, a dollar will be deducted from the above prices.

Address

L. L. LANGSTROTH.

Greenfield, Mass.

INTRODUCTION

CHAPTER I.

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The present condition of practical bee-keeping in this country, is known to be deplorably low. From the great mass of agriculturists, and others favorably situated for obtaining honey, it receives not the slightest attention. Notwithstanding the large number of patent hives which have been introduced, the ravages of the bee-moth have increased, and success is becoming more and more precarious. Multitudes have abandoned the pursuit in disgust, while many of the most experienced, are fast settling down into the conviction that all the so-called "Improved Hives" are delusions, and that they must return to the simple box or hollow log, and "*take up*" their bees with sulphur, in the old-fashioned way.

In the present state of public opinion, it requires no little courage to venture upon the introduction of a new hive and system of management; but I feel confident that a *new era* in bee-keeping has arrived, and invite the attention of all interested, to the reasons for this belief. A perusal of this Manual, will, I trust, convince them that there is a better way than any with which they have yet been acquainted. They will here find many hitherto mysterious points in the physiology of the honey-bee, clearly explained, and much valuable information never before communicated to the public.

It is now nearly fifteen years since I first turned my attention to the cultivation of bees. The state of my health having compelled me to live more and more in the open air, I have devoted a large portion of my time, of late years, to a careful investigation of their habits, and to a series of minute and thorough experiments in the construction of hives, and the best methods of managing them, so as to secure the largest practical results.

Very early in my Apiarian studies, I procured an imported copy of the work of the celebrated Huber, and constructed a hive on his plan, which furnished me with favorable opportunities of verifying some of his most valuable discoveries; and I soon found that the prejudices existing against him, were entirely unfounded. Believing that his discoveries laid the foundation for a more extended and profitable system of bee-keeping, I began to experiment with hives of various construction.

The result of all these investigations fell far short of my expectations. I became, however, most thoroughly convinced that no hives were fit to be used, unless they furnished *uncommon protection* against *extremes* of *heat* and more especially of *COLD*. I accordingly discarded all thin hives made of inch stuff, and constructed my hives of *doubled* materials, enclosing a "dead air" space all around.

These hives, although more expensive in the first cost, proved to be much cheaper in the end, than those I had previously used. The bees *wintered* remarkably well in them, and swarmed *early* and with unusual *regularity*. My next step in advance, was, while I secured my surplus honey in the most convenient, beautiful and salable forms, so to facilitate the entrance of the bees into the honey receptacles, as to secure the largest fruits from their labors.

Although I felt confident that my hive possessed some valuable peculiarities, I still found myself unable to remedy many of the casualties to which bee-keeping is liable. I now perceived that no hive could be made to answer my expectations unless it gave me the *complete control of the combs*, so that I might remove any, or all of them at pleasure. The use of the Huber hive had convinced me that with proper precautions, the combs might be removed without *enraging* the bees, and that these insects were capable of being domesticated or *tamed*, to a most surprising degree. A knowledge of these facts was absolutely necessary to the further progress of my invention, for without it, I should have regarded a hive designed to allow of the removal of the combs, as too dangerous in use, to be of any practical value. At first, I used movable slats or bars placed on rabbets in the front and back of the hive. The bees were induced to build their combs upon these bars, and in carrying them down, to fasten them to the sides of the hive. By severing the attachments to the sides, I was able, at any time, to remove the combs suspended from the bars. There was nothing *new* in the use of movable *bars*; the invention being probably, at least, a hundred years old; and I had myself used such hives on Bevan's plan, very early in the commencement of my experiments. The chief peculiarity in my hives, as now constructed, was the facility with which these bars could be removed without enraging the bees, and their combination with my new mode of obtaining the surplus honey.

With hives of this construction I commenced experimenting on a larger scale than ever, and soon arrived at results which proved to be of the very first importance. I found myself able, if I wished it, to *dispense entirely* with *natural swarming*, and yet to multiply colonies with much greater *rapidity* and *certainty* than by the common methods. I could, in a *short time*, *strengthen my feeble colonies*, and

furnish those which had *lost their Queen* with the means of *obtaining another*. If I suspected that any thing was the matter with a hive, I could *ascertain its true condition*, by making a thorough examination of every part, and if the *worms had gained a lodgment*, I could quickly *dispossess* them. In short, I could perform all the operations which will be explained in this treatise, and I now believed that bee-keeping could be made *highly profitable*, and as much a matter of *certainty*, as any other branch of rural economy.

I perceived, however, that one thing was *yet* wanting. The *cutting* of the combs from their attachments to the *sides* of the hive, in order to remove them, was attended with much loss of *time* to myself and to the bees, and in order to *facilitate* this operation, the construction of my hive was necessarily *complicated*. This led me to invent a method by which the combs were attached to MOVABLE FRAMES, and suspended in the hives, *so as to touch neither the top, bottom, nor sides*. By this device, I was able to remove the combs at pleasure, and if desired, I could speedily transfer them, bees and all, *without any cutting*, to another hive. I have experimented largely with hives of this construction, and find that they answer most admirably, all the ends proposed in their invention.

While experimenting in the summer of 1851, with some observing hives of a peculiar construction, I discovered that bees could be made to work in glass hives, *exposed to the full light of day*. The notice, in a Philadelphia newspaper, of this discovery, procured me the pleasure of an acquaintance with Rev. Dr. Berg, pastor of a Dutch Reformed church in that city. From him, I first learned that a Prussian clergyman, of the name of Dzierzon, (pronounced Tseertsone,) had attracted the attention of crowned heads, by his important discoveries in the management of bees. Before he communicated the particulars of these discoveries, I

explained to Dr. Berg, my system of management, and showed him my hive. He expressed the greatest astonishment at the wonderful similarity in our methods of management, both of us having carried on our investigations without the slightest knowledge of each other's labors. Our hives, he found to differ in some very important respects. In the Dzierzon hive, the combs are not attached to *movable frames*, but to *bars*, so that they cannot, *without cutting*, be removed from the hive. In my hive, which is opened *from the top*, any comb may be taken out, without at all disturbing the others; whereas, in the Dzierzon hive, which is opened from one of the ends, it is often necessary to *cut and remove many* combs, in order to get access to a particular one; thus, if the *tenth* comb from the end is to be removed, *nine* combs must be first *cut and taken out*. All this consumes a large amount of time. The German hive does not furnish the surplus honey in a form which would be found most salable in our markets, or which would admit of safe transportation in the comb. Notwithstanding these disadvantages, it has achieved a *great triumph* in Germany, and given a *new impulse* to the cultivation of bees.

The following letter from Samuel Wagner, Esq., cashier of the bank in York, Pennsylvania, will show the results which have been obtained in Germany, by the new system of management, and his estimate of the superior value of my hive to those in use there.

YORK, PA., DEC. 24, 1852.

DEAR SIR,

The Dzierzon theory and the system of bee-management based thereon, were originally promulgated, *hypothetically*, in the "Eichstadt Bienenzeitung" or Bee-journal, in 1845, and at once arrested my attention. Subsequently, when in

1848, at the instance of the Prussian government, the Rev. Mr. Dzierzon published his "Theory and Practice of Bee Culture," I imported a copy, which reached me in 1849, and which I translated prior to January 1850. Before the translation was completed, I received a visit from my friend, the Rev. Dr. Berg, of Philadelphia, and in the course of conversation on bee-keeping, mentioned to him the Dzierzon theory and system, as one which I regarded as new and very superior, though I had had no opportunity for testing it practically. In February following, when in Philadelphia, I left with him the translation in manuscript—up to which period, I doubt whether any other person in this country had any knowledge of the Dzierzon theory; except to Dr. Berg I had never mentioned it to any one, save in very general terms.

In September, 1851, Dr. Berg again visited York, and stated to me your investigations, discoveries and inventions. From the account Dr. Berg gave me, I felt assured that you had devised substantially the *same system* as that so successfully pursued by Mr. Dzierzon; but how far *your hive* resembled his I was unable to judge from description alone. I inferred, however, several points of difference. The coincidence as to system, and the principles on which it was evidently founded, struck me as exceedingly singular and interesting, because I felt confident that you had no more knowledge of Mr. Dzierzon and his labors, before Dr. Berg mentioned him and his book to you, than Mr. Dzierzon had of you. These circumstances made me very anxious to examine your hives, and induced me to visit your Apiary in the village of West Philadelphia, last August. In the absence of the keeper, as I informed you, I took the liberty to explore the premises thoroughly, opening and inspecting a number of the hives, and noticing the internal arrangement of the parts. The result was, that I came away convinced that though your system was based on the same principles as

Dzierzon's, yet that your hive was almost totally different from his, in construction and arrangement; that while the same objects *substantially* are attained by each, your hive is more simple, more convenient, and much better adapted for general introduction and use, since the mode of using it can be more easily taught. Of its ultimate and triumphant success I have no doubt. I sincerely believe that when it comes under the notice of Mr. Dzierzon, he will himself prefer it to his own. It in fact combines all the good properties which a hive ought to possess, while it is free from the complication, clumsiness, *vain whims*, and decidedly objectionable features, which characterize most of the inventions which profess to be at all superior to the simple box, or the common chamber hive.

You may certainly claim *equal credit* with Dzierzon for originality in observation and discovery in the natural history of the honey bee, and for success in deducing principles and devising a most valuable system of management from observed facts. But in *invention*, as far as neatness, compactness, and adaptation of means to ends are concerned, the sturdy German must yield the palm to you. You will find a case of similar coincidence detailed in the Westminster Review for October, 1852, page 267, et seq.

I send you herewith some interesting statements respecting Dzierzon, and the estimate in which his system is held in Germany.

Very truly yours,
SAMUEL WAGNER.

REV. L. L. LANGSTROTH.

The following are the statements to which Mr. Wagner refers.—

"As the best test of the value of Mr. Dzierzon's system, is the *results* which have been made to flow from it, a brief account of its rise and progress maybe found interesting. In 1835 he commenced bee-keeping in the common way, with 12 colonies—and after various mishaps, which taught him the defects of the common hives and the old mode of management, his stock was so reduced that in 1838 he had virtually to begin anew. At this period he contrived his improved hive in its ruder form, which gave him the command over all the combs, and he began to experiment on the theory which observation and study had enabled him to devise. Thenceforward his progress was as rapid as his success was complete and triumphant. Though he met with frequent reverses—about 70 colonies having been stolen from him, sixty destroyed by fire, and 24 by a flood—yet in 1846 his stock had increased to 360 colonies, and he realized from them that year six thousand pounds of honey, besides several hundred weight of wax. At the same time most of the cultivators in his vicinity who pursued the common methods, had fewer hives than they had when he commenced.

In the year 1848, a fatal pestilence, known by the name of "foul brood," prevailed among his bees, and destroyed nearly all his colonies before it could be subdued—only about ten having escaped the malady, which attacked alike the old stocks and his artificial swarms. He estimates his entire loss that year at over 500 *colonies*. Nevertheless he succeeded so well in multiplying by artificial swarms, the few that remained healthy, that in the fall of 1851 his stock consisted of nearly 400 colonies. He must, therefore, have multiplied his stocks more than three fold each year. "

The highly prosperous condition of his colonies is attested by the Report of the Secretary of the Annual Apiarian Convention which met in his vicinity last spring. This Convention, the fourth which has been held, consisted of 112 experienced and enthusiastic bee-keepers from various districts of Germany and neighboring countries, and among them were some who when they assembled were strong opposers of his system.

They visited and personally examined the Apiaries of Mr. Dzierzon. The report speaks in the very highest terms of his success, and of the manifest superiority of his system of management. He exhibited and satisfactorily explained to his visitors his practice and principles; and they remarked, with astonishment, the *singular docility* of his bees, and the thorough control to which they were subjected. After a full detail of the proceedings, the Secretary goes on to say:—

"Now that I have seen Dzierzon's method practically demonstrated, I must admit that it is attended with fewer difficulties than I had supposed. With his hive and system of management it would seem that bees become at once more docile than they are in other cases. I consider his system the simplest and best means of elevating bee-culture to a profitable pursuit, and of spreading it far and wide over the land—especially as it is peculiarly adapted to districts in which the bees do not readily and regularly swarm. His eminent success in re-establishing his stock after suffering so heavily from the devastating pestilence—in short the recuperative power of the system demonstrates conclusively, that it furnishes the best, perhaps the only means of reinstating bee-culture to a profitable branch of rural economy.

Dzierzon modestly disclaimed the idea of having attained perfection in his hive. He dwelt rather upon the truth and importance of his *theory* and *system of management*."

From the Leipzig Illustrated Almanac—Report on Agriculture for 1846.

"Bee culture is no longer regarded as of any importance in rural economy."

From the same for 1851, and 1853.

"Since Dzierzon's system has been made known an entire revolution in bee culture has been produced. A new era has been created for it, and bee-keepers are turning their attention to it with renewed zeal. The merits of his discoveries are appreciated by the government, and they recommend his system as worthy the attention of the teachers of common schools.

Mr. Dzierzon resides in a poor sandy district of Middle Silesia, which, according to the common notions of Apiarians, is unfavorable to bee-culture. Yet despite of this and of various mishaps, he has succeeded in realizing 900 dollars as the product of his bees in one season!

By his mode of management, his bees yield, even in the poorest years, from 10 to 15 per cent on the capital invested, and where the colonies are produced by the Apiarian's own skill and labor they cost him only about one-fourth the price at which they are usually valued. In ordinary seasons the profit amounts to from 30 to 50 per cent, and in very favorable seasons from 80 to 100 per cent."

In communicating these facts to the public, I have several objects in view. I freely acknowledge that I take an honest pride in establishing my claims as an independent observer; and as having matured by my own discoveries, the same system of bee-culture, as that which has excited so much interest in Germany; I desire also to have the testimony of the translator of Dzierzon to the superior merits of my hive. Mr. Wagner is extensively known as an able German scholar.

He has taken all the numbers of the Bee Journal, a monthly periodical which has been published for more than fifteen years in Germany, and is probably more familiar with the state of Apiarian culture abroad, than any man in this country.

I am anxious further to show that the great importance which I attach to my system of management, is amply justified by the success of those who while pursuing the same system with inferior hives, have attained results, which to common bee-keepers, seem almost incredible. Inventors are very prone to form exaggerated estimates of the value of their labors; and the American public has been so often deluded with patent hives, devised by persons ignorant of the most important principles in the natural history of the bee, and which have utterly failed to answer their professed objects, that they are scarcely to be blamed for rejecting every new hive as unworthy of confidence.

There is now a prospect that a Bee Journal will before long, be established in this country. Such a publication has long been needed. Properly conducted, it will have a most powerful influence in disseminating information, awakening enthusiasm, and guarding the public against the miserable impositions to which it has so long been subjected.

Two such journals are now published monthly in Germany, one of which has been in existence for more than 15 years—and their wide circulation has made thousands well acquainted with those principles, which must constitute the foundation of any enlightened and profitable system of culture.

The truth is that while many of the principal facts in the physiology of the honey bee have long been familiar to scientific observers, it has unfortunately happened that some of the most important have been widely discredited.

In themselves they are so *wonderful*, and to those who have not witnessed them, often *so incredible*, that it is not at all strange that they have been rejected as fanciful conceits, or bare-faced inventions.

Many persons have not the slightest idea that *every thing* may be *seen* that takes place in a bee-hive. But hives have for many years, been in use, containing only one large comb, enclosed on both sides, by glass. These hives are darkened by shutters, and when opened, the queen is exposed to observation, as well as all the other bees. Within the last two years, I have discovered that with proper precautions, colonies can be made to work in observing hives, without shutters, and exposed continually to the *full light of day*; so that observations may be made at all times, without in the least interrupting the ordinary operations of the bees. By the aid of such hives, some of the most intelligent citizens of Philadelphia have seen in my Apiary, the queen bee depositing her eggs in the cells, and constantly surrounded by an affectionate circle of her devoted children. They have also witnessed, with astonishment and delight, all the steps in the mysterious process of raising queens from eggs which with the ordinary development, would have produced only the common bees. For more than three months, there was not a day in which some of my colonies were not engaged in making new queens to supply the place of those taken from them, and I had the pleasure of exhibiting all the facts to bee-keepers who never before felt willing to credit them. As *all* my hives are so made that each comb can be taken out, and examined at pleasure, those who use them, can obtain from them all the information which they need, and, are no longer forced to take any thing upon trust.

May I be permitted to express the hope that the time is now at hand, when the number of practical observers will be so

multiplied, that ignorant and designing men will neither be able to impose their conceits and falsehoods upon the public, nor be sustained in their attempts to depreciate the valuable discoveries of those who have devoted years of observation and experiment to promote the advancement of Apiarian knowledge.

CHAPTER II.

THE HONEY BEE CAPABLE OF BEING TAMED OR DOMESTICATED TO A MOST SURPRISING DEGREE.

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If the bee had not such a necessary and yet formidable weapon both of offence and defence, multitudes would be induced to enter upon its cultivation, who are now afraid to have any thing to do with it. As the new system of management which I have devised, seems to add to this inherent difficulty, by taking the greatest possible liberties with so irascible an insect, I deem it important to show clearly, in the very outset, how bees may be managed, so that all necessary operations may be performed in an Apiary, without incurring any serious risk of exciting their anger.

Many persons have been unable to control their expressions of wonder and astonishment, on seeing me open hive after hive, in my experimental Apiary, in the vicinity of Philadelphia, removing the combs covered with bees, and shaking them off in front of the hives; exhibiting the queen, transferring the bees to another hive, and, in short, dealing with them as if they were as harmless as so many flies. I have sometimes been asked if the bees with which I was experimenting, had not been subjected to a long course of instruction, to prepare them for public exhibition; when in some cases, the very hives which I was opening, contained swarms which had been brought only the day before, to my establishment.

Before entering upon the natural history of the bee, I shall anticipate some principles in its management, in order to prepare my readers to receive, without the doubts which would otherwise be very natural, the statements in my book, and to convince them that almost any one favorably situated, may safely enjoy the pleasure and profit of a pursuit, which has been most appropriately styled, "the poetry of rural economy;" and that, without being made too familiar with a sharp little weapon, which can most speedily and effectually convert all the poetry into very sorry prose.

The Creator intended the bee for the comfort of man, as truly as he did the horse or the cow. In the early ages of the world, indeed until very recently, honey was almost the only natural sweet; and the promise of "a land flowing with milk and honey," had then a significance, the full force of which it is difficult for us to realize. The honey bee was, therefore, created not merely with the ability to store up its delicious nectar for its own use, but with certain properties which fitted it to be domesticated, and to labor for man, and without which, he would no more have been able to subject it to his control, than to make a useful beast of burden of a lion or a tiger.

One of the peculiarities which constitutes the very foundation, not merely of my system of management, but of the ability of man to domesticate at all so irascible an insect, has never, to my knowledge, been clearly stated as a great and controlling principle. It may be thus expressed.

A HONEY BEE NEVER VOLUNTEERS AN ATTACK, OR ACTS ON THE OFFENSIVE, WHEN IT IS GORGED OR FILLED WITH HONEY.

The man who first attempted to lodge a swarm of bees in an artificial hive, was doubtless agreeably surprised at the ease with which he was able to accomplish it. For when the bees are intending to swarm, they fill their honey-bags to their

utmost capacity. This is wisely ordered, that they may have materials for commencing operations immediately in their new habitation; that they may not starve if several stormy days should follow their emigration; and that when they leave their hives, they may be in a suitable condition to be secured by man.

They issue from their hives in the most peaceable mood that can well be imagined; and unless they are abused, allow themselves to be treated with great familiarity. The hiving of bees by those who understand their nature, could almost always be conducted without the risk of any annoyance, if it were not the case that some improvident or unfortunate ones occasionally come forth without the soothing supply; and not being stored with honey, are filled with the gall of the bitterest hate against all mankind and animal kind in general, and any one who dares to meddle with them in particular. Such radicals are always to be dreaded, for they must vent their spleen on something, even though they lose their life in the act.

Suppose the whole colony, on sallying forth, to possess such a ferocious spirit; no one would ever dare to hive them, unless clad in a coat of mail, at least bee-proof, and not even then, until all the windows of his house were closed, his domestic animals bestowed in some safe place, and sentinels posted at suitable stations, to warn all comers to look out for something almost as much to be dreaded, as a fiery locomotive in full speed. In short, if the propensity to be exceedingly good-natured after a hearty meal, had not been given to the bee, it could never have been domesticated, and our honey would still be procured from the clefts of rocks, or the hollows of trees.

A second peculiarity in the nature of the bee, and one of which I continually avail myself with the greatest success, may be thus stated.

BEES CANNOT, UNDER ANY CIRCUMSTANCES, RESIST THE TEMPTATION TO FILL THEMSELVES WITH LIQUID SWEETS.

It would be quite as easy for an inveterate miser to look with indifference upon a golden shower of double eagles, falling at his feet and soliciting his appropriation. If then we can contrive a way to call their attention to a treat of running sweets, when we wish to perform any operation which might provoke them, we may be sure they will accept it, and under its genial influence, allow us without molestation, to do what we please.

We must always be particularly careful not to handle them roughly, for they will never allow themselves to be pinched or hurt without thrusting out their sting to resent such an indignity. I always keep a small watering-pot or sprinkler, in my Apiary, and whenever I wish to operate upon a hive, as soon as the cover is taken off, and the bees exposed, I sprinkle them gently with water sweetened with sugar. They help themselves with the greatest eagerness, and in a few moments, are in a perfectly manageable state. The truth is, that bees managed on this plan are always glad to see visitors, and you cannot look in upon them too often, for they expect at every call, to receive a sugared treat by way of a peace-offering.

I can superintend a large number of hives, performing every operation that is necessary for pleasure or profit, and yet not run the risks of being stung, which must frequently be incurred in attempting to manage, in the simplest way, the common hives. Those who are timid may, at first, use a bee-dress; though they will soon discard every thing of the kind, unless they are of the number of those to whom the bees have a special aversion. Such unfortunates are sure to be stung whenever they show themselves in the vicinity of a bee-hive, and they will do well to give the bees a very wide berth.

Apiarians have, for many years, employed the smoke of tobacco for subduing their bees. It deprives them, at once, of all disposition to sting, but it ought never to be used for such a purpose. If the construction of the hives will not permit the bees to be sprinkled with sugar water, the smoke of burning paper or rags will answer every purpose, and the bees will not be likely to resent it; whereas when they recover from the effect of the tobacco, they not unfrequently remember, and in no very gentle way, the operator who administered the nauseous dose.

Let all your motions about your hives be gentle and slow. Accustom your bees to your presence; never crush or injure them in any operation; acquaint yourself fully with the principles of management detailed in this treatise, and you will find that you have but little more reason to dread the sting of a bee, than the horns of your favorite cow, or the heels of your faithful horse.

CHAPTER III.

THE QUEEN OR MOTHER-BEE, THE DRONES, AND THE WORKERS; WITH VARIOUS HIGHLY IMPORTANT FACTS IN THEIR NATURAL HISTORY.

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Bees can flourish only when associated in large numbers, as a colony. In a solitary state, a single bee is almost as helpless as a new-born child; it is unable to endure even the ordinary chill of a cool summer night.

If a strong colony of bees is examined, a short time before it swarms, three different kinds of bees will be found in the hive.

1st. A bee of peculiar shape, commonly called the *Queen Bee*.

2d. Some hundreds, more or less, of large bees called *Drones*.

3d. Many thousands of a smaller kind, called *Workers* or common bees, and similar to those which are seen on the blossoms. A large number of the cells will be found filled with honey and bee-bread; while vast numbers contain eggs, and immature workers and drones. A few cells of unusual size, are devoted to the rearing of young queens, and are ordinarily to be found in a perfect condition, only in the swarming season.

The *Queen-Bee* is the only *perfect female* in the hive, and all the eggs are laid by her. The *Drones* are the *males*, and the

Workers are *females*, whose ovaries or "egg-bags" are so *imperfectly developed* that they are incapable of breeding, and which retain the instinct of females, only so far as to give the most devoted attention to feeding and rearing the brood.

These facts have all been demonstrated repeatedly, and are as well established as the most common facts in the breeding of our domestic animals. The knowledge of them in their most important bearings, is absolutely essential to all who expect to realize large profits from an improved method of rearing bees. Those who will not acquire the necessary information, if they keep bees at all, should manage them in the old-fashioned way, which requires the smallest amount either of knowledge or skill.

I am perfectly aware how difficult it is to reason with a large class of bee-keepers, some of whom have been so often imposed upon, that they have lost all faith in the truth of any statements which may be made by any one interested in a patent hive, while others stigmatize all knowledge which does not square with their own, as "book-knowledge," and unworthy the attention of practical men.

If any such read this book, let me remind them again, that all my assertions may be put to the test. So long as the interior of a hive, was to common observers, a profound mystery, ignorant and designing men might assert what they pleased, about what passed in its dark recesses; but now, when all that takes place in it, can, *in a few moments*, be exposed to the *full light of day*, and every one who keeps bees, can *see and examine* for himself, the man who attempts to palm upon the community, his own conceits for facts, will speedily earn for himself, the character both of a fool and an impostor.

THE QUEEN BEE, or as she may more properly be called THE MOTHER BEE, is the common mother of the whole colony. She reigns therefore, most unquestionably, by a divine right, as every mother is, or ought to be, a queen in her own family. Her shape is entirely different from that of the other bees. While she is not near so bulky as a drone, her body is longer, and of a more *tapering*, or sugar-loaf form than that of a worker, so that she has somewhat of a wasp-like appearance. Her wings are much shorter, in proportion, than those of the drone, or worker; the under part of her body is of a golden color, and the upper part darker than that of the other bees. Her motions are usually slow and matronly, although she can, when she pleases, move with astonishing quickness.

No colony can long exist without the presence of this all-important insect. She is just as necessary to its welfare, as the soul is to the body, for a colony without a queen must as certainly perish, as a body without the spirit hasten to inevitable decay.

She is treated by the bees, as every mother ought to be, by her children, with the most unbounded respect and affection. A circle of her loving offspring constantly surround her, testifying, in various ways, their dutiful regard; offering her honey, from time to time, and always, most politely getting out of her way, to give her a clear path when she wishes to move over the combs. If she is taken from them, as soon as they have ascertained their loss, the whole colony is thrown into a state of the most intense agitation; all the labors of the hive are at once abandoned; the bees run wildly over the combs, and frequently, the whole of them rush forth from the hive, and exhibit all the appearance of anxious search for their beloved mother. Not being able anywhere to find her, they return to their desolate home, and by their mournful tones, reveal their

deep sense of so deplorable a calamity. Their note, at such times, more especially when they first realize her loss, is of a peculiarly mournful character; it sounds something like a *succession of wails on the minor key*, and can no more be mistaken by the experienced bee-keeper, for their ordinary, happy hum, than the piteous moanings of a sick child can be confounded, by an anxious mother, with its joyous crowings, when overflowing with health and happiness.

I am perfectly aware that all this will sound to many, much more like romance than sober reality; but I have determined, in writing this book, to state facts, however wonderful, just as they are; confident that they will, before long, be universally received, and hoping that the many wonders in the economy of the honey bee will not only excite a wider interest in its culture, but will lead those who observe them, to adore the wisdom of Him who gave them such admirable instincts. I cannot refrain from quoting here, the forcible remarks of an English clergyman, who appears to be a very great enthusiast in bee-culture.

"Every bee-keeper, if he have only a soul to appreciate the works of God, and an intelligence of an inquisitive order, cannot fail to become deeply interested in observing the wonderful instincts, (instincts akin to reason,) of these admirable creatures; at the same time that he will learn many lessons of practical wisdom from their example. Having acquired a knowledge of their habits, not a bee will buzz in his ear, without recalling to him some of these lessons, and helping to make him a wiser and a better man. It is certain that in all my experience, I never yet met with a keeper of bees, who was not a respectable, well-conducted member of society, and a moral, if not a religious man.^[1] It is evident, on reflection, that this pursuit, if well attended to, must occupy some considerable share of a man's time and thoughts. He must be often about his bees, which will help