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Stoker Wilde Christie Maupassant Haggard Chesterton Molière Eliot Grimm
Garnett Engels Schiller Byron Maupassant Schiller
Goethe Hawthorne Smith Kafka
Cotton Dostoyevsky Kipling Doyle Willis
Baum Henry Nietzsche Dumas Flaubert Turgenev Balzac
Leslie Stockton Vatsyayana Crane
Burroughs Verne
Curtis Tocqueville Gogol Busch
Homer Tolstoy Whitman Twain
Darwin Zola Lawrence Dickens Plato
Potter Freud Jowett Stevenson Andersen Harte
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Mysteries of Bee-keeping Explained

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MYSTERIES

OF

BEE-KEEPING EXPLAINED:

BEING A COMPLETE

ANALYSIS OF THE WHOLE SUBJECT;

CONSISTING OF

THE NATURAL HISTORY OF BEES, DIRECTIONS FOR OBTAIN-
ING THE GREATEST
AMOUNT OF PURE SURPLUS HONEY WITH THE LEAST POS-
SIBLE
EXPENSE, REMEDIES FOR LOSSES GIVEN, AND THE SCIENCE
OF
"LUCK" FULLY ILLUSTRATED – THE RESULT OF MORE
THAN TWENTY YEARS' EXPERIENCE IN
EXTENSIVE APIARIES.

BY M. QUINBY,

PRACTICAL BEE-KEEPER.

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PREFACE.

Before the reader decides that an apology is necessary for the introduction of another work on bees into the presence of those already before the public, it is hoped that he will have the patience to examine the contents of this.

The writer of the following pages commenced beekeeping in 1828, without any knowledge of the business to assist him, save a few directions about hiving, smoking them with sulphur, &c. Nearly all the information to be had was so mingled with erroneous whims and notions, that it required a long experience to separate essential and consistent points. It was *impossible* to procure a work that gave the information necessary for practice. From that time to the present, no sufficient guide for the inexperienced has appeared. European works, republished here, are of but little value. Weeks, Townley, Miner, and others, writers of this country, within a few years, have given us treatises, valuable to some extent, but have entirely neglected several chapters, very important and essential to the beginner. Keeping bees *has* been, and is now, by the majority, deemed a hazardous enterprise. The ravages of the moth had been so great, and loss so frequent, that but little attention was given to the subject for a long time. Mr. Weeks lost his entire stock three times in fifteen years. But soon after the discovery was promulgated, that honey could be taken from a stock without destroying the bees, an additional attention was manifest, increasing to a rage in many places. It seems to be easily understood, that *profit* must attend success, in this branch of the farmer's stock; inasmuch as the "bees work for nothing and find themselves." This interest in bees should be encouraged to continue till enough are kept to collect all the honey now wasted; which, compared with the present collections, would be more than a thousand pounds to one. But to succeed, that is the difficulty. Some eighteen years since, after a propitious season, an aged and esteemed friend said to me, "It is not to be expected that you will have such luck always; you must expect they will run out after a time. I have always noticed, when people have first-rate luck for a time, that the bees generally take a turn, and are gone in a few years."

I am not sure but, to the above remarks, may be traced the cause of my subsequent success. It stimulated me to observation and inquiry. I soon found that good seasons were the "lucky" ones, and that many lost in an adverse season, all they had before gained. Also, that strong families were the only ones on which I could depend for protection against the moth. This induced the effort to ascertain causes tending to diminish the size of families, and the application of remedies. Whether success has attended my efforts or not, the reader can judge, after a perusal of the work.

It is time that the word "*luck*," as applied to beekeeping, was discarded. The prevailing opinion, that bees will prosper for one person more than another, under the same circumstances, is fallacious. As well might it be applied to the mechanic and farmer. The careless, ignorant farmer, might occasionally succeed in raising a crop with a poor fence; but would be liable, at any time, to lose it by trespassing cattle. He might have suitable soil in the beginning, but without knowledge, for the proper application of manures, it might fail to produce; unless a *chance* application *happened* to be right.

But with the *intelligent* farmer the case is different: fences in order, manures judiciously applied, and with propitious seasons, he makes a sure thing of it. Call him "*lucky*" if you please; it is his knowledge, and care, that render him so. So with bee-keeping, the careful man is the "lucky" one. There can be no effect without a preceding cause. If you lose a stock of bees, there is a cause or causes producing it, just as certain as the failure of a crop with the unthrifty farmer, can be traced to a poor fence, or unfruitful soil. You may rest assured, that a rail is off your fence of management somewhere, or the proper applications have not been made. In relation to bees, these things may not be quite so apparent, yet nevertheless true. Why is there so much more uncertainty in apiarian science than other farming operations? It must be attributed to the fact, that among the thousands who are engaged in, and have studied agriculture, perhaps not more than one has given his energies to the nature and habits of bees. If knowledge is elicited in the same ratio, we ought to have a thousand times more light on one subject than the other, and still there are some things, even in agriculture, that may yet be learned.

It is supposed, by many, that we already have all the knowledge that the subject of *bees* affords. This is not surprising; a person that was never furnished with a full treatise, might arrive at such conclusions. Unless his own experience goes deeper, he can have no means of judging what is yet behind.

In conversation relative to this work, with a person of considerable scientific attainments, he remarked, "You do not want to give the natural history of bees at all; that is already sufficiently understood." And how is it understood; as Huber gives it, or in accordance with some of our own writers? If we take Huber as a guide, we find many points recently contradicted. If we compare authors of our day, we find them contradicting each other. One recommends a peculiarly constructed hive, as just the thing adapted to their nature and instincts. If a single point is in accordance with their nature, he labors to twist all the others to his purpose, although it may involve a fundamental principle impossible to reconcile. Some one else succeeds in another point, and proceeds to recommend something altogether different. False and contradictory assertions are made either through ignorance, or interest. Interest may blind the judgment, and spurious history may deceive.

It is folly to expect success in bee-keeping for any length of time, without a correct knowledge of their nature and instincts; and this we shall never obtain by the course hitherto pursued. As much of their labor is performed in the dark, and difficult to be observed, it has given rise to conjecture and false reasoning, leading to false conclusions.

When I say a thing *is so*, or say it is *not so*, what evidence has the reader that it is proved or demonstrated? My mere assertions are not expected to be taken in preference to another's; of such proof, we have more than enough. Most people have not the time, patience, or ability, to set down quietly with close observation, and investigate the subject thoroughly. Hence it has been found easier to receive error for truth, than to make the exertion necessary to confute it; the more so, because there is no guide to direct the investigation. I shall, therefore, pursue a different course; and for every *assertion* endeavor to give a test, that the reader may apply and satisfy himself, and trust to no one. As for theories, I shall try to keep them

separate from facts, and offer such evidence as I have, either for or against them. If the reader has further proof that presents the matter in another light, of course he will exercise the right to a difference of opinion.

I could give a set of rules for practice, and be very brief, but this would be unsatisfactory. When we are told a thing *must be done*, most of us, like the "inquisitive Yankee," have a desire to know *why* it is necessary; and then like to know *how* to do it. This gives us confidence that we are right. Hence, I shall endeavor to give the practical part, in as close connection with the natural history, that dictates it, as possible.

This work will contain several chapters entirely new to the public: the result of my own experience, that will be of the utmost value to all who desire to realize the greatest possible advantages from their bees.

The additions to chapters already partially discussed by others, will contain much original matter not to be found elsewhere. When many stocks are kept, the chapter on "Loss of Queens," alone, will, with attention, save to any one, not in the secret, enough in one season to be worth more in value than many times the cost of this work. The same might be said of those on diseased brood, artificial swarms, wintering bees, and many others.

If such a work could have been placed in my hands twenty years ago, I should have realized hundreds of dollars by the information. But instead of this, my course has been, first to suffer a loss, and then find out the remedy, or preventive; from which the reader may be exempt, as I can confidently recommend these directions.

Another new feature will be found in the duties of each season being kept by itself, commencing with the spring and ending with the winter management.

In my anxiety to be understood by all classes of readers, I am aware that I have made the elegant construction and arrangement of sentences of secondary importance; therefore justly liable to criticism. But to the reader, whose object is information on this subject, it can be of but little consequence.

CHAPTER I.

A BRIEF HISTORY.

THREE KINDS OF BEES.

Every prosperous swarm, or family of bees, must contain one queen, several thousand workers, and, part of the year, a few hundred drones.



QUEEN.



WORKER.



DRONE.

QUEEN DESCRIBED.

The queen is the mother of the entire family; her duty appears to be only to deposit eggs in the cells. Her abdomen has its full size very abruptly where it joins the trunk or body, and then gradually tapers to a point. She is longer than either the drones or workers, but her size, in other respects, is a medium between the two. In shape she resembles the worker more than the drone; and, like the worker, has a sting, but will not use it for anything below royalty. She is nearly destitute of down, or hairs; a very little may be seen about her head and trunk. This gives her a dark, shining appearance, on the upper side—some are nearly black. Her legs are somewhat longer than those of a worker; the two posterior ones, and the under surface, are often of a bright copper color. In some of them a yellow stripe nearly encircles the abdomen at the joints, and meets on the back. Her wings are about the same as the workers, but as her abdomen is much longer, they only reach about two-thirds the length of it. For the first few days after leaving the cell, her size is much less than after she has assumed her maternal duties. She seldom, perhaps never, leaves the hive, except when leading a swarm, and when but a few days old, to meet the drones, in the air, for the

purpose of fecundation. The manner of the queen's impregnation is yet a disputed point, and probably never witnessed by any one. The majority of close observers, I believe, are of opinion that the drones are the males, and that sexual connection takes place in the air,¹ performing their amours while on the wing, like the humble-bee and some other insects. It appears that one impregnation is operative during her life, as old queens are not afterwards seen coming out for that purpose.

DESCRIPTION AND DUTY OF WORKERS.

As all labor devolves on the workers, they are provided with a sack, or bag, for honey. Basket-like cavities are on their legs, where they pack the pollen of flowers into little pellets, convenient to bring home. They are also provided with a sting, and a virulent poison, although they will not use it abroad when unmolested, but, if attacked, will generally defend themselves sufficient to escape. They range the fields for honey and pollen, secrete wax, construct combs, prepare food, nurse the young, bring water for the use of the community, obtain propolis to seal up all crevices about the hive, stand guard, and keep out intruders, robbers, &c., &c.

DESCRIPTION OF DRONES.

When the family is large and honey abundant, a brood of drones is reared; the number, probably, depends on the yield of honey, and size of the swarm, more than anything else. As honey becomes scarce, they are destroyed. Their bodies are large and rather clumsy, covered with short hairs or bristles. Their abdomen terminates very abruptly, without the symmetry of the queen or worker. Their buzzing, when on the wing, is louder, and altogether different from the others. They seem to be of the least value of any in the hive. Perhaps not more than one in a thousand is ever called upon to perform the duty for which they were designed. Yet they assist, on some occasions, to keep up the animal heat necessary in the old hive after a swarm has left.

MOST BROOD IN SPRING.

In spring and first of summer, when nearly all the combs are empty, and food abundant, they rear brood more extensively than at any other period, (towards fall more combs are filled with honey,

giving less room for brood.) The hive soon becomes crowded with bees, and royal cells are constructed, in which the queen deposits her eggs. When some of these young queens are advanced sufficiently to be sealed over, the old one, and the greater part of her subjects, leave for a new location, (termed swarming.) They soon collect in a cluster, and, if put into an empty hive, commence anew their labors; constructing combs, rearing brood, and storing honey, to be abandoned on the succeeding year for another tenement. One in a hundred may do it the same season, if the hive is filled and crowded again in time to warrant it. Only large early swarms do this.

THEIR INDUSTRY.

Industry belongs to their nature. When the flowers yield honey, and the weather is fine, they need no impulse from man to perform their part. When their tenement is supplied with all things necessary to reach another spring, or their store-house full, and no necessity or room for an addition, and we supply them with more space, they assiduously toil to fill it up. Rather than to waste time in idleness, during a bounteous yield of honey, they have been known to deposit their surplus in combs outside the hive, or under the stand. This natural industrious habit lies at the foundation of all the advantages in bee-keeping; consequently our hives must be constructed with this end in view; and at the same time not interfere with other points of their nature; but this subject will be discussed in the next chapter. Those peculiar traits in their nature, mentioned in this, will be more fully discussed in different parts of this work, as they appear to be called for, and where proof will be offered to sustain the positions here assumed, which as yet are nothing more than mere assertions.

CHAPTER II.

HIVES.

HIVES TO BE THOROUGHLY MADE.

Hives should be constructed of good materials, boards of good thickness, free from flaws and cracks, well fitted and thoroughly nailed.

The time of making them is not very particular, providing it is done in season. It certainly should not be put off till the swarming period, to be made as wanted, because if they are to be painted; it should be done as long as possible before, as the rank smell of oil and paint, just applied, might be offensive to the bees.

But what kind of hive shall be made?

In answer, some less than a thousand forms have been given. The advantages of bee-keeping depend as much upon the construction of hives, as any one thing; yet there is no subject pertaining to them on which there is such a variety of opinions, and I have but little hopes of reconciling all these conflicting views, opinions, prejudices, and interests.

DIFFERENT OPINIONS ABOUT THEM.

One is in favor of the old box, and the cruel practice of killing the bees to obtain the honey, as the only means to obtain "luck;" "they are sure to run out if they meddle with them." Another will rush to the opposite extreme, and advocate all the extravagant fancies of the itinerant patent-vender, as the *ne plus ultra* of all hives, when perhaps it would be worth more for fire-wood than the apiary.

THE AUTHOR HAS NO PATENT TO RECOMMEND.

To remove from the mind of the reader all apprehension that I am about condemning one patent to recommend another, I would say in the beginning, that I have *no patent to praise, no interest in deceiving*, and I hope no prejudices to influence me, in advocating or condemning *any* system. I wish to make bee-keeping plain, simple, economical, and profitable; so that when we sum up the profit "it shall not be found in the other pocket."

It is a principle recognized by our statute, that no person is suitable as a Juror, who is biased either by interest or prejudice. Now whether I am the impartial Jurist, is not for me to say: but I wish to discuss the subject fairly. I hope some few will be enabled to see their own interest: at any rate, dismiss prejudice, as far as possible, while we examine wherein *one class* in community is unprofitable to bee-keepers.

SPECULATORS SUPPORTED LONG ENOUGH.

We have faithfully supported a host of speculators on our business for a long time; often not caring one straw about our success, after pocketing the fee of successful "humbuggery." One is no sooner gone, than we are beset by another, with something altogether different, and of course the acme of perfection.

PREFIX OF PATENT A BAD RECOMMENDATION.

This has been done until the very prefix of patent, or premium, attached to a hive, renders it almost certain that there must be something deleterious to the apiarian; either in expense of construction or intricate and perplexing in management, requiring an engineer to manage, and a skilful architect to construct.

What does the American savage, who without difficulty can track the panther or wolf, know of the principles of chemistry? What does the Chemist know of following a track in the forest, when nothing but withered leaves can guide him? Each understands principles, the *minutia* of which the other never dreamed.

IGNORANCE OF OFFICERS AND COMMITTEES.

Thus it appears to be with granting patents and premiums, if we take what has been patented and praised by our committees and officers as improvements in bee-culture. These men may be capable, intelligent, and well fitted for their sphere, but in bee matters, about as capable of judging, as the Hottentot would be of the merits of an intricate steam-engine. Knowledge and experience are the only qualifications competent to decide.

OPPOSITION TO SIMPLICITY.

I am aware that among the thousands whose direct interest is opposed to my simple, plain manner of getting along, many will be

ready to contend with me for every departure from their patent, improved or premium hives, as the case may be.

BY GAINING ONE POINT, PRODUCE ANOTHER EVIL.

I think it will be an easy matter to show that every departure from simplicity to gain *one* point, is attended in another by a correspondent evil, that often exceeds the advantage gained. That we have made vast improvements in art and science, and in every department of human affairs, no one will deny; consequently, it is assumed we must correspondingly improve in a bee-hive; forgetting that nature has fixed limits to the instinct of the bee, beyond which she will not go!

It will be necessary to point out the advantages and objections to these pretended improvements, and then we will see if we cannot avoid the objections, *and retain the advantages, without the expense*, by a simple addition to the common hive; because if we expect to encourage bee-keeping, they must have better success than a neighbor of mine, who expended fifty dollars for bees and a patent, and lost all in three years! Most bee-keepers are farmers; very few are engineers sufficient to work them successfully. I would say to all such as do not understand the nature of bees, adhere to simplicity until you do, and then I am quite sure you will have no desire for a change.

FIRST DELUSION.

Probably the first delusion in the patent line originated with the idea, that to obtain surplus honey, it was absolutely necessary to have a chamber hive. To get rid of the depredations of mice, the suspended hive was contrived. The inclined bottom-board was then added to throw out the worms. To prevent the combs from sliding down, the lower end was contracted.

The principle of bees rearing queens from worker-eggs when destitute, gave rise to the dividing hive in several forms. Comb, when used several years, becomes thickened and black, and needs changing; hence the changeable hives, Non-swarmer have been introduced to save risk and trouble. Moth-proof hives to prevent the ravages of worms, &c., &c.

CHAMBER HIVE.

The chamber hive is made with two apartments; the lower and largest is for the permanent residence of the bees, the upper or chamber for the boxes. Its merits are these: the chamber affords all the protection necessary for glass boxes; considered as a cover, it is never lost. Its demerits are inconvenience in handling; it occupies more room if put in the house in the winter; if glass boxes are used, only one end can be seen, and this may be full when the other may hold some pounds yet, and we cannot possibly know until it is taken out. I know we are told to return such boxes when not full "and the bees will soon finish them," but this will depend on the yield of honey at the time; if abundant, it will be filled; if not, they will be very likely to take a hint, and remove below what there is in the box; whereas if the chamber was separate from the hive, and was not a chamber but a loose cap to cover the boxes, it could be raised at any time without disturbing a single bee, and the precise time of the boxes being filled ascertained, (that is, when they are of glass.)

MRS. GRIFFITH'S HIVE.

Mrs. Griffith, of New Jersey, is said to have invented the suspended chamber hive with the inclined bottom-board. One would suppose this was sufficiently inconvenient to use, and difficult and expensive to construct.

WEEKS' IMPROVEMENT.

Yet Mr. Weeks makes an alteration, calls it an improvement, the expense is but a trifle more; it is sufficient to be sanctioned by a patent. From front to rear, the bottom is about three inches narrower than the top, somewhat wedge-shape; it has the merit to prevent the combs from slipping down, when they *happen* to be made, to have the edges supported. The objections are, that filth from the bees will not fall as readily to the bottom as if every side was perpendicular, and the extra trouble in constructing.

INCLINED BOTTOM-BOARDS DO NOT THROW OUT ALL THE WORMS.

Inclined bottom-boards form the basis of one or two patents, said to be good to roll out the worms. I can imagine a pea rolling off such a board; but a worm is not often found in a rolling condition. Most of us know, that when a worm drops from the combs, it is like

the spider, with a thread attached above. The only way that I can imagine one to be thrown out by these boards, is to have it dead when it strikes it, or so cold that it cannot spin a thread, and wind to shake the board, till it rolls off. The objections to these boards are coupled with the suspended hive, with which they are usually connected.

OBJECTIONS TO SUSPENDED HIVES.

All suspended hives *must be objectionable* to any one who wishes to know the *true* condition of his bees at all times. Only think of the trouble of unhooking the bottom-board, and getting down on your back, or twisting your neck till your head is dizzy, to look up among the combs, and then see nothing satisfactory for want of light; or to lift the hive from its supporters, and turn it over. The operation is too formidable for an indolent man, or one that has much other business. The examination would very probably be put off till quite sure it would do no longer, and sometimes a few days after that, when you will very often find your bees past remedy.

SEE BEES OFTEN.

"*See your bees often,*" is a choice recipe,—it is worth five hundred dollars at interest, even when you have but few stocks. How necessary then that we have every facility for a close and minute inspection. How much easier to turn up a hive that simply rests on a stand. Sometimes it is necessary to turn the hive, even bottom up, and let the rays of the sun directly among the combs, to see *all* the particulars. By this close inspection, I have often ascertained the cause of some difficulty, and provided a remedy, thus saving a good many that in a short time would have been lost; yet, with a little help, were as valuable as any by another year.

HALL'S PATENT.

Mr. Hall has added a lower section to his hive, about four inches deep, with two boards inside, like the roof of a house, to discharge the worms, &c.; but as these boards would interfere with close inspection, they are objectionable. Several other variations of inclined bottom-boards and suspended hives have been contrived, to obtain a patent, but the objections offered will apply to most of them. I shall not weary the reader by noticing in detail *every* hive that has

been patented; I think if I notice the *principles of each kind*, it will test his patience sufficiently.

JONES' PATENT.

Jones' dividing hive was probably suggested by this instinctive principle of the bee, viz.: when a stock by any accident loses its queen, and the combs contain eggs or very young larvæ, they will rear another. Now if a hive is constructed so as to divide the brood-combs, it would seem quite certain that the half without a queen, would raise one; and we could multiply our stocks without swarms, the trouble of hiving, and risk of their going to the woods, &c.

AN EXPERIMENT.

Several years ago, I thought I had obtained a principle that would revolutionize the whole system of bee management. In 1840 I constructed such hives, and put in the bees to test by actual experiment, the utility of what seemed so very plausible in theory. It would appear that this principle suggested the same idea to Mr. Jones; perhaps with this difference: I think he did not wait to test the plan thoroughly, before obtaining his patent in '42. One vender of rights asserted that 63 stocks were made from one in three years; but somehow a great many that obtained the rights, failed in their expectations. From my experiments, I think I could guess at some of the reasons.

Mr. A. — "Well, what are the reasons? give us your experience, if you please, I am interested; I had the right for such a hive, and had a lot made to order, that cost more money in the end than I shall ever pay again for anything about bees."

Do not be too hasty, friend, I think I can instruct you to keep bees on principles in accordance with their nature, which is very simple, so that if you can be induced to try again, we will have the *hives* cost but little, at any rate.

REASONS OF FAILURE IN DIVIDING HIVES.

The greatest difficulty with dividing hives, appeared to be here. It must be constructed with a partition or division to keep the combs in each apartment separate; otherwise, we make tearing work in the division. When bees are first put into such hives, unless the swarm

is very large, and honey abundant, one apartment will be filled to the bottom before a commencement is made in the other.

Mr. A. — "What difference can that make? It is necessary to have the hive full; if it cannot be all filled at once, why let them fill part."

The difference is this. The first combs built by a swarm are for brood, and store-combs afterwards, as needed; one apartment will be nearly filled with all brood-combs, and the other with store-combs and honey. Now in the two kinds of cells there is a great difference; those for breeding are near half an inch in length, while those for storing are sometimes two inches or more; totally unfit for breeding; until the bees cut them off to the proper length, which they will not do, unless compelled for want of room, consequently this side of store-combs is but little used for brood. When such hive is divided, the chances are not more than one in four, that this apartment will have any young bees of the proper age from which to raise a queen; if not, and the old queen is in the part with the brood-comb, where she will be ninety-nine times in a hundred, one half of the hive is lost for want of a queen.

Mr. A. — "Ah! I think I now understand how I lost one-half of nearly every hive I divided. I also lost some of them in the winter; there was plenty of bees as well as honey; can you tell the cause of this?"

I will guess that they starved.

Mr. A. — "Starved! why, I said there was plenty of honey."

I understood it, but nevertheless feel quite sure.

Mr. A. — "I would like to see that made plain; I can't understand how they could starve when there was honey!"

CAUSE OF STARVING IN SUCH HIVES.

I said one apartment would be filled with brood-combs; this will be occupied, at least partially, with brood as long as the yield of honey lasts; consequently, there will be but little room for storing here, but the other side may be full throughout. The bees will take up their winter quarters among the brood-combs. Now suppose the honey in this apartment is all exhausted during a severe turn of cold weather, what can the bees do? If one should leave the mass and go