

# THE LIFE OF THE BEE

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ON THE THRESHOLD OF THE HIVE



IT is not my intention to write a treatise on apiculture, or on practical bee-keeping. Excellent works of the kind abound in all civilized countries, and it were useless to attempt another. France has those of Dadant, Georges de Layens and Bonnier, Bertrand, Hamet, Weber, Clement, the Abbe Collin, etc. English-speaking countries have Langstroth, Bevan, Cook, Cheshire, Cowan, Root, etc. Germany has Dzierzon, Van Berlespoch, Pollmann, Vogel, and many others.

Nor is this book to be a scientific monograph on *Apis Mellifica*, *Ligustica*, *Fasciata*, *Dorsata*, etc., or a collection of new observations and studies. I shall say scarcely anything that those will not know who are somewhat familiar with bees. The notes and experiments I have made during my twenty years of beekeeping I shall reserve for a more technical work; for their interest is necessarily of a special and limited nature, and I am anxious not to over-burden this essay. I wish to speak of the bees very simply, as one speaks of a subject one knows and loves to those who know it not. I do not intend to adorn the truth, or merit the just reproach Reaumur addressed to his predecessors in the study of our honey-flies, whom he accused of substituting for the marvelous reality marvels that were imaginary and merely plausible. The fact that the hive contains so much that is wonderful does not warrant our seeking to

add to its wonders. Besides, I myself have now for a long time ceased to look for anything more beautiful in this world, or more interesting, than the truth; or at least than the effort one is able to make towards the truth. I shall state nothing, therefore, that I have not verified myself, or that is not so fully accepted in the text-books as to render further verification superfluous. My facts shall be as accurate as though they appeared in a practical manual or scientific monograph, but I shall relate them in a somewhat livelier fashion than such works would allow, shall group them more harmoniously together, and blend them with freer and more mature reflections. The reader of this book will not learn therefrom how to manage a hive; but he will know more or less all that can with any certainty be known of the curious, profound, and intimate side of its inhabitants. Nor will this be at the cost of what still remains to be learned. I shall pass over in silence the hoary traditions that, in the country and many a book, still constitute the legend of the hive. Whenever there be doubt, disagreement, hypothesis, when I arrive at the unknown, I shall declare it loyally; you will find that we often shall halt before the unknown. Beyond the appreciable facts of their life we know but little of the bees. And the closer our acquaintance becomes, the nearer is our ignorance brought to us of the depths of their real existence; but such ignorance is better than the other kind, which is unconscious, and satisfied.

Does an analogous work on the bee exist? I believe I have read almost all that has been written on bees; but of kindred matter I know only Michelet's chapter at the end of his book "The Insect," and Ludwig Buchner's essay in his "Mind in Animals." Michelet merely hovers on the fringe of his subject; Buchner's treatise is

comprehensive enough, but contains so many hazardous statements, so much long-discarded gossip and hearsay, that I suspect him of never having left his library, never having set forth himself to question his heroines, or opened one of the many hundreds of rustling, wing-lit hives which we must profane before our instinct can be attuned to their secret, before we can perceive the spirit and atmosphere, perfume and mystery, of these virgin daughters of toil. The book smells not of the bee, or its honey; and has the defects of many a learned work, whose conclusions often are preconceived, and whose scientific attainment is composed of a vast array of doubtful anecdotes collected on every side. But in this essay of mine we rarely shall meet each other; for our starting-point, our aim, and our point of view are all very different.

The bibliography of the bee (we will begin with the books so as to get rid of them as soon as we can and go to the source of the books) is very extensive. From the beginning this strange little creature, that lived in a society under complicated laws and executed prodigious labours in the darkness, attracted the notice of men. Aristotle, Cato, Varro, Pliny, Columella, Palladius all studied the bees; to say nothing of Aristomachus, who, according to Cicero, watched them for fifty-eight years, and of Phyliscus, whose writings are lost. But these dealt rather with the legend of the bee; and all that we can gather therefrom--which indeed is exceedingly little -- we may find condensed in the fourth book of Virgil's *Georgics*.

The real history of the bee begins in the seventeenth century, with the discoveries of the great Dutch savant Swammerdam. It is well,

however, to add this detail, but little known: before Swammerdam a Flemish naturalist named Clutius had arrived at certain important truths, such as the sole maternity of the queen and her possession of the attributes of both sexes, but he had left these unproved. Swammerdam founded the true methods of scientific investigation; he invented the microscope, contrived injections to ward off decay, was the first to dissect the bees, and by the discovery of the ovaries and the oviduct definitely fixed the sex of the queen, hitherto looked upon as a king, and threw the whole political scheme of the hive into most unexpected light by basing it upon maternity. Finally he produced woodcuts and engravings so perfect that to this day they serve to illustrate many books on apiculture. He lived in the turbulent, restless Amsterdam of those days, regretting "Het Zoete Buiten Leve"--The Sweet Life of the Country--and died, worn-out with work, at the age of forty-three. He wrote in a pious, formal style, with beautiful, simple outbursts of a faith that, fearful of falling away, ascribed all things to the glory of the Creator; and embodied his observations and studies in his great work "Bybel der Natuure," which the doctor Boerhave, a century later, caused to be translated from the Dutch into Latin under the title of "Biblia Naturae." (Leyden, 1737.)

Then came Reaumur, who, pursuing similar methods, made a vast number of curious experiments and researches in his gardens at Charenton, and devoted to the bees an entire volume of his "Notes to Serve for a History of Insects." One may read it with profit today, and without fatigue. It is clear, direct, and sincere, and possessed of a certain hard, arid charm of its own. He sought especially the destruction of ancient errors; he himself was responsible for several new ones; he partially understood the formation of swarms and the political establishment of queens; in a

word, he discovered many difficult truths, and paved the way for the discovery of more.

He fully appreciated the marvelous architecture of the hive; and what he said on the subject has never been better said. It is to him, too, that we owe the idea of the glass hives, which, having since been perfected, enable us to follow the entire private life of these fierce insects, whose work, begun in the dazzling sunshine, receives its crown in the darkness. To be comprehensive, one should mention also the somewhat subsequent works and investigations of Charles Bonnet and Schirach (who solved the enigma of the royal egg); but I will keep to the broad lines, and pass at once to Francois Huber, the master and classic of contemporary apiarian science.

Huber was born in Geneva in 1750, and fell blind in his earliest youth. The experiments of Reaumur interested him; he sought to verify them, and soon becoming passionately absorbed in these researches, eventually, with the assistance of an intelligent and faithful servant, Francois Burnens, devoted his entire life to the study of the bee. In the annals of human suffering and human triumph there is nothing more touching, no lesson more admirable, than the story of this patient collaboration, wherein the one who saw only with immaterial light guided with his spirit the eyes and hands of the other who had the real earthly vision; where he who, as we are assured, had never with his own eyes beheld a comb of honey, was yet able, notwithstanding the veil on his dead eyes that rendered double the veil in which nature enwraps all things, to penetrate the profound secrets of the genius that had made this invisible comb; as though to teach us that no condition in life can warrant our abandoning our desire and search for the truth. I will



not enumerate all that apiarian science owes to Huber; to state what it does not owe were the briefer task. His "New Observations on Bees," of which the first volume was written in 1789, in the form of letters to Charles Bonnet, the second not appearing till twenty years later, have remained the unfailing, abundant treasure into which every subsequent writer has dipped. And though a few mistakes may be found therein, a few incomplete truths; though since his time considerable additions have been made to the micrography and practical culture of bees, the handling of queens, etc., there is not a single one of his principal statements that has been disproved, or discovered in error; and in our actual experience they stand untouched, and indeed at its very foundation.

Some years of silence followed these revelations; but soon a German clergyman, Dzierzon, discovered parthenogenesis, i. e., the virginal parturition of queens, and contrived the first hive with movable combs, thereby enabling the bee-keeper henceforth to take his share of the harvest of honey, without being forced to destroy his best colonies and in one instant annihilate the work of an entire year. This hive, still very imperfect, received masterly improvement at the hands of Langstroth, who invented the movable frame properly so called, which has been adopted in America with extraordinary success. Root, Quinby, Dadant, Cheshire, De Layens, Cowan, Heddon, Howard, etc., added still further and precious improvement. Then it occurred to Mehring that if bees were supplied with combs that had an artificial waxen foundation, they would be spared the labour of fashioning the wax and constructing the cells, which costs them much honey and the best part of their time; he found that the bees accepted these combs most readily, and adapted them to their requirements.

Major de Hruschka invented the Honey-Extractor, which enables the honey to be withdrawn by centrifugal force without breaking the combs, etc. And thus, in a few years, the methods of apiculture underwent a radical change. The capacity and fruitfulness of the hives were trebled. Great and productive apiaries arose on every side. An end was put to the useless destruction of the most industrious cities, and to the odious selection of the least fit which was its result. Man truly became the master of the bees, although furtively, and without their knowledge; directing all things without giving an order, receiving obedience but not recognition. For the destiny once imposed by the seasons he has substituted his will. He repairs the injustice of the year, unites hostile republics, and equalizes wealth. He restricts or augments the births, regulates the fecundity of the queen, dethrones her and installs another in her place, after dexterously obtaining the reluctant consent of a people who would be maddened at the mere suspicion of an inconceivable intervention. When he thinks fit, he will peacefully violate the secret of the sacred chambers, and the elaborate, tortuous policy of the palace. He will five or six times in succession deprive the bees of the fruit of their labor, without harming them, without their becoming discouraged or even impoverished. He proportions the store-houses and granaries of their dwellings to the harvest of flowers that the spring is spreading over the dip of the hills. He compels them to reduce the extravagant number of lovers who await the birth of the royal princesses. In a word he does with them what he will, he obtains what he will, provided always that what he seeks be in accordance with their laws and their virtues; for beyond all the desires of this strange god who has taken possession of them, who is too vast to be seen and too alien to be understood, their eyes see further than the eyes of the god himself; and their one thought is the

accomplishment, with untiring sacrifice, of the mysterious duty of their race.