

THE SWARM

FROM

THE LIFE OF THE BEE

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WE will now, so as to draw more closely to nature, consider the different episodes of the swarm as they come to pass in an ordinary hive, which is ten or twenty times more populous than an observation one, and leaves the bees entirely free and untrammelled.

Here, then, they have shaken off the torpor of winter. The queen started laying again in the very first days of February, and the workers have flocked to the willows and nut-trees, gorse and violets, anemones and lungworts. Then spring invades the earth, and cellar and stream with honey and pollen, while each day beholds the birth of thousands of bees. The overgrown males now all sally forth from their cells, and disport themselves on the combs; and so crowded does the too prosperous city become that hundreds of belated workers, coming back from the flowers towards evening, will vainly seek shelter within, and will be forced to spend the night on the threshold, where they will be decimated by the cold.

Restlessness seizes the people, and the old queen begins to stir. She feels that a new destiny is being prepared. She has religiously fulfilled her duty as a good creatress; and from this duty done there result only tribulation and sorrow. An invincible power menaces her tranquillity; she will soon be forced to quit this city of hers, where she has reigned. But this city is her work, it is she, herself. She is not its queen in the sense in which men use the word. She issues no orders; she obeys, as meekly as the humblest of her subjects, the masked power, sovereignly wise, that for the present, and till we attempt to locate it, we will term the "spirit of the hive." But she is the unique organ of love; she is the mother of the city. She founded it amid uncertainty and poverty. She has peopled it with her own substance; and all who move within its walls—workers, males, larvae, nymphs, and the young princesses whose approaching birth will hasten her own departure, one of them being already designed as her successor by the "spirit of the hive"—all these have issued from her flanks.



What is this "spirit of the hive"—where does it reside? It is not like the special instinct that teaches the bird to construct its well planned nest, and then seek other skies when the day for migration returns. Nor is it a kind of mechanical habit of the race, or blind craving for life, that will fling the bees upon any wild hazard the moment an unforeseen event shall derange the accustomed order of phenomena. On the contrary, be the event never so masterful, the "spirit of the hive" still will follow it, step by step, like an alert and

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quick-witted slave, who is able to derive advantage even from his master's most dangerous orders.

It disposes pitilessly of the wealth and the happiness, the liberty and life, of all this winged people; and yet with discretion, as though governed itself by some great duty. It regulates day by day the number of births, and contrives that these shall strictly accord with the number of flowers that brighten the country-side. It decrees the queen's deposition or warns her that she must depart; it compels her to bring her own rivals into the world, and rears them royally, protecting them from their mother's political hatred. So, too, in accordance with the generosity of the flowers, the age of the spring, and the probable dangers of the nuptial flight, will it permit or forbid the first-born of the virgin princesses to slay in their cradles her younger sisters, who are singing the song of the queens. At other times, when the season wanes, and flowery hours grow shorter, it will command the workers themselves to slaughter the whole imperial brood, that the era of revolutions may close, and work become the sole object of all. The "spirit of the hive" is prudent and thrifty, but by no means parsimonious. And thus, aware, it would seem, that nature's laws are somewhat wild and extravagant in all that pertains to love, it tolerates, during summer days of abundance, the embarrassing presence in the hive of three or four hundred males, from whose ranks the queen about to be born shall select her lover; three or four hundred foolish, clumsy, useless, noisy creatures, who are pretentious, gluttonous, dirty, coarse, totally and scandalously idle, insatiable, and enormous.

But after the queen's impregnation, when flowers begin to close sooner, and open later, the spirit one morning will coldly decree the simultaneous and general massacre of every male. It regulates the workers' labours, with due regard to their age; it allots their task to the nurses who tend the nymphs and the larvae, the ladies of honour who wait on the queen and never allow her out of their sight; the house-bees who air, refresh, or heat the hive by fanning their wings, and hasten the evaporation of the honey that may be too highly charged with water; the architects, masons, wax-workers, and sculptors who form the chain and construct the combs; the foragers who sally forth to the flowers in search of the nectar that turns into honey, of the pollen that feeds the nymphs and the larvae, the propolis that welds and strengthens the buildings of the city, or the water and salt required by the youth of the nation. Its orders have gone to the chemists who ensure the preservation of the honey by letting a drop of formic acid fall in from the end of their sting; to the capsule-makers who seal down the cells when the treasure is ripe, to the sweepers who maintain public places and streets most irreproachably clean, to the bearers whose duty it is to remove the corpses; and to the amazons of the guard who keep watch on the threshold by night and by day, question comers and goers, recognise the novices

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who return from their very first flight, scare away vagabonds, marauders and loiterers, expel all intruders, attack redoubtable foes in a body, and, if need be, barricade the entrance.

Finally, it is the spirit of the hive that fixes the hour of the great annual sacrifice to the genius of the race: the hour, that is, of the swarm; when we find a whole people, who have attained the topmost pinnacle of prosperity and power, suddenly abandoning to the generation to come their wealth and their palaces, their homes and the fruits of their labour; themselves content to encounter the hardships and perils of a new and distant country. This act, be it conscious or not, undoubtedly passes the limits of human morality. Its result will sometimes be ruin, but poverty always; and the thrice-happy city is scattered abroad in obedience to a law superior to its own happiness. Where has this law been decreed, which, as we soon shall find, is by no means as blind and inevitable as one might believe? Where, in what assembly, what council, what intellectual and moral sphere, does this spirit reside to whom all must submit, itself being vassal to an heroic duty, to an intelligence whose eyes are persistently fixed on the future?

It comes to pass with the bees as with most of the things in this world; we remark some few of their habits; we say they do this, they work in such and such fashion, their queens are born thus, their workers are virgin, they swarm at a certain time. And then we imagine we know them, and ask nothing more. We watch them hasten from flower to flower, we see the constant agitation within the hive; their life seems very simple to us, and bounded, like every life, by the instinctive cares of reproduction and nourishment. But let the eye draw near, and endeavour to see; and at once the least phenomenon of all becomes overpoweringly complex; we are confronted by the enigma of intellect, of destiny, will, aim, means, causes; the incomprehensible organisation of the most insignificant act of life.



Our hive, then, is preparing to swarm; making ready for the great immolation to the exacting gods of the race. In obedience to the order of the spirit—an order that to us may well seem incomprehensible, for it is entirely opposed to all our own instincts and feelings—60,000 or 70,000 bees out of the 80,000 or 90,000 that form the whole population, will abandon the maternal city at the prescribed hour. They will not leave at a moment of despair; or desert, with sudden and wild resolve, a home laid waste by famine, disease, or war. No, the exile has long been planned, and the favourable hour patiently awaited. Were the hive poor, had it suffered from pillage or storm, had misfortune befallen the royal family, the bees would not forsake it. They leave it only when it has attained the apo-

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gee of its prosperity; at a time when, after the arduous labours of the spring, the immense palace of wax has its 120,000 well-arranged cells overflowing with new honey, and with the many-coloured flour, known as “bees’ bread,” on which nymphs and larvae are fed.

Never is the hive more beautiful than on the eve of its heroic renouncement, in its unrivalled hour of fullest abundance and joy; serene for all its apparent excitement and feverishness.

Let us endeavour to picture it to ourselves, not as it appears to the bees—for we cannot tell in what magical, formidable fashion things may be reflected in the 6,000 or 7,000 facets of their lateral eyes and the triple cyclopean eye on their brow—but as it would seem to us, were we of their stature. From the height of a dome more colossal than that of St. Peter’s at Rome waxen walls descend to the ground, balanced in the void and the darkness; gigantic and manifold, vertical and parallel geometric constructions, to which, for relative precision, audacity, and vastness, no human structure is comparable. Each of these walls, whose substance still is immaculate and fragrant, of virginal, silvery freshness, contains thousands of cells, that are stored with provisions sufficient to feed the whole people for several weeks. Here, lodged in transparent cells, are the pollens, love-ferment of every flower of spring, making brilliant splashes of red and yellow, of black and mauve. Close by, in twenty thousand reservoirs, sealed with a seal that shall only be broken on days of supreme distress, the honey of April is stored, most limpid and perfumed of all, wrapped round with long and magnificent embroidery of gold, whose borders hang stiff and rigid. Still lower the honey of May matures, in great open vats, by whose side watchful cohorts maintain an incessant current of air. In the centre, and far from the light whose diamond rays steal in through the only opening, in the warmest part of the hive, there stands the abode of the future; here does it sleep, and wake. For this is the royal domain of the brood-cells, set apart for the queen and her acolytes; about 10,000 cells wherein the eggs repose, 15,000 or 16,000 chambers tenanted by larvae, 40,000 dwellings inhabited by white nymphs to whom thousands of nurses minister.¹ And finally, in the holy of holies of these parts, are the three, four, six, or twelve sealed palaces, vast in size compared with the others, where the adolescent princesses lie who await their hour, wrapped in a kind of shroud, all of them motionless and pale, and fed in the darkness.



On the day, then, that the Spirit of the Hive has ordained, a certain part of the population will go forth, selected in accordance with sure and immovable laws, and make way for hopes that as yet are formless. In the sleeping city there remain the males, from whose

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ranks the royal lover shall come, the very young bees that tend the brood-cells, and some thousands of workers who continue to forage abroad, to guard the accumulated treasure, and preserve the moral traditions of the hive. For each hive has its own code of morals. There are some that are very virtuous and some that are very perverse; and a careless bee-keeper will often corrupt his people, destroy their respect for the property of others, incite them to pillage, and induce in them habits of conquest and idleness which will render them sources of danger to all the little republics around. These things result from the bee's discovery that work among distant flowers, whereof many hundreds must be visited to form one drop of honey, is not the only or promptest method of acquiring wealth, but that it is easier to enter ill-guarded cities by stratagem, or force her way into others too weak for self-defence. Nor is it easy to restore to the paths of duty a hive that has become thus depraved.



All things go to prove that it is not the queen, but the spirit of the hive, that decides on the swarm. With this queen of ours it happens as with many a chief among men, who though he appear to give orders, is himself obliged to obey commands far more mysterious, far more inexplicable, than those he issues to his subordinates. The hour once fixed, the spirit will probably let it be known at break of dawn, or the previous night, if indeed not two nights before; for scarcely has the sun drunk in the first drops of dew when a most unaccustomed stir, whose meaning the bee-keeper rarely will fail to grasp, is to be noticed within and around the buzzing city. At times one would almost appear to detect a sign of dispute, hesitation, recoil. It will happen even that for day after day a strange emotion, apparently without cause, will appear and vanish in this transparent, golden throng. Has a cloud that we cannot see crept across the sky that the bees are watching; or is their intellect battling with a new regret? Does a winged council debate the necessity of the departure? Of this we know nothing; as we know nothing of the manner in which the spirit conveys its resolution to the crowd. Certain as it may seem that the bees communicate with each other, we know not whether this be done in human fashion. It is possible even that their own refrain may be inaudible to them: the murmur that comes to us heavily laden with perfume of honey, the ecstatic whisper of fairest summer days that the bee-keeper loves so well, the festival song of labour that rises and falls around the hive in the crystal of the hour, and might almost be the chant of the eager flowers, hymn of their gladness and echo of their soft fragrance, the voice of the white carnations, the marjoram, and the thyme. They have, however, a whole gamut of sounds that we can distinguish, ranging from profound de-

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light to menace, distress, and anger; they have the ode of the queen, the song of abundance, the psalms of grief, and, lastly, the long and mysterious war-cries the adolescent princesses send forth during the combats and massacres that precede the nuptial flight. May this be a fortuitous music that fails to attain their inward silence? In any event they seem not the least disturbed at the noises we make near the hive; but they regard these perhaps as not of their world, and possessed of no interest for them. It is possible that we on our side hear only a fractional part of the sounds that the bees produce, and that they have many harmonies to which our ears are not attuned. We soon shall see with what startling rapidity they are able to understand each other, and adopt concerted measures, when, for instance, the great honey thief, the huge sphinx atropos, the sinister butterfly that bears a death's head on its back, penetrates into the hive, humming its own strange note, which acts as a kind of irresistible incantation; the news spreads quickly from group to group, and from the guards at the threshold to the workers on the furthest combs, the whole population quivers.



It was for a long time believed that when these wise bees, generally so prudent, so far-sighted and economical, abandoned the treasures of their kingdom and flung themselves upon the uncertainties of life, they were yielding to a kind of irresistible folly, a mechanical impulse, a law of the species, a decree of nature, or to the force that for all creatures lies hidden in the revolution of time. It is our habit, in the case of the bees no less than our own, to regard as fatality all that we do not as yet understand. But now that the hive has surrendered two or three of its material secrets, we have discovered that this exodus is neither instinctive nor inevitable. It is not a blind emigration, but apparently the well-considered sacrifice of the present generation in favour of the generation to come. The bee-keeper has only to destroy in their cells the young queens that still are inert, and, at the same time, if nymphs and larvae abound, to enlarge the store-houses and dormitories of the nation, for this unprofitable tumult instantaneously to subside, for work to be at once resumed, and the flowers revisited; while the old queen, who now is essential again, with no successor to hope for, or perhaps to fear, will renounce for this year her desire for the light of the sun. Reassured as to the future of the activity that will soon spring into life, she will tranquilly resume her maternal labours, which consist in the laying of two or three thousand eggs a day, as she passes, in a methodical spiral, from cell to cell, omitting none, and never pausing to rest.

Where is the fatality here, save in the love of the race of to-day for the race of to-morrow? This fatality exists in the human species

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also, but its extent and power seem infinitely less. Among men it never gives rise to sacrifices as great, as unanimous, or as complete. What far-seeing fatality, taking the place of this one, do we ourselves obey? We know not; as we know not the being who watches us as we watch the bees.



But the hive that we have selected is disturbed in its history by no interference of man; and as the beautiful day advances with radiant and tranquil steps beneath the trees, its ardour, still bathed in dew, makes the appointed hour seem laggard. Over the whole surface of the golden corridors that divide the parallel walls the workers are busily making preparation for the journey. And each one will first of all burden herself with provision of honey sufficient for five or six days. From this honey that they bear within them they will distil, by a chemical process still unexplained, the wax required for the immediate construction of buildings. They will provide themselves also with a certain amount of propolis, a kind of resin with which they will seal all the crevices in the new dwelling, strengthen weak places, varnish the walls, and exclude the light; for the bees love to work in almost total obscurity, guiding themselves with their many-faceted eyes, or with their antennae perhaps, the seat, it would seem, of an unknown sense that fathoms and measures the darkness.



They are not without prescience, therefore, of what is to befall them on this the most dangerous day of all their existence. Absorbed by the cares, the prodigious perils of this mighty adventure, they will have no time now to visit the gardens and meadows; and tomorrow, and after tomorrow, it may happen that rain may fall, or there may be wind; that their wings may be frozen or the flowers refuse to open. Famine and death would await them were it not for this foresight of theirs. None would come to their help, nor would they seek help of any. For one city knows not the other, and assistance never is given. And even though the bee-keeper deposit the hive, in which he has gathered the old queen and her attendant cluster of bees, by the side of the abode they have but this moment quitted, they would seem, be the disaster never so great that shall now have befallen them, to have wholly forgotten the peace and the happy activity that once they had known there, the abundant wealth and the safety that had then been their portion; and all, one by one, and down to the last of them, will perish of hunger and cold around their unfortunate queen rather than return to the home of their birth,

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whose sweet odour of plenty, the fragrance, indeed, of their own past assiduous labour, reaches them even in their distress.



That is a thing, some will say, that men would not do—a proof that the bee, notwithstanding the marvels of its organisation, still is lacking in intellect and veritable consciousness. Is this so certain? Other beings, surely, may possess an intellect that differs from ours, and produces different results, without therefore being inferior. And besides, are we, even in this little human parish of ours, such infallible judges of matters that pertain to the spirit? Can we so readily divine the thoughts that may govern the two or three people we may chance to see moving and talking behind a closed window, when their words do not reach us? Or let us suppose that an inhabitant of Venus or Mars were to contemplate us from the height of a mountain, and watch the little black specks that we form in space, as we come and go in the streets and squares of our towns. Would the mere sight of our movements, our buildings, machines, and canals, convey to him any precise idea of our morality, intellect, our manner of thinking, and loving, and hoping—in a word, of our real and intimate self? All he could do, like ourselves when we gaze at the hive, would be to take note of some facts that seem very surprising; and from these facts to deduce conclusions probably no less erroneous, no less uncertain, than those that we choose to form concerning the bee.

This much at least is certain; our “little black specks” would not reveal the vast moral direction, the wonderful unity, that are so apparent in the hive. “Whither do they tend, and what is it they do?” he would ask, after years and centuries of patient watching. “What is the aim of their life, or its pivot? Do they obey some God? I can see nothing that governs their actions. The little things that one day they appear to collect and build up, the next they destroy and scatter. They come and they go, they meet and disperse, but one knows not what it is they seek. In numberless cases the spectacle they present is altogether inexplicable. There are some, for instance, who, as it were, seem scarcely to stir from their place. They are to be distinguished by their glossier coat, and often too by their more considerable bulk. They occupy buildings ten or twenty times larger than ordinary dwellings, and richer, and more ingeniously fashioned. Every day they spend many hours at their meals, which sometimes indeed are prolonged far into the night. They appear to be held in extraordinary honour by those who approach them; men come from the neighbouring houses, bringing provisions, and even from the depths of the country, laden with presents. One can only assume that these persons must be indispensable to the race, to which they render essential service, although our means of investigation have

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not yet enabled us to discover what the precise nature of this service may be. There are others, again, who are incessantly engaged in the most wearisome labour, whether it be in great sheds full of wheels that forever turn round and round, or close by the shipping, or in obscure hovels, or on small plots of earth that from sunrise to sunset they are constantly delving and digging. We are led to believe that this labour must be an offence, and punishable. For the persons guilty of it are housed in filthy, ruinous, squalid cabins. They are clothed in some colourless hide. So great does their ardour appear for this noxious, or at any rate useless activity, that they scarcely allow themselves time to eat or to sleep. In numbers they are to the others as a thousand to one. It is remarkable that the species should have been able to survive to this day under conditions so unfavourable to its development. It should be mentioned, however, that apart from this characteristic devotion to their wearisome toil, they appear inoffensive and docile; and satisfied with the leavings of those who evidently are the guardians, if not; the saviours, of the race.”



Is it not strange that the hive, which we vaguely survey from the height of another world, should provide our first questioning glance with so sure and profound a reply? Must we not admire the manner in which the thought or the god that the bees obey is at once revealed by their edifices, wrought with such striking conviction, by their customs and laws, their political and economical organisation, their virtues, and even their cruelties? Nor is this god, though it be perhaps the only one to which man has as yet never offered serious worship, by any means the least reasonable or the least legitimate that we can conceive. The god of the bees is the future. When we, in our study of human history, endeavour to gauge the moral force or greatness of a people or race, we have but one standard of measurement—the dignity and permanence of their ideal, and the abnegation wherewith they pursue it. Have we often encountered an ideal more conformable to the desires of the universe, more widely manifest, more disinterested or sublime; have we often discovered an abnegation more complete and heroic?



Strange little republic, that, for all its logic and gravity, its matured conviction, and prudence, still falls victim to so vast and precarious a dream! Who shall tell us, O little people that are so profoundly in earnest, that have fed on the warmth and the light and on nature's purest, the soul of the flowers, wherein matter for once

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seems to smile, and put forth its most wistful effort towards beauty and happiness—who shall tell us what problems you have resolved, but we not yet, what certitudes you have acquired that we still have to conquer? And if you have truly resolved these problems, and acquired these certitudes, by the aid of some blind and primitive impulse and not through the intellect, then to what enigma, more insoluble still, are you not urging us on? Little city abounding in faith and mystery and hope, why do your myriad virgins consent to a task that no human slave has ever accepted? Another spring might be theirs, another summer, were they only a little less wasteful of strength, a little less self-forgetful in their ardour for toil; but at the magnificent moment when the flowers all cry to them, they seem to be stricken with the fatal ecstasy of work; and in less than five weeks they almost all perish, their wings broken, their bodies shrivelled and covered with wounds.

“Tantus amor florum, et generandi gloria mellis!”

cries Virgil in the fourth book of the *Georgics*, wherein he devotes himself to the bees, and hands down to us the charming errors of the ancients, who looked on nature with eyes still dazzled by the presence of imaginary gods.



Why do they thus renounce sleep, the delights of honey and love, and the exquisite leisure enjoyed, for instance, by their winged brother, the butterfly? Why will they not live as he lives? It is not hunger that urges them on. Two or three flowers suffice, for their nourishment, and in one hour they will visit two or three hundred, to collect a treasure whose sweetness they never will taste. Why all this toil and distress, and whence comes this mighty assurance? Is it so certain, then, that the new generation whereunto you offer your lives will merit the sacrifice; will be more beautiful, happier, will do something you have not done? Your aim is clear to us, clearer far than our own; you desire to live, as long as the world itself, in those that come after; but what can the aim be of this great aim; what the mission of this existence eternally renewed?

And yet may it not be that these questions are idle, and we who are putting them to you mere childish dreamers, hedged round with error and doubt? And, indeed, had successive evolutions installed you all-powerful and supremely happy; had you gained the last heights, whence at length you ruled over nature's laws; nay, were you immortal goddesses, we still should be asking you what your desires might be, your ideas of progress; still wondering where you imagined that at last you would rest and declare your wishes fulfilled. We are so made that nothing contents us; that we can regard no single

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thing as having its aim self-contained, as simply existing, with no thought beyond existence. Has there been, to this day, one god out of all the multitude man has conceived, from the vulgarest to the most thoughtful) of whom it has not been required that he shall be active and stirring) that he shall create countless beings and things, and have myriad aims outside himself? And will the time ever come when we shall be resigned for a few hours tranquilly to represent in this world an interesting form of material activity; and then, our few hours over, to assume, without surprise and without regret, that other form which is the unconscious, the unknown, the slumbering, and the eternal?



But we are Forgetting the hive wherein the swarming bees have begun to lose patience, the hive whose black and vibrating waves are bubbling and overflowing, like a brazen cup beneath an ardent sun. It is noon; and the heat so great that the assembled trees would seem almost to hold back their leaves, as a man holds his breath before something very-tender but very grave. The bees give their honey and sweet-smelling wax to the man who attends them; but more precious gift still is their summoning him to the gladness of June, to the joy of the beautiful months; for events in which bees take part happen only when skies are pure, at the winsome hours of the year when flowers keep holiday. They are the soul of the summer, the clock whose dial records the moments of plenty; they are the untiring wing on which delicate perfumes float; the guide of the quivering light-ray, the song of the slumberous, languid air; and their flight is the token, the sure and melodious note, of all the myriad fragile joys that are born in the heat and dwell in the sunshine. They teach us to tune our ear to the softest, most intimate whisper of these good, natural hours. To him who has known them and loved them, a summer where there are no bees becomes as sad and as empty as one without flowers or birds.



The man who never before has beheld the swarm of a populous hive must regard this riotous, bewildering spectacle with some apprehension and diffidence. He will be almost afraid to draw near; he will wonder can these be the earnest, the peace-loving, hard-working bees whose movements he has hitherto followed? It was but a few moments before he had seen them troop in from all parts of the country, as pre-occupied, seemingly, as little housewives might be, with no thoughts beyond household cares. He had watched them stream into the hive, imperceptibly almost, out of breath, eager, ex-

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hausted, full of discreet agitation; and had seen the young amazons stationed at the gate salute them, as they passed by, with the slightest wave of antennae. And then, the inner court reached, they had hurriedly given their harvest of honey to the adolescent portresses always stationed within, exchanging with these at most the three or four probably indispensable words; or perhaps they would hasten themselves to the vast magazines that encircle the brood-cells, and deposit the two heavy baskets of pollen that depend from their thighs, thereupon at once going forth once more, without giving a thought to what might be passing in the royal palace, the work-rooms, or the dormitory where the nymphs lie asleep; without for one instant joining in the babel of the public place in front of the gate, where it is the wont of the cleaners, at time of great heat, to congregate and to gossip.



To-day this is all changed. A certain number of workers, it is true, will peacefully go to the fields, as though nothing were happening; will come back, clean the hive, attend to the brood-cells, and hold altogether aloof from the general ecstasy. These are the ones that will not accompany the queen; they will remain to guard the old home, feed the nine or ten thousand eggs, the eighteen thousand larvae, the thirty-six thousand nymphs and seven or eight royal princesses, that to-day shall all be abandoned. Why they have been singled out for this austere duty, by what law, or by whom, it is not in our power to divine. To this mission of theirs they remain inflexibly, tranquilly faithful; and though I have many times tried the experiment of sprinkling a colouring matter over one of these resigned Cinderellas, that are moreover easily to be distinguished in the midst of the rejoicing crowds by their serious and somewhat ponderous gait, it is rarely indeed that I have found one of them in the delirious throng of the swarm.



And yet, the attraction must seem irresistible. It is the ecstasy of the perhaps unconscious sacrifice the god has ordained; it is the festival of honey, the triumph of the race, the victory of the future: the one day of joy, of forgetfulness and folly; the only Sunday known to the bees. It would appear to be also the solitary day upon which all eat their fill, and revel, to heart's content, in the delights of the treasure themselves have amassed. It is as though they were prisoners to whom freedom at last had been given, who had suddenly been led to a land of refreshment and plenty. They exult, they cannot contain the joy that is in them. They come and go aimlessly—they whose

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every movement has always its precise and useful purpose—they depart and return, sally forth once again to see if the queen be ready, to excite their sisters, to beguile the tedium of waiting. They fly much higher than is their wont, and the leaves of the mighty trees round about all quiver responsive. They have left trouble behind, and care. They no longer are meddling and fierce, aggressive, suspicious, untamable, angry. Man—the unknown master whose sway they never acknowledge, who can subdue them only by conforming to their every law, to their habits of labour, and following step by step the path that is traced in their life by an intellect nothing can thwart or turn from its purpose, by a spirit whose aim is always the good of the morrow—on this day man can approach them, can divide the glittering curtain they form as they fly round and round in songful circles; he can take them up in his hand, and gather them as he would a bunch of grapes; for to-day, in their gladness, possessing nothing, but foil of faith in the future, they will submit to everything and injure no one, provided only they be not separated from the queen who bears that future within her.



But the veritable signal has not yet been given. In the hive there is indescribable confusion; and a disorder whose meaning escapes us. At ordinary times each bee, once returned to her home, would appear to forget her possession of wings; and will pursue her active labours, making scarcely a movement, on that particular spot in the hive that her special duties assign. But to-day they all seem bewitched; they fly in dense circles round and round the polished walls, like a living jelly stirred by an invisible hand. The temperature within rises rapidly—to such a degree, at times, that the wax of the buildings will soften, and twist out of shape. The queen, who ordinarily never will stir from the centre of the comb, now rushes wildly, in breathless excitement, over the surface of the vehement crowd that turn and turn on themselves. Is she hastening their departure, or trying to delay it? Does she command, or haply implore? Does this prodigious emotion issue from her, or is she its victim? Such knowledge as we possess of the general psychology of the bee warrants the belief that the swarming always takes place against the old sovereign's will. For indeed the ascetic workers, her daughters, regard the queen above all as the organ of love, indispensable, certainly, and sacred, but in herself somewhat unconscious, and often of feeble mind. They treat her like a mother in her dotage. Their respect for her, their tenderness, is heroic and boundless. The purest honey, specially distilled and almost entirely assimilable, is reserved for her use alone. She has an escort that watches over her by day and by night, that facilitates her maternal duties and gets ready the cells wherein the eggs shall be laid; she has loving attendants who

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pet and caress her, feed her and clean her, and even absorb her excrement. Should the least accident befall her the news will spread quickly from group to group, and the whole population will rush to and fro in loud lamentation. Seize her, imprison her, take her away from the hive at a time when the bees shall have no hope of filling her place, owing, it may be, to her having left no predestined descendants, or to there being no larvae less than three days old (for a special nourishment is capable of transforming these into royal nymphs, such being the grand democratic principle of the hive, and a counterpoise to the prerogatives of maternal predestination), and then, her loss once known, after two or three hours, perhaps, for the city is vast, work will cease in almost every direction. The young will no longer be cared for; part of the inhabitants will wander in every direction, seeking their mother, in quest of whom others will sally forth from the hive; the workers engaged in constructing the comb will fall asunder and scatter, the foragers no longer will visit the flowers, the guard at the entrance will abandon their post; and foreign marauders, all the parasites of honey, forever on the watch for opportunities of plunder, will freely enter and leave without any one giving a thought to the defence of the treasure that has been so laboriously gathered. And poverty, little by little, will steal into the city; the population will dwindle; and the wretched inhabitants soon will perish of distress and despair, though every flower of summer burst into bloom before them.

But let the queen be restored before her loss has become an accomplished, irremediable fact, before the bees have grown too profoundly demoralised—for in this they resemble men: a prolonged regret, or misfortune, will impair their intellect and degrade their character—let her be restored but a few hours later, and they will receive her with extraordinary, pathetic welcome. They will flock eagerly round her; excited groups will climb over each other in their anxiety to draw near; as she passes among them they will caress her with the long antennae that contain so many organs as yet unexplained; they will present her with honey, and escort her tumultuously back to the royal chamber. And order at once is restored, work resumed, from the central comb of the brood-cells to the furthest annex where the surplus honey is stored; the foragers go forth, in long black files, to return, in less than three minutes sometimes, laden with nectar and pollen; streets are swept, parasites and marauders killed or expelled; and the hive soon resounds with the gentle, monotonous cadence of the strange hymn of rejoicing, which is, it would seem, the hymn of the royal presence.



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There are numberless instances of the absolute attachment and devotion that the workers display towards their queen. Should disaster befall the little republic; should the hive or the comb collapse, should man prove ignorant, or brutal; should they suffer from famine, from cold or disease, and perish by thousands, it will still be almost invariably found that the queen will be safe and alive, beneath the corpses of her faithful daughters. For they will protect her, help her to escape; their bodies will provide both rampart and shelter; for her will be the last drop of honey, the wholesomest food. And be the disaster never so great, the city of virgins will not lose heart so long as the queen be alive. Break their comb twenty times in succession, take twenty times from them their young and their food, you still shall never succeed in making them doubt of the future; and though they be starving, and their number so small that it scarcely suffices to shield their mother from the enemy's gaze, they will set about to reorganize the laws of the colony, and to provide for what is most pressing; they will distribute the work in accordance with the new necessities of this disastrous moment, and thereupon will immediately re-assume their labours with an ardour, a patience, a tenacity and intelligence not often to be found existing to such a degree in nature, true though it be that most of its creatures display more confidence and courage than man.

But the presence of the queen is not even essential for their discouragement to vanish and their love to endure. It is enough that she should have left, at the moment of her death or departure, the very slenderest hope of descendants. "We have seen a colony," says Langstroth, one of the fathers of modern apiculture, "that had not bees sufficient to cover a comb of three inches square, and yet endeavoured to rear a queen. For two whole weeks did they cherish this hope; finally, when their number was reduced by one-half, their queen was born, but her wings were imperfect, and she was unable to fly. Impotent as she was, her bees did not treat her with the less respect. A week more, and there remained hardly a dozen bees; yet a few days, and the queen had vanished, leaving a few wretched, inconsolable insects upon the combs."



There is another instance, and one that reveals most palpably the ultimate gesture of filial love and devotion. It arises from one of the extraordinary ordeals that our recent and tyrannical intervention inflicts on these hapless, unflinching heroines. I, in common with all amateur bee-keepers, have more than once had impregnated queens sent me from Italy; for the Italian species is more prolific, stronger, more active, and gentler than our own. It is the custom to forward them in small, perforated boxes. In these some food is placed, and

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the queen enclosed, together with a certain number of workers, selected as far as possible from among the oldest bees in the hive. (The age of the bee can be readily told by its body, which gradually becomes more polished, thinner, and almost bald; and more particularly by the wings, which hard work uses and tears.) It is their mission to feed the queen during the journey, to tend her and guard her. I would frequently find, when the box arrived, that nearly every one of the workers was dead. On one occasion, indeed, they had all perished of hunger; but in this instance as in all others the queen was alive, unharmed, and full of vigour; and the last of her companions had probably passed away in the act of presenting the last drop of honey she held in her sac to the queen, who was symbol of a life more precious, more vast, than her own.



This unwavering affection having come under the notice of man, he was able to turn to his own advantage the qualities to which it gives rise, or that it perhaps contains: the admirable political sense, the passion for work, the perseverance, magnanimity, and devotion to the future. It has allowed him, in the course of the last few years, to a certain extent to domesticate these intractable insects, though without their knowledge; for they yield to no foreign strength, and in their unconscious servitude obey only the laws of their own adoption. Man may believe, if he choose, that, possessing the queen, he holds in his hand the destiny and soul of the hive. In accordance with the manner in which he deals with her—as it were, plays with her—he can increase and hasten the swarm or restrict and retard it; he can unite or divide colonies, and direct the emigration of kingdoms. And yet it is none the less true that the queen is essentially merely a sort of living symbol, standing, as all symbols must, for a vaster although less perceptible principle; and this principle the apiarist will do well to take into account, if he would not expose himself to more than one unexpected reverse. For the bees are by no means deluded. The presence of the queen does not blind them to the existence of their veritable sovereign, immaterial and everlasting, which is no other than their fixed idea. Why inquire as to whether this idea be conscious or not? Such speculation can have value only if our anxiety be to determine whether we should more rightly admire the bees that have the idea, or nature that has planted it in them. Wherever it lodge, in the vast unknowable body or in the tiny ones that we see, it merits our deepest attention; nor may it be out of place here to observe that it is the habit we have of subordinating our wonder to accidents of origin or place, that so often causes us to lose the chance of deep admiration; which of all things in the world is the most helpful to us.

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These conjectures may perhaps be regarded as exceedingly venturesome, and possibly also as unduly human. It may be urged that the bees, in all probability, have no idea of the kind; that their care for the future, love of the race, and many other feelings we choose to ascribe to them, are truly no more than forms assumed by the necessities of life, the fear of suffering or death, and the attraction of pleasure. Let it be so; look on it all as a figure of speech; it is a matter to which I attach no importance. The one thing certain here, as it is the one thing certain in all other cases, is that, under special circumstances, the bees will treat their queen in a special manner. The rest is all mystery, around which we only can weave more or less ingenious and pleasant conjecture. And yet, were we speaking of man in the manner wherein it were wise perhaps to speak of the bee, is there very much more we could say? He too yields only to necessity, the attraction of pleasure, and the fear of suffering; and what we call our intellect has the same origin and mission as what in animals we choose to term instinct. We do certain things, whose results we conceive to be known to us; other things happen, and we flatter ourselves that we are better equipped than animals can be to divine their cause; but, apart from the fact that this supposition rests on no very solid foundation, events of this nature are rare and infinitesimal, compared with the vast mass of others that elude comprehension; and all, the pettiest and the most sublime, the best known and the most inexplicable, the nearest and the most distant, come to pass in a night so profound that our blindness may well be almost as great as that we suppose in the bee.



“All must agree,” remarks Buffon, who has a somewhat amusing prejudice against the bee—“all must agree that these flies, individually considered, possess far less genius than the dog, the monkey, or the majority of animals; that they display far less docility, attachment, or sentiment; that they have, in a word, less qualities that relate to our own; and from that we may conclude that their apparent intelligence derives only from their assembled multitude; nor does this union even argue intelligence, for it is governed by no moral considerations, it being without their consent that they find themselves gathered together. This society, therefore, is no more than a physical assemblage ordained by nature, and independent either of knowledge, or reason, or aim. The mother-bee produces ten thousand individuals at a time, and in the same place; these ten thousand individuals, were they a thousand times stupider than I suppose them to be, would be compelled, for the mere purpose of existence, to con-

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trive some form of arrangement; and, assuming that they had begun by injuring each other, they would, as each one possesses the same strength as its fellow, soon have ended by doing each other the least possible harm, or, in other words, by rendering assistance. They have the appearance of understanding each other, and of working for a common turn; and the observer, therefore, is apt to endow them with reasons and intellect that they truly are far from possessing. He will pretend to account for each action, show a reason behind every movement; and from thence the gradation is easy to proclaiming them marvels, or monsters, of innumerable ideas. Whereas the truth is that these ten thousand individuals, that have been produced simultaneously, that have lived together, and undergone metamorphosis at more or less the same time, cannot fail all to do the same thing, and are compelled, however slight the sentiment within them, to adopt common habits, to live in accord and union, to busy themselves with their dwelling, to return to it after their journeys, etc., etc. And on this foundation arise the architecture, the geometry, the order, the foresight, love of country—in a word, the republic; all springing, as we have seen, from the admiration of the observer.” There we have our bees explained in a very different fashion. And if it seem more natural at first, is it not for the very simple reason that it really explains almost nothing? I will not allude to the material errors this chapter contains; I will only ask whether the mere fact of the bees accepting a common existence, while doing each other the least possible harm, does not in itself argue a certain intelligence. And does not this intelligence appear the more remarkable to us as we more closely examine the fashion in which these “ten thousand individuals” avoid hurting each other, and end by giving assistance? And further, is this not the history of ourselves; and does not all that the angry old naturalist says apply equally to every one of our human societies? And yet once again: if the bee is indeed to be credited with none of the feelings or ideas that we have ascribed to it, shall we not very willingly shift the ground of our wonder? If we must not admire the bee, we will then admire nature; the moment must always come when admiration can be no longer denied us, nor shall there be loss to us through our having retreated, or waited.



However these things may be, and without abandoning this conjecture of ours, that at least has the advantage of connecting in our mind certain actions that have evident connection in fact, it is certain that the bees have far less adoration for the queen herself than for the infinite future of the race that she represents. They are not sentimental; and should one of their number return from work so severely wounded as to be held incapable of further service, they will

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ruthlessly expel her from the hive. And yet it cannot be said that they are altogether incapable of a kind of personal attachment towards their mother. They will recognise her from among all. Even when she is old, crippled, and wretched, the sentinels at the door will never allow another queen to enter the hive, though she be young and fruitful. It is true that this is one of the fundamental principles of their polity, and never relaxed except at times of abundant honey, in favour of some foreign worker who shall be well laden with food.

When the queen has become completely sterile, the bees will rear a certain number of royal princesses to fill her place. But what becomes of the old sovereign? As to this we have no precise knowledge; but it has happened, at times, that apiarists have found a magnificent queen, in the flower of her age, on the central comb of the hive; and in some obscure corner, right at the back, the gaunt, decrepit "old mistress," as they call her in Normandy. In such cases it would seem that the bees have to exercise the greatest care to protect her from the hatred of the vigorous rival who longs for her death; for queen hates queen so fiercely that two who might happen to be under the same roof would immediately fly at each other. It would be pleasant to believe that the bees are thus providing their ancient sovereign with a humble shelter in a remote corner of the city, where she may end her days in peace. Here again we touch one of the thousand enigmas of the waxen city; and it is once more proved to us that the habits and the policy of the bees are by no means narrow, or rigidly predetermined; and that their actions have motives far more complex than we are inclined to suppose.



But we are constantly tampering with what they must regard as immovable laws of nature; constantly placing the bees in a position that may be compared to that in which we should ourselves be placed were the laws of space and gravity, of light and heat, to be suddenly suppressed around us. What are the bees to do when we, by force or by fraud, introduce a second queen into the city? It is probable that, in a state of nature, thanks to the sentinels at the gate, such an event has never occurred since they first came into the world. But this prodigious conjuncture does not scatter their wits; they still contrive to reconcile the two principles that they appear to regard in the light of divine commands. The first is that of unique maternity, never infringed except in the case of sterility in the reigning queen, and even then only very exceptionally; the second is more curious still, and, although never transgressed, susceptible of what may almost be termed a Judaic evasion. It is the law that invests the person of a queen, whoever she be, with a sort of inviolability. It would be a simple matter for the bees to pierce the intruder with

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their myriad envenomed stings; she would die on the spot, and they would merely have to remove the corpse from the hive. But though this sting is always held ready to strike, though they make constant use of it in their fights among themselves, *they will never draw it against a queen*; nor will a queen ever draw hers on a man, an animal, or an ordinary bee. She will never unsheath her royal weapon—curved, in scimeter fashion, instead of being straight, like that of the ordinary bee—save only in the case of her doing battle with an equal: in other words, with a sister queen.

No bee, it would seem, dare take on herself the horror of direct and bloody regicide. Whenever, therefore, the good order and prosperity of the republic appear to demand that a queen shall die, they endeavour to give to her death some semblance of natural decease, and by infinite subdivision of the crime, to render it almost anonymous.

They will, therefore, to use the picturesque expression of the apiarist, “ball” the queenly intruder; in other words, they will entirely surround her with their innumerable interlaced bodies. They will thus form a sort of living prison wherein the captive is unable to move; and in this prison they will keep her for twenty-four hours, if need be, till the victim die of suffocation or hunger.

But if, at this moment, the legitimate queen draw near, and, scenting a rival, appear disposed to attack her, the living walls of the prison will at once fly open; and the bees, forming a circle around the two enemies, will eagerly watch the strange duel that will ensue, though remaining strictly impartial, and taking no share in it. For it is written that against a mother the sting may be drawn by a mother alone; only she who bears in her flanks close on two million lives appears to possess the right with one blow to inflict close on two million deaths.

But if the combat last too long, without any result, if the circular weapons glide harmlessly over the heavy cuirasses, if one of the queens appear anxious to make her escape, then, be she the legitimate sovereign or be she the stranger, she will at once be seized and lodged in the living prison until such time as she manifest once more the desire to attack her foe. It is right to add, however, that the numerous experiments that have been made on this subject have almost invariably resulted in the victory of the reigning queen, owing perhaps to the extra courage and ardour she derives from the knowledge that she is at home, with her subjects around her, or to the fact that the bees, however impartial while the fight is in progress, may possibly display some favouritism in their manner of imprisoning the rivals; for their mother would seem scarcely to suffer from the confinement, whereas the stranger almost always emerges in an appreciably bruised and enfeebled condition.



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There is one simple experiment which proves the readiness with which the bees will recognise their queen, and the depth of the attachment they bear her. Remove her from the hive, and there will soon be manifest all the phenomena of anguish and distress that I have described in a preceding chapter. Replace her, a few hours later, and all her daughters will hasten towards her, offering honey. One section will form a lane, for her to pass through; others, with head bent low and abdomen high in the air, will describe before her great semicircles throbbing with sound; hymning, doubtless, the chant of welcome their rites dictate for moments of supreme happiness or solemn respect.

But let it not be imagined that a foreign queen may with impunity be substituted for the legitimate mother. The bees will at once detect the imposture; the intruder will be seized, and immediately enclosed in the terrible, tumultuous prison, whose obstinate walls will be relieved, as it were, till she dies; for in this particular instance it hardly ever occurs that the stranger emerges alive.

And here it is curious to note to what diplomacy and elaborate stratagem man is compelled to resort in order to delude these little sagacious insects, and bend them to his will. In their unswerving loyalty, they will accept the most unexpected events with touching courage, regarding them probably as some new and inevitable fatal caprice of nature. And, indeed, all this diplomacy notwithstanding, in the desperate confusion that may follow one of these hazardous expedients, it is on the admirable good sense of the bee that man always, and almost empirically, relies; on the inexhaustible treasure of their marvellous laws and customs, on their love of peace and order, their devotion to the public weal, and fidelity to the future; on the adroit strength, the earnest disinterestedness, of their character, and, above all, on the untiring devotion with which they fulfil their duty. But the enumeration of such procedures belongs rather to technical treatises on apiculture, and would take us too far.²



As regards this personal affection of which we have spoken, there is one word more to be said. That such affection exists is certain, but it is certain also that its memory is exceedingly short-lived. Dare to replace in her kingdom a mother whose exile has lasted some days, and her indignant daughters will receive her in such a fashion as to compel you hastily to snatch her from the deadly imprisonment reserved for unknown queens. For the bees have had time to transform a dozen workers' habitations into royal cells, and the future of the race is no longer in danger. Their affection will increase, or dwindle, in the degree that the queen represents the future. Thus we often find, when a virgin queen is performing the pe-

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rilous ceremony known as the “nuptial flight,” of which I will speak later, that her subjects are so fearful of losing her that they will all accompany her on this tragic and distant quest of love. This they will never do, however, if they be provided with a fragment of comb containing brood-cells, whence they shall be able to rear other queens. Indeed, their affection even may turn into fury and hatred should their sovereign fail in her duty to that sort of abstract divinity that we should call future society, which the bees would appear to regard far more seriously than we. It happens, for instance, at times, that apiarists for various reasons will prevent the queen from joining a swarm by inserting a trellis into the hive; the nimble and slender workers will flit through it, unperceiving, but to the poor slave of love, heavier and more corpulent than her daughters, it offers an impassable barrier. The bees, when they find that the queen has not followed, will return to the hive, and scold the unfortunate prisoner, hustle and ill-treat her, accusing her of laziness, probably, or suspecting her of feeble mind. On their second departure, when they find that she still has not followed, her ill-faith becomes evident to them, and their attacks grow more serious. And finally, when they shall have gone forth once more, and still with the same result, they will almost always condemn her, as being irremediably faithless to her destiny and to the future of the race, and put her to death in the royal prison.



It is to the future, therefore, that the bees subordinate all things; and with a foresight, a harmonious co-operation, a skill in interpreting events and turning them to the best advantage, that must compel our heartiest admiration, particularly when we remember in how startling and supernatural a light our recent intervention must present itself to them. It may be said, perhaps, that in the last instance we have given, they place a very false construction upon the queen’s inability to follow them. But would our powers of discernment be so very much subtler, if an intelligence of an order entirely different from our own, and served by a body so colossal that its movements were almost as imperceptible as those of a natural phenomenon, were to divert itself by laying traps of this kind for us? Has it not taken us thousands of years to invent a sufficiently plausible explanation for the thunderbolt? There is a certain feebleness that overwhelms every intellect the moment it emerges from its own sphere, and is brought face to face with events not of its own initiation. And, besides, it is quite possible that if this ordeal of the trellis were to obtain more regularly and generally among the bees, they would end by detecting the pitfall, and by taking steps to elude it. They have mastered the intricacies of the movable comb, of the sections that compel them to store their surplus honey in little boxes

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symmetrically piled; and in the case of the still more extraordinary innovation of foundation wax, where the cells are indicated only by a slender circumference of wax, they are able at once to grasp the advantages this new system presents; they most carefully extend the wax, and thus, without loss of time or labour, construct perfect cells. So long as the event that confronts them appear not a snare devised by some cunning and malicious god, the bees may be trusted always to discover the best, nay, the only human, solution. Let me cite an instance; an event, that, though occurring in nature, is still in itself wholly abnormal. I refer to the manner in which the bees will dispose of a mouse or a slug that may happen to have found its way into the hive. The intruder killed, they have to deal with the body, which will very soon poison their dwelling. If it be impossible for them to expel or dismember it, they will proceed methodically and hermetically to enclose it in a veritable sepulchre of propolis and wax, which will tower fantastically above the ordinary monuments of the city. In one of my hives last year I discovered three such tombs side by side, erected with party-walls, like the cells of the comb, so that no wax should be wasted. These tombs the prudent grave-diggers had raised over the remains of three snails that a child had introduced into the hive. As a rule, when dealing with snails, they will be content to seal up with wax the orifice of the shell. But in this case the shells were more or less cracked and broken; and they had considered it simpler, therefore, to bury the entire snail; and had further contrived, in order that circulation in the entrance-hall might not be impeded, a number of galleries exactly proportionate, not to their own girth, but to that of the males, which are almost twice as large as themselves. Does not this instance, and the one that follows, warrant our believing that they would in time discover the cause of the queen's inability to follow them through the trellis? They have a very nice sense of proportion, and of the space required for the movement of bodies. In the regions where the hideous death's-head sphinx, the acherontia atropos, abounds, they construct little pillars of wax at the entrance of the hive, so restricting the dimension as to prevent the passage of the nocturnal marauder's enormous abdomen.



But enough on this point; were I to cite every instance I should never have done. To return to the queen, whose position in the hive, and the part that she plays therein, we shall most fitly describe by declaring her to be the captive heart of the city, and the centre around which its intelligence revolves. Unique sovereign though she be, she is also the royal servant, the responsible delegate of love, and its captive custodian. Her people serve her and venerate her; but they never forget that it is not to her person that their homage is giv-

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en, but to the mission that she fulfils, and the destiny she represents. It would not be easy for us to find a human republic whose scheme comprised more of the desires of our planet; or a democracy that offered an independence more perfect and rational, combined with a submission more logical and more complete. And nowhere, surely, should we discover more painful and absolute sacrifice. Let it not be imagined that I admire this sacrifice to the extent that I admire its results. It were evidently to be desired that these results might be obtained at the cost of less renouncement and suffering. But, the principle once accepted—and this is needful, perhaps, in the scheme of our globe—its organisation compels our wonder. Whatever the human truth on this point may be, life, in the hive, is not looked on as a series of more or less pleasant hours, whereof it is wise that those moments only should be soured and embittered that are essential for maintaining existence. The bees regard it as a great common duty, impartially distributed amongst them all, and tending towards a future that goes further and further back ever since the world began. And, for the sake of this future, each one renounces more than half of her rights and her joys. The queen bids farewell to freedom, the light of day, and the calyx of flowers; the workers give five or six years of their life, and shall never know love, or the joys of maternity. The queen's brain turns to pulp, that the reproductive organs may profit; in the workers these organs atrophy, to the benefit of their intelligence. Nor would it be fair to allege that the will plays no part in all these renouncements. We have seen that each worker's larva can be transformed into a queen if lodged and fed on the royal plan; and similarly could each royal larva be turned into worker if her food were changed and her cell reduced. These mysterious elections take place every day in the golden shade of the hive. It is not chance that controls them, but a wisdom whose deep loyalty, gravity, and unsleeping watchfulness man alone can betray: a wisdom that makes and unmakes, and keeps careful watch over all that happens within and without the city. If sudden flowers abound, or the queen grow old, or less fruitful; if population increase, and be pressed for room, you then shall find that the bees will proceed to rear royal cells. But these cells may be destroyed if the harvest fail, or the hive be enlarged. Often they will be retained so long as the young queen have not accomplished, or succeeded in, her marriage flight—to be at once annihilated when she returns, trailing behind her, trophy-wise, the infallible sign of her impregnation. Who shall say where the wisdom resides that can thus balance present and future, and prefer what is not yet visible to that which already is seen? Where the anonymous prudence that selects and abandons, raises and lowers; that of so many workers makes so many queens, and of so many mothers can make a people of virgins? We have said elsewhere that it lodged in the "Spirit of the Hive," but where shall this spirit of the hive be looked for if not in the assembly of workers? To

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be convinced of its residence there, we need not perhaps have studied so closely the habits of this royal republic. It was enough to place under the microscope, as Dujardin, Brandt, Girard, Vogel, and other entomologists have done, the little uncouth and careworn head of the virgin worker side by side with the somewhat empty skull of the queen and the male's magnificent cranium, glistening with its twenty-six thousand eyes. Within this tiny head we should find the workings of the vastest and most magnificent brain of the hive: the most beautiful and complex, the most perfect, that, in another order and with a different organisation, is to be found in nature after that of man. Here again, as in every quarter where the scheme of the world is known to us, there where the brain is, are authority and victory, veritable strength and wisdom. And here again it is an almost invisible atom of this mysterious substance that organises and subjugates matter, and is able to create its own little triumphant and permanent place in the midst of the stupendous, inert forces of nothingness and death.³

And now to return to our swarming hive, where the bees have already given the signal for departure, without waiting for these reflections of ours to come to an end. At the moment this signal is given, it is as though one sudden mad impulse had simultaneously flung open wide every single gate in the city; and the black throng issues, or rather pours forth in a double, or treble, or quadruple jet, as the number of exits may be; in a tense, direct, vibrating, uninterrupted stream that at once dissolves and melts into space, where the myriad transparent, furious wings weave a tissue throbbing with sound. And this for some moments will quiver right over the hive, with prodigious rustle of gossamer silks that countless electrified hands might be ceaselessly rending and stitching; it floats undulating, it trembles and flutters like a veil of gladness invisible fingers support in the sky, and wave to and fro, from the flowers to the blue, expecting sublime advent or departure. And at last one angle declines another is lifted; the radiant mantle unites its four sunlit corners; and like the wonderful carpet the fairy-tale speaks of, that flits across space to obey its master's command, it steers its straight course, bending forward a little as though to hide in its folds the sacred presence of the future, towards the willow, the pear-tree, or lime whereon the queen has alighted; and round her each rhythmical wave comes to rest, as though on a nail of gold, and suspends its fabric of pearls and of luminous wings.

And then there is silence once more; and, in an instant, this mighty tumult, this awful curtain apparently laden with unspeakable menace and anger, this bewildering golden hail that streamed upon every object near—all these become merely a great, inoffensive, peaceful cluster of bees, composed of thousands of little motionless groups, that patiently wait, as they hang from the branch of a tree,

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for the scouts to return who have gone in search of a place of shelter.



This is the first stage of what is known as the “primary swarm” at whose head the old queen is always to be found. They will settle as a rule on the shrub or the tree that is nearest the hive; for the queen, besides being weighed down by her eggs, has dwelt in constant darkness ever since her marriage-flight, or the swarm of the previous year; and is naturally reluctant to venture far into space, having indeed almost forgotten the use of her wings.

The bee-keeper waits till the mass be completely gathered together; then, having covered his head with a large straw hat (for the most inoffensive bee will conceive itself caught in a trap if entangled in hair, and will infallibly use its sting), but, if he be experienced, wearing neither mask nor veil; having taken the precaution only of plunging his arms in cold water up to the elbow, he proceeds to gather the swarm by vigorously shaking the bough from which the bees depend over an inverted hive. Into this hive the cluster will fall as heavily as an over-ripe fruit. Or, if the branch be too stout, he can plunge a spoon into the mass; and deposit where he will the living spoonfuls, as though he were ladling out corn. He need have no fear of the bees that are buzzing around him, settling on his face and hands. The air resounds with their song of ecstasy, which is different far from their chant of anger. He need have no fear that the swarm will divide, or grow fierce, will scatter, or try to escape. This is a day, I repeat, when a spirit of holiday would seem to animate these mysterious workers, a spirit of confidence, that apparently nothing can trouble. They have detached themselves from the wealth they had to defend, and they no longer recognise their enemies. They become inoffensive because of their happiness, though why they are happy we know not, except it be because they are obeying their law. A moment of such blind happiness is accorded by nature at times to every living thing, when she seeks to accomplish her end. Nor need we feel any surprise that here the bees are her dupes; we ourselves, who have studied her movements these centuries past, and with a brain more perfect than that of the bee, we too are her dupes, and know not even yet whether she be benevolent or indifferent, or only basely cruel.

There where the queen has alighted the swarm will remain; and had she descended alone into the hive, the bees would have followed, in long black files, as soon as intelligence had reached them of the maternal retreat. The majority will hasten to her, with utmost eagerness; but large numbers will pause for an instant on the threshold of the unknown abode, and there will describe the circles of solemn rejoicing with which it is their habit to celebrate happy

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events. "They are beating to arms," say the French peasants. And then the strange home will at once be accepted, and its remotest corners explored; its position in the apiary, its form, its colour, are grasped and retained in these thousands of prudent and faithful little memories. Careful note is taken of the neighbouring landmarks, the new city is founded, and its place established in the mind and the heart of all its inhabitants; the walls resound with the love-hymn of the royal presence, and work begins.



But if the swarm be not gathered by man, its history will not end here. It will remain suspended on the branch until the return of the workers, who, acting as scouts, winged quartermasters, as it were, have at the very first moment of swarming sallied forth in all directions in search of a lodging. They return one by one, and render account of their mission; and as it is manifestly impossible for us to fathom the thought of the bees, we can only interpret in human fashion the spectacle that they present. We may regard it as probable, therefore, that most careful attention is given to the reports of the various scouts. One of them it may be, dwells on the advantage of some hollow tree it has seen; another is in favour of a crevice in a ruinous wall, of a cavity in a grotto, or an abandoned burrow. The assembly often will pause and deliberate until the following morning. Then at last the choice is made, and approved by all. At a given moment the entire mass stirs, disunites, sets in motion, and then, in one sustained and impetuous flight, that this time knows no obstacle, it will steer its straight course, over hedges and cornfields, over haystack and lake, over river and village, to its determined and always distant goal. It is rarely indeed that this second stage can be followed by man. The swarm returns to nature; and we lose the track of its destiny.

¹The figures given here are scrupulously exact. They are those of a well-filled hive in full prosperity.

²The stranger queen is usually brought into the hive enclosed in a little cage, with iron wires, which is hung between two combs. The cage has a door made of wax and honey, which the workers, their anger over, proceed to gnaw, thus freeing the prisoner, whom they will often receive without any ill-will. Mr. Simmins, manager of the great apiary at Rottingdean, has recently discovered another method of introducing a queen, which, being extremely simple and almost invariably successful, bids fair to be generally adopted by apiarists who value their art. It is the behaviour of the queen that usually makes her introduction a matter of so great difficulty. She is almost distracted, flies to and fro, hides, and generally comports herself as an intruder, thus arousing the suspicions of the bees, which are soon confirmed by the workers' examination. Mr. Simmins at first completely isolates the queen he intends to introduce, and lets her fast for half an hour. He then lifts a corner of the inner cover of the orphaned hive, and places the strange queen on

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the top of one of the combs. Her former isolation having terrified her, she is delighted to find herself in the midst of the bees; and being famished she eagerly accepts the food they offer her. The workers, deceived by her assurance, do not examine her, but probably imagine that their old queen has returned, and welcome her joyfully. It would seem, therefore, that, contrary to the opinion of Huber and all other investigators, the bees are not capable of recognising their queen. In any event, the two explanations, which are both equally plausible—though the truth may lurk, perhaps, in a third, that is not yet known to us—only prove once again how complex and obscure is the psychology of the bee. And from this, as from all questions that deal with life, we can draw one conclusion only: that, till better obtain, curiosity still must rule in our heart.

³The brain of the bee, according to the calculation of Dujardin, constitutes the 1—174th part of the insect's weight, and that of the ant the 1—296th. On the other hand the peduncular parts, whose development usually keeps pace with the triumphs the intellect achieves over instinct, are somewhat less important in the bee than in the ant. It would seem to result from these estimates—which are of course hypothetical, and deal with a matter that is exceedingly obscure—that the intellectual value of the bee and the ant must be more or less equal.