The sweetness of honey makes you, Pliny, master of the pleasing natural science, you who have made known Urban bees and Barbarian bees. Indeed you have perceived nectar, that nourishing fluid diluted by the dew. You have distinguished Urban bees by their customs, virtue, worthiness and barbarian bees by their swarms, purity, and harmony in singing.

Recall the greatest Urban bees. For example, it is asserted that ancient philosophers followed their swarms even to the Prophet Energia, and that they reached the oracle itself. Behold, indeed, you have Urban bees who, according to the extent of their honey-making and by the airy nectar flowing sweetly from the most virtuous hive, are resolved that good deeds might bless whatever place they are in and that they might favor good and learned men.

Look to the bees as excellent examples of how social intercourse should be set up. Certainly they suggest to the world a moral philosophy. Also, learn purity of morals and honesty from these swift-flying creatures, who attend to their home and family, who attend to labors, work, arms, defense, and who attend finally to the procedures of civic life.

Marvel at the duties of the king. Marvel at the duties of the populace, of parent and offspring. Marvel at the customs of the little animals everywhere. The master, who has power both by endowment and by his own virtue, who labors in giving laws, in ruling, in fostering, in directing, in encouraging, who begets offspring, who gives education, who makes the labor productive, is the father. The people are offspring who obey, guard, defend, and follow; they also do not suffer the master to be disturbed by the eyes of strangers. They are offspring who lift him up and carry him on their necks and shoulders. They consider the fledgling kings equally worthy of their veneration. They are continuously engaged in labors and duties allotted in the best manner according to the norm of instituted social intercourse. In accordance with what is right and proper, they have guards, a time to sleep, a time for meals, regular hours, rank, and even customs, as Pliny says. Since they will not tolerate the lazy or the wasteful in their home, they chastise or destroy those who have crowded together or who have ceased working. However, they always accompany their worthy companions in their mutual duties, even to misery and death.

If the militia, which either invades (another country) or defends (its own), depends on strong men, on prudent counsel and instruction, and on appropriate strategy, go to the king, the leader, the military, the bee; consult the bee. Fear is absent (in him); present are military art, the line of march, military rank. Bees are in agreement among themselves and therefore they are obedient to their superiors. Any reason for going forth, even the barbaric name of the Cimbrians, leads forth that line of march, the marvelous expeditions, and issues the movement of the troops. There are camps, and there are those who guard and defend them. In any soldier you see that there is such strength and such fortitude that although he lacks the iron weapons such as we who are not armed by nature use, he is able to cut down and overthrow the enemy with weapons implanted (in him) by nature, and these weapons, as sharp as can be, make up his power in invading, as we have seen. Furthermore, they do not spare themselves very difficult tasks as when they employ their strength in pushing forward and cleaving through wooden objects. They do not tremble at the size of animals larger (than themselves), and they even attack men and horses who threaten harm. Now they have never conceived any anger against harmless things, and they have never harmed anything outside battle, for that is justice in war to the bees. The cause has been noted by Hermonactis. We know that they killed three who were seen among them, that they killed the lord, drove away the rest entirely, and delivered their home and master from the invading robbers. Scaliger notes both the unfortunate horse and the unfortunate inexperienced rider. Certainly there is virtue and strength in military bees.

(Bee hives) have hexagonal cells with regular sides, like those which one might observe in the supports of a bridge. No carpenter's rule has been applied in the building; however, it is so carefully constructed as anything to which such a rule has been applied. Marvel at the most artful plan of the substructures and of the suspended buildings, the joining and equality (of the sides) without any weight or danger of collapse. These homes have been elegantly constructed, located and furnished so that the family might live together as is right and proper, just as the home is constructed according to what is right and proper. There are royal cells, citizens' cells, plebian cells and servants' cells placed together, each formed in a manner in accord with the dignity and worthiness (of the inhabitant) and with the plan of the work itself. Under the ruined exteriors of collapsing cells are placed posts, foundations and props by way of repairs. From this Antononacius we have the name builder in admiration. People praise the architecture and mathematics of the bees, and those are disciplines in which so many men are unskilled. Bees also have military architecture, that most useful art of fortification, more ancient perhaps than any art you might find among men. It is practiced methodically and diligently according to natural science in the materials employed and according to mathematics in the order of the forms of fortifications. You will see (these arts) if you consider what they draw up all around and what they heap up for shutting out (enemies) and repelling all harm and also if you consider the tubules made of stone, the constricted openings, and the many things of this sort that are in beehives. Turn your attention to statics. If you seek out (some bees) which are apart from the rest, you might creep upon them gently while they load themselves with small pebbles as ballast against the furious force of the wind. Consider astrology, if you wish, for it is not at all vain or superstitious (although it is often ridiculed as such among men and is considered vain and rash, a thankless pleasure, among the chief men of the princely court), but it is the order of the times according to the very stars and the rules of the atmosphere, from whence comes foreknowledge. Add also the vicarious uses of light that you might wonder very greatly at all astronomy, especially in the older bees.

So that you may believe that they have been instructed in the arts although they do not attain the Peripatum of natural philosophy, see what flowers they taste. Consider all things concerning the honeymakers. You might be ignorant of, or because it is worn to the bone by so abundantly, you might have doubts about how and from where, physiologically, honey is made and how wax (is made), for both of which many uses are always at hand. Most people and many famous writers are ignorant (of these things). You must admit, however, that it must be well known to the bees, for they swarm together from all sides, and they gather and pile (the wax and honey). They learn of the sap, the juices exuding from certain plants, flowers, and fruits. They do not wander among different kinds of plants; indeed they go from violet to violet in an undeviated order. They chiefly seek friendly plants. We see swarms around the tuberose called iris, and around orchids, which are remarkable for their parsley-like flower; also we see them all around the acorum which, since it is so small, is called bee's pepper. And now the aromas of clover float to them. You might correctly say that the more international arts, all of those important accessories to men, came to them from the bees. Indeed from the knowledge of botany, according to which (the bees) have extracted this most excellent fluid throughout the ages. For that purpose and for their collections they have foreknowledge of the weather and the rotation of planets, and they always know those things which are unknown to or greatly disputed by meteorology.

Indeed, you have never clarified or drunk gold by chemistry, except in the feverish fantasies of a spirit hoping in vain and knowing more of Chimera than of chemistry. Behold, bees distill the most outstanding nectar, the sweetest and most kindly of foods, drinks and medications for us and for themselves, and they do so far more than all Chymian(alchemy, which is) on the one hand all smoke, or on the other a stone (the philosopher's stone) of profit, hardened by the heat. You are being taught here what you may call both gold and potable, and it is not so costly nor as laboriously (gotten).

What experiment can be greater, according to science? What deed can ever be more outstanding in physical science or to a wise man whom people consider most knowledge learned in the investigation of nature? What, finally, can be more marvelous than to know so completely one's own nature that one might compose from selected materials, bring to perfection and bring forth into life by his own hands offspring similar to himself. To what animal, either the most skillful or the most powerful, is that (power) given? Is not the Pythagorean Pythagoras of Paraclesus (a man whom some call the *Mysteriarchum*, the monarch of science, and whom many others ridicule) more to be laughed at than he is able to laugh? The little bee, who has certainly been constructed and begotten by the bee, stage forth like (its parent) to its work and flies in the same manner (as its parent). Behold the admirable duty of consuming tender buds and the power of bringing forth. Behold the wisdom of the Creator, who has given weaknesses of carnal desire; behold this spectacle which is absolutely singular and mysterious in the entire natural theatre.

By what titles do you praise the bee? What greater titles do you neglect? How many more you should surely give. Do not call them airy, wandering, light, agile, diligent, busy, but (call them) also artful; (do not call them) artful, but also artificial; (do not call them) artificial, but also artificial. Indeed, there are epithets given to continuous and persevering labors or to those which are always exercised; instead, (call them) wise and ingenious. Moreover, they are guileless, pious, thrifty, celibate, and if you consider the work first done by the bee, (call them) also gatherer, flower-gathering; then they are honey-flowing, honeycomb-flowing, the mother of honey, or, in filling themselves, the effectrix of divine honey. In their beginnings, both the honey-like juice and the flower-gatherer are considered by the sun, if one listens to Homer. This very small bee is adorned by many great titles, which are certainly merited, and even the small size of bees praises them the more. You must admit (that their smallness) is an argument, and you must admit the argument from the quality of the bee, which is far for from the emulation of their customs. Pliny had his argument for admiring them from these things.

The bee is destroyed if you crush the summit [of the hive] See the height to which the mound rises in accordance with its praiseworthy custom; yea, the bee is praised for wisdom, prudence, courage, power, industry, labor, business, concord, piety, temperance, chastity, humbleness, frugality, the greatest usefulness, citizenship, natural science, especially for all arts of ruling, and inviolable justice. Indeed [the bee is the subject] of such praises from ancient times all said. Thus this phalanx of virtues, admirable in itself and of so great a number as can scarcely be counted, Pluratchi says in one word, *Apiarius*.

From no other place except from the beehive itself, whose pleasant and sweet flowers the West Wind brings forth and nourishes, can you be favored by the name of the deity Favorat by the deity himself. Make the bees Pythagorean sect, according to etymology, and add this cause of favor to the bees and beehives. Truly the West Wind and the honeycomb promote best and most the celestial, perpetual nectar-like juices.

Jupiter Melisseus is the benefactor of bees, of the bees of Mount Ida and of Melissa herself, from whom, as forebear, [we have] the name of the species. Jupiter, who by the industry and kindness of the bees was nourished by honey and protected and preserved from the cured teeth of his offspring, was gather in a cave of Mount Ida, escaped a dangerous and nothing greater than which can ever be undergone or imagined. No remedy for this evil, of which there was no knowledge but only suspicion beforehand, has ever been devised. This kindness of the bees is more important than either their internal defects or those imposed upon them. More powerful than the bees of Mount Ida are the Urban bees who by their outstanding virtue are able to nourish and to liberate, not only in a cave but on the summit of the globe, anyone who flees to them. By the greatest probity and by the sacred laws they are able to exclude, to drive out, and exterminate any evil whatever, protected as it may be by a cave and even concealed in the hidden center itself.

What of Georgius, the diviner of words? From his ancient Teutonic voices he calls forth genuine praises of these living honeymakers. You can picture to yourself the Bee, if not very elegantly certainly very accurately, by admiring the mysterious and the ordinary procedures of power and by admiring good things of the greatest usefulness brought together because bees offer and hold out many things to us. Meanwhile you reveal the mystery to us. To bring forth and to rule are parts of the same duty and are reciprocal because he, who rules will bring forth all things in the same way, and he who produces rules. The Bic to the Belgians, the Bien to the Germans, bees, the most beautiful models of power, always produce much more abundantly. They give as honey as food, honey and propolim as medicine, wax for the most sacred and solemn brilliance, examples for the soul, also many clear admonitions both by their good name and by their omens. Certainly the very best things [come] from bees.

An animal might not be munificent enough to have been known to Pliny, or rich enough [to have been known] to Lucan. We see that bees and the family of bees are most useful to the human and other living creatures. Indeed one may most aptly call those things which we acquire from their beneficence riches. Completely without recompense they make honey for us. They endure labor of a thousand uses in life, as indeed I read in Pliny. They demand nothing for themselves in return for their labors or daily works. They have neither pastures nor fields for the necessities of life, neither flocks nor shepherds. According to Aristotle they do not harm any fruit, and according to Pliny, if they brush against anything while they are gathering the most subtle juice, they do this so lightly that they seem scarcely to taste the largest flowers. They do not distort, destroy, or many any flowers. They work harmlessly. They gather the flowing treasures for the lord, not to cause injury or damage to anything. Your works are always profitable by the marvelous propagation of the swarms. You will add as much as ten thousand *sesterria* a year to your riches from a small field when bees have been placed there, and you will have thousands of pounds of honey yearly produced from this kind of field. You have heard Varro and other teachers of agriculture marvel at these things. You have many things if you have bees. Marvel at the thrift of bees, for indeed (they produce) without expending any produce of the field or fruits and without any other expense. Finally, we must bear-witness to the many resources bestowed by bees and to our enrichment from the resources of the bees. Certainly from grammar you know how easily a little letter might be altered, from the most witty Plutarch or Pliny, or *ulla* and *aula*. Bees certainly produce sweet resources, an opulent plenitude of sweetness.

What products do you have from bees?— honey, wax, *commosim, propolim, pissoceron, eritbacon*, even honeycombs. These things certainly bring together the most excellent juices, material most useful to you not in one way only or one faculty only but indeed for the greatest benefit to the entire body. But if you stand off and look, there are better things, more worthy things, and sweeter things that they instill in the mind. From the moral and mystical sanctuary of nature they are warnings, examples, and signs. They have given stimulus to undertaking the paths of virtue and work and against any laziness whatsoever and the defects of idleness. These things are able to pierce the mind itself by a long and very strong sting. It would be a shameful thing if the smallest animals should surpass human nature. While the bees hoap up their riches of wax in mind and body about you, are you ignorant that you have them or of how to make use of them?

What is the flame of nectar and of ambrosia? How much do you praise them again and again? The odors of the latter and the tastes of the former, especially, have been pictured by poets in celestial feasts, and no other foods or potions have been allowed a place in supernal feasings because these things, which can satisfy all appetites of banqueters and satisfy them in every way, are most excellently and exquisitely complete within themselves. What is honey itself, unless it is both other gifts of bees and, in addition, something not from flowers; the other from the dew of the sky. What other pleasing thing will you ever find that excels honey in odor or in taste? or what than is more wholly taste, what more wholly sweet, which seems to have been sent from the sky and to be wholly celestial. Honey is pleasing as food and drink, as you, Ausonius have sung. It is sacred, according to Lucaus, and all heavenly gift, according to Virgil. Jupiter himself rains it down on you, Galen. Finally this nectar is indeed the nectar, for you, of Virgil and Martial. Who can refuse in any way that ambrosia juice of Orpheus, that is to say, ambrosia (now the table cease) or is ambrosia itself? Will anyone not say with Ambrose that this is sacred? By this nectar and ambrosia you can satisfy both thirst and hunger. According to Pythagoras, [you can almost live] by them alone. You may forego any impure and bloody food, mixtures of many broths, and impure combinations of food without taking any other organic food, without any injury to health; or, according to the authority of Democritus, [you can live] by the odor alone, as if by [breathing] the agreeable exhalations of the sweetest flowers and thus nourishing and recreating [the body], it would be possible to restrain one who is aging and about to depart from the living.

Who would not praise and love you exceedingly, Pythagorean Melissa, you who have turned mortal men from the eating of meat and from bloody, fleshy food by [bringing] the celestial food. You brought the food by which those long-lived fathers remained so long in health and life and which active old men, guided by the reason of philosophy, used, the drink by which Democritus, Anticlucus the Physician, and Romulus Pollio overcame the aging effects of their years. Why do you praise wine sweetened with honey? Why pass over in silence anything as sweet as honey? Should we not mention those long-lived Cyrenic honey-eaters, or the gods, blessed, beautiful, and long-lived even to a thousand years, and also those Orphics of Macrobius who

_____ drink both the sweet foods from earthly grasses, And the ambrosial juice from the perennial dew?

Or Aristotelus for whom honey daily prevents the access of disease? Behold indeed the vital juices. Do not other foods and all drinks owe gratitude to them? Men are accustomed to partake of them whether they are injected by art or added by nature as far as they creep into living food and other things that are used. Honey is entirely nutritious; all nutriment is sweetened with honey. Honey is so simple that it may be hidden more or less in all things, mixed so thoroughly with them that it might appear nearly physically similar to other particles when they are brought together in equal parts [with it]. That honey in which the water evaporates most easily is valued rather more dearly, and it is thickened finally so that our batch contains the greatest spirits and forces of many [bees] who have made it, and as a result it receives and gives forth [these forces and spirits] most strongly. From this honey there is complex healing energy, but also there are more numerous uses. If you remove the dewy honey and the honey from flowers and reeds from Melitite and Melicratum and from healing waters and from *Sarmatic Hydromelia, Medos, Calabrian Metaglin, or Hydromel Atos*, you will have removed all foods which have medicinal value. Thus there would be scarcely any food and even less medicine. There is nothing compounded by art which cannot be brought to perfection by this nectar. The Egyptian ancestor of the bee is said, not undeservedly, to have invented medicine. Your bees, in thick swarms around the funeral rites of Hippocrates, the father of medicine, not undeservedly sitting on the sepulcher, intended to escort it and to adorn it. These preservers of life, bees, deserve to be praised by greater titles than those of honey alone, since health is preserved by honeyed food and restored by honeyed medications. Certainly the nature of the eternal skies, praised by the sacred prophets, which one might say is like a clock constructed in long-lasting results, can be represented by the Pythagorean as very pure and immutable air with its own special law, but nevertheless it is able to breath forth an odor. Iatro-chemistry also can breath forth marvelously.

You are indeed amazed at these juices from the sky, Pliny, which are certainly celestial in [their] excellence. At the same time you grieve because they become soiled, falling from such a great height to the lower depths, and they are corrupted into the juices of flowers. You praise the aethereal liquor which falls from a dry sky, the perspiration of the sky, the saliva of the stars, the juice of the air, so that afterwards others receive the juice of the sky having condensed into drops and the sweet dewy saliva from the stars and the waters of the sun. One ancient learned man, now this one and now that than with lenitive, praises the drops, the effusions, the harvest. And at the same time they sing of and praise the Apollonian bees most elegantly for their care, their harvest, their conservation; they praise the collectors, the guards, the administrators. The pleasant, fertile Calabria awaits the manna-like liquors from the sky. India awaits the pleasing juices more moist than the flowing saccharin. You certainly recognize in the honey-sweet dew of our native land, which is sought after by the little bees, the honey-rain from the sky which Galen tells of. And you must have heard of the golden showers of Jupiter pouring forth into the chaste bosoms of Danae, as Horace tells, or the golden showers that were sent down on the Rhodians at the birth of Minerva, as Claudianus says, or golden showers like the great auspices at the birth of Hero. They rain likewise on us, but they are not heavy with the splendid weight of golden coins. Honey, by its outstanding sweetness and by the nectar sweet effusions of good things, can bless and nourish our generation with much fruitfulness in every way.

Why, however, should we refuse these pleasures and riches of the earth? The flower is the mother of honey; it is the nurse of bees. It is proclaimed not only by the name of its fruit but by the name of bees, and according to Herodotus, there is the Scythian *Apia*. Pliny found the best honeys there where they were gotten from the little casks of the best flowers. But there is a not slight danger that nothing can be drawn out of the diverse vessels on account of contraction except by the most facile talents. Indeed the vessels are not both wet and dull at the same time just as they are not both large and small. They might have bitterness from the plant, sourness from the absinthe, for which Sardinian honey is found fault with, and from the *cochicum* uneven quality from the boxwood and the *Acacedis*, and worse things from the oleander, perhaps even the insanity that is known as *Menomanon*. Finally they might have a stench from wolfbane or from the flowers of the chamaeleon plant, as Bellon believes. For these reasons all honey of the Santi and the Heraclionic Pontus is rejected. One obtains *galbanarium* from the galbaniferous stalk. Moreover, just as honey from the heath is less watery in accord with its nature, and honey from the Cretan Ida is more watery, according to Varro, it is known that bees make thick honey from rosemary. Some honey is fluid; some is very thick. The most outstanding honey is that from the silver mines of Hymettus, according to Strabo, which you value as much as silver because it is made without smoke. It might be pleasing to dwell on the honey in the plants themselves and even in lesser things. You know that honey is pressed from flowers by the tyrants of the Troglodytes, that it is made by the same art from palms in Assyria, and that Saccharin comes from the reedy indigo according to Statius. Add also the honey from the highest branches of trees, which produces madness in the Pompeians, and honey pressed from the pods of *Ceratia* and that honey which the honey-making *Tacanciens* in Africa, emulating bees, make from flowers. I name manna and *Melaseccarum* which are produced from cut trees, and also the birch of the Germans flowing with honey-sweet juice. Below these there is the grass which we call nectarous from which you can suck and eat honey. Add to this the honey-flowing *Meri* from Mexico, that celestial food of admirable growth, which has carried the name of honey and the thing itself across the pillars of Hercules. It has much honey and no aloes, unless one uses that inappropriate word because of the empty spiked leaves of the *Phytonomorum*. There are Livonica and Lithuanica from whence one can have the most abundant honey. If, according to the witness of Cordus, there is very little moisture in those regions, where you can get honey except from plants? Behold the honey-producing stems; behold the honey of the earth and the honey within flowers and plants.

THE BEEHIVE
OF THE NATURAL THEATRE
OF PRINCE FEDERICO CESI LINCEI

PRINCE OF SAN ANGELÍ AND SAN POLI. I. MARCH[ESE] OF M[ONTI]CELLI. II. A ROMAN NOBLE DESCENDANT OF G.[IACOMO] C.FESL]

WHO IS DEDICATED

TO THE

UNIVERSAL HONEY-MAKING FAMILY DERIVED FROM ITS FIRST GENERATION,

Distributed in its special and differences in the visible natural world.

The father, the king, the supreme lord is outstanding because of his beauty, his form, and because of a shining diadem that is marked on his head. According to Columella, he does not have a sting, (a fact) to which nearly all recent writers (perchance from the Diogenian teachings) seem to subscribe. However, Aristotle says that the more influential and certainly the more able bees do not make use of (the sting), and Ambrose agrees with him. Nevertheless, there are those who, together with Aelian and Pliny, doubt whether these bees lack a sting. Truly this elegant prince is absolute over all others even from his birth. He is obvious at once because of his wings and his remarkable limbs and his full stature and his size. Certainly no one could easily consider him from whom all bees with stings are brought forth to be devoid of a sting. Other kings likewise have their origin from him because the material for the generation of bees is strewn by him. Cardan thinks that it is nothing other than honey from which bees spring forth entirely. Scaliger denies this, but he seems to indicate that the bee nevertheless adds honey-sweet liquid and, moreover, the heat elegantly appropriate to the construction [of the young]. But nevertheless, according to the equally legitimate testimony of Pliny and Aristotle, the bee is made from the honey of flowers, chiefly Cetintha, Olea, *and* Arundinis. *Bees are fed by honey, a fact about which [Pliny and Aristotle] are in agreement. There are the honeysweet origins; bees bring back the honey-like connection with shrewd foreknowledge, with desire and with form. At this time, however, the honey is a liquor of tranquil nature; it is the material, selected and plucked from the viscera of flowers, their own special biding place for honey, for fermenting a certain virtue which must quicken. But it seems also that we should undertake to examine more closely the value of the work; and we must stop here for a time while we are most desirous of turning the attention of honey-lovers from the picture of the exterior to that of the interior.*

The material, swollen with juice, is not nicely arranged. It is at first in a disarranged and rather simple form. The heterogeneous mixture has particles hidden in small, crude limps. Since it is suffused by moisture, at first it contains heats which by evaporation pulse and quicken in the center from the internally stiffed heat. Many things have certainly been written about the bubbling, mingling mass, the various solutions and applications. Now the one and now the other of the forms caused by the heat are united for the completion of the organs. These quick movements are spread out in their beginnings. They stir around a great deal, and they dissociate by mutual internal strugglings into parts which either become closed in or disappear. The particles, disturbed and moving vigorously, little by little undergo that joining which holds and restrains them in appropriate boundaries within and without. [The body of the bee] is carefully made solid, and while [the grubs] hang from the supports of nearby walls, the passages for flowing and the passages for breathing are made, and when all things have been distributed according to what is right, their parts are constructed. At last, by a calm collecting and at a convenient site [the parts] gather together in one body. This disposition leaves empty spaces in [the body] for the flowing [of liquids] and veins in the fascias, bringing together some things for the purpose of flowing, while some other things have been compressed, joining those things which are thinner and those things which are thicker. It divides the drier, more solid things which contain from the softer contents, and quietly and with soothing obligations it tempers the motions, the freedom from restraint which should neither be able to nor ought to break forth or waste away. In this way, on the one hand the exhalation of the vital heat in the fever of work is checked, and on the other hand a release is provided and that pleasing heat, as if formed into rays, can settle in a moderate middle path between frenzy and laziness. They call it celestial heat, they call it heat from the stars mystically corresponding to the element of the stars, whatever its terrestrial origin and home might be. The functions of the vital principle of the soul (that is to say, of the more tenuous and constantly excited and extended parts always connected with the vital principle by interior pulsations) can be exercised by the instruments of the mass itself, namely the muscles and the various limbs and all the organs logically and compliantly arranged, variously excited by leveling, by withdrawal, by impulse, by pressure, and by posture. Certainly the mutual coordination and harmony of the whole, of the parts, and of all the forms, which rest in an orderly fashion from large to small and from distant to closely connected, maintain the completed work, and it forms the nature of the animal, in which that double nature of moving and movement, of freeing and being free, might appear as a result of a maker with such a nature. Only with great difficulty can you represent in words that single work which is of a multiple nature. This fruitfulness is certainly more to be the industry of that great Mother, who seem unknown of the name. Just like the industry of themselves in the hive. It should not seem marvelous if by a single one of their works many living creatures can be produced, the parents of whom are preserved by their powers. However it is much easier and agreeable to reason to mention this, that so long as the parents remain near (for material far away or unsuitable should not be gathered) so long will the powers of the cause be joined in one thing. Now the material, which they call the generating material of bees, is present, having been plucked from honey-bearing flowers, and in that material a bee-like structure ought to emerge from a not accidental collection of the parts; but having been collected it is so similar to the [bees] own forms which follow [from it] that the particles ought to be much closer to and go into bees in a fine step if they are gathered and compressed far away. The milky color [of the material] indicates that it is sperm-like and foamy and that, condensed within its bounds, it is appropriate for the formation of organs but not as the first food, such as we would consider mother's milk, eggs, many seeds, and oily, watery, and salty mixtures. It is the result of fermenting, of better honey [which you will see] if you observe the movement and bubblings of honey, especially that mixture, which is mixed with water. Indeed it is nothing more wonderful to mix honey with water than to mix it with any other spirit. [Bees] can be produced quite easily by nature (a helpful analogy is an egg). But the king, the father himself, provides over what he gathers. By his work the material is made smooth, is placed in order, and is distributed after it is arranged and refined. The material of the bee is first formed and produced from the material of the bee from surrounding heat, but from the seminal spirits injected by [the king]. It is very greatly agitated and stirred up by these spirits, and in intermingling with such spirits it is more readily excited and springs forth with its original vigor just as it would from a father. When it has been seized by the fervor which pursues and urges it gradually through the last steps of the folding and compression, it is moved and stirred up and all of the limbs. Thus, the material, which is now the generating material of bees, is formed. They are thought by a number of scientists to be nothing more than a substance similar to condensed spirits. Although they have added the fleshy body (better for the first food) the generative materials overflow with spirits. In any case it is allowed that the force and energy of the generative material are in the spirit. Without a doubt we have the purest material, the primordial spirit (as I call it) from the father, which brings bee to completion. The fluent, unsteady, immediately produces more and more similar parts so that the life of the bee, having been implanted most promptly and most strongly, remains, sent forth equally by the disposition of the place, capable above all of being molded, and for more efficient than the architecture of Scaliger. And it is admirable too how natural philosophers, building and furnishing homes for themselves, unite with their labors the work of the bees and the work of the Pythagorean plain. They are not ignorant of the fact that bees are more the father who knows no easier sports, no excitement of lustful madness, no impurities or venerics.

What entirely opposite things he seizes upon. He knows the substance, for an unknowable author does not produce, and he accomplishes unknown work and offspring, but [the Father] gives work befitting a free man to free men, with zeal. Should you perhaps throw out the fuller materials which are rather heavy? These should not be sought by the body of the bee because [bees] do not have a crane for taking in food which they cannot use. [Such food] would flow through the limbs nor should it leave any mark on the form [of the bees] which are outstanding now since they have been formed before. Bees are formed and adorned with [these so] very sweet and subtle forms. [Bees] are formed and disposed similarly to the father, are outstanding. The very delicate little body should not be polluted by eating strange food if foods on which the body depends exist close by. The spirits alone, which are imposed on the generative constitution of this material, are sufficient. They are sent forth entirely from the body of the Father. They are well distinguished, and they are like so many spirits which are sent forth ornamented with flowers. Bees are formed and adorned with [these so] very sweet and subtle forms. The spirits establish that posture both inside and out. From the joining [of spirit and form] the Aphius results in all its forms. You should not doubt those distinctions of form, although it is allowed that you cannot see them. The particles in their various positions convey the maternal characteristics, though they escape our eyes. Thus, you can discern things by tastes and odors, by the various striking of particles [upon the senses], and you can perceive odors of things, because of certain particles which are sent forth from them by the sight of them. You can perceive even the smallest invisible bodies effused by Moschus throughout an entire bedchamber. I say that you can perceive the Moschaceus parts. If you consider odor as the tastes of dogs, you should learn about what they perceive, the diverse exhalations from the body of a single animal, the traces clinging persistently in the trails despite much time and washing. These exhalations could certainly not be perceived distinctly or could not attract the attention of the senses unless the particles on the outside retain the maternal form. The material of bees, although it cannot be seen, is well impressed on the breath and breathing of the whole body, but it is not impressed with more difficulty than the material which is more tenuous and more similar to spirits. It is not surprising that it is easier and more suitable to receive and to accept what the outer parts [of the body] assimilate. It has prepared, like a bud maturing in nature, from a little worm at the beginning which turns into an egg, where it is gathered up into a round ball, as if in an egg. At its completion it encloses a resting nymph which gathers strength from its chief components. When at last arms and legs have grown out and its other limbs have stretched forth, it is made smooth and it emerges from the mother, nourished to all her maternal details. Little mothers are steadfastly present, fostering the kingly fetuses of the resting bees until they are finally brought to completion. You should consider these little mothers as being of a lower rank along with the other bands of workers. First the Great Mother Nature operates on these little birds. Then the father produces, advances and Confirms the work. At last there are the little workers. Thus the marvel in this procreation is that nature seems to act together with the parents. Nature seems to cooperate more and to bring forth [offspring] just as [the parents] do. Nature has carried parts of your substance from the foul-named passion, and you have parts from material similar to it and marked by it. Through the harmony [of fire and nature] there are, on the one hand, forms and on the other their connection, heat now producing the first and then the succeeding forms, both the starting and the resting. There are always fossil similar to the substance of the body. As the material itself is further away, much more is formed by the spirit which is at hand, and the great parent, happening onto an assembly of advantageous things, brings forth bees. There is a truly unique force of nature and of the fabric which brings these things to completion in a remarkably short time. They also work very quickly in a manner of a bee's construction. Aristotle denies that bees are produced in this way, so that [the new kings] can reach perfection must rapidly and so that they do not have to linger as unformed little worms or as a sleeping nymph or such a small thing, but they grow most rapidly in size of body and of nature at though made from the choice flowers of all those available, as Pliny says. In this certain way are kings generated according to the honey-like principle. In this way, then, nothing whatsoever is left by chance or by the work of God in those, only the can doubt that these Occhionalii India Gypsies, which are strong and which can and does tempt weak young slaves [is absent]; indeed [those slaves] seem to be guided much less prudently than those young birds, who know much earlier (in life) how to direct any venery in themselves to the purpose of successors and subjects so that they can dedicate the labors of their strength equitably to the fruits of setting up colonies, and they send forth now one and now another. Truly one cannot lead to a very short time, but it is not bee without administrators or with too [numerous] administrators. The workshop of physiology in which the composition of the offspring is done is completely inaccessible. It is unheard of by many, whether they are guided by the scholastic intrebusses of stirring or by the more pleasant cover of contemplation, whose pages have mentioned that according to history the sisters of the king are of common and ordinary origins. This industrious proficiency of bees certainly does not seem to be a matter of natural history, and it is not a matter of natural philosophy. It is very obscure to the questioning Aristotle and to Pliny and much more so to others. The third manner of bringing forth young, which is as remarkable as the others, is the generation from the sensitive of the parents, which is unnecessary or is unknown to the ancients and naturally has one. It seems as if a new nature had been constituted. The king, the lord, occupies himself almost entirely with the practice of bringing forth offspring who can be formed. It is the duty of the great parent (for which reason he is considered the only male in the whole family, but wrongly so). He most skillfully makes the beings who are his soldiers, slaves, administrators, and even sons according to the oath, whom he rules with full right and power and who he industriously employs in works and duties. He does not take on any other labors or any cares of less importance than the greatest occupations, the actual ruling and keeping together of the people.

There is a cohort, or a retinue, selected for the king from the older bees. It remains around the leader in attendance and guardianship and other such duties. [Its members] are excused from the honey making labors, according to Aelian. Pliny says that these attendants are called the cupbearers [of honey].

There are leaders, who are the royal administrators whom nearly all writers usually confuse with kings and thus say that there are many kings, or better, aristocrats among the bees. Moreover, we ourselves can well recognize the monarch when we admire these swift-flying bees from a distance. He is well-established in his own duties, and his limbs are on a solid (colored) body. Thus [bees] are formed, with rifts, and, moreover, are exposed by Pliny. This finally brings about a difference in the opinion that there are several kings! [If you consider that τὸν βασιλέα, τοὺς ἡγεμόνας, *(than king, than leader) distinguishes the one lord from those outstanding bees who undertake the command and will lead the line of march of the people. There are also those who are accustomed to seditious leaders; whenever they are less than complicant or in some other way culpable they are driven a great distance away from the beehive and from the royal courtyard.*

[They are] the parents of the drones, armed with a strong sting which they say is worthy of a male. They are very similar to the king by gaiety, excellent spirit, and are strong in their constitution. They are nourished by their work, do not seem to serve the same function as receptacles and bark do the shell, and surrounding material do for eggs, or as the uterus and skin do for higher animals, but they promote the generation of the incipient kingly spirit, add heat to the work of construction, and and besides the work of construction, and in a secondary sense, are nourished by their work, do not seem to serve the same function as receptacles and bark do the shell, and surrounding material do for eggs, or as the uterus and membrane do for higher animals, but they promote the generation of the incipient kingly spirit, add heat to the work of construction, and and besides the work of construction, and in a secondary sense, are nourished by their work, and with a murmuring commotion they stir these up to greater heats as if for the hatching of the whole band from the broken shells and membrane of eggs, and they are exposed by Pliny. Then finally they produce the incipient kingly spirit, and heat to the work of construction, and in the commencement of their work. For this reason you can call them little mothers, nurses, who take care of all the duties of the mother herself and of the womb in bees, from conceiving to giving birth by freeing [the bees from their cells].

[There are] drones, the sutlers, the servants of the bees, their water-bearers, designated by the masculine name of bee. Some think that they are the offspring of all those who have served their term [of work] because when they cease their labors outside they, least of all, are allowed to be lazy but they must be relieved of duties within the hive. They are designated as producers of the commonwealth and as the complement of the family. They are nonetheless fierce and have no sting or have a sting. The drones are called stinged however because of their nature and will. Although they are not as large as the kings, when there is no king they are proud for then they are produced in a more worthy place in the cells of the bees, and because of this they hold the rank of the king. Since they are proud they hold the rank of common servants. They perform in addition the tasks unworthy of a freeman, and they are even constrained to fulfill the destiny of others, for example that of the emerging incubo. They are sterile, according to many. There are several things concerning which Aristotle seems to say the same thing about them and about the offspring of bees. You should read the name Τεῖρες, *Cephanes for Greek drones. There are also those who are called the drones of bees. [Drones] produce what is false and sterile, and because of this they are noted for their vice of laziness, for which they continually suffer punishment. It pleases Scaliger to call [them]* Apiastros.

[There are] the honey thieves which, according to Pliny, are another group of drones who are certainly illegitimate and are black with a great round belly (is it perhaps accordant with black sedition?) They are the largest of the family. They are smaller than the drones according to Aristotle who, since he generally confused them with the [worker bees], is the reason that [other writers] bear the same thing, and that wrongly. This black bee I believe is better called Kachim *after Albertus Magnus.*

Now call Kachim, or Cachimus, or Cachimus, or Cachimus, or Cachimus, or because of its color according to Scaliger, [who] pick and use the names that are fitting for this abortion because it causes abortion). The little grubs of bees are molested by a species of spider ambiguously called Phyneustam. *These cause an abortion of bees, according to Pliny. The little creatures are called the bee-eaters. One better explains this happening and purchase comes closer to the [case] when he deems that this happens because of the corrupt generation of bees, because of a defect of incubation, or of the mixture itself, or because of some other injury from outside.*

The Oestrus *also is considered a kind of bee that is produced in the outer parts of the combs, according to Pliny it is a larger fetus that because of the size of its body is able to imitate the king himself. This domestic and disquieting enemy is thus confusedly called a [king] because it drives the swarm [from the hive] and does not allow it to be at rest. You think that its generation is similar to that of the* scletus *but with much more abundant spirits spreading through the material leading even to madness. While the creatures are closed up, they are violently stirred up by any blow on the outside and by the internal beats in the hive, and they are usually mistaken by the name of foul filth. The little beats immediately cause a turbulent ferment. The swarm thus driven harshly as if by a goad is never able to insinuate itself into the unproductive ruin [of the hive]. Thus nothing can have a place under the roofs of the family* Apina *which does not contribute (in the hive) in some way. Thus [bees] are situated in their diverse forms according to the proportions and mixing of spirits and mass, by the ferment, and by thorough boiling. The diverse kinds of bees constitute steps in the house of the bees. Some are distinguished as greater in the administration of the regimen, some are distinguished by their duties, and others by their labors.*

Armed with a sting, larger honey-makers

Armed with a sting, larger honey-makers

Of the URBAN *bee, who is accustomed to make honey in the homes of hospitable men, and is received in cultivated lands, humane, happier, and those...*

Golden-yellow

Who are received into beehives by men, swarming now in our land, then in America

By more ancient descriptions

By more recent observations, more nearly varied in nature, fruit, size and species

Larger

Smaller

According to Pliny and Aristotle, the best Urban bees are thickset, round, short, and a variegated golden-red color. According to Albertus Magnus they are perhaps a third sort of genus which he calls Columnale.

There are somewhat longer, hairy bees which are similar to wasps. They are less highly esteemed by Pliny, although might they be a second genus, according to Albertus?

According to Pliny and Aristotle there are other somewhat longer, hairy bees, similar to wasps, that are of a lower class. They are inferior to the first two kinds in the art of living together and of arranging their comb and their dwellings.

There are ones of enormous size, black and shaggy, like a ball of yarn, according to Columella.

There are, according to Columella,