BOOK XV.

HYPOTHESIS.

These things are in this Book, being indeed the Fifteenth of the Select Precepts of Agriculture, and comprising natural sympathy and antipathy; and concerning the care of bees, and the making of honey; and that a person may not be stung by bees or wasps; and concerning the destroying of drones.

I.—CONCERNING NATURAL SYMPATHY AND ANTIPATHY.

NATURE has found many things having sympathy and antipathy in respect of each other, as Plutarch says in his second book of his Convivial Tracts[m]. I have therefore deemed it necessary to arrange the most wonderful of these in this treatise of mine; for I have taken pains that not only the lovers of agriculture should collect what is useful from my labours, but that my discourse should be likewise adapted to the lovers of literature.

[m] Sympos, ii. Quest. vii.

rature. You must know then that an elephant[n] in consummate fury becomes tame at the sight of a ram; and that he abhors the grunting of a pig. A wild bull[o] becomes composed and gentle when tied to a fig-tree. A horse[p] bit by a wolf will be a good and a swift one; and sheep bit by wolves have their flesh of a sweeter flavour, but their wool[q] produces vermin: these things are indeed mentioned by Plutarch. Pamphilus also says, in his Treatise on the Philosophy of Nature, that horses treading[r] in the steps of wolves become torpid in their limbs; and that a wolf, when he touches a squill, becomes spasmodic, for which reason foxes lay squills in their holes on account of the wolves. A wolf, if he[s] first sees a man, renders him feeble and speechless, as Plato says in his Treatise on Politics: but when the wolf is first seen by the human creature, his powers desert him. A lion treading on the leaves of the holm-oak becomes motionless: he also dreads a cock and his crowing; and if he sees him, he flies away.

[n] Plutarch mentions this. Symp. lib. ii. p. 641.

[o] See Pliny, xxiii. 7. 64.

[p] This is taken notice of by Plutarch, Prob. viii.

[q] See Pliny, xi. 33.

[r] Anatolius, p. 300.

[s] Virgil takes notice of this, Ecl. ix. 54.

away. A hyæna, by some natural instinct, when it treads on the nocturnal shade of a dog, formed by the moon, lets itself down from a height as if by a rope. And Nestor says in his Panacæa, that a hyæna, when it sees a man[t] or a dog asleep, lays its body along the creature that is asleep; and if it indeed finds itself of a greater size than the creature that is sleeping, it naturally, from its length, renders it delirious[u], and it feeds from[v] its hands without any reluctance; but if it perceives itself to be shorter than it, it runs away with the utmost speed. When a hyæna advances towards you, beware lest it come upon you from the[w] right side, for you will become motionless, and you will not have the power to help yourself: but when it comes upon you from the left side, attack it with confidence, for you will be sure to kill it. If a person holds the tongue[x] of a hyæna in his hand, he will have the surest protection against

[t] This is mentioned by Aristotle, *Mirabil. Auscultat.* and by Ælianus, iii. 7.

[u] This alludes to the paraphrenesis, which was a temporary madness.

[v] This can only refer to the human creature.

[w] See Pliny, lib. xxviii. 8; and Æli. vi. 14.

[x] See Pliny, lib. i.

against the attack of dogs. If the polypus[y] approach a crab, it casts its claws. When there is a fumigation of ivy, bats perish. Vultures perish from the smell of perfume. A serpent dies, when leaves of the oak are thrown upon it. A serpent will not stir, when a quill of the ibis is thrown at it. A viper, being once struck with a reed, becomes motionless; but repeatedly, it gathers strength. If you apply a branch of the beech to a viper, it is intimidated. If a testudo[z] eats serpents, it becomes sick; but when it eats origanum, it is convalescent. Storks lay leaves[a] of the plane-tree in their nests, on the account of bats. Swallows lay in parsley, on account of beetles[b]; ring-doves lay in bay; the circi[c], lettuce; the harpæ[d], ivy: crows lay in agnus[e]; the upupæ[f], amianthus; ravens, vervain;

[y] See Pliny, lib. ix. c. 30. This in the original is very ambiguous; Vitelli has translated it *polipody*, after the Latin.

[z] See Aristotle, H. A, ix. 6; Æli. iii. 5; and vi. 12.

[a] Anatolius takes notice of this, p. 298.

[b] This animal is called *blatta*, in Latin and Italian; Matth. lib. ii. 35.

[c] Κιρκοι. See Ælianus, i. 35.

[d] See Alciat. in Emb. *Altivolam milvus comitatur degener harpam.*

[e] The vitex of the Romans came under this name.

[f] See Pliny, x. c. 29.

vervain; larks lay in agrostis, whence the adage,

In the lark's nest is the perverse agrostis laid.

Thrushes lay in myrtle; the partridge, the tops of reeds; the ardea[g], a crab: the eagle lays in maiden-hair.

Theophrastus and Aristotle say, that animals are not only generated one from another, but that they are spontaneously produced, and that they arise from putrid mould, and that some animals and plants are changed into others: for they say that the caterpillar is changed into another winged creature, called the butterfly; and that the worms from the fig-tree are changed into cantharides; and the hydrus[h] into a viper, when ponds are dried. It seems also, that some animals are transformed according to the seasons; as the hawk is changed into the upupa; and as the erithacus[i] and the summer phœnicuri[k] are transformed in the same way as the ficedula and the melancoryphi are metamorphosed; for it is the

 ficedula

[g] Ερωδιος. The heron and other birds come under this name; Pennant, class ii. 173.

[h] The Latin name of this was *natrix*; Matth. l. vi. c. 51.

[i] It was the *rubecula* of the Romans.

[k] The *ruticillæ* of the Romans.

ficedula about autumn, and immediately after the vintage it becomes a melancoruphos[l]. If sea-birds are hurt in their beaks, they are cured with origanum. A radish, when laid on a scorpion, kills it. If a person stung by a scorpion sit in an erect posture on an ass, looking towards its tail, the ass will suffer for him, and it gives an unequivocal proof of it. If a person stung by a scorpion says to the ass, "A scorpion has stung me," he will suffer no pain, it being transferred to the ass. Ants, that the wheat accumulated by them may not grow, eat the interior part of the grain. The seeds that, in sowing, touch the horn of the ox, are not affected by fire; and these are called *kerasbola*. The magnet, or sideritis, attracts iron; but it is divested of this power, when rubbed with garlic: it recovers its power, if the blood of a goat is poured upon it. Amber, or succinum, attracts to itself chaff and all light things, except basil. There are two sorts of ætites[m]; the one indeed is dense and solid, the other rarefied and light; but that indeed which is solid, being tied to females, promotes the growth of the fœtus. Coral in a house keeps off all violence and treachery; and shoots of ebony have

[l] *Atricapilla* of the Romans.

[m] See Pliny, 36, 39. This is, in English, called eagle-stone.

have the same effect, as well as the roots of aspalathus[n], and the sweet-scented anagallis[o], and dried squill, lying in the vestibule of a house. A fumigation of the stone called *gagates*[p], drives away reptiles; and this stone, when besprinkled with cold water, and brought to the fire, burns with much splendor, as Nestor says in his Panacæa; but when oil is poured on it, it ceases to burn. Amianthus is superior to the power of fire, and it is not burnt, although it should remain a long time in the fire. The salamander[q] likewise, a very small animal, is produced from fire, and it lives in fire, and is not consumed by its flame. Bulls, when their nostrils are rubbed with a preparation of roses, become vertiginous. A he-goat will not run away, if you cut his beard.

II.—CONCERNING BEES, AND HOW THEY MAY BE PRODUCED FROM AN OX, WHICH IS CALLED BOUGONE.

The place in which the bees are to be, ought to be turned to the aspect where the sun rises

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[n] Matth. l. i. c. 19.

[o] See Matthiol. l. ii. c. 174.

[p] Matthiol. l. iv. c. 103.

[q] Matthiol. l. ii. c. 56, gives an account of this animal, as do *Acta Eruditorum*, for 1667.

in the winter or in the spring, that they may be cherished in the winter, and that the vernal air, blowing on them, may refresh them. The best water for the bees is that which runs through rough gravel, clear and not turbid; for it renders the bees healthy, and it makes good honey. But it is proper to set pebbles and stones, and wood, rising a little above the water, that they may rest upon them, and drink at their ease: and if there is no spring-water, you must draw water out of a well into clean vessels[r] or cisterns[s], and let them be near the bees, that they may not be fatigued in going to water. They are very fond of thyme; and when they are well fed with it, they make the greatest quantity of honey, and they breed well. Sage also, and thymbra, and cytisus, are very grateful food to bees, and the fresh swarms are very apt to pitch on cytisus, and they receive nourishment from it without much labour. But the best hives, that is, the vessels to receive the bees, are made of boards of the mountain ash, or of the fig-tree, and of the pine likewise, and of the beech. Let the breadth of them be a cubit, and the length two cubits; and let them be covered on the outside with a preparation of plaster and

[r] Press-vessels, in the Greek.

[s] Fountains, in the Greek.

and cow-dung; for they will be less apt to rot. It is also proper to perforate them obliquely, that the air gently blowing, may dry the cobweb and other obstacles, and that it may refresh the bees. But this animal delights in a solitary situation, and it detests the approach of human creatures; for which reason, the bee-keeper must build a wall of hollow stones around them, that they, flying into the holes, may have the power to escape the birds that lie in wait for them, and the dew. They are attached to their accustomed pastures, and they do not willingly come into strange grounds: for which reason it is proper to keep them in the same place. But if it be necessary for a purchaser, or for some other reason, that they should be removed, let the person tie the hives, in the night, carefully in leather[t], and let him take them away before day; for in this private manner he will neither disturb the combs, nor harass the bees. When they indeed feed on spurge, and taste its juice, they contract a looseness[u]; it is therefore proper to remove and to extirpate that which grows near them, and to cure them with the rind of the fruit of the pomegranate, that is, with the integument;

 having

[t] Skins, in the Greek.

[u] Diarrhœa, in the Greek.

having pounded it, and sifted it through a fine sieve, having mixed it with honey and with rough wine, and having set it for them. You will also cure them of vermin, by burning branches of the apple-tree, and of the wild fig-tree, and by making a suffumigation. You will likewise cure them of dimness of sight with the smoke of the leaves of origanum. Now, as bees produced from an ox come to life on the one-and-twentieth day, so are swarms produced in the same number of days. The kings indeed are found in the upper parts of the combs: and it is proper to leave one in every hive, and to destroy the rest; for the bees being divided between them, raise a sedition, and they desist from their work. The best indeed of the kings are those of a yellow colour, of a size larger than that of a bee by the half; the second are those that are variegated, rather of a dark colour, of double size. But it is proper to remove from the place spurge, and hellebore, and thapsia[v], and absinthium, and the wild cucumber, and all things that are pernicious to the bees; for they indeed make bad honey, and they take it from these. You will also destroy creatures that lie in wait for them; and they are wasps,

[v] See Pliny, xiii. 22; and Dioscorides, l. iv. Matth. iv. 151.

wasps, the titmouse[w], the bee-eater[x], swallows, crocodiles[y], and lizards; and drive away and destroy all things that are pernicious to the bee. They indeed become unmanageable at the approach of human creatures, and they fall upon them, and they are more severe on such as smell of wine, and of perfume[z]; and they fall upon women, especially upon such as are of an amorous complexion. But let the hives in which the bees are, be carefully rubbed with the choicest thyme, or with the white poplar: and that they may like their hives and remain in them, pound an equal quantity of nard and myrrh, and mix them with a quadruple proportion of honey, and you are to rub the hives with these. Iobas, king of Libya, says, that bees might be raised in a wooden coffer: and Democritus[a], and Varro, in the Roman tongue, say that bees are to be raised in a house, which is much better; and the method is this: let there be a building ten cubits high, and of the same number of cubits in breadth, and

[w] In Greek, αιγιθαλος; in Latin, *parus*; in French, *mesange*.

[x] In Greek and Latin, *merops*.

[y] Matth. iii. 10.

[z] Varro, iii. 16. Columella, 9. 14. 3.

[a] Columella says this ought to be done, from the summer solstice to the rising of the dog-star, 9. 14.

of equal dimensions[b], at all sides, and let there be one entrance, and four windows made in it, one window in each wall: then bring into this building a bullock, two years[c] and a half old, fleshy, very fat: set to work a number of young men, and let them powerfully beat it, and by beating, let them kill it with their bludgeons, pervading the bones along with the flesh: but let them take care that they do not make the beast bloody (for the bee is not produced from blood), not falling on with so much violence with the first blows: and let all the apertures be stopped with clean and fine cloths dipped in pitch; as the eyes, and the mouth, and such as are formed by nature for necessary evacuation: then, having scattered a good quantity of thyme, and having laid the bullock on it, let them immediately go out of the house, and let them cover the door and the windows with strong clay, that there may be no entrance nor vent to the air, nor to the wind. The third week it is proper to open the building

[b] The building was a cube; that is, the six sides consisted of an equal number of cubits, and the angles were right angles.

[c] Thirty months, in the Greek. This method of raising bees is mentioned by many of the ancient writers. Ælianus *de animal.* l. ii. c. ult. Virgil. *Georg.* iv. 550.

building on all sides, that the light and pure air may be admitted, except the side where a strong wind blows in; for if this be the case, it is proper to keep the windows[d] shut on this side: but when the materials seem to be animated, having attracted a sufficient portion of air, it is again proper to secure the building with clay according to the former method: having then opened it on the eleventh day after this period, you will find it full of bees crowded in clusters on each other, and the horns, and the bones, and the hair, and nothing else of the bullock left. They say indeed that the kings are produced from the brain, but the other bees from the flesh. Kings are also produced from the spinal marrow. But those that are produced from the brain are superior to the others in size and beauty, and in strength. But the first change and transformation of the flesh into living creatures, and as it were a conception and birth, you will thus know; for when the building is opened, you will see things small and white in appearance, and like one another, and not perfect, nor yet such as may be properly called living animals, in great number about the bullock, all indeed motionless, but gradually increasing in size. You may then see the form of the

[d] Entrance, in the Greek.

the wings with their divisions, and the bees assuming their proper colour, and seated around their king, and flying, but to a small distance, and with tremulous wings, on account of their want of practice, and the debility of their members. They also settle on the windows with a murmuring noise, impelling and forcing one another, from the desire of approaching the light. But it is better to open and to shut the windows every other day, as it has been intimated; for it is proper, lest they change the nature of the bees, from longer confinement; for when the dwelling receives no air, the bees perish as from suffocation. Let the apiary be near the house; and when the bees fly out, when the windows are opened, make a suffumigation of thyme and of cneorum[e]; for by the smell you will draw them into the apiary, being attracted by the fragrance of the flowers; for when you make a fumigation of these things, you will easily bring them in; for bees like fragrance and flowers, which, as they fabricate honey, they ought to do.

III.

[e] See Matthiolus, l. i. c. 13; and Pliny, xxi. 9.

III.—CONCERNING BEES.

THE bee is the most sagacious and the most skilful of all[f] animals, and it approaches man in point of understanding; and its work is truly divine, and of the greatest utility to the human race; and the polity of this animal resembles the institutions of communities perfectly well managed; for they make excursions under their commander, and by his orders: and carrying the most glutinous substances from flowers and from trees, they cover the ground[g] plot and the entrances with these, as with unguent; and some make honey, and others do something else. It is likewise an extraordinarily cleanly[h] animal, settling on nothing that has a disagreeable smell, and that is impure; nor is it given to excessive feeding; nor does[i] it approach flesh, or blood, or any thing that is fat, but such things only as have an agreeable flavour; nor does[k] it injure the labours of others, but resists with all its might those

[f] Of all other animals, in the Greek.

[g] The Greek implies that it was tesselated.

[h] Varro, iii. 16. Palladius, i. 37.

[i] Aristotle, lib. i. and iv. 8, and viii. 11.

[k] Aristotle, lib. i. Æli. v. 11.

those that use their efforts to destroy its own labours; and, conscious of its want of strength, it makes a narrow and sinuous entrance into its hive; the bees therefore standing round, easily destroy a number entering to do them injury. Proper harmony is also grateful to this animal; for which reason, bee-masters bring them together by means[1] of cymbals, or by clapping their hands with just adaptation. This animal alone seeks a leader, that takes care of the whole swarm; it therefore always honours the king, and it accompanies him with alacrity, wherever he takes his station, and it supports him when he is fatigued, and it carries and protects him when he cannot fly. But it consummately hates the slothful; and they[a] therefore take the slothful and kill them. Its mechanical skill indeed seems to make a very near approach to a rational understanding, for it makes hexagonal cells.

IV.—THAT BEES MAY NOT FLY AWAY.

Bees will not betake themselves to flight, if you will cover the entrances into the hives with the

[1] Varro, lib. iii. 16.

[a] This transition is according to the original.

the fæces[n] of a heifer: and when a swarm is pitched and settled, take the king and[o] cut the extremities of his wings; for while he remains within, the bees will not relinquish the hive. The bees will not run away, if you pound the leaves of the wild and of the reclaimed olive, and rub the hives[p] towards the evening, or if you wash the standings[q] and the hives with melicraton. It is also proper to set food before the young swarms, œnomel, in troughs[r] having leaves and plenty of flowering thymbra, that they may not be drowned. But some pounding dried grapes together, and mixing a little thymbra with them, and laying them in pellets, feed the swarms in the best way possible, when the bees remaining in the hives are hungry through the winter's cold, or the summer's heat. When the vernal days are past, having driven them to their pastures, by a fumigation of dry cow-dung, you are to clean and sweep the hives; for the stink-

ing

[n] The original is too accurately expressive of the quality of the fæces.

[o] Pliny says the same thing, lib. xi. c. 17.

[p] Swarms, in the Greek.

[q] Walls, in the Greek.

[r] Boats, in the Greek.

ing smell of common dung brings on them a listlessness, and cob-webs embarrass them. If there are indeed many combs in the hives, it is proper to take the worst, lest the bees become unhealthy for want of room. It is not proper to take more than two swarms from one hive; for the bees will be poor and debilitated.

V.—WHEN IT IS PROPER TO TAKE THE BEES.

THE best time to take the honey and the wax, is at the rising of the Pleiades; and, according to the Romans, about the beginning of the month of May: the second taking is when the autumn begins; and the third, when the Pleiades set, about the month of October: not however on set days, but according to the perfection of the combs; for if it is taken before they are wrought, the bees take a dislike to their habitation, and being thirsty, they cease from working. They also do the same, if you greedily take away all the stock, and entirely empty the hives: for you ought to leave the tenth part for them in the spring, and in the summer; but in the winter you ought to take a third part, and to leave two parts; for they thus will not despond, and they will have food. It is likewise proper to drive

drive them out with the smoke of cow-dung, or of the wild mallows[s], which they call *dendromalache*: and the taker ought to be rubbed with the juice of this, on account of the stings of the bees: and baum, and the flower of the lentisc, are useful on this occasion.

VI.—THAT THE HONEY-TAKER MAY NOT BE STUNG.

HAVING poured the juice of wild mallows with oil on the meal of parched fenugreek, and having made it of the consistence of honey, rub your face and the naked parts of your body strenuously; and having swallowed some of it, breathe into the hive three or four times: and having set fire to some cow-dung in a pot, and having brought it to the entrance into the hive, permit the smoke to break in during half an hour, and take and hold the pot at some distance, that the smoke may abound on the outside; and so take the bees. If you likewise wish to take wasps nests, prepare yourself in this manner, mixing the meal of fenugreek with oil, &c.

VII.

[s] The original mentions, that the plant is of the male kind.

[t] The mallow-tree.

VII.—CONCERNING HONEY, AND THE MANAGEMENT OF IT.

THE Attic honey is the best; and of the Attic, the Hymettian[u]. That also which is made in islands, is good. The Hyblæan[v] is the best of the Sicilian honey; and the Acramamorian[w], of the Cretan honey; and the Chutrian, of the Cyprian; and the Calumnian is the best of the Coan honey. Let it also be pellucid, and of a yellowish hue, and mellow, when touched; and when drawn, let it remain long coherent; and when taken up, let it come down gradually, and ending in a very small point; and when it is gently drawn, let it be taken up of due consistence; and let it be of an agreeable smell. But as all honey becomes dry in length of time, the Attic honey remains in a liquid state, and it becomes of a blackish colour. Be sure then to boil the inferior honey, for it will be better; but eat the best honey in its crude state; for it is not only pleasant to the persons that

[u] What was made on Mount Hymettus, on the west of the river Asopus.

[v] Hybla was a mountain near Syracuse.

[w] Supposed to be made near the promontory of Samonium, on the eastern side of Crete.

that use it, but it also makes them long-lived; such persons therefore as are fed with honey with bread only, live a very long time; and it preserves all the senses perfect. Democritus being indeed asked, how men might become healthy and long-lived? said, "If they supplied the external parts of the body with oil, and the internal parts with honey." If the honey will be genuine, you will know by touching it; for when it is not adulterated, you[x] will not soil yourself by touching it.

VIII.—THAT SWARMS OF BEES, OR FIELDS, OR HOUSES, OR STALLS OF CATTLE, OR WORKSHOPS, MAY NOT BE AFFECTED BY ENCHANTMENT.

DIG in the hoof of the right side of a sable ass, under the threshold of the door, and pour on some liquid pitchy resin, (and this is produced in Zacynthos[y], out of a pond, as the asphaltus is thrown up in Apollonia[z], near Dyrrachium) and salt, and Heracleotic[a] origanum, and cardamomum,

[x] You will touch it without soil, is the Greek expression.

[y] Mentioned by Pliny, xxxv. 15.

[z] On the shore of the Adriatic.

[a] Harduinus ad Plin. xx. 16.

mum[b], and cumin, some fine bread, squills, a chaplet of white or of crimson wool, the chaste[c] tree, vervain, sulphur, pitchy torches; and lay on some amaranthus[d] every month, and lay on the mould; and, having scattered seeds of different kinds, let them remain.

IX.—TO DESTROY THE DRONES.

If you wish to destroy the drones, early in the evening besprinkle the inside of the covers of the hives with water; and about the break of the day open[e] the hives, and you will find the drones settled on the drops on the covers; for being always well fed with honey, they are thirsty: and having an insatiable thirst for water, they do not relinquish the moisture on the covers. You might indeed destroy them all, and none of them will escape. They are large, and they have no stings, and they are lazy. Aristotle says, that the honey made from the box-tree is of a disagreeable smell; of

[b] Matth. lib. i. c. 5.

[c] *Vitex* or *agnus*.

[d] The original specifies that of a reddish colour. See Matth. lib. iv. c. 52.

[e] It appears from this passage, that the tops of the hives were made to be taken off.

of which if persons that are healthy eat, they are disturbed in their understanding; but that persons that are epileptic[f] are immediately cured of their disease.

X.—THAT A PERSON MAY NOT BE STUNG BY WASPS.

LET the person be rubbed with the juice of the wild[g] mallow, and he will not be stung.

[f] This is mentioned by Aristotle, *de Mirabil. Auscult.* p. 1151, edit. Par.

[g] Crescentius prescribes the juice of rue as a preventive, lib. vi.