

INSTRUCTIONS

FOR

MANAGING

BEEES.

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FOR

MANAGING BEEES.

IT is proposed in the following Paper to give some short Account of *Bees* ; to lay down Instructions for the due Management of them, in such manner as to procure with Ease and Plenty, the useful Produce of Honey and Wax which they afford ; and then to consider the great Profit that arises from this Branch of Husbandry, as an Encouragement to the Farmer to bestow some pains upon what will afford him so plentiful a Recompence.

Most People, when by Exchange, Gift, or otherwise, they have got an Hive of Bees, (for there is a ridiculous Superstition, that if they are bought, they won't thrive) leave them carelessly upon a Stool, in any Situation : If they happen to thrive, they are well pleas'd with the Produce, but never mind whether they do or no, till they come to enquire what they can get from them ; but if thro' Neglect they miscarry, if they be plundered by Vermin or other Bees, or if they perish for want of Food, they then

impute that Miscarriage to the wetness and windiness of the Season, which ought rather to be charged to their own Neglect. There are very few Parts of *Ireland*, which do not afford sufficient and proper Provision for Bees, There is indeed a Difference in point of Goodness observ'd in the Honey which is gather'd in different Places, arising from the Diversity of Plants that Bees feed on. And indeed it cannot be otherwise, when we consider that Honey and Wax are neither of them entirely the Produce of Bees, but being gathered from Flowers by them, are worked up, and deposited in the Hives; it is no wonder then that such very delicious and wholesome Liquor should be obtained from Honey, since it is no other than the most elaborate and refined Juice of the Plant gathered from the Flower by the Bee, and laid up in its proper Store-House. But in such Places where the common Flowers afford but an indifferent sort of Honey, that Inconveniency may in some measure be remedied by raising and propagating such Flowers and Plants as produce the best Honey, as shall be shewn hereafter.

CHAP. I. *Of B E E S.*

WE observe three sorts of Bees in each Hive, the common working Bee, which is the Female, the Drone, which is the Male, and the Queen-Bee.

The common working or Female-Bee is about three quarters of an Inch long, with four Wings, six Legs, a large

a large Head, very small Neck, and slender in the middle part. Her Fangs or Jaws are furnish'd with Teeth, which meet sideways, and not one over another, like those of other Animals. They knead their Wax with these Fangs, attack, and hold their Enemies, carry out the Dead and Dirt from their Hives, and do many other Offices : The Sting is in Shape like a barbed Spear, very sharp, easily penetrates any Substance, but with Difficulty is brought out again, about a quarter of an Inch long, of which the better half is barbed, where there is a small Hole, through which an inflammatory kind of Liquor is let into the Wound occasioned by the Sting, and squeezed out by that Action, which occasions the Smart we feel upon being stung. Their Eyes are very large, covered with a thick horny Membrane, upon which account they are very dim-sighted. To supply this Defect, they have two jointed Horns which grow above the Eyes, about the Tenth of an Inch long ; these they can contract or put forth at pleasure, and thereby very sensibly feel any thing within their reach : The most useful Instrument they have is their Proboscis, commonly called their Tongue, it is too long to be contained at length in their Mouth, and so is doubled underneath, and reaches a good way down the Breast : This is an hollow Tube, which she hath a power of lengthening or contracting at pleasure, and communicates with the Honey-bag plac'd in the hinder-part of her Body, between the Sting and the Gut. She thrusts this Tongue into the Flower and gathereth the Honey, which she deposits in her Bag till she goes home to the Hive ; sometimes by means of this Tongue she puts Water in her Bag to carry home, in order to mix up the Sandrack or Bee-bread for feeding the Young : This Bag is furnished with proper Muscles, by which at pleasure the Honey is emptied

emptied into the Comb, or the Water squeezed out for Use. The Description of these Muscles, together with the Heart and Lungs, the Anus and Sphincter, and the hairy Covering of its Body, are all discoverable by the Microscope, but would be too tedious for this Place.

Her Feet are six, very pliant, full of Joints, hairy, with two Toes at the Extremity of either Foot. Her hindmost Feet are longest, that she may put them forward to the foremost, which receive from her Tongue and Fangs the Bee-bread and Wax, and working it on the Thighs of the hindmost, she stands in the mean time on her middlemost, and tho' she can and doth ordinarily stand and go on all her Feet, yet the two foremost have with her the Use of Hands, therewith she stroaks and clears her Eyes, before her setting out, but they are principally used in working to dispose the Wax on her Thighs.

The Male-Bee, commonly called the Drone, is larger every way than the Female, and more beautiful, he hath no Sting, neither are his Fangs and Tongue made for gathering Honey, as may appear upon slender Observation: The *Naturalists* have discovered by Anatomy the Parts proper for Generation, which together with his heating and nourishing the Brood, are the only Uses he is fit for. So soon as this Work is done, the Honey-Bees drive the Drones out of the Hives, and they die.

It is too much a Custom with many People to destroy the Drones in the beginning of the Season, to the great Damage of the Stock: They will not breed or swarm for want of the Drones, and will be liable to miscarry the ensuing Season, whereas plenty of Drones in an Hive is a certain Mark and Cause of their thriving, and throwing forth early and strong Swarms: The Drone seldom appears till Afternoon, when the Honey-Bee comes from Work and

and takes his Place ; then they are seen flying about the Hives, refreshing, airing and emptying themselves, and after some time they return into the Hive, to propagate the Stock, and nourish the Brood.

There is in every Hive one Bee more beautiful in Shape and Colour than the rest, larger and longer than the working Bee, but not so large as the Drone, the Wings are of the size of the working Bee, but the Sting and Tongue are less, so that she is not made for Flight or Work, she is called the Queen-Bee, because no Swarm of Bees will prosper without one of them, and no Swarm will go off without one or more, and when they settle they kill all but one. Several Experiments have been made, by taking the Queen-Bee from a Stock, and returning her again, by which the Attachment of the Bees to the Queen hath been discovered. If she happen to drop in swarming, or to be lost by any Accident from the Hive, the Bees dwindle to nothing, and forsake their Hive, unless another of the same kind be brought to them, or another Stock joined to them, which, tho' weaker, hath a Queen-Bee with them.

That Bees are annuals, or do not live above 14 or 15 Months, appears from several Observations, but chiefly from the great Decrease of the Stock in the Months of *August* and *September*, for which no Cause can be assigned but the Death of the old ones; about that time they begin to dwindle in their Size, their Bodies wither, their Wings wear away, and they are most frequently overcome with Labour and Age abroad in the Field, and never reach home: If they die in the Hive, their Fellows carry them forth, and drop them at thirty or forty yards Distance from the Hive; their Young are left in Possession of the Stock of Provisions, laid up for the Winter, and after they have bred the ensuing Year, and

and taught their Young their Art of Management, they go off in their turn, and leave their Posterity to continue the Colony. The chief time of breeding is in the Spring, earlier or later, according as the Season is more or less forward ; most Authors agree *March* and *April* are the breeding Months, so that in *May* they swarm ; but it sometimes happens upon a sudden Alteration of the Weather in the Spring, that the whole Hive is in Danger of perishing : The warm Weather in *March* encourages them to work and breed, upon a sudden change to cold or stormy Weather, they have not Provision enough for the young Brood, which are daily encreasing, and being confined at home, they must perish for Want, unless they be carefully looked after, and fed at this time, and in this circumstance, of which in its proper Place.

The Female-Bee lays her Egg in the bottom on one side of a Cell in a Comb, and never puts more than one Egg in one Cell : These Eggs are white, somewhat bigger than a common Fly-blow, but not so big as the Eggs of Ants. They are laid in the Center of the Hive, no where within three or four Inches of the Top, Bottom, and Sides ; lest they shou'd be chilled with Cold, or not receive sufficient Heat from the Bees, which heap together between the Combs in the Hives, and so be rendred abortive : This Egg sometimes turns into a Maggot, which is fed by the Mother-Bee with Sandrack or Bee-Bread, for a time ; it is then turned into an *Aurelia*, after the manner of other Insects : In this state it is shut up for a while in the Cell, by a covering of Wax ; whence at length it comes out a perfect Bee, breaking the covering with its Head : This time of breeding takes up about one and twenty Days from the Egg to the Bee : The young Bees are whiter than the old ones, and are always fed for some Days

Days at the Mouth, as a Sparrow feedeth her Young; when they grow strong enough they go forth to work, and learn the Arts of their Parents. A Number of these young Bees being generated in the Spring, the Hive is not able to hold them, and this is the occasion of their swarming. The Reader however is not to imagine, that the Swarm consists wholly of young ones, but when the Hive is overfull, and one Queen-Bee or more ready, Young and Old, Male and Female, go off together, I must here leave them ready for Flight, while I give some Directions to prepare an Hive for their Reception.

CHAP. II. Of HIVES.

THE best Hives for Bees are made of Straw, which is the most equal Fence against the Summer's Heat and Winter's Cold: If they are to be placed upon single Stools, they should be plaister'd all over with Lime, Clay, and Cow-Dung: If in the Bee-House, only round the Bottom. I would further recommend to fix a wooden Hoop round the Bottom of the Straw-hive, which will occasion it to stand level upon the Bench in the Bee-House; this Hoop is to be two Inches deep, it must fit the last Round of the Straw-Hive, and be pegg'd on from within to keep it fast.

In some Places the Hives are made of Wicker or small Sallies, which are not so convenient, for they expose the Honey to run by the Heat of the Summer Sun, and the Stocks to Cold and Robbers in Winter.

Dr. *Warder* hath recommended a Method of preserving Bees in wooden Boxes instead of Straw-Hives, placing two or three Boxes one over another

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ther in a Bee-House; the manner of using them is this: When the Bees have fill'd one Box with Honey, and are preparing to swarm, then you are to raise the Box that is full, upon another empty Box, which has a square Hole on the Top for the Bees to pass from the upper Box to the lower; the Bees finding Room in the lower Box, immediately fall to work to fill it with Combs and Honey. The propos'd Advantage of this Method is this, that when you intend to take the Honey, you need only take away the upper Box, running a wooden Slider across the Hole of Communication, which cuts the Combs, and separates the upper Box from the lower, by which means the swarming of Bees is prevented, and the Honey taken without smothering or destroying the Bees. But these Boxes are costly and troublesome, so as not to be fit for the Countryman. The Box-Hives for four Colonies, at three Boxes to each, will cost Ten Pounds, besides the Bee-House; whereas the Straw-Hive costs but Eight-pence, the Hoop at Bottom Two-pence, and an Hoop to enlarge it, hereafter to be described, Six-pence, which for twelve Hives comes not to a tenth part of that Expence; by the Boxes indeed the Honey is taken without destroying the Bees, which is but a small Advantage, considering the Bees are Annuals, and that taking their Winter-Provision from them, is little short of destroying them; so that unless they be well fed, the Colony will be in Danger of being lost.

A Gentleman of this SOCIETY, whose Curiosity prompted him to try this Experiment of Dr. *Warders*, assures me, that tho' it were cheaper than the Method here recommended of Strawhives and Hoops, yet he found it both in point of Profit and convenience, much inferior to this Method for many Reasons.

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There is great Hazard in moving the Boxes so as not to disturb the Bees very much, and it can rarely be done without being much stung; the Boxes must be lifted up, and the fresh Box put under almost instantaneously, and by the most steady Hand, for if the Bees are very angry, (which is almost always the Case) the Apprehensions of being stung, make the Operator blunder in the Performance. And this is still more difficult at the second raising, when the Box and Hive are both to be lifted together. If the lowest Box be filled with Combs and Honey in the beginning of *August*, the Hive at Top may be taken off for Use: But if it chance otherwise, that there be not Honey in the Combs of the lowest Box, the Hive cannot be taken off without endangering the Stock for want of Food; and if it be left, you get no Honey that Year: And where it is taken, it is easier and less dangerous to smother 20 Hives with Brimstone in the common way, than to take one Hive or Box of one Colony.

Another Inconvenience that attends *Dr. Warder's* Bee-Boxes, is, that by taking off only the upper-Box yearly, the Wax in each Box will be two Years old, and consequently ill coloured, neither will the Honey be of that Year's gathering, by which means you never get the purest Honey or Wax.

Since Bees do best defend themselves from Cold when they hang round together in a globular form, the nearer the Hives approach to that form, they will be the warmer, but of necessity the Bottom must be broad, that the Hive may stand firm upon the Bench, and that the Combs may be easier taken out; and the Top must be three or four Inches higher than the just Form of a Globe (whether the Hive be covered with Hackles or not) because they delight to hang in a Cone, and work from a Point: But chiefly to prevent sinking when they are full of Honey or young Bees, to

which the broad-crowned Hives are generally subject.

Upon this Account, the Shape of the Hive is recommended to be like an Egg, with one End cut off, as People order it when they are about to eat it, it may consist of twelve Straw-Wreaths or Rows, according to the Bigness of it ; the three first Rows of one Magnitude, and about a Foot or somewhat more in Diameter, the four next above them larger, bellying out a little each beyond his Fellow, that the Combs may be more firmly fastned: The other five by little and little are to be narrowed to a Center at the Top, that it may be Pyramidal.

Some recommend Hives that will hold a Bushel or more, yet an Half-bushel Hive will contain a competent Stock: However an Hive had better be too little than too big, for such are hurtful to the Increase and Prosperity of Bees: If the Hive be too great, the Bees will be more lazy, working uncomfortably, because they despair ever to furnish and finish their House; an over-large Hive is prejudicial to their swarming, and therefore I have set an Half-bushel Hive as the *Medium*: And for the same Reasons, an Hive of one Peck Dimensions may be proper for Casts, or Swarms from those Hives that have swarmed before in the same Season.

Before the Hive be used it is necessary to rub off with great Care all the sticking Ends of Straws from within-side; some recommend singeing for this Purpose, and rubbing well with a Syth-stone: If it be not smoothed some way or other, the Bees are at incredible labour to smooth it with their Fangs; which may be observed in the Night, by applying your Ear to the Hive, and the short Bits and Ends of Straw so cut off are thrown out of the Hive. The daubing the Inside of the Hive with sweet Herbs, Cream, or other Substances, commonly called dressing

sing it, is prejudicial, for such Substances are apt to
 turn sower, and so prove offensive to the Bees: But
 if something must be done, it is best to rub a little
 Water and Honey at the upper-end, because that
 may allure the Bees to it: Tho' even this is not al-
 ways necessary, for if the Hives be thoroughly clean-
 ed, they will generally speaking take to it. The
 next thing to be done is, to cut a Notch in the lowest
 Rownd of the Hive, or in the Hoop before-men-
 tioned, two Inches long, and half an Inch deep, for
 a Door or Passage for the Bees to go in and out.
 Then for the Support of the Honey and Combs with-
 in the Hive, get a Stick of green Ash, or of any o-
 ther Tree near at hand, and stick it in the middle of
 the Top of the Hive within-side, so long as to reach
 within half an Inch of the Bottom, having first cleft
 the Stick, then within the Cleft of the Stick, fix
 another Stick of the same sort cross-ways, fastening
 each End into the Sides of the Hive, and another in
 the same manner about five Inches above that.

The same ingenious Gentleman, whom I men-
 tioned in the 9th Page, hath added the following
 Directions for sticking the Hive: " Take a clean
 " Stick as thick as the Top of your little Finger,
 " sharpen one End, and thrust it through the Hive,
 " within four or five Inches of the Top within-side,
 " then take a Sally-Stick, because it will split well,
 " as thick as your middle Finger, then bind it hard
 " with two or three turns of Packthread, within
 " two Inches of the End, to prevent its splitting
 " quite thorough. Then split it in the middle from
 " the other End up to the Packthread, after split
 " it the cross-way of that, and in the End above the
 " Binding cut a large Notch to fix it against the Stick
 " in the Upper-part of the Hive; and when the
 " Stick is thus split into four, the Inside of each
 " Piece must all the Length be pared off, and made
 " some-

“ something flat, that they may the easier be bent ;
 “ then bend each of them outward about the fourth
 “ part of a Circle, and sharpen the Points of them,
 “ and with a pointed Stick make four Holes
 “ through the Hive within five Rounds of the Bot-
 “ tom, but if it stands on an Hoop, within four
 “ Rounds of the Bottom, then set the Notch to the
 “ middle of the Stick fixed in the Crown of the
 “ Hive, and put each of the Ends of the split End
 “ through the Sides, where the Holes were made,
 “ and two Rounds lower than that exactly to an-
 “ swer, between each of those Sticks thrust two
 “ Sticks, the Thickness of that on the Top of the
 “ Hive, through the Hive, and these will be ex-
 “ actly across each other, as you may see in
 “ *Figure 11.*

Having thus prepared the Hive, it may be next proper to let you know how you are to use it.

CHAP. III. *Of Swarming.*

THE old Stocks having bred in the Spring and the Bees by reason of their Numbers being streightned for Room, prepare to send forth a Colony or Swarm, and sometimes afterwards another, as the Season proves favourable; the first Swarm that goes off is called the Prime Swarm; and whatever Swarms go off afterwards, as sometimes there will two or three, they are called Casts.

There is no precise Time that can be named for the swarming of Bees, generally speaking the two swarming Months, are *May* and *June*, tho' there are some-

sometimes Swarms in *April*, and very often in *July*; those in *April* are in great Danger, (if Cold Weather should follow their swarming) to be starved, before they can get any thing to begin House-keeping withall: Those that swarm in *July*, tho' they are in no Danger of any sudden Want, Honey-gathering being plenty every where, yet are they in great Danger in the Winter following, least having so short a Summer, they shou'd not have gathered Honey enough to serve them till the next Spring.

Tho' it be impossible to determine the precise Time of the Year when Bees will swarm, yet by the forwardness of the Spring and warmth of the Weather, one may guess very near the Time.

A warm, calm, and showering Spring, causes many and early Swarms; dry weather maketh Plenty of Honey, and moist of Swarms, so when a dry Summer followeth a moist Spring, the Beefolds are rich, but if the Summer be also moist, the Encrease of Bees will be great, and because of the Scarcity of Honey, there will be Danger of their perishing; so that many Swarms at the End of Summer, unless you carefully feed them, will be no great Advantage; for except some very early Swarms, and some good Stocks which cast betime, or not at all, if left to themselves, they will die for Hunger; and the Reason is, that the Weather keeping them much in, they can do nothing but breed, and when they go abroad, bring in nothing but Bee-bread and Water, wherewith they feed their Young, but can find nothing to lay up in Store.

Sometimes by reason of the Uncertainty of the Weather, early Swarms are not the best, the Wind oftentimes continuing high and cold, and the Season close, so that without a little refreshing, many Swarms are like to perish, and if a Swarm by bad Weather be checked, and hindred in their Work.
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the first Week, they will seldom work courageously all the Summer following.

The Signs of the first Swarms are somewhat uncertain; but lying out, about, or under the Hive, in the Morning and Evenings only, is a probable Sign of swarming, whereas to lye out constantly is a Sign of not swarming.

When Bees lye continually forth of the Hive, they usually swarm late, sometimes not at all that Year; for the Hive being full of Bees, and therefore very hot, the Bees to refresh and cool themselves, lye abroad under the Hive, or upon the Sides thereof, whereby the Hive never seems over-full: and having used a while to lye forth, find no Inconvenience from their Multitudes, and are loath to forsake what they have gathered.

If they begin a Comb under the Board, it is a sure Sign of not swarming; and in some Cases they will not swarm by any Methods you can use: A Remedy to prevent any Inconvenience from hence, will be afterwards offered, when I come to speak of raising the Hive by the Hoop, to prevent small Casts. *Purchas, Warder*, and other Authors, very reasonably suppose, that when they will not swarm, it must be for want of a Leader or Queen-Bee to head them. When they are about to swarm, you may observe in the Morning, about Nine a Clock, that they run in and out of the Hive, and on the Outside of the Hive; they appear in great Confusion, and must then be watched; when they will presently swarm, you may sometimes know by their gathering together, without at the Door of the Hive, and not only upon the Hive, but on the Stool also; where when you see them begin to hang one upon another in swarming time, and to grow into a Cluster, that covers the Stool in any Place, then before they will presently rise, if the Weather hold: But commonly

ly some few do first fly forth, to and fro about the Door of the Hive, with a greater Noise than ordinary, and as they encrease in Number, the Noise made by them is more smart and vehement; then they begin to dance before the Hive, and make many circling Motions with an humming Noise, at length they go off with an unusual Humming, are very angry at that Time, and will sting all that come in their Way: Bees will swarm any time of the Day, between Eight in the Morning, and Four in the Afternoon, but the chief time of swarming is between Eleven and One.

Bees when they alight, generally settle all together, sometimes, but seldom, they divide into two or three Parcels in their settling, which shall be considered hereafter; sometimes they will go clean off, to some Place they have beforehand provided, as an Hive of old Combs, an hollow Tree, or the hollow part of some Building, perhaps a Mile or two distant from the Place where they swarm; but often in these Cases, they take some stand first to muster their Strength, and see if they have the Queen-Bee with them: For the Queen-Bee sometimes goes off first, sometimes stays to see the Flight go off, and then follows them, and because her Wings are shorter in Proportion to the Length of her Body, than that of other Bees, it sometimes happens that she falls down to the Ground by the way; in any of which Cases the Bees will never settle right, but return to their own Hive, or disperse elsewhere, or be lost. Dr. *Warder* says, he has frequently remedied this Inconvenience by finding the Queen-Bee, somewhere between the Hive whence the Bees swarmed, and the Place where they first alighted; and so hiving her with the Swarm, or by hiving them with another Queen-Bee, hath saved them; but these Cases do not often happen, for generally,

as I said before, they go all together, and alight upon some Bough of a Tree; or about the Body of it, or upon some Hedge, or Pales, and sometimes, but very rarely, upon the Grass.

When Swarms are up, and busy in their Dance, it hath been an old and common Practice, for want of other Musick, to play them a fit of Mirth, upon a Bason, Warming-pan, or Kettle, to make them more speedily alight, and to keep them from flying away; but this is perfectly needless, for they will settle of themselves, except they have chosen a Place beforehand which is very near; in which Case, when their Company is all out, they will fly directly thither, and your ringing and tingling will prevail nothing to persuade them to stay.

The only Benefit of this tingling is, that if you have Neighbours near you, that keep Bees, you may give Notice thereby to prevent wrangling, if some of theirs should arise at the same time.

By the time the Swarm is settled, the best way is to hive it immediately, (having Hives of all sorts always ready) for fear of their rising again, or of others coming to it. The Hive should be chosen answerable to the Swarm, it is recommended to chuse an Hive somewhat more in Dimentions than three Pecks for a forward Swarm, and three Pecks for a Prime Swarm in the beginning of *June*; but use no Hive under half a Bushel.

If it be in the Heat of the Day, and the Sun shine upon the Swarm, they will not stay long; if they be provided of a Place (Hive or Tree) as some are beforehand, presently after they are settled, and all their Company gathered together, they will uncluster, rise again, and be gone, and fly right thither, and will not be stay'd by any Course you can take: If they are not provided beforehand, as soon as they are gathered together, they depute or empower some

some of their Company to spy out a Place, if they return with the News of it, before swarming-time is past for that Day, then (if they are not hived) they will presently uncluster and away; otherwise they will hang until the next Day. It is therefore very indiscreet to let them hang till Night, as some do, for the Swarm may be lost, besides the hindrance to their Work; for if they be hived early in the afternoon, they will immediately fall to work, and sometimes make a Comb as handful long before Night, and fill much of it with Honey; as hath been discovered upon uniting two Casts.

There are other Inconveniences which attend a Delay of hiving them, for by too long hanging they will be fond of the Place, hanker thereabouts, and neglect their Labours. Where there are many Hives,* there is great likelihood of other Swarms rising at the same time, if they be within hearing, and sometimes two Prime Swarms will rise and fly together; all these Circumstances require particular Directions in the hiving, which shall be next laid down--- though after all, Use and Experience are better Masters, when guided by Reason and Discretion, than any Rules which can be given; for the different manners of hiving depend very much upon the different Circumstances of lighting and pitching.

If the Swarm settle upon some Bough of a Tree within reach, or upon Pales, or an Hedge where you can come readily at them, the first thing to be done, is to shade them with a Sheet, till your Hive be ready to receive them; and if it can be contrived to prop up the Hive any way over them, till they crawl up into it, (which will happen sometimes in half an Hour to a Top-Swarm) it is the best way, otherwise you must, as gently as you can, shake them into the Hive. When they are there, place

the Hive upon the Ground upon a Sheet or Board near the Place, having laid under it two Sticks of about an Inch Diameter, and a Foot asunder, to rear up the skirts of the Hive, that no Bee may be crushed by the Hive, and that the Bees may more readily enter, and that such Bees as are within hearing, and hanker about the Place, may come to their Fellows; but if you remove the Hive immediately to the Bee-House, or to any Distance from the Place where the Swarm pitched, many will be lost, or at least return home again, to the Damage of the Swarm: When they have stood thus till Evening, remove them to the Stool, or Stand in the Bee-House, where they are to remain. If they should settle very high on the Top of a Tree, where you cannot come conveniently to shade them, and they be upon a single Bough, the best way is, with a very sharp Knife to cut the Bough off, and having before tied a String to it, to let it down to the Ground upon a Board or Sheet, and so shading them, and placing the Hive over them, they will soon be hived, in the manner before directed: This whole Action must be done very gently, lest by shaking the Swarm too much, the Bees be scattered, and beside the loss of the Swarm, the Operator may be most dreadfully stung.

If they should settle very high, and that around the Trunk of the Tree, so that it will be impossible to get them all into the Hive together, carry up a Cloth with you, and getting as many as you can into the Hive, cover them in the Hive with the Cloth, and bring it down with the Mouth upward, and set them upon the Ground upon a Board or Sheet, as before directed; let the Remainder be brought into another empty Hive, covered in the same manner, and when the Hive is down, knock them out by the side of the former, and place the first Hive over them;

them; this is sometimes necessary to be repeated three or four times, before the whole be got.

It sometimes happens, that a Swarm shall separate in their Flight, and settle in two or three distinct Places, which is always attended with a Queen-Bee to each Party, and is the Cause of that Separation: In this Case they must be hived separately, and joined together at Night, in the same manner as will be shewed by and by, in the joining of Casts, for they may in this state be considered as so many Casts; and therefore the Rules there laid down are applicable here.

If it should happen that another Swarm should rise before you have hived your Swarm, there is great Danger of their flying together, if the first be within hearing; therefore they should be stopt up with a Cloth, and let go again after you have hived the first Swarm; but if this cannot be done time enough, but that they are already upon the Wing, and come towards you, the first Swarm should be covered with a Sheet, until the last be settled elsewhere; but if they fly about the covered Hive, seeking to enter there, set down a prepared empty Hive by it, and they will often go in of themselves.

If two Prime Swarms should rise together, they will for the most part settle together: There is no Remedy but hiving them into two Hives as equally as you can divide them. If you happen to give each Hive a Queen-Bee, they will each Swarm remain quiet in their respective Hives, otherwise they will quit the Hive, where no Queen-Bee is, and go into the other; when they are all got into one Hive, you must knock them all out upon a Cloth or broad Board, and divide them again. But if this should fail of an effectual Division, and they will all go into one Hive, knock them out again, and over one Party place an Hive inhabited by a weak Cast, for there
you

you are sure of a Queen-Bee, and carry the rest away to some Distance, so you may be pretty sure of two good Hives however.

Some Authors give Directions, how to defend the Hands and Face from the sting of the Bees ; but unless they be settled in an untoward Place and Posture for hiving, there is not any great Danger ; however the Hands may be covered with a pair of woollen Gloves, (for the Bees will stick their sting thro' Leather) and a Gauze or Cypress may veil the Face, and secure it from Danger.

Casts, or second Swarms, except they be early, and out of large Stocks, seldom thrive, there is scarce one Cast in twenty that will gather Honey enough to keep them till the next Spring ; so that they are generally taken up, at the End of the Season, with the old Stocks, but they have so little Honey in them, that they turn to no Account ; the way to make something of them, is to put two or three of these Casts together into one Hive, and so they will become one good Stock, and stand out the Year very well. The manner is as follows.

When you have a Cast or second Swarm, take it into the Hive as you do the Swarms, and put it into its Place ; then perhaps two or three Days after, or a Week, you may have another Cast up, and pitched ; let this second Cast be hived by it self also, and set under the Tree where it pitched till Night, when you must join them thus ; spread a Napkin about Ten a Clock at Night, on the Ground, close by the Stool of the first Cast, then lay a stick cross the Napkin, fetch the second Cast that swarmed that Day, and with a strong stroke on the stick that lies cross the Napkin, knock out the Bees, which will all come out at that one stroak, upon the Napkin in a broad Lump ; then throwing the Hive out of your Hand, take your first Cast off from

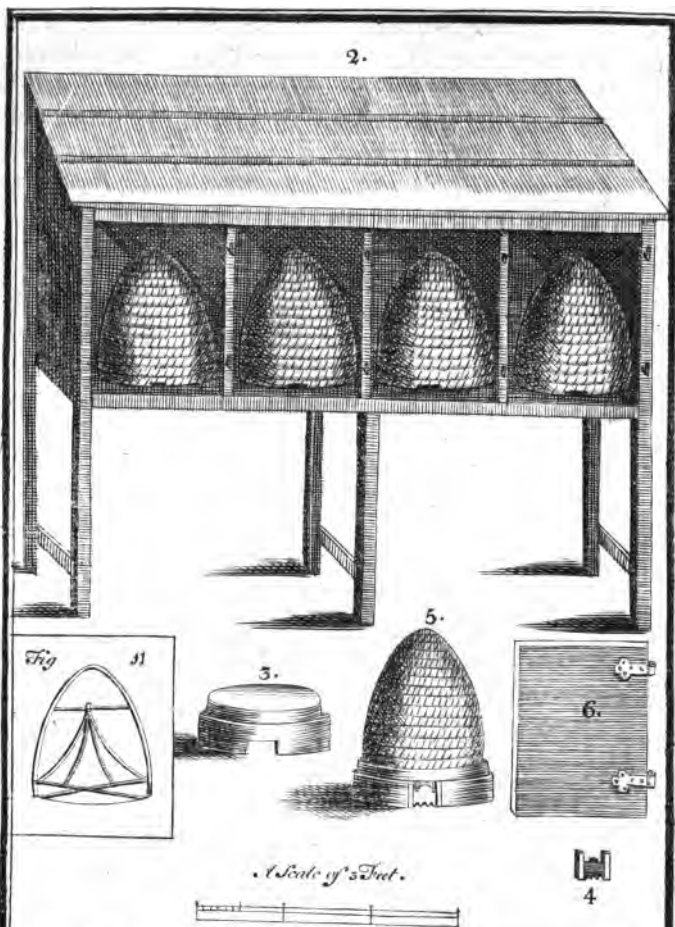
from the Stool, and set it over the Bees on the Napkin, and they will in about an Hour all crawl up, and become one Family; if any of them crawl about on the Out-side of the Hive, as they sometimes will, brush them off upon the Napkin, and they will soon go to their Fellows; then about Eleven or Twelve a Clock take up the Hive, and put it in its Place, so you shall have two Casts in one Hive, and in the same manner you may have a third, and a fourth; and thus you may have a strong Swarm of Bees for the next Year. There is another way of joining Casts, which may sometimes be more conveniently done; having hived the Casts in separate Hives as before, join the two Bottoms at Night, setting them upright, the least Cast undermost, fix them fast for one whole Night, and stop them in; if you find in the Morning, by applying your Ear to the Out-side of the Hive, that all is quiet within, let them remain so till Night, and then stool them; if they do not join, the lesser may be knocked out, and the larger placed over them the Night following. When Casts are put together they will fight till one of the Queen-Bees is dead and thrown out of the Hive, and then they will join quietly.

Since generally speaking the taking of Casts is troublesome, and unless they be joined as is here directed, they seldom come to any thing, the throwing forth these Casts or second Swarms, should be prevented if possible. Now the Reason of Bees swarming (as was before shewed) is for want of Room to work in, and if by any means the Hive can be enlarged, in Proportion to the Increase of the Stock by this second Brood, they will not cast. For this Purpose therefore, the Person who makes the Hive, should make three or four Rounds of Straw, in such manner as to fit the Mouth of the Hive, upon which at convenient times, it may be raised, putting

ring a small stick across to fix the Combs upon: But the Hoop at the Bottom of the Hive, that was formerly recommended, makes this Affair much easier; for by means of another Hoop about four or five Inches broad, upon which the first Hoop may shut, like the Lid of a Box, the Hive is easily enlarged: This Hoop hath two small Handles, one on each side, to lift up the whole Hive: And there are four thin pieces of Wood fastned on the Inside, about an Inch long, two on each side, for the cross sticks that support the Combs to rest upon. *Fig. 4.* is a little Door, about two Inches broad, to slip up and down in a Groove, which must be kept shut from the latter End of *July* to *April* following; a little bit of Wood, with two or three Notches, just big enough for one Bee to pass, and supported by a Nail, is sufficient for the Straw-Hive. *Fig. 5.* Represents the Hive with the two Hoops; these Hoops are of great Use, for they are much the neatest way, and will serve many Years, provided Care be taken, by washing them in warm Water, to cleanse away thoroughly the scent of the old Stock.

CHAP. IV. *Of the Bee-House.*

THE Position of the *Apiary* or Bee-House must be to the *South*, in such Part of the Garden or Orchard, as is most open before the Hives, that the Bees may not be interrupted in their Flight; the Bee-House is made thus: Take two Deal Boards well seasoned, and so broad, as when joined together may admit the Hive, and



- 2 the Beehouse. —————
- 3 the under hoop. —————
- 4 the sliding door and frame. ~~~~~
- 5 a Hive upon the under hoop with y sliding door
- 6 a moveable door to fix on the hooks of y uprights
belonging to the Beehouse in Winter

and three Inches beside for a Landing-place for the Bees to light on, join them, and fix them upon four or six Pillars fastned to the Ground; back it up with Boards, and cover it in the manner of an halt Coping, as in *Fig. 2*. Make Partitions between each Hive, that a Door may be fixed on to shut them up all Winter, this Door is to hook on and off, as *Fig. 6*.

By this Means Bees may be preserved from the injuries of the Weather, from Mice, Vermin, and other Accidents, which Hives upon single Stools are exposed to. It is necessary upon removing Hives from single Stools to vacant Places in the Bee-house, that the Places where old Stocks have stood, be well washed and cleaned, so that no Scent remain; for the same Reason Bees shou'd not be placed near a Dung-hill, or Cucumber-bed, bad Smells and Dirt being very offensive to them.

The Largeness of the Apiary must be proportioned to the Number of Hives, and the Number of Hives to the Quantity of Flowers you have near you to feed on, for an Orchard may as well be overstocked with Bees, as any Portion of Land with Cattle; and whoever adventures to keep a larger Stock of Bees, than his Orchard or his Neighbourhood, (if void of Bees) can maintain, will be much disappointed in his Gains; and perhaps impute that Loss to the Inclemency of the Season, or other Causes, which is truly owing to an Over-stock; and this naturally leads me to shew you how they feed, and what Plants they most delight in.

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CHAP.

CH A P. V. *Of such Plants as Bees most delight in.*

IT was before shewn how Bees gather Wax, and knead it about their hind Legs, they gather Honey with their Trunk, which is hollow, by thrusting it into the Inside of the Blossom, and so suck it out; the Trunk hath a Communication with the Honey-bag, placed in the Hinder-part of their Bodies, and they take up, and carry Water in the same manner to the Hive, which is necessary in working the Wax into the Comb.

Besides Honey and Wax, they carry home to the Hive a kind of Substance generally of a yellowish Colour, and mistaken for Wax, because they stick it to their Thighs, but upon trial it will neither knead together, nor melt by Heat like Wax; it is called Sandrack or Bee-bread, and they both eat it themselves while it is fresh, and they are confined by bad Weather, and feed their Young with it; but in time it grows rancid and sower, and then they throw it out of the Hive; it is sweet to the Taste at first, and is esteemed to be some grosser Part of the Plant approaching to the Nature of Honey, but not so pure, which they get from Flowers, that will not afford them Honey.

Bees delight much in the Blossoms of many of our common Fruit-Trees, Apples, Pears, Plumbs, Cherries, Goosberries, Rasberries, and therefore it is proper to have Bees near such Plantations. In *April, May, and June*, they have Flowers in Plenty, but are hardest put to it in *March, July and August*. In *March* they fly to the Hazel, the Sally, Goosberry-blossoms, Dandelyon and Wall-Flowers: They are

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very

very fond of Heath, Rape, Rosemary, Archangel, the white Garden-Poppy, and therefore the Owner of Bees should contrive to place his Bees near Places abounding therewith; and also plant such Herbs, whose Blossoms they delight in, at such Seasons as will yield Blossoms, when the Bees have not Variety or Plenty elsewhere; as for Instance, if a Bed of the white Garden-Poppy be sowed early in the Spring, they will be a good Recruit to the Bees in *July* and *August*; and if again this be sowed in *October*, they will afford the Bees good Food early in the Spring. But whatever Care is taken to get Plants proper for Bees, and a situation to place them in, it will be sometimes necessary to feed them, which together with the manner how that ought to be done, and to know when they are weak, I shall consider in the next Chapter, after I have taken Notice that all the Authors about Bees agree in having a Conveniency of Water, and some of them in having Salt for the Use of Bees near at hand.

A Watering-Place near the Bee-Garden is so very necessary, that they cannot subsist without it; Water is of use in kneading the Wax, and to digest their Bee-bread: Pieces of Wood or Boards entered into the Water, and set shelving, or leaning towards the *North*, are very proper; they chuse rather to suck the Water out of the Earth, above the Ground, than to suck the pure Water it self.

But if there be neither Pond nor River within a hundred Yards of the Bee-Garden, Water must be set within a convenient Distance in wooden Troughs; and light thin moveable Boards, or Corks, placed within the Troughs, that may rise and fall with the Water, they should have small Clefs, or many little Holes bored through them, that the Bees may stand on the Boards and drink; in Summer they will drink securely upon Duck-

Weed and other thick Weeds in the middle of Ponds.

Bees frequent Sinks, and Places where greasy Water is thrown out, and rather delight to drink out of Saw-pits and Holes where the Water is thick, and troubled, than out of Ponds tho' nearer to them.

Some suppose, that they suck out of old Ditches and Places that incline to Saltpetre, for want of salt Water; and Salt is prescribed to be laid under weak Stocks, to make them more vigorous and lusty. Whether any, and of what use Salt may be to Bees, I cannot perfectly say; but am certain they thrive very well near the Sea-side, and have often observed them to alight on Rocks and Sea-Weed: Probably the warm Vapours which arise from the Sea, and cause an earlier Spring, and warmer Air in Places near the Sea, are beneficial to Bees, and cause them to thrive. I remember two Instances of the Beneficence of Sea-Air to Bees, one at a Farm-House in the County of *Mayo*, near *Killala*, which was surrounded by the Sea; there was no kind of Shelter about it, nor any thing in the Garden but Potatoes, and yet the Bees throve mightily, the Top-Swarms never failed, and yet they were never fed. The other Instance I saw in the County of *Down*, of a Swarm which settled in a Loop-hole of the Castle, part of an old House near the Sea; tho' they have been often disturb'd by the Curiosity of People, yet they throve well, and would upon no account quit their Situation.

It is observ'd that, where Bees feed for the most part on the Flowers of *French Furze*, their Honey is not so well tasted nor so valuable as in other Places.

CHAP.

CHAP. VI. *Of Ordering and Feeding Bees.*

HAVING thus far provided a Convenience for the Bees, they will make a sufficient Quantity of Food for themselves, except the unseasonableness of the Weather, the smallness of their Number, the treachery of Enemies, the Power of Robbers, their reiterated swarmings, or the unskillfulness and mismanagement of their Owners prevent it. There are two Seasons of the Year principally that they must be looked into, and helped as they have occasion, Spring and Autumn.

In *February* the Hives should be lifted up nimbly on one side, and with a Wing or some such thing for that purpose, all the bits of Combs, Dross, Dung, Dirt, or whatever else lies upon the Stool, should be wiped away; and if the Stocks have any crumbly or crispy Combs, they should be taken out, for the Bees cannot work in them. You should likewise at this time, and in the following Month, examine if they want Food, and if there be occasion, feed them, in the manner herein after directed; for if the Stock be pretty full of Bees, and little Honey left, they must be fed; the former you shall see by looking into the Hive, and the latter you may know by their Weight.

The best time to do any thing about the Bees is in the Morning before they stir, or when they are gone abroad, or in the Evening, when they are returned from their Work.

The Doors or Entrances into the Hives must at all times be carefully looked after, for very great Loss attends a Neglect herein, by Mice and Vermin
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in Winter, and Wasps and Robbing-bees in Autumn.

When the Bees have wrought a Week in the Spring, the better Hives may have three or four Notches in the Door open, and by degrees more, until they be full, and then you may open them entirely, by taking away the Grates until Autumn; but you must be sure to set them early to the old Stocks, that have over-swarmed, as also to the poor Swarms, and in a dry Year sooner than in a moist; for Wasps are then more numerous and early, and the Robbing-bees finding little abroad to busy themselves about, will be seeking to plunder poor and weak Stocks betimes.

It cannot with any great Certainty be determined what Quantity of Honey will serve an Hive of Bees all the Winter, because of the Uncertainty of their Numbers; and even if this were known, the forwardness or backwardness of the Spring, may require different Quantities of Honey for the same Hive; but if the Stocks be weak in Autumn which you intend to preserve (tho' it is not adviseable to let any weak Stocks continue) or if in the Spring, by bad Weather, and Increase of Numbers, they want Food, you must give it them in the following manner.

Take three or four Pounds of Honey, and one Quart of Water, boil them together, and let the Mixture stand till it be cold; put some of this into a Plate that will hold about a Pound, covering it with pieces of white Paper; slide the Plate into the Hive, by gently lifting up the Edge thereof in the Evening, and repeat this every Day till you have given them sufficient; so soon as they have used the Honey, they will drag the Papers out of the Hive; these Papers are necessary for the Bees to stand and work on, for they are so greedy of Honey, that they would

would otherwise be drowned in the Plates, and the Honey unmixed with Water would be too thick to carry into the Combs.

As the feeding of Bees is absolutely necessary to the Preservation of the Stocks, so it must be managed with Prudence and Care according to their Circumstances; if they be over-fed, they grow lazy, and if fed at a wrong time, it is of no use to them; the true time is in *September*, and from the latter End of *March* to the middle of *April*; and even this must be governed by the Season: If the Spring be early and dry, they will scarce want Help, but if otherwise the Hive being full of young Brood at that Season, Care must be taken of them in order to have early Swarms; and if the Stock be weak and poor in Autumn, they will come to nothing without feeding, and even tho' a weak Stock should outlive the Winter, they seldom or never come to good, which I have frequently experienced, but especially in the following Instance.

A Gentleman of my Acquaintance, who is fond of Bees, observed one Morning in *April*, about a Quart of Bees lying in a Cluster at the Foot of the Stool, upon raising the Hive he found it quite deserted, and many dead upon the Stool; imagining they wanted Food, he caused some Honey and warm Water to be mixed, with which he filled some of the Combs in the Hive: Upon examining the Cluster, he observed one Bee more beautiful than the rest; she had lost one of her Wings: Imagining this to be the Queen-Bee, he returned her into the Hive, upon which the rest spread themselves about the Place, some of these he put into the Hive, and in half an Hour they all followed. They stayed in the Hive, were fed plentifully, and wrought briskly: However they made little of it, and came to nothing.

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I have recommended feeding Bees with Honey in the manner directed, because upon Experience I can affirm it the best. I am not ignorant that others recommend pouring the Honey into old Combs, or sliding it into the Hive in little Troughs made on purpose; but these I know to be more hazardous, and I think not less troublesome. The Antients recommended feeding them with Raisins, bruised Figs, and other sweet Fruits dried. *Pliny* in particular recommends Hen's Flesh, tho' it is notorious, Flesh is never eaten by them, and is clear contrary to their Nature. Some Gentlemen of my Acquaintance recommend sweet Wort, Sugar and Water, and such kind of Substances: But I think they must be understood only in a Deficiency of Honey, for that is beyond doubt their natural Food: For tho' they will feed upon all kind of sweet Things, yet they can neither extract Honey from them, nor fill their Combs out of them, which they constantly do with Honey and Water, as here directed. And when they are strong and vigorous, they will rather gather Honey abroad than feed upon any of those foreign Substances.

Tho' I have mentioned two principal Times of feeding the Bees, yet I must take Notice, that the Spring is the Time chiefly to be regarded: For if the Weather be wet and cold, and the Stock full of Brood, they will be in Danger of perishing, to the utter Damage of the Colony, whereas such Hives as are so weak as to require Food in Autumn, are seldom worth preserving, as I hinted before, and therefore should be taken in Autumn.

For this Purpose in the latter End of *August*, or the beginning of *September*, the Swarms should be all surveyed, and such as are found not to be competently supplied, should be taken, and if in examining the old Stocks, especially such as have swarmed
twice,

twice, or oftner, it be found that there are few Bees, they should be taken also, and none suffered to stand that do not at the least weigh 14 Pounds, which commonly includes all Casts fit for taking; those that have few Bees, tho' they be never so well stored with Honey, will hardly continue to the next Spring, but become a Prey to Robbers, yet if you desire to save any that are well supplied, you may drive a swarm into them that you intend to take, and so make a good Stock.

The Hives may be examined in the Night by lifting them up, and looking into them with a Candle, or if you pat on the Outside in the Day-time with your Hand, there will be a sudden Murmur in the Hive by the Disturbance; if the Murmur be sudden and short, then it is a sign there are but few Bees, but if it be smart, and long descending from the Top downwards, then it is a sign there is plenty.

I suppose the common Method of taking the Honey and Wax by smothering the Bees with Brimstone-Matches, in an Hole in the Ground under the Hive, to be too commonly known to be mentioned here. Several have been desirous of taking the Honey and Wax without destroying the Bees, but taking their Food from them, is little short of starving them, and considering they are Annuals, the smothering them is of little Consequence. *Dr. Warder's* Bee-Boxes which I gave an Account of before, are designed to save the Bees, and there is a common Method of driving them, which tho' to little Purpose, for the main Profit, and very often attended with Damage to the main Stock, hath been much practised; the Method is this.

Let an empty Hive be prepared, of the same Dimensions as the Hive, from whence you intend to drive the Bees; and having spread a Cloth in a Paile or other Vessel, place the empty Hive with the

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Mouth uppermost ; then nimble apply the Mouth of the Hive you intend to drive, to the Mouth of the empty Hive, and by taking up the Corners of the Cloth, and tying both Hives with a String, join them together, turn them so that the empty Hive may be uppermost ; then gently knock with the Palms of your Hands upon the Sides and Crown of the under Hive, changing the Place, and sometimes making a little stop, that the Bees may have leisure to ascend ; and in half an Hour or a little more, they will all be gone up into the Hive prepared for their Reception, and leave the Honey and Wax for your Use, after you have placed the new inhabited Hive upon a Stool, or in the Bee-House. This Practice is much gone out of Use, for Reasons obvious enough, and therefore I need not insist any longer upon it: The old and common Practice of smothering the Bees, and so taking the Honey and Wax, will I believe upon Experience be found the easiest and least prejudicial to the Bee-Master.

CHAP. VII. *Of the Enemies of Bees, Robbers, &c. and the Methods how to destroy or avoid them.*

BEES themselves are the greatest and most dangerous Enemies to Bees, for they will attack one another, and fight desperately upon several Occasions ; as where two Swarms join together, they will fight till one of the Queen-Bees be killed ; where they attempt to rob

one

one anothers Hives, or where a poor Swarm drove from their own Hive want an House, and endeavour to get one from another Swarm, they will fight sometimes to the Destruction of both Stocks; the Case of two Swarms uniting, was before considered, and the Remedy, as far as this Mischief admits of one, directed, where the hiving of Casts was spoke of: Their Attempts to rob one another hath something in it very singular, and unless great Care be taken, are attended with many bad Consequences. It is not perfectly or always for want of Honey at home, that Bees rob one another; in Spring sometimes, but most generally in Autumn, when the Weather is warm, and little or no Flowers in the Field, from whence to gather Honey; in dry Years often, in the latter End of *August*, the strongest and most numerous Stocks find out where Honey is, and attempt to get it; they generally attack such Hives as have fewest Bees, those that have over-swarmed, or Casts, where they judge they may be most successful, and meet the fewest Difficulties; when an Hive is weak in Numbers, it is quickly discovered by other Bees, generally of another Colony, for they chuse to rob abroad, it may be at half a Mile's Distance; there are Scouts sent from the Robbers to examine their Strength and their Treasure; these do not go boldly into the Hive, like the true Bees, but pry about, and attempt to steal in, sometimes by the Top of the Door, creeping in from off the Outside of the Hive; if they get in, and find it for their Purpose, they come in greater Numbers next Day, and so encrease their Numbers daily, till they get the better of the true Bees, either by driving them out of the Hive, or killing the Queen-Bee; in which latter Case the true Bees join with the Robbers, and carry off their Honey to the Conquerors Hive, leaving their own deserted. But in

this Conflict many perish, wherever they sting it is mortal to the Wounded, and often to the Assailant: If they tear off a Wing or a Leg with their Fangs, the Bee thus injur'd dies, or what is equal, is of no farther Use, and not suffered in any Hive; so that it is no wonder in such Assaults, Multitudes should perish. Mr. *Purchas* tells us of two full Swarms, which might be supposed two Pecks of Bees, reduced to less than a Pint by one Battle.

When an Hive thus assaulted happens to lose the Queen-Bee in the Battle, and the true Bees join with the Robbers to carry off the Honey, one may easily be deceived in imagining the Hive is full of Bees; for in the Day-time you shall see the Mouth of the Hive crowded, and Bees very busy going in and out, but if you observe close, the Bees go loaded out, and come empty in; and if you look into the Hive in the Night by a Candle, you shall find it quite deserted of Bees; but if you look in time, you may perhaps get the Combs full of Honey, which you may take for your Pains.

It was before advised, to take such Stocks or Casts as from their Weakness or Poverty were judged most likely to be a Prey to Robbers; but when they are in Danger, the best Course is to shut up the Grate at the Mouth of the Hive, so as not to suffer a Passage for more than two Bees at a time, and when they are actually attacked, to shut up the Hive entirely, leaving a Quill or two, or a bit of Tobacco-pipe in the stoppage for an Hole to let in Air; and the Robbers finding no Passage to get in, will quit their Purpose in three or four Days, and then you may open the Passages again: But where a Battle is so far gone that you are likely to lose most of the Bees, and no Remedy proves effectual to stop it, the best way is at Night to smother all together, and take what Honey is left,

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The throwing of Dust upon them, or Water, or Beer, have been advised as effectual, to stop a Battle, when the Bees are up and fighting; but the Battle generally begins in the Hive, and those Remedies are often ineffectual when they are up; so that the best should be made of a bad bargain, and you are advised to take what Honey you can get, before all be plundered.

If you can find out the Stock from whence the Robbers come, it is adviseable to stop them up for a while, either in the manner now mentioned, or by covering the whole Hive with a Sheet. Mr. *Purchas* recommends a Method in which I don't remember any of the Authors upon this subject have followed him, which is, with a very sharp and long Knife to make an Incision in the Top of the Hive, and by thrusting in the Knife up to the Hilt, to set some Combs a running, which will find the Bees work at home, and then they will not rob.

Dr. *Warder* advises to lessen the Passages of all your Hives in the beginning of *August* to about half an Inch in Breadth, and to let them stand thus all the Winter, and till about the middle of *April* in the Spring; when generally speaking, robbing-time is over: This is not only a Safeguard against Robbers, but likewise helps to keep them warm in Winter.

Tho' the weakest Stocks are most liable to be attacked, and that in the latter end of *August*, yet sometimes strong Stocks may be attacked before that time of the Year, of which the Gentleman I mentioned before gives the following Instance.

In a very hot Summer, remarkable for breeding a great Number of Wasps, in the last Week in *July*, walking in his Garden at a good Distance from his Bee-House, which was painted white, he imagined somebody had daubed it over with Dirt; but
going

going to see it, he found to his great Surprize the whole Bee-House covered with Bees, and among them thousands of Wasps, going into and coming out of the strongest Colony of four ; he had looked into it that Morning, and found the lowest Box filled with Combs down to the Board, and the Cells in the Combs sealed up, so that he imagined his three Boxes could not weigh less than 100 Pound weight; he got with some Difficulty, by waving a burning Furze-bush before him, through the Bees to the Back of his Bee-House, where opening the Back-Door of that Colony, and putting his Hand to the Fore-part of the lowest Box, he shut down the sliding Doors, and then shut up all the other Colonies ; upon opening the Window-shuts of the three Boxes, he perceived Bees and Wasps fighting desperately, but they soon left off when they found they were shut in : By the help of Gunpowder, fired Furze, and Brimstone burnt under the Boxes, he destroy'd the Bees, and then he found that the lowest Box was quite emptied, the middle was almost half emptied, but the upper Box was full of Honey, and not a Maggot or bit of Sandrack in it. There was some of both in the middle and lowest Boxes ; and out of the two upper Boxes, tho' one was half plundered, he got thirty Quarts. of Honey : Ever since he generally takes his Honey, and contracts the Mouth of his Hives before the End of *August*.

Mice are great Enemies to Bees, especially in the Winter, when they run to the Hives for shelter, and nest in the Heckles which cover them : They eat the young Brood, and the Sandrack, and are so offensive to the Bees; that if they get footing in an Hive, the Bees will desert it; they sometimes get into the Heckles, and eat an Hole through the Crown of the Hive ; but most commonly they get in

in at the Mouth of the Hive, and the Bees being torpid and numbed with the Cold, lie above ; and then they do much mischief by gnawing the sealed Combs : It hath been an usual Custom to leave the Door of the Straw-Hive too large and high, but the Hoop before recommended, and the Grates, will keep them pretty secure from Mice entering by this Passage, but if you have a Bee-house, you are pretty safe from Mice breaking in at the Crown of the Hive : If the Hives be upon single Stools, and covered with Heckles, they should be looked at once in three Weeks, or a Month at least, and if any Mice are got in, they must be destroyed ; it is proper to have Traps in the Bee-house, and to take care there be not any long Grass, or other Harbour for Mice near the Bees.

Moths and Earwigs are very troublesome to Bees, they get under the Combs, and lay their Eggs there, to the hatching of which the Heat of the Bees contribute : If Care be taken that the skirts of the Hive be plaistered close to the Stool, or Feet, and that in *March* or *September* the Hives be gently lifted up, and the Board cleaned with a Wing or Brush, a great deal of this kind of Mischief may be prevented.

Wasps, if not timely destroyed, do great Mischief to Bees ; in *May* and part of *June* they content themselves with eating dead Bees ; but in *June* and *July*, as they grow older and bolder, they will attempt to get into the Hives, and if they can make their Party good, will rob and plunder, and often join robbing Bees, and destroy whole Stocks ; their Nests should be carefully sought after, and either drowned with scalding Water, or dug in : if you observe Water-Troughs about *May*, you shall see very large Wasps, these are Breeders, and will each
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have a Nest, and therefore for every one of these you kill, you prevent a whole Nest.

Dr. *Warder* tells us, that Swallows and Sparrows destroy Bees. The Tom-Tit flies at them sometimes ; he will sometimes light upon the Stool, and peck upon the outside of the Hive, and when a Bee comes out to see what is the matter, the Tit whips it up in his Bill, and carries it away to his Nest, and then comes for more ; one of them will destroy thirty Bees one after another thus: These Birds may easily be destroyed by a Gun.

CHAP. VIII. *Profit of Bees, Honey, and Wax.*

IF you begin with Ten good Stocks, and the Years prove favourable, so that each Hive yield one prime Swarm, and a Cast besides, and if you put two Casts into one Hive, then you will have 25 good Stocks at the End of the first Year, and if all these are preserved, they will increase to above 60 in the second Year, and 150 in the third, barring Casualties ; and valuing them one with another but at 5s. each Hive, they will all together be worth 35*l.* which is a sufficient Recompence for the labour and Charge attending them.

That this Value of an Hive is much within compass, will appear from hence, that a good Hive when taken, will yield from Eight to Ten Quarts of Honey, and from One Pound and half to Two Pounds

Pounds of Wax; the Honey being worth 9*d.* per Quart at a *medium*, and the Wax 14*d.* per Pound, the Value of an Hive will be eight Shillings and six Pence; which will considerably encrease the Computation for 150 Hives, and bring it to above 60*l.* which is a very considerable Gain for so small an Expence.

There hardly need any other Motive to engage the Husbandman in the Prosecution of this useful Management; but the Advantages which may be further obtained, by manufacturing the Honey and Wax thus produced, must not be passed over in Silence, tho' I shall mention only the most considerable, referring to those who have more expressly treated of Honey and Wax, and their Medicinal Uses to Physicians and Surgeons, whose more immediate Business it is to treat of them in this Light.

Honey is commonly distinguished into Virgin and Common Honey; the Virgin is that, which is taken the Year it is made, and the purest of this runs from the Combs upon breaking, without any Pressure; but that which is obtained by Pressure, hath some bits of Combs and Sandrack, or other Foulness mixed with it; the former is preferable in all Cases, where it is to be used without Clarification; but where the Honey is to be boyled, and the Scum strained for Use, as in making Mead, it is of little Consequence, because the Dross is separated by the straining and scumming.

In making of the best Mead, if the common Honey be used, 120 Pounds will make a Barrel of very good Mead, but if the Mead be made of clear Honey, the best way is to allow four Pounds to every Gallon of Water; they should be mixed in the Copper, boiled, and well scummed, the Scum may be strain'd through a Flannel Bag, which will make it

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fine, and then may be mixed with the rest. When the Liquor is almost cold, it may be tunned up, close stopped, and let to stand till it be fine, and fit for Use: All possible Care should be taken in breaking the Combs, to separate the young Brood and the Bee-bred from the Honey, for it is apt to give the Mead a bad Taste: When the Mead is well made and old enough for Use, which will be in a Year generally, tho' sometimes more or less, according to the Strength of the Liquor, the Circumstances of Weather, and Manner and Place of keeping, it proves a very delicious Wine, and will supply the Defect of Canary and other foreign Wines.

Some People chuse in making this Wine, to mix Brandy, Spices, and other Substances therewith in the brewing, which depend upon the Fancy of the Owners, and may sometimes be useful, but I believe oftner do Harm than Good; but the purest Mead is obtained in the manner here directed.

The Gentleman I have so often mentioned, hath obliged the SOCIETY with his Manner of making his Mead. He makes two sorts, the smaller he drinks at Meals, the stronger at other Times, and can with Pleasure drink a Bottle of it. The first is thus directed.

In the beginning of Summter, as soon as you can get Balm, to every six Quarts of Water put one Quart of Honey, boyl it gently, taking off only the first Scum that rises as it begins to boyl; and when it is boyled enough, which you will easily know by taking some of it up in a wooden Bowl-dish, you will see it cruddle and appear broken in Clouds; if it is not, boyl it till you see it so, which will be in about an Hour's boyling, then put two good Bundles, one of Sweet-briar, the other of Balm, into a large Tub, and lade out the Liquor scalding hot
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into it, which will give it a fine Colour and Flavour; when it is cool, strain out the Herbs through a Sieve, and with a Whisk whip up a spoonful of good Barm with some of the Liquor, which put into the Cask, then tun up your Liquor, stopping it loofely for a Day or two, then bung it close, trying the Vent now and then lest it burft the Cask, and in five or six Weeks it will be fine and fit for drinking; and if you bottle it, put two Cloves in each Bottle, and it will be fit to drink in a Fortnight. After the same manner brew the stronger sort, of a Quart of Honey to five Quarts of Water, and it will be fit to bottle the next Winter; and what you brew of that sort the latter End of Summer, will be fit to bottle the next Spring.

Another Gentleman of the SOCIETY hath been prevailed on to furnish the Publick with the following Receipt for making a sort of Mead, that hath been much approved of. *Viz.*

To make an Excellent Mead, answering to Sack, Sherry, or Mountain White-Wine.

AT the beginning of Winter, put 60 Quarts of the best Honey, and 180 Quarts of Water into a Brewing-Copper; under which having kindled a Fire, stir the Water and Honey together, and so leave them till the Liquor is ready to boyl; at which time take off the thick Scum from the Top, and continue scimming it as fast as the Scum riseth, for the space of an Hour from the Time of boyling; then, having an Ounce of sliced Ginger, and half an Ounce of Mace, tied up loose in a Cloth, throw the same into the Copper, and keep all boyling and scimming till such time as you judge that one third Part of the Liquor is wasted, and you perceive no Scum to rise, which will happen in an Hour and an half, or two Hours, after the Liquor begins to boyl, according as you keep the Fire fiercer or slacker; but the less hot the Fire is, the better; provided it keeps the Liquor boyling; then rake out the Fire, and lade out the Liquor into Tubs, and as soon as the same is cold, tun it up into a clean Barrel, and cover the Bung-hole with a piece of Paper for about 24 Hours, and then stop it up, very close, with a good Bung wrapt in Cloth or brown Paper, and cover it with Clay that is free from Stones, and well temper'd after being wet with Beef-brine, or Salt and Water, to keep it close and free from cracking. Put some of this Clay about the Vent-hole also, at the same time you stop up the Cask.

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OBSERVATIONS.

THis Mead without any forced Fermentation by Barm or otherwise, or any artificial fining, will of it self become clear as Sack, and at the Age of two Years, be equal to it in Strength and Richness; and being then bottled, and kept in a cool Place, will still grow better by Age, losing the luscious Taste of the Honey, and growing more like to Sherry or rich Mountain-Wine.

The Quantity of Honey and Water specified in the Receipt, is put to answer just a Barrel of Mead. They who are minded to have other Quantities, more or less, according to their Vessels, may obtain their End, by giving the same Proportion of Three Quarts of Water to One of Honey, and allowing a *third* Part of the Whole for Waste in boiling.

If any be minded to have Mead less rich, and sooner fit for drinking, the same Method is to be observ'd exactly; only allowing a greater Proportion of Water to Honey than *Three to One*; as *Three and one Fourth* (which is the Quantity I have allowed in making Mead for *Twenty* Years past) or *Three and one Half*, or *Three and three Fourths*, or *Four* Quarts of Water to One of Honey; more than which it will not be proper to put, if the Design be to have good keeping Mead, that will answer the Intention of Wine.

Virgin-Honey is the best for this Mead; It is very clear, and of a pale Yellow while new and fluent; and white and stiff after keeping till the second Year; but any Honey that is pure, and free from any disagreeable Tack will suffice.

The best Water, if it can be had, is from a Dissolution

lution of Snow, taken up perfectly clean, and put into a Brewing-Copper, and other Vessels, for melting by a gentle Fire. Spring-Water is good; and River-Water, tho' muddy, may be used without prejudicing the Liquor; which will fall fine, and be fit for drinking with River-Water sooner than either of the former.

To know exactly when one third of the Liquor is boyled away there is this easy Method, without nicely regarding Time. Having cast up the Number of Quarts, Gallons, or Lading-Pails your whole Quantity of Water and Honey will fill, and divided the same into three Parts; put two of those Parts into the Boyler, and then mark how high they rise in it, by putting down a Stick through the Liquor to the Bottom of the Boyler, and notching the same just above the Surface of the Liquor, or the wet part of the Stick; afterwards put up the remaining third Part, and let all boyl, till, on putting the same Stick several times into the same Place of the Copper as you did at first, you find the Liquor is wasted away and sunk down to the Notch made on the Stick.

A Vessel made of a Brandy, Canary, or any White-Wine Cask, is the best for Mead: It must have at least four Iron Hoops besides the common smart Hoops; for scarce any Liquor is so searching, and needs so tight a Cask as Mead. An *Aron* or *Rbenish*-Cask, holds the same Quantity as a common Ale-Barrel; and is much stronger and better hoop'd. They are to be had at most Vintners. Thus far concerning Mead.

The Wax when it is separated from the Honey, is broke into small bits, and boiled in a Kettle of Water, it rises to the Top, and is to be carefully taken off, separating it from the Dross and Dirt, and so

so made into a Cake. These Cakes by melting, refining, mincing into Shavings, and bleaching, are brought to a perfect Degree of Whiteness, and are made into Candles, which give the clearest Light, and are not offensive in the burning, as those made of Tallow generally are.

Wax is a principal Ingredient in making of Plaisters for all Chirurgical Uses, and for several Compositions necessary to many Manufactures ; but the enlarging upon these Uses here would carry me into too great a Length ; and may be thought foreign to the Purpose of this Paper, since its Uses are so many that it deserves a Treatise on purpose.

F I N I S.

