THE

Experienced BEE-KEEPER,

CONTAINING

AN ESSAY

ON THE

MANAGEMENT OF BEES:

Wherein is ſhewn,

FROM LONG PRACTICE,

The moſt eaſy and profitable METHOD of treating thoſe uſeful INSECTS; particularly intereſting to the Keepers of BEES, and uſeful to every Family.

Together with

An improved METHOD of making MEAD, and other WINES, with HONEY.

——— *aërii mellis cœleſtia dona*
Exequar.

VIRG. GEORG.

By BRYAN J'ANSON BROMWICH, M. A.

THE SECOND EDITION.

LONDON,
PRINTED FOR CHARLES DILLY,
M.DCC.LXXXIII.

TO

THE RIGHT REVEREND

The LORD BISHOP of

DROMORE.

MY LORD,

THE many obligations conferred on me by your Lordſhip, I ſhall ever remember with pleaſure and gratitude: they have done me ſo much honour in having received them, that for me to enumerate them here would have the appearance of vanity.

The following ſhort Treatiſe, on the Management of Bees, I have been induced to preſent to your Lordſhip's protection, from the approbation you were pleaſed to

expreſs of my method of preſerving the lives of theſe induſtrious little labourers, and well knowing how ready your Lordſhip is to afford your patronage to any thing that is in the leaſt likely to be of benefit and advantage to mankind. At the ſame time, I am very ſenſible that I offer nothing new to your Lordſhip's penetration, even on this ſubject; but am happy to catch every opportunity to declare, that I am,

Your Lordſhip's

moſt obliged,

and moſt obedient,

humble ſervant,

BRYAN-I'ANSON BROMWICH.

A D-

ADVERTISEMENT.

AFTER ſo many ingenious and learned men have furniſhed the world with their obſervations on Bees, an additional Treatiſe may appear unneceſſary; yet as the following pages were the conſequence of a ſeries of real experiments, many uſeful remarks will be found in them unnoticed by others who have written on the ſame ſubject. And as a conſiderable increaſe of honey and wax, in our own country, is confeſſedly of ſome importance, not only in regard to the private emolument of individuals, but alſo to the nation in general (as leſſening the importation of theſe articles), whatever experiments therefore tend to promote the facility or cheapneſs of ordering this part of huſbandry, I flatter myſelf, will not be thought totally undeſerving ſome attention from the public.

And notwitſtanding the many ingenious tracts, which have been written on the œconomy and ordering of Bees (and to which I acknowledge myſelf greatly indebted), wherein the uſual method of deſtroying theſe induſtrious little inſects is univerſally condemned, and many have been the

ſchemes ſuggeſted to prevent it, yet ſtill we ſee it continues the general practice. And thus it will ever continue, till a method is propoſed, at leaſt equally profitable, eaſy, and attended with no more expence to the proprietor.

The following little Treatiſe, therefore, which is founded on actual experience and long obſervation, is meant to obviate this uſeleſs, unprofitable, and cruel cuſtom, by pointiug out a way, greatly ſuperior in point of profit, ſimplicity, and cheapneſs of management, than any method ever yet recommended; and which will clearly ſhow, that the common barbarous mode of deſtroying theſe profitable little labourers, is alſo a great loſs to the owners themſelves.

What has chiefly deterred people from putting thoſe methods in practice, already propoſed for this deſirable end, is, that however plauſible they may appear, yet they are too complicated and expenſive ever to be adopted for general uſe. They may indeed amuſe the rich, and be of ſervice to the naturaliſt; but are entirely uſeleſs to thoſe who wiſh to profit by them.

Another objection to the many ingenious methods recommended in the Treatiſes that have been written on this ſubject, is, that Truth (ſo neceſſary to be adhered to in writings of this ſort) is often blended with fiction; and this for want of practical knowledge in thoſe who have taken their accounts from others; ſo much ſo, that, was one to ſit down merely to confute all the abſurdities that have been written

written in regard to the management of Bees, it would alone compoſe a conſiderable volume. Moſt books therefore on this ſubject (quite contrary to the laudable motive which dictated them) have rather diſcouraged than aſſiſted this branch of rural œconomy.

On the contrary, theſe obſervations, which I now ſubmit to the impartial judgement of the public, though they recommend a proceſs greatly ſuperior in point of profit, yet nevertheleſs it will be found to be attended with much leſs trouble and expence, than even the keeping Bees in common ſtraw hives. I may add too, that truth has guided my pen; nothing is aſſerted in them but what has been repeatedly tried, and drawn from actual experiment.

In the directions given for the making of Mead, I have endeavoured to aſcertain the exact quantity of honey, with the degree of fermentation, neceſſary to give it the greateſt ſtrength, with the moſt agreeable flavor poſſible. In reſpect to the other wines to be made with honey, I have only to add, that although they may readily be diſtinguiſhed by a nice taſte from thoſe wines they are ſaid to imitate, yet they may be equally as pleaſing to many people; and as they afford an agreeable variety, each one may chooſe what ſuits his fancy. And perhaps the few experiments I have made may be the means of further diſcoveries and improvements in this neceſſary and uſeful article.

In regard to the language of the following pages, the author is ſenſible he ſtands in need of much indulgence

And muſt ye kill?—Miſtaken thought—ah, ſhame!
No more involve them in ſulphureous flame.
The tender race, whom works of peace employ;
Buſy'd in public cares, and full of joy!
Was it for this they ſought the roſeate bowers,
With ceaſeleſs labour toil'd on ſpangled flowers?
For this they bore the ſummer's ſultry ray,
And autumn's ſunny gleam; nor loſt a day?
Ah! cruel man! the ſulphur'd matches ſpare,
And be content the nectar'd ſweets to ſhare!
In juſt return, the happy race reward;
From chilling winds the peaceful manſion guard:
Regale them too, upon ſome ſmiling day;
Thy tender cares they amply will repay.

CON-

CONTENTS.

Of

DESCRIP-

ADVERTISEMENT.

THE Candid Reader, it is hoped, will excuſe ſome Inaccuracies of Expreſſion, as well as Typographical Errors in the following Treatiſe, when he is informed that the Author, (who reſided in the Country) after committing his Obſervations and Directious to paper, was ſuddenly called away to attend a ſick Friend to Italy, before he had time to reviſe the Style, much leſs to correct the Preſs; and that the Publiſher was unwilling, for the Sake of meer Literary Compoſition, to detain theſe uſeful and curious Precepts from the Public: Who are therefore reſpectfully deſired, in the Author's Abſence, to make the following Corrections of ſome of the

ERRATA, &c.

Page viii. *line* 11. *for* than, *read* to.
ix. 10. *dele* it
12. 18. *for* admirable, *read* admirably.
25. *note* † *read* nearly half the expence.
26. *line* 15. *read* theſe Alighting-Boards.
34. 17. *for* entrails, *read* excrements.
44. 28. *read*, this Inſect.
47. 27. *read* taken off. It muſt
51. 21. *for* requires, *read* require
52. 10. *for* uſed, *read* attended to
60. 21. *for* not being, *read* is not
65. 22. *for* imaginary, *read* groundleſs.

HACTENUS.

DESCRIPTION

OF

BEES.

Of the Queen Bee *.

THERE are three ſorts of Bees diſtinguiſhed in every Hive: viz. The Queen, or Female Bee; the Drone, or Male; and the common working Bee.

The Queen is very different from the reſt both in ſhape and colour; her body is longer than the Drone, neater made, and tapers to a point. She has very ſhort wings in proportion to her ſize, and her belly and legs are of a brighter yellow, than the other Bees. Like the common working Bee, ſhe is armed with a ſting, but never makes uſe of it unleſs greatly irritated. Without a Queen the

* See the Plate, Fig. I.

Bees can never proſper, as ſhe alone is the Breeder *; and there is ſeldom more than one of theſe in a hive, at the ſame time, except in the breeding ſeaſon. If two ſwarms are purpoſely united, one Queen is always ſacrificed to the peace of the hive. But this is not always the conſequence, as hath generally been believed when ſtocks accidentally unite themſelves; or when they are kept in Colonies, that is, raiſed boxes. In proof of this aſſertion, I will relate a circumſtance that happened in my own apiary.

In the winter of 1777, I had three ſingle Straw-hives of Bees, ſtanding ſeparately, in an incloſed ſhed; theſe happened to be blown down by a violent wind; the weather being froſty, and very cold, prevented the Bees from flying much abroad, but from the poſition in which they fell, they all accidentally united themſelves into one hive, without even the loſs of one Bee that I could perceive.

* Some writers, on this ſubject, affirm to the contrary; and fancy the working Bees equally breeders. But theſe aſſertions are manifeſtly abſurd, and contradictory to the obſervations of the beſt Naturaliſts. When the Queen Bees are diſſected, there is always found in them an *Ovaria* replete with a multitude of eggs, ſomewhat for number like roe of a fiſh; but never any thing ſimilar to an *Ovaria* was ever found in any other ſort of the Bees which compoſe the hive. If the common working Bees bred equally with the Queen, what uſe then can we ſuppoſe the Queen to be of, or why ſhould they not be able to exiſt without one? It is notorious that if the Queen dies, unleſs replaced with another, the hive, or colony, is ſoon annihilated; the Bees being ſenſible, by an uncommon Inſtinct they poſſeſs, that without her their generation ceaſes. *Waſps*, *Hornets*, *Humble-Bees*, are alſo bred from one Mother, or Queen; and they alone, amongſt theſe laſt, ſurvive the winter; and if one of them is killed in April or May, a whole neſt is deſtroyed.

I had

I had the curiosity to examine this hive afterwards, and saw the three Queens living, to appearance, very amicably together. I immediately raised them on a large *flat-topped* hive, in order to give them room, thinking that the most likely method to promote their friendship. This proceeding has answered beyond my most sanguine expectation; having continued to take from them, every summer since, one or two hives, well filled; in short, it has more than doubled the profits, had they continued as they were. Had I not raised this hive, I make no doubt but that two of the Queens would have been killed, as soon as the weather became milder, and the breeding season commenced; but that not one of them was killed is evident from their great increase afterwards, and which one Queen could not support, or any thing equal to their numbers *.

It appears evident to me, that it is only for want of room, that the Bees dispatch their supernumerary Queens. In support of this opinion, I observe it often happens, that two Queens, when they lead swarms from a hive, at the same time, generally settle together without the least commotion. Now it is well known that Bees always provide themselves an habitation before they leave

* Since the above was written, I have proved it beyond a doubt, that more than one Queen Bee will live in the same colony, or raised boxes, by the many experiments I have made, of dividing collateral boxes to increase their number: for which directions are given in the latter part of this treatise.

their old hive, and that it is only from the Queen's being unable to fly far at a time, that they ſo often alight on the branches of thoſe trees that grow near them. It may reaſonably be ſuppoſed, therefore, that as they ſwarm together, without the leaſt diſturbance, and both of them very amicably alight on the ſame branch, that they are both likewiſe deſtined to the ſame place, and that the place they have provided is ſufficiently large. It is only then after they are hived, that, finding the habitation too ſmall for the offspring of both Queens, hoſtilities commence, and one is ſacrificed to the welfare of the Colony.

The attachment of Bees to their Queen is very wonderful; be but poſſeſſed of her, and you may lead them where you pleaſe. If by any accident ſhe dies; the others immediately ceaſe to work, and only conſume what ſtores they have, and periſh. However, this attachment is by no means conſtant to any one particular Queen; for if a hive, which has loſt its own, can by any means be provided with another, the ſame attachment to her will be obſerved as to the former: Order and regularity will be immediately eſtabliſhed, and they will reſume their labors with all their former activity and diligence.

It is remarkable that when you are poſſeſſed of the Queen from any hive, the reſt become more gentle, and ſeldom make uſe of their ſtings.

The Queen Bee ſcarce ever leaves a hive, unleſs when ſhe leads a ſwarm.

The

The *ovaria* of a Queen Bee contains ſome Thouſands of eggs, ſomewhat ſimilar to the roe of a fiſh. The great naturaliſt, Swammerdam, relates that he diſcovered in the *ovaria* of one Queen, ready to lay, five thouſand one hundred viſible eggs.

It is commonly ſuppoſed that ſhe lays nearly two hundred eggs every day, in the height of the breeding ſeaſon *. She ſometimes begins laying ſo early as the latter end of January, but this depends entirely on the forwardneſs of the ſeaſon. The moſt certain rule to know this is, that whenever the Bees are obſerved to collect from the early flowers, it is then a ſure indication of the Queen's breeding, and beginning to lay her eggs.

* I have been aſſured by the moſt reſpectable authority, that the firſt Mr. Wildman, who ſhewed experiments on Bees (for his nameſake, who now keeps a ſhop in Holbourn, was not the original Diſcoverer of the method of handling Bees, or that publiſhed the quarto volume concerning them by ſubſcription), having doubted whether all the young ones bred in a hive proceeded from the Queen Bee, made the following experiment. He caught a Queen, and tied her by a thread ſo that ſhe could ~~not~~ wander but a few inches; he found notwithſtanding eggs ſoon afterwards depoſited in cells to which ſhe could not reach: this ſeemed deciſive againſt the one mother Bee. But a day or two after more narrowly obſerving what paſſed in the hive, he ſaw the working Bees carrying the eggs from the ſaid mother, or Queen Bee, and depoſiting them for her in the diſtant cells. This curious fact is recommended to the notice of ſuch Bee-maſters, as have a facility in catching the Queen at pleaſure.

Of the Drone or Male Bee *.

The *Drone* or *Male bee* is very unlike any of the others, from which he may eaſily be diſtinguiſhed: he is ſomewhat ſhorter in general, than the Queen; though of a thicker and clumſier make He is covered with a ſort of down at the nether end, and is conſiderably larger than the common working Bee; and whenever he flies, he makes a rougher and deeper ſound. The *Drones*, however, are not all of one ſize, for ſome of them are much ſmaller than others; they are not like the others, armed with a ſting, therefore may be handled without fear. Five or ſix hundred, or more, are often bred in one hive; they are not formed to collect either honey, or wax, but feaſt on the labors of the reſt; leading a luxurious life of idleneſs and love. But their pleaſures with their lives are very ſhort; for as they ſeldom appear before the middle of *May*, ſo they are generally deſtroyed, or expelled the hive, by the other Bees, before the *month of Auguſt*, if the hive is ſtrong. At this time, the breeding ſeaſon being partly over, a moſt cruel war is commenced againſt them; for as they contribute nothing to the winter ſtores, by their induſtry, therefore, when they

* See the Plate.

are

are no longer of any uſe, they are all deſtroyed: Even the young brood are dragged from their cells, and every veſtige of Drone is totally annihilated.

In weak hives they are ſuffered to live longer, and the reaſon is, not that the other Bees are not able to drive them out, but that they find them neceſſary in hatching the young brood, to which their additional warmth greatly contributes, being themſelves but few in number. Therefore the cuſtom of killing Drones, when they are obſerved to remain later than common, and which ſome practiſe, thinking the other Bees are not able to do it, is highly prejudicial to the proſperity of a hive.

A moſt ſingular circumſtance attending the generation of Bees, is, that although there are ſo many males to one female, and they have been obſerved to couple like other inſects *; yet that this ſhould be to impregnate the *ovaria* for a future, not that preſent ſeaſon, is exceedingly remarkable. In order to prove this, we need only obſerve that Bees begin to breed ſo early as the month of *February*, ſometimes ſooner, and the Drones are ſeldom ſeen before the beginning of *May*, and are always deſtroyed before the following winter commences. In ſhort, there is no *Drone* hatched before the latter end of April or the beginning of May.

* See M. de Rèaumur on Bees.

When the Drones firſt appear, in the ſpring, ſwarms, from the ſingle hives, may then ſoon be expected, if the weather be favourable. They ſeldom appear before *eleven* in the *morning*, and very few are ever ſeen after *ſix in the evening*. An exception to this rule is, when the bees are going to ſwarm, which they ſometimes do, in very hot, ſultry weather, ſo early as eight o'clock in the morning, though very ſeldom; and part of the Drones always attend the ſwarms.

Thoſe hives that have the greateſt number of Drones generally turn out the moſt ſwarms: it ſhows they are poſſeſſed of the moſt prolific Queens. Thoſe in which are found no Drones at all ſhould either be immediately taken, or elſe united with ſome other ſtocks; for this circumſtance ſhows that the Bees have loſt their Queen, or elſe ſhe is a barren one: in either caſe the Bees can never proſper. Whatever may have been ſaid, that Bees have been known to proſper without any Drones appearing; this for certain may be depended on, that thoſe hives which breed no Drones, breed no other ſort of Bees.

Of

Of the Working Bee *.

The *Working Bees* are much leſs in ſize than the Queen, or Drone; they are armed with a ſting, and are ſoon irritated to make uſe of it. They may, with ſome propriety, be called Mules, being of neither ſex. Theſe are the only labourers, and of this ſort the hive or colony chiefly conſiſts. The working Bees collect all the wax and honey, build the combs, guard the hive, &c. and are ever ready to ſacrifice their lives for the general good. And from all the obſervations I could ever make, there appears, alſo of Theſe, a variety of ſpecies in every hive. Some ſeem to be formed to collect the honey, whilſt others ſearch the flowers for wax only; others again, I obſerve, never leave the hive, but ſeem as if conſtantly employed in the various works within; ſuch as building the comb, diſburdening thoſe that return from the fields, feeding the young brood, and guarding their treaſures, &c. In ſhort, they ſeem to be endued with a peculiar inſtinct, directing each one its different taſk; and that without a ſufficient number of theſe, in each department, no colony will proſper.

It has been thought that Bees, all the winter months, are in a ſtate of ſleep, and inactivity; but this is very erroneous: They are then equally alive and active within the hive; and conſume nearly

* See Plate.

as

as much proviſion as they do in ſummer; except in very cold and ſevere weather. Conſequently the more ſevere the winter proves, the greater quantity of ſtores remain with the Bees in ſpring.

If any accident deſtroys the Mother, or Queen, the reſt immediately ceaſe to labour, and only live whilſt their ſtores remain; unleſs there is a proſpect of a young one's being ſoon hatched, or another can be given them from ſome other hive. But as the giving them one from another hive will be attended with great trouble and difficulty, I would adviſe, when ſuch accident happens, always to unite them with ſome weak hive. The method of doing which will be found in the *directions* given *for uniting ſwarms*.

Although every good ſwarm is compoſed of many thouſands of Bees, commonly between forty and fifty-thouſand, yet ſuch is their peculiar inſtinct, that a ſingle Bee of any other hive ſhall not obtrude himſelf, but he is inſtantly known, and ſeized on as a robber.

Bees have, if I may be allowed the expreſſion, a ſort of language amongſt themſelves, whereby they know each other's wants. This will be eaſily known to the moſt ſuperficial obſerver, by giving the leaſt attention to them, in building their combs, unloading the labourers, feeding each other, &c. They alſo foreknow ſtorms; and will ſound an alarm, when any thing injurious approaches their habitation; and ſuch ſounds will be inſtantly underſtood, and anſwered by the whole hive. But not

not one of the leaſt inſtances of their ſagacity is, a day or two before they ſwarm the ſecond or third time, when it ſhould ſeem as if a ſort of Council were held, night and morning, debating whether it will be for the general good that any more ſhould emigrate. If there are Bees ſufficient in the hive, to ſpare ſo many as will compoſe the caſt, leave then is given to the young Queen by the old one to lead a ſecond or third ſwarm. This may readily be known by her deſcending to the bottom of the hive, and ſummoning her new ſubjects by repeated calls, in a louder and more ſhrill tone than what was uſed before. The next day the caſt or ſecond ſwarm, &c. may be expected, if the weather be favourable. If leave is not obtained by the young Queen, ſhe is then ſacrificed to the peace of the commonwealth.

Of the Wax, and Combs.

It is believed that the *Combs* are formed from powder, collected from the *Stamina of Flowers* which alſo ſerves them for a part of their *food*. The Bees collect it into little balls, with which they load their legs. Before this crude wax, or farina, is uſed for building combs, it is digeſted in the body of the Bee, and this brings it to a proper conſiſtency for their purpoſe.

This *Farina* is alſo called *Bee-Bread*; and that the Bees feed upon it, we need only obſerve that

larg

large quantities are collected and laid up, in every hive, where wax is not wanted. The ſubſtance is digeſted in the body of the Bee, before it becomes wax; and in proof of this aſſertion, we know that new combs, before they are filled with honey, or young brood, are of a clear white colour, whereas the farina, or crude wax, is of various colours, according to the flowers from whence it is brought.

The manner in which theſe little inſects conſtruct their combs, is worthy obſervation. By the *hexagonal* form of the cells, they loſe no room, as the circumference of one makes a part of the circumference of another; which was it contrived in any other ſhape, there could not be ſo many cells, of equal capaciouſneſs, in the ſame given ſpace. Theſe cells, which are very thin, are ſtrengthened at the entrance by a fillet of wax, and alſo at the bottom by the angle of one admirably falling in the middle of its oppoſite.

admirably.

There are different ſorts of combs in every hive, made according to the ſpecies of Bees which are to be bred in them. In thoſe combs conſtructed for breeding the Drones, the cells are conſiderably larger than thoſe which are intended for the working Bees; and thoſe cells which are made for breeding the Females or Queens, are of a very peculiar form, and faſhioned with a deal of labour *.

It is very remarkable, the wonderful inſtinct peculiar to the Mother Bee, in being able to diſtinguiſh the ſort of egg (out of the great number the

* See the Plate.

ovaria

ovaria is compoſed of) ſhe is going to depoſit, and to chuſe one of theſe cells accordingly.

There is another kind of wax, which Bees collect, called *propolis*. This is a ſort of *reſin*, not gathered as wax is, from the ſtamina of flowers, but from the *rind*, and the *leaves* of *trees*, *ſhrubs*, &c. Its colour is of a reddiſh brown, and becomes harder than wax. The Bees uſe it to cloſe every crevice in their hives, and to faſten the hives, or boxes, to the board they reſt on. In regard to this particular, ſmooth boxes, or hives made of wood, are greatly to be preferred to ſtraw-hives; the boxes ſave the Bees an immenſe deal of labour which the ſtraw-hives require; as they ſmooth the whole inſide of them with *propolis*. And was the inſide of the boxes themſelves rubbed over with wax, in order to ſtop every crevice, before the Bees were put in, it would greatly forward their works.

Of the Honey.

Bees collect moſt of their honey, as well as wax, from flowers; a part is alſo got from what is commonly called honey-dews. This *Honey-dew*, that is found on the leaves of trees, is nothing more than a ſweet juice which exudes from the leaves. If this juice fell, as it is vulgarly ſuppoſed, from the open air, it would then cover the leaves of any tree in its way, promiſcuouſly, which never happens; we ſee it only on part of the leaves of ſome particular trees, and

never but on one ſide *. As Honey-dews never happen but in very hot ſultry weather, *heat* therefore in all probability is the cauſe of them.

The goodneſs of honey entirely depends on the ſituation in which the Bees are placed; great quantities may be collected from *Commons of Heath*, or *Fields of Buck-wheat*; but what is got in theſe ſituations is always of a very deep colour, and not well flavoured. The beſt and fineſt coloured honey is collected from *flowers*. The *mignonettes* produce the moſt fragrant of any I am acquainted with in this country, and in the greateſt quantity; their flowers continuing in bloom all the *ſummer* and *autumn*.

In the year 1779, I made the following experiment: obſerving Bees to be particularly fond of the flowers of *mignonette*, I therefore planted a large quantity of it before two hives, at a conſiderable diſtance from any other Bees. Having plenty of this proviſion ſo near them, very few ever left the garden; and theſe probably for water, which Bees often have recourſe to, in dry weather. In *September*, the ſame year, I took the honey, and found a greater produce, by one-third and upwards, than from any two of my beſt hives, where the Bees were obliged to fly abroad; and this equal, both in fragrance and colour, to any imported from the warmer climates.

* The Oak is the principal tree which produces the Honey-dew in any quantity; it is often found on the Maple, Sycamore, Hazel, and Bramble, and alſo on Hop-plants.

There

There are two ſorts of *mignonette plants*, the one is *annual* and ſweet-ſcented, the other *perennial*; both equally beneficial to Bees. They continue in bloom till deſtroyed by froſts, and afford both honey and farina the whole ſeaſon.

Honey is not, like the wax, made by the Bees, but only collected by them: they collect it by ſuction, and afterwards convey it to the cells, which when filled are cloſed with a very thin covering of wax. There are indeed two ſorts of honey, which the Bees make uſe of: that which they live upon in ſummer is of a more fluid, watery ſubſtance, than that which is collected for their winter proviſion. The cells which contain the former of theſe are always left open; their winter ſtores, on the contrary, are ſecured with great care, and are never touched till the honey-gathering ſeaſon is over, and the cold weather commences.

Of the Situation of Bees.

The beſt ſituation for Bees is facing the *ſouth*, rather inclining to the *weſt*; it being better for them to have the *evening*, than the *morning ſun*. Full *eaſt* or *north* ſhould always be avoided. Bees are not able to ſee but in a clear light; when therefore they return late in an evening, and are placed either *north* or *eaſt*, they would often, in that ſituation, not be able eaſily to find their way into the hive; and when they return home heavily loaded,

and

and miſs the entrance of their habitation, they generally fall upon the ground, which, if either wet or cold, chills them ſo much, that they are ſeldom ever able to riſe again; which conſequently muſt occaſion a daily loſs.

For the ſame reaſon, the nearer Bees are placed to the ground the better; five or ſix inches from it is quite ſufficient to ſecure them from the eaſy acceſs of vermin; they ſhould by no means ever be placed in a higher ſituation, which, however injudicious, has often been recommended.

No *weeds*, &c. ſhould ever be permitted to grow near them, as they not only harbour *vermin*, but alſo occaſion the loſs of many Bees, when they happen to fall among them in wet weather. If looſe ſand is ſpread pretty thick before them, it will be found very convenient, both in obſtructing the growth of weeds, and alſo a drain for the wet.

It is very proper that the Bee Garden ſhould be furniſhed with thoſe plants, herbs, &c. that yield the Bees plenty of food; ſuch as *Gooſeberry* and all kinds of *fruit trees*; *Spaniſh Broom*, *Mignonette*, *Thyme*, *Borage*, and *Tobacco-plants*: alſo *fields of Turnips*, *Buck-wheat*, or *Dutch-clover*, in bloom, are what they collect from in great quantities.

Thoſe ſhrubs and flowers which bloom early in the year, will be found particularly uſeful in or near the Bee-garden; ſuch as the *yellow winter Aconite*, the *Crocus* and *Snow-drop*; but more eſpecially hedges of the *Sallows*. On the Farina of the *Sallows* (which comes early and in great abun-

abundance), the Bees nourish the young brood, and nothing will produce forward ſwarms ſo much as plenty of this food. *Raſberry* and *Blackberry Bloſſoms* alſo afford conſiderable quantities of this nutriment, though later in the year.

The *Apiary* being ſituated near *Oak*, or *Horſe-Cheſnut Trees*, is alſo very beneficial to the Bees: The *Oak* moſt frequently producing the honey-dews, and the *Cheſnut Trees* afford great quantities of bloom.

Bees collect too a conſiderable ſhare of honey and farina from the bloſſoms of *Ivy*; and this, I believe, excepting the *mignonette*, and what is commonly called the *Bee Flower* *, is the lateſt bloom they gather from.

The Apiary ſhould be ſheltered as much as poſſible from the *north* and *eaſtern winds*; and if placed near the dwelling-houſe, will ſave much attendance in ſwarming-time.

The *floors* for the hives ſhould always be made of ſmooth light board, and never of ſtone; this laſt becoming ſo intenſely cold in winter, that it is almoſt certain deſtruction to every Bee that happens to alight on it.

Of their ſwarming.

In the ſpring, when a hive becomes crouded by the young brood, if it is not ſoon raiſed on an

* This flower is not very common; and the author is probably unacquainted with its true name.

empty one, part of them will ſeek for a new habitation. As ſoon therefore as a young Queen is hatched, and becomes fit to fly, ſhe then only waits for the firſt fine morning to lead the young colony to its new abode. They ſhould therefore be watched from the beginning of *May* to the middle of *July*.

Sometimes it happens that two or three *Queens* lead a ſwarm, and this is generally the caſe when the Bees ſettle in ſo many ſeparate cluſters; but as ſoon as they are put into a hive, only one is ſuffered to remain there; the others are always deſtroyed, with many of their attendants, which never forſake them.

When Bees ſwarm, they generally alight on ſome branch of a tree or hedge near the place they came from: for this reaſon it will be very convenient to have a few trees planted about the apiary, or they may be induced to fly ſo far before they can find a convenient place to alight as to be loſt to the proprietor.

When the ſwarm is to be put into a *ſtraw hive*, be careful that all the looſe ſtraws in the inſide are ſinged off; and this will alſo deſtroy any *young brood of moths* which may have harboured there: let it be afterwards rubbed with a coarſe cloth, and it will ſave the Bees a deal of labour in clearing it themſelves. Let the hive alſo be rubbed with a *bunch of Beaum*, dipped in a mixture of *brown ſugar* diſſolved in beer; this being agreeable to their taſte, will induce them not to forſake the habita-

habitation you have provided; which often happens when they take any diſlike to it.

The ſwarm when hived muſt not be carried immediately where it is to remain, but muſt be placed on a cloth on the ground, firſt laying a ſtick or two on the cloth, for the hive to reſt on, and in order to give the Bees free entrance. In the evening when the Bees are all in the hive, and not before, it may be carried where it is to remain. The hive containing the ſwarm ſhould be well ſhaded whilſt it remains on the ground, with the boughs of trees, &c. leſt the too powerful heat of the ſun ſhould offend them, and cauſe them to riſe a ſecond time. If the weather is not likely to be favourable, put under the new ſwarm a plate or ſhallow diſh of honey, covered over with bits of ſtraw, or with a piece of paper pricked full of holes: or ſtrew under the hive ſome brown ſugar moiſtened with beer; this will ſerve them to feed upon till they can get abroad to work. Previous to hiving the ſwarm, a ſmall ſtick or two ſhould be run acroſs, in a contrary direction to the mouth or entrance of the hive, to ſecure the combs from falling.

It is a common practice with country people to ring a bell, or pan, when their Bees ſwarm; fancying the noiſe hinders them from flying far, and cauſes them to ſettle ſooner. I cannot ſay I ever found that this makes the leaſt difference; for if the Queen who leads them is ſtrong and able to fly far, it is not any noiſe that will retard her

flight.

flight. In one reſpect the ringing to Bees may be of uſe; it aſcertains your property, in claiming your ſwarms, when they happen to alight in your neighbour's premiſes.

It is neceſſary all the ſwarming ſeaſon, that Bees ſhould be continually watched, from eight o'clock in the morning till after four in the evening: for although it is ſeldom they riſe ſo early as eight, yet in very hot weather I have had ſwarms riſe even before that hour; and caſts, or ſecond ſwarms, often come out of the hive ſo late as four or five in the evening. If Bees are not continually watched all the ſeaſon, in a large apiary, many ſwarms muſt unavoidably be loſt; for if the branch they happen to alight on be much expoſed to the ſun, it will cauſe them to leave their ſituation in a few minutes; it is very neceſſary therefore always to be provided with hives, boxes, &c. ready prepared, according to the above directions, all the ſwarming ſeaſon.

It is unneceſſary to give directions for the hiving of Bees, or ſhaking them from the bough into the hive, it being an operation ſo univerſally known in every village throughout the kingdom. I ſhall only obſerve, that the perſon who performs it ſhould ſecure himſelf as much as poſſible againſt the ſtings. The beſt dreſs I can recommend is, a carter's round frock, with a pair of ſtout gloves, and two pair of ſtockings. The face ſhould be fortified with a ſmall meſhed net, to be thrown over the hat, or ſome other thin cloth that can be

ſeen

ſeen through. Many people uſe no precautions whatſoever, and indeed Bees at this time are ſeldom apt to ſting.

No ſooner is the ſwarm ſettled in the hive, but the Bees fall to work in making combs, and in a few hours time will have finiſhed one or two of conſiderable magnitude. This is a clear proof that they digeſt the farina, or crude wax, in their ſtomachs, before they uſe it to form their cells; for commonly a large comb is conſtructed before a ſingle Bee, in the new ſwarm, will offer to fly abroad. A few of them, indeed, that are juſt returned from the fields, previous to the ſwarms iſſuing forth, may be ſeen to have ſome farina attached to their legs, but inconſiderable in proportion to the combs they make, before they collect any, after they are hived.

The new ſwarms uſually build more comb, in the firſt fortnight after they are hived, than they do the whole ſucceeding ſummer; and this induſtry is excited not ſo much for cells to place their ſtores in, as for their Queen to depoſite her eggs.

It often happens that Bees, in ſwarming-time, hang out of the hive in large cluſters; either the hive being too ſmall to contain their numbers, or elſe the extreme heat of the weather makes it too warm for them to ſtay within. In either caſe it is a ſure indication of their being crouded, and of their wanting to ſwarm; and that they only wait for a leader to conduct them. I would always adviſe, when this happens, if they ſhould not riſe

  within

within a day or two, to raiſe them immediately on a flat-topped hive; by this means the ſupernumerary Bees will have room to work, who otherwiſe only waſte their time, and live on the labours of the reſt; and if it ſhould be late in the ſummer before a young Queen is produced, and fit to lead them, they then loſe the beſt part of the year, and will ſcarce have time to fill their own hive ſufficiently to ſubſiſt on through the winter, beſides greatly impoveriſhing the old ſtock. Whereas, by the method I have now ſuggeſted, they will be hindered from ſwarming at all, unleſs they ſhould riſe a few days after they are raiſed *. You will by this means, inſtead of two weak ſtocks, often get a double hive, well filled with wax and honey, and which I have frequently experienced.

A great deal has been written on the ſubject of making Bees ſwarm artificially, when they are obſerved thus to hang from the mouth or entrance; but I can aſſure my readers, from repeated trials, that they are all of them very uncertain and troubleſome experiments. Raiſing them, as above, is the only certain method of treating them with any ſucceſs.

Many people have imagined they can tell when Bees are going to ſwarm by a peculiar noiſe the females make at that time; but this only happens

* If a young Queen is in great forwardneſs, raiſing them, in that caſe, will not prevent their ſwarming. Neither will it if the entrance of the upper hive be left open; they muſt have a paſſage at the loweſt hive only, if you wiſh the Bees to take to it.

before

before a caſt, or ſecond ſwarm, and never before the firſt. Theſe Calls (as they are commonly ſtyled) may be heard very diſtinctly two or three days before the caſt riſes, particularly in the evenings; and when you liſten to them, it ſeems as if the Queens were in debate, and anſwering each other. Theſe noiſes or calls were made by the *Queens only*, and by them you may diſtinguiſh how many there are, at that time, in the hive, each ſound being very different. The caſts uſually happen the ninth day after the firſt ſwarm, if bad weather does not prevent them coming out.

EXPLANATION OF THE PLATE.

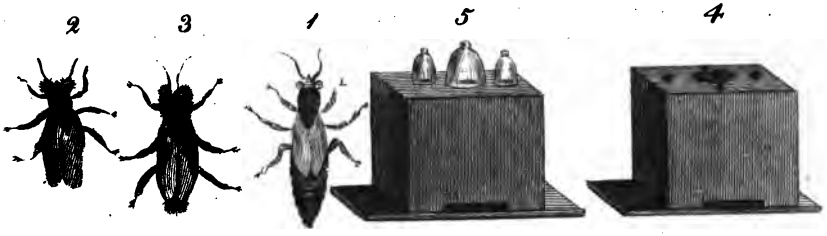
Fig.

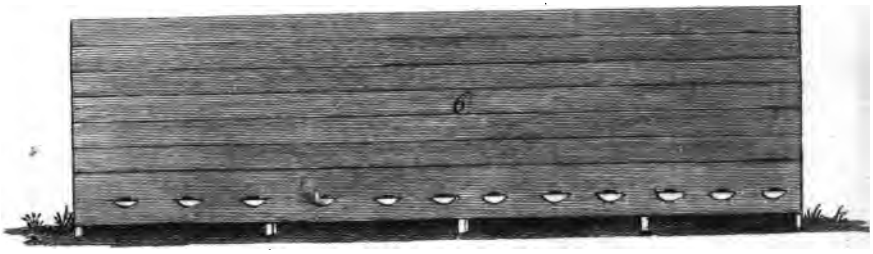
1. Repreſents the Queen, or Female Bee.
2. The working Bee.
3. The Drone, or Male Bee.
4. The Deal Box, 9 inches ſquare, and 8 inches in height *.
5. Ditto with ſmall Glaſs Hives at top †.
6. Front of the Bee-Houſe, 13 feet long, and 4 in height.
7. The back part of Ditto, with 4 doors; one of which is open, ſhewing three colonies, or rows of boxes.
8. The ſide, 14 inches in breadth.
9. Repreſents the Cell of a Queen Bee, attached to a comb.
10. Repreſents the manner in which Bees uſually hang to the Bough of a Tree, when they ſwarm.

* I would recommend a ſtrict attention to the exact ſize of the Boxes here mentioned: even the variation of half an inch, will be found to cauſe a material difference in regard to the future ſucceſs in uſing them.

† This is meant for the convenience of taking ſmall quantities of pure unmixed virgin Honey at any time or hour of the day throughout the Summer. See page 51.

Of





Of the Bee-Houſe, and Boxes.

Deſcription of a new invented Bee-Houſe with Boxes *.

When Bees are to be raiſed, in order to partake of their wax, and honey, without deſtroying them, it is abſolutely neceſſary that they ſhould be kept in a houſe or ſhed. This that I am going to deſcribe, is, I believe, formed on the plaineſt, and moſt ſimple plan that can be contrived, and alſo the cheapeſt.

A houſe to contain twelve colonies muſt be made of the following dimenſions. The length muſt be thirteen feet: the height, in front, four; that is, four feet from the bottom board, or that on which the boxes are to be placed. The breadth of the ſides or ends of the houſe do not require more ſpace than fourteen inches. The back part is compoſed of four doors, to open from end to end; three feet and a half in height, from the roof to the bottom board †. This houſe, or ſhed, may be made with common half-inch deal boards, which, when well painted, will be equally as

* See the plate.

† In a ſecure and ſheltered ſituation the doors to the houſe may be omitted, and thereby nearly half the expence of making it will be ſaved.

durable

durable as any other wood: the whole expence of this conſtruction need not amount to more than 30 ſhillings.

An inch deal board very ſmooth and even muſt be placed in the inſide from end to end, about twelve inches broad, for the boxes to reſt on. Exactly even with this bottom board, twelve holes muſt be cut to correſpond with the mouths, or entrance holes of the boxes; which ſhould be four inches wide, and half one in height. Underneath each of theſe holes, on the outſide of the front, ſmall pieces of boards are faſtened in a declining poſition; as well for the greater eaſe for the Bees to alight on, as to drain off the wet. It will be proper alſo to paint each of theſe alighting boards of different colours, and alſo round the mouth of each entrance, in order to prevent, as much as poſſible, the Bees miſtaking one box for another.

A houſe thus conſtructed, of little more than three yards in length, will be found to contain twelve colonies; which will be found equal to twenty-four hives, with all their ſwarms, kept in the uſual way.

The boxes, which are to contain the Bees, I recommend to be made of well ſeaſoned inch-deal-board, it being the lighteſt and warmeſt wood. Let them be made nine inches ſquare, and eight in height, in the inſide; with a communication-hole at top of about three inches*. The mouth

* In order to ſave the Bees trouble, and retard their labors as little as poſſible, four ſmaller holes of about an inch may be cut round the middle one. See plate, Num. 4.

or entrance ſhould be four inches wide, and only half one in height, the better to preſerve the Bees from *mice*, *ſnails*, &c. Theſe boxes ſhould be well made, and the work cloſely joined together; ſo conſtructed, they will be equally as warm, more convenient, and much cheaper in the end, than any thing of the kind that can be made with ſtraw.

Thoſe perſons who are curious to obſerve what progreſs the Bees make in their works, may inſert, in the back part of the boxes, ſmall panes of clear glaſs, with covers of *tin*, *wood*, &c. to be opened or ſhut occaſionally. At the ſame time it muſt be obſerved, that theſe covers, or doors, ſhould never be left open long together, or it will greatly interrupt their labors.

Bees in Colonies.

Of ordering Bees in Colonies, with an eaſy method of taking the Wax and Honey, without deſtroying them.

When the houſe and boxes are prepared, let them be furniſhed with ſtrong and early ſwarms; never with late or ſecond ſwarms, theſe ſeldom anſwering the purpoſe of raiſing a ſtock. And when a ſwarm is to be put into the houſe, it is neceſ-

neceſſary, from the ſmallneſs of the boxes, to place that box which contains the Bees immediately on an empty one, leſt they ſhould leave it for want of room; one of theſe boxes alone being ſcarce large enough for a good ſwarm.

If the ſwarm is ſtrong, and produced early in the ſeaſon, both theſe boxes will be filled with combs in a few weeks. When this is perceived, let a third be immediately added underneath. By this means the combs in the upper box will, in a little time, be free from the young brood, and be intirely appropriated for honey: for it is natural for the female Bee, as ſoon as the boxes are raiſed to deſcend, and lay all or moſt of her eggs, in the lower boxes, as being nearer the entrance. So that when the young, in the upper box, have emerged from their cells, thoſe combs are bred in no more, but are immediately filled with honey or crude-wax. For this reaſon the honey got from Bees, by means of boxes, is in a far purer ſtate than that procured in the common method; where conſiderable quantities of the young brood muſt unavoidably be mixt with it.

Whenever there is reaſon to ſuſpect that the upper box is filled with honey, without any of the brood (and which is generally the caſe when the loweſt or third box is filled with combs), it may then with ſucceſs, and not before, be taken off. To do which, let a perſon who takes it go early in the morning before ſun-riſe, prepared with a thin pliable knife, the blade of which ſhould be

ſeven

ſeven or eight inches long, in order to cut through the combs that are attached to the ſecond box: when this is done, let him gently lift it off, at the ſame time laying a ſmall board to ſtop up the communication hole, and keep the bees from flying out of the lower boxes. Let the box taken off be carried to ſome diſtance; and as there will always ſome Bees remain it, turn the bottom uppermoſt, and for a minute or two keep rapping the ſides of it with a ſmall ſtick. This repeated noiſe will ſometimes cauſe them to leave the box in a ſhort time; but if they ſhould not be readily got rid of this way, then one of the three following methods may be choſen, according to a perſon's ſituation or convenience.

The firſt is to plunge the whole box, and its contents, in a tub of water, placed in readineſs for that purpoſe. Neither the wax or honey will be at all the worſe for this operation, if done with a gentle hand, and not immerſed too long; and the Bees will ſoon recover their drowning, if taken out and laid on a dry cloth in the ſun *.

Another method, and by far the beſt, where it can be procured, is to, carry the box, as ſoon as taken, into a dark room, excepting a ſmall window for the Bees to fly out at. Let the box, when

* It may happen that a Queen Bee is amongſt her drowned ſubjects, therefore, after this operation, ſhe ſhould be ſought for with a careful eye; and if found, returned to the colony from whence ſhe was taken.

brought

brought into the room, be ſet from the window, with its bottom uppermoſt, as far as the place will admit; then keep rapping the ſides, and the Bees will moſt of them take wing, and immediately make for the light. In this method the Bees will be got rid of ſooner than by any other: for as they can ſee only in a clear light, none can return into the room. If a Queen Bee ſhould be in the box, which ſometimes happens, part of her attendants will never leave it whilſt ſhe remains. When therefore moſt of the Bees are gone, and it is found difficult to get rid of the reſt; let the box be examined, and if a Queen is found, let her be carefully conveyed to the old ſtock. Whoever performs this buſineſs, ſhould be well fortified againſt the ſtings; the beſt directions for which, ſee in the article of Bees ſwarming.

Another way, and which ſome may prefer, is ſtupifying the Bees, by burning in the box taken off a piece of the *Fungus maximus* *. Take a piece of the dried *Fungus*, as big as a hen's egg, and fix it on a ſtick at the bottom of an empty ſtraw-hive, the bottom upwards; which when lighted, place over it the box taken from the colony: in order to keep in the fume, wrap a cloth round the intermediate ſpace, betwixt the box and the hive. In a ſhort time all the Bees will fall into the empty hive, but they will ſoon recover themſelves when

* In order to prepare this ſubſtance for uſe, ſee the article of *Uniting ſwarms.*

expoſed

expoſed to the open air, and immediately join their companions.

It is neceſſary to obſerve that the upper box ſhould not be taken away too early in the year: I have ſeldom ſucceeded before the latter end of June. If it is taken before the young brood are all gone, the honey is not only the worſe for it, but the colony greatly weakened. Experience however will point out this much better than any written directions can do, as our ſeaſons vary ſo conſiderably.

The ſame day the upper box is taken away, an empty one muſt be placed underneath; and when this is filled with combs, the ſame operation may again be repeated. It ſeldom happens that two of theſe boxes may not be taken in a ſeaſon, and often three. But it is to be obſerved that none ought to be taken after the firſt week in Auguſt.

When ſpeaking above of taking two or three boxes from each colony, I would be underſtood of the ſecond, or ſucceeding years. The firſt ſeaſon, the Bees being ſo few in number, it often happens that even one cannot be taken with ſafety, unleſs the ſwarm be very early and ſtrong. But in the ſecond and third years, when the number of Bees are increaſed, generally two, and often three, may be taken, and yet leave ſufficient proviſion for them in winter.

The above method of keeping and ordering of Bees will be found on trial far preferable, in every

every reſpect, to any other that hath yet been offered to the public. Thoſe methods hitherto recommended, however ingenious, are more adapted for the amuſement of people of fortune, than for uſe to thoſe who wiſh to profit by them; the expence and trouble attending them being ſo very conſiderable, that few, unleſs for curioſity or amuſement, could ever think of putting them in practice.

On the contrary, all the implements neceſſary in the method here recommended, are of ſo plain and ſimple conſtruction, and ſo eaſily procured, that it is in the power of every cottager to be poſſeſſed of them, and even to make them all himſelf. The Bees alſo are ſo eaſily managed, that the keeping them this way will be found much leſs expenſive and troubleſome than in common ſtraw hives; at the ſame time the profit will be doubled, the Bees being never deſtroyed. The honey too will be got in purer ſtate; for with ſtraw hives, the way Bees are uſually kept, it is impoſſible to have the honey without a mixture of the young brood.

Advan-

Advantages of keeping Bees in colonies, or boxes, compared with the common method of keeping them in ſingle hives.

In ſpeaking of the advantages, ariſing from this method of ordering Bees, it is not my deſign to amuſe the inexperienceed reader with vain and deluſive expectations, but to relate facts only which have occurred in my experience; and which I ſhall endeavour to exhibit, at one view, by the following impartial calculations and compariſons. The emoluments ariſing from either method will be ſeen to be very conſiderable though more than double in favor of colonies: and when tenderneſs and compaſſion for theſe induſtrious little inſects is put in the ſcale, no one ſurely will heſitate which mode to adopt.

The conſiderable profit, ariſing from the culture of Bees, I believe, greatly exceeds any other branch of agriculture; and it is rather to be wondered at that the keeping them has not been more univerſal. I know of none excepting this, that will return *cent. per cent.* for money expended, and which this on trial will be found to exceed. Here the proprietor wants not large extenſive poſſeſſions; a ſmall garden only will anſwer his purpoſe; and a little attention, at ſome particular ſeaſons of the year, is all that is required.

That colonies are preferable to any other mode of keeping Bees, is very obvious. Bees in ſingle hives, all the breeding ſeaſon, are diſtreſſed for want of room; moſt of the cells being then filled with the young brood, ſo that but little honey can be collected till very late in the ſummer, excepting juſt for their immediate ſupply. Whereas in colonies, by the continual addition of freſh boxes, their induſtry is excited, and all the Bees by that means are fully employed, which is much more agreeable to their nature.

Nor is it altogether the profits, though evidently ſo ſuperior, that ſhould induce us to preſerve the lives of theſe little induſtrious laborers, and explode the common method of deſtroying them; but the honey this way will be taken in it's pure native ſtate, unmixt with the offenſive ~~entrails~~ of the young brood; which is impoſſible to be avoided with that which is produced in ſingle hives.

The following calculation, of the expences for a houſe of twelve colonies, compared with thoſe of twenty-four common hives, with the advantages and diſadvantages of each method, will clearly ſhew the ſuperiority the one has to the other.

COLO-

COLONIES.

First expence of 12 Colonies.

	£.	s.	d.
The houſe, painting &c.	1	10	0
36 boxes, at 1s. each	1	16	0
12 ſwarms, 10s. 6d. each	6	6	0
	9	12	0

Average profit of Ditto.

Twelve colonies will produce in a moderate ſeaſon 360 pounds weight of honey, with about 18 of wax. The annual profit will therefore be on an average as follows,

	s.	d.
360lb. of honey at 6d. p. lb,	9	0
18lb. of wax at 1s. 9d.	1	6
	10	6

Excluſive of the above, there remain the 12 original ſtocks, from which the colonies were produced: the ſucceeding annual profits of which will be half the ſum above ſpecified. For a fuller explanation of this, ſee the article of purchaſing Bees.

Bees, kept in colonies, require no attendance, as they never ſwarm unleſs forced to it by not raiſing them.

In colonies they are entirely free from accidents of weather, vermin, &c. No mice can enter if made according to the preceding directions; and the boxes being ſo often changed prevents the moth (that moſt fatal enemy to Bees) from deſtroying them.

They are alſo more ſecure from bad ſeaſons: as it muſt be the proprietor's own fault if he leaves not a ſufficient quantity of honey, in the autumn, to guard againſt the chance of a backward ſpring*.

A little more than three yards ſquare of ground will be ſufficient for 12 Colonies, with ſcarce any trouble or attendance.

COMMON SINGLE HIVES.

First expence of 24 common hives.

	£.	s.	d.
24 ſwarms, at 10s. 6d. each	12	12	0
48 hives, at 10d. each	2	0	0
48 ſtands, at 1s. each	2	8	0
48 hackles, at 3d. each	0	12	0
	17	12	0

Average profit of Ditto

Twenty-four ſingle hives, allowing 15 pounds weight of honey for each, will annually produce 360. Which is but juſt equal to that of 12 colonies

	£.	s.	d.
360lb. wt. of honey	9	0	0
18lb. of wax	1	11	6
	10	11	6

The above calculation is made in ſuppoſition that each hive annually produces one ſwarm, which on an average ſeldom happens.

Conſtant attendance is abſolutely neceſſary all the ſwarming ſeaſon, which in a large apiary will laſt more than three months, and often with the beſt attendance ſwarms are loſt.

In the uſual method, accidents of this ſort are perpetually happening. They are often devoured by mice, or deſtroyed by the moth, &c. which laſt ſtraw hives are more liable to than deal boxes.

Bees, kept in ſtraw hives, often die for want, eſpecially when a ſeries of unfavorable weather hinders them from collecting from the early flowers.

Twenty-four hives, with all their ſwarms and caſts, will require a conſiderable Garden. The comparative trouble and attendance of which I need not ſpecify.

* See article for feeding Bees, and of ordering them in Spring and Autumn.

Of uniting Swarms.

The ſecond or third ſwarms, commonly called caſts, with the ſwarms of ſwarms, &c. all which uſually happen in *July* or *Auguſt*, are ſeldom ſtrong enough themſelves to ſtand the ſucceeding winter. The only way therefore to preſerve them is to unite two or three of theſe together, in the following manner.

If two or three of theſe ſhould happen to come the ſame day, they then may be put altogether into one hive, without further trouble, and they will unite themſelves. But if ſome time is elapſed between their ſwarming, it will be a matter of more difficulty if they are to be united in a common ſtraw hive. The method is this; as ſoon as a ſwarm riſes which is to be united with a former one, let it be hived in the uſual manner, and brought in the evening where the firſt ſwarm is placed; which being done, ſpread a clean cloth ſmooth upon the ground, with a ſtick laid upon it for the hive to reſt on, and alſo that the Bees may have ſufficient room to go in and out of the hive: the Bees that are juſt hived muſt then be placed on this cloth, and giving the hive a ſmart ſtroke or two with the hand, they will all fall upon it; then throw the empty hive aſide, and inſtantly place that which contains the former ſwarm over thoſe on the cloth, and they will preſently unite,

and

and become one family. After they are a little ſettled they muſt be placed again on the ſtand where the firſt hive was taken from. When Bees are to be united in boxes, they will be much eaſier managed; it is done only by placing the laſt ſwarm over the firſt, and unſtopping the communication hole between them.

Uniting ſwarms is alſo of great uſe when a hive has loſt its queen: The beſt method to be uſed in that caſe is, to unite it with ſome weak ſtock, and thereby gain a double advantage, numbers to one, and a queen to the other. However, the way to manage this union muſt be different from the preceding, or the Bees removed will inſtantly fly to the place they were taken from, and moſt of them periſh. I prefer Mr. Thorley's contrivance in this caſe to any other, and which is done by a ſtupefying fume, as follows. Be provided with a large *Fungus*, commonly known by the names of *Bunt*, *Burt*, *Frog-cheeſe*, *Mully-puff's*, *Puckfiſt*, or *Puff-balls*; they are of various ſizes, ſome nearly as big as a man's head; when they are ripe, the inſide begins to turn brown, and then they are fit to be gathered: put one of theſe into ſtrong paper, and preſs it to near half its former ſize, by tying it very cloſe; then put it into an oven, after bread has been drawn, and let it remain all night; when it will burn freely, it is dry enough to uſe. When any hives are to be united, cut off a piece of the dryed *fungus*, as big as a *hen's egg*, and fix it on a ſtick at the bottom of an empty hive; this muſt

be

be ſet on fire, and the hive, with the Bees in, placed over it; in the ſpace of a minute they will moſt of them fall into the empty hive. Proceed then, with the other hive of Bees in the ſame manner; afterwards put them altogether into the hive it is deſigned they ſhould remain in. When they are all in, cover it over with ſome coarſe cloth that will admit the air, and let them remain ſhut up all that night and the next day. The ſecond night, after their union in the duſk of the evening, let the cloth be juſt removed from the mouth of the hive, and the Bees will ſally forth with a great noiſe, but being late they will ſoon return. They muſt be confined for three or four days more, firſt inſerting two pieces of quills at the mouth, to let in the air; afterwards they will be entirely reconciled, and the door may be left open. It muſt be obſerved, that the operation of the ſtupefying fume is to be performed with the utmoſt expedition, as the Bees will continue in that ſtate but a very ſhort time.

Obſer-

Obſervations on purchaſing Bees, in order to ſtock the Colonies, and alſo of removing Bees.

The beſt and moſt proper time to purchaſe Bees is about *Chriſtmas*; for by this means you gain a whole year. If you buy ſwarms in the ſummer, the price will be juſt the ſame, and you then run the riſk of their not ſtanding the ſucceeding winter. But if you purchaſe good and ſtrong ſtocks in *December*, or the beginning of *January*, you not only furniſh your boxes from your *own apiary*, but ſtill remain proprietor of the old ſtock, which may annually ſupply you with freſh colonies.

The hives procured at this time ſhould weigh at leaſt twenty pounds, in order to produce ſtrong and early ſwarms the ſucceeding ſprings; for on this circumſtance greatly depends the ſucceſs of your colonies. Swarms of the preceding ſummer are to be preferred to old hives; they are eaſily diſtinguiſhed by the colour of the combs; theſe of the later ſort are conſiderably darker than thoſe of the former. Particular care ſhould alſo be taken that they are free from moths and other inſects, which ſo often prove deſtructive to Bees. Old ſtocks ſhould be rejected for ſeveral reaſons; they are not only more liable to be deſtroyed by the moth, and other vermin, than freſh ſwarms; but old combs, that have been often bred in, weigh heavier, and in

that reſpect are very deceitful to an inexperienced purchaſer.

It is alſo very injudicious to remove Bees after the *beginning of January*; for if it ſhould happen to be a mild forward ſeaſon, and the Bees have had even one fine day to work in before their removal, it will ſo accuſtom them to their old ſituation, that many hundreds, inſenſible of any alteration, will naturally return loaded to the ſpot on which they formerly ſtood; and as theſe muſt unavoidably periſh, it will greatly weaken the ſtock to which they belong. This never happens when Bees are removed in December, or the beginning of January; it being natural for them, before they reſume their labours, early in the year, to catch the firſt favourable hour to reconnoitre their ſituation, and this manœuvre they never perform but once at the commencement of the ſeaſon. The young ones alſo uſe the ſame precaution in their firſt flight: they do not eagerly ſally forth to the fields, as the more experienced old ones, but firſt of all make ſeveral circles in the air, keeping their heads towards the hive.

Directions for feeding Bees, and ordering them in the Spring and Autumn.

At the end of *September*, about *Michaelmas*, when the honey-gathering ſeaſon is over, the *Bee-garden* ſhould be viſited, and all the hives and colonies thoroughly inſpected. All the ſingle hives ſhould weigh at leaſt *twenty pounds*, and the colonies or boxes not leſs than *thirty*. Thoſe ſtocks that are wanting of this weight muſt have a ſufficient ſupply given them to make up the deficiency. Of leſs weight they ſeldom ſurvive the winter, and if they do, are generally ſo weak in ſpring, that they are ſeldom afterwards of much ſervice. This ſeaſon alſo is the beſt time to feed them, as the honey is not yet candied by the cold, which, in that ſtate, to Bees is certain deſtruction; give them therefore at this ſeaſon as much as is neceſſary. The way to feed them is this; place them on an empty box, or flap-topped hive, into which put a ſhallow diſh, or plate of honey, covered over with ſhort ſtraws; they will ſoon fall upon it, and carry it to their combs. This muſt be repeated till the hive is of its proper weight. No one need regret beſtowing thus plentifully upon them, as they will always be repaid with intereſt; in ſhort, without giving them a ſufficient

ficient ſupply, the feeding them at all will be of little uſe.

I muſt obſerve, that the honey given to Bees ſhould never be put on the outſide, at the mouth or entrance of the hive, as it will not only draw others to them, but cauſe them to fight and deſtroy each other.

Notwithſtanding what has been ſaid above of feeding Bees, I would not recommend the practice but in caſe of neceſſity. Weak ſtocks are liable to many accidents which ſtrong ones are free from; the beſt method of treatment, therefore, is to unite all the weak ones in *ſummer*, before the honey-gathering ſeaſon is over; one ſtrong hive being of more value than many weak ones.

Coarſe brown ſugar, moiſtened with *mild ale*, is a very good ſubſtitute to feed the Bees with inſtead of honey; and for my own part I generally prefer it; they are not only equally fond of it, but they feed upon it cleaner. Bees cannot be fed with honey without the loſs of great numbers, unleſs it is given them in very ſmall quantities at a time *.

The ſtands or boards, on which the hives or boxes reſt, ſhould now alſo be carefully examined, and all impurities bruſhed off. There will always be found ſome *embryos of Moths*, and other inſects, depoſited on the ſtands; which, if ſuffered to come

* A friend has ſuggeſted that if a pound of honey be diluted with a little warm water, and then poured into a diſh or platter, and covered all over with bits of paper, pricked full of holes, they will feed as clean, and have a more natural food to depoſite in their cells.

 to

to perfection, will often deſtroy, and always greatly weaken the Bees the ſucceeding ſummer. The ſame attention is alſo to be obſerved at the end of *January*, or in the beginning of *February* at furtheſt.

Many people have recommended methods of keeping Bees particularly warm all the winter; but this is very injudicious. Keeping them very warm, makes them more active; conſequently they will deſtroy more of their proviſions; and it often entices them into the open air, to their utter deſtruction. Generally the more ſevere the winter, the better it is for the Bees; and the only care neceſſary at this ſeaſon is, to keep them dry, and free from rains and wind.

In the *autumn*, or when the honey-gathering ſeaſon is partly at an end, the mouth or entrance of each hive and colony ſhould be contracted one half, or leſs. In this ſituation the Bees will be much better able to defend themſelves againſt their enemies of every kind; but particularly from *Waſps*, and the *robberies* of other Bees, at this ſeaſon often very troubleſome.

Of Enemies to Bees.

Bees have many enemies, which ſhould have as little acceſs to the *apiary* as poſſible. *Sparrows*, *Swallows*, and *Robin Redbreaſts*, but particularly the firſt, are very deſtructive to Bees; their *neſts* therefore

therefore ought to be deſtroyed with all diligence. *Ducks* alſo devour great quantities from off the flowers.

The *Mouſe* is a very dangerous enemy, eſpecially in the winter, and will deſtroy a hive of Bees in a little time: from this diſaſter Bees kept in boxes are perfectly ſecure; the entrance, being only half an inch in height, is too low to admit them.

Waſps and *Hornets* are very hurtful towards the end of ſummer: *Hornets* prey upon the Bees themſelves, and the *Waſps* rob them of their honey. In ſome years, when there are great plenty of Waſps, the *weak ſtocks* are in danger of being totally deſtroyed, unleſs ſome precautions are uſed to prevent their depredations. The beſt time to get rid of theſe fierce inſects is in *April* or *May*; in every waſp then killed, you deſtroy a whole neſt; theſe are the mothers which alone ſurvive the winter, and are the only breeders. In ſummer the neſt ſhould be ſought for and deſtroyed, which may be done by burning brimſtone in the holes where their combs are formed, or wet gun-powder; afterwards let them be dug up and buried, or they will preſently recover from their ſuffocation.

The *Moth* is another very formidable enemy to the *apiary*; too great care cannot be uſed to be free from this inſect. Bees are oftener deſtroyed, and ſuffer more from this enemy than all the reſt: and if there are many that have got into a hive, it is impoſſible to ſave it. The beſt precaution to be uſed is frequently, both in the *ſpring* and

and *autumn*, to bruſh off all the filth that may have fallen on their ſtands, and often examine the edges of the hives, and clear off any of their webs that may adhere to them. Deal boxes have greatly the advantage of ſtraw hives in this reſpect; the boxes being ſo often changed, that the moth has no time to harbor in them; neither are they ſo ſubject to the moth as ſtraw hives are.

Earwigs and *Woodlice* are alſo great plunderers of the apiary, and ſhould often be ſought for and deſtroyed. For this reaſon the hives and houſes ſhould be frequently examined, and the ſtands bruſhed, and kept as neat and clean as poſſible: otherwiſe the crumbs of wax, dead Bees, and other filth falling down, will afford ſo much harbor for all kinds of vermin, that it may prove deſtructive to the ſtrongeſt hives and colonies.

Bees are often *great enemies* to each other, and furious battles are ſometimes fought, when they want to rob one another of their honey. Theſe battles are ſeldom, if ever, with Bees of the *ſame apiary*, nor do they ever happen in good honey-gathering years; it is generally in bad ſeaſons that they become thus furious, when they find they have not a ſufficient ſupply for the approaching winter. In order to remedy this evil, when theſe attacks are perceived, the entrance of each hive and colony ſhould be nearly cloſed, all but a ſmall ſpace that will admit only the paſſing of one Bee at a time: they will defend this narrow paſſage with much greater eaſe than

than a larger entrance. When theſe battles commence, they are eaſily known by the number of dead Bees that lie under the hive; and it is wonderful with what fury they perſevere in their attacks to a hive into which any of the robbers have once gained an entrance. I muſt obſerve that commonly the weakeſt ſtocks are ſubject to theſe encroachments; and this is a ſtrong argument for uniting all hives of this claſs.

Of ſeparating the honey and wax.

Take the boxes, or hives, into a cloſe room, ſecure from the acceſs of Bees, or they will be found very troubleſome during the operation. As the combs are taken out, the top of the cells on each ſide muſt be pared off; this is to give the honey a free paſſage through the ſieves, into which they muſt be laid *, and there left to drain into large glazed ſtone pans. Whilſt the honey is running, it will be proper to burn ſome live coals of charcoal in the ſame room, to warm the air, which will cauſe it to run the freer and quicker from the cells; at the ſame time care is to be taken that no ſmoke is made, which would give the honey an ill flavor. The honey thus obtained, without be-

* Large wire ſieves are beſt at firſt; afterwards let the honey be drained through common hair-ſieves.

ing preſſed, or ſqueezed from the combs, is the beſt and pureſt.

The honey which ſtill remains in the combs will be of an inferior ſort, as it will not be gotten without ſome impurities. If it is waſhed out for the purpoſe of making mead, it will be equally as good for that uſe as the beſt; as the crude wax &c. always ſeparates in the fermentation.

After the honey is entirely ſeparated from the combs, in order to obtain the wax in a pure ſtate, they muſt be boiled pretty much in a copper of water, often ſtirring them whilſt they are over the fire. When the combs are ſufficiently boiled, they muſt be put into a ſtrong canvaſs bag, and the wax preſſed out into a veſſel of water.

The uſual method of doing this is to ſuſpend a three-cornered canvaſs bag over a veſſel of clean water; which bag being filled with the combs well boiled, the wax is preſſed out by two people, each holding the ends of a couple of ſmooth ſticks; which being often paſſed, and with ſome force, down each ſide of the bag, ſeparates the wax very perfectly, which falls into the water underneath. When all the wax is ſeparated from the dregs, it muſt afterwards be taken from the water, and again melted over the fire, and all the ſcum carefully taken off. It muſt then be poured into veſſels in order to form it into cakes, previouſly putting into them a little water, to drain off any impurities that may yet remain in the wax. The larger the cakes of wax are, the better and more valuable they will be.

 The

The above method is the uſual way of ordering the combs, excepting in large apiaries, where preſſes are ſometimes made uſe of; which for great quantities are more expeditious.

There is a much eaſier proceſs, and which I have often practiſed, for procuring the wax from thoſe combs which have never been bred in *. The manner of doing it is thus. Separate, in the firſt place, all the combs that have never been bred in; they are eaſily diſtinguiſhed from the others, being thinner, lighter, and not of ſo dark a colour. To mix in the reſt will be of little uſe, as they yield little and often no wax. When all the beſt combs, and parts of combs, are ſeparated from the others, let them be put into a boiler, and preſſed cloſe down, in order to give them the more room; then let them be covered with water, and kept boiling for the ſpace of ten minutes; during the boiling they muſt be kept conſtantly ſtirred, and when cold all the wax will be found in a hard cake on the ſurface. As there will be a quantity of droſs adhere to the bottom of the wax, let it be pared off with a knife; and let the wax be again melted in a ſmaller veſſel, without water, and the ſcum taken clean off. Afterwards let it be poured into a tin or earthen veſſel, with a little water at the bottom, to form into cakes for ſale. In order to

* Mr. *Keys*, in a late ingenious treatiſe, has recommended a proceſs ſomewhat ſimilar to this, but with the addition of aquafortis. What uſe the aquafortis is of, I have not been able to diſcover. And probably Mr. Keys never tried it without.

obtain the little wax contained in the refuſe combs, they muſt be boiled, and preſſed in the canvas bag, as given in the directions above.

Of Mead, and Wines to be made with Honey.

Mead, or *Hydromel*, is a ſtrong luſcious wine, made with honey and water; the goodneſs and ſtrength of which entirely depends on a due *mixture* and *fermentation*. When properly made, it is ſtronger than moſt other wines, and will ſoon intoxicate. Though it is a liquor at preſent not in great repute, yet it ſoon may become ſo by a little attention in making it. In order to obtain this deſireable end, and to make this cheap and wholeſome liquor pleaſing to the taſte, has induced me to attempt ſeveral experiments, which have employed my attention for ſeveral years. How far my inquiries have ſucceeded, will be found by the ſubſequent plain, eaſy, and ſimple methods.

To make Mead.

Mix honey with clear ſoft water till it will juſt bear a new egg, that is, till the ſurfaces of the egg and water meet only: For as the honey got from different ſituations often differs eſſentially in goodneſs; this, therefore, is the beſt method I can ſuggeſt for aſcertaining the juſt quantities. To

imagine the Mead will be ſtronger by allowing more honey, as ſome practiſe, even till part of the egg riſes conſiderably above the ſurface of the water, is very erroneous; it will neither be ſo ſtrong or palatable. A proper mixture being aſcertained, let it be put over a fire, when ſome attention will be neceſſary in taking off the ſcum as it ariſes, both before and after it boils *. As ſoon as the ſcum is taken off, it muſt be immediately taken from the fire, and poured into the cooler. If a fermentation does not commence the next day, it may be haſtened by putting in a little good yeaſt, *perfectly free from any ill flavor*. It may be left to ferment in the cooler about ten or twelve hours, and then put into barrels; the barrels muſt be filled within about two inches of the top; whilſt the liquor is fermenting, the bunghole muſt not be ſtopped up, but only covered with thin paper, cloth, &c. in order to keep out the duſt, and at the ſame time admit the external air. As the liquor gets lower in the caſk, it muſt often be refilled †, whilſt the fermentation laſts: For if it gets too low to work through the vent hole, the foulneſs will ſink for want of paſſage, and thereby muddy the wine. When the working is ceaſed, the caſks

* It muſt be obſerved, that the leſs the liquor boils the better, and that need only be till the ſcum is taken off. The more it is boiled, the worſe it ferments. A very little boiling is neceſſary to ſeparate the impurities; when that is obtained, it ſhould be immediately ſtopped.

† This filling ſhould be renewed as often as neceſſary, till the fermentation has entirely ceaſed; at the ſame time great care ſhould be taken not to break the ſcum at top, or as little as poſſible, leſt it cauſe the Mead to be foul and ill taſted.

may then be ſtopped cloſe down; though it will be neceſſary to open a vent hole whenever it is perceived to ferment again, and which often happens.

The uſual time of making Mead is the latter end of *September*, or the beginning of *October*, ſoon after the honey is taken from the *Apiary*; and this ſeaſon is to be preferred, as the weather is ſeldom either very hot or cold, conſequently more favourable to fermentation. When Mead is made therefore at this time, in the *March* following it ſhould be racked from the lees into a freſh caſk, ſcented with the *prepared match* *. And if it is not perfectly fine from the firſt racking †, the operation ſhould be repeated every month or two afterwards till it becomes ſo. In doing this, dry calm days ſhould be choſen, never rainy or windy ones, as all new wines at thoſe times are apt to fret, and be in a ſort of fermentation, and conſequently foul. When perfectly fine, it may be bottled off.

The way to promote, or check fermentation.

Mead, and all fermented liquors, require a due degree of fermentation; too much or too little is equally pernicious. If it is not fermented enough, it never arrives at the *vinous* quality, will not get fine, but becomes weak, and mere ſtum. If, on the contrary, it is fermented too much, it then

* See the method of ſcenting caſks with the match.

† That is, in five or ſix weeks after the firſt racking.

ſurpaſſes the *vinous*, and tends to *acid*. Thoſe who ſuperintend the making of Mead, ſhould frequently taſte it whilſt it is working By this means they will ſoon acquire a certain knowledge (and which can only be obtained by experience), when the liquor has arrived at the *deſirable vinous medium*, after which it ought not to ferment.

As *Mead* is a liquor that requires much fermentation, though not a violent one; the following particulars may therefore be attended to as occaſion requires.

In order to *promote* the fermentation, the liquor muſt not by any means be *ſhook*, or put into the leaſt motion. It muſt alſo have free *admiſſion* of the *external air*, and be kept in a moderate degree of warmth.

To *check* or *hinder* a violent fermentation, you need only *burn* a little *ſulphur* near the veſſel, and it will immediately reſtrain its fury.

A *new caſk* checks the fermentation of any liqour, and renders it weak and ſpiritleſs. No veſſel therefore ſhould be made uſe of for wine but what has been well ſeaſoned, or the liquor will be *flat* and *vapid*.

The method of ſcenting caſks with the match.

To one ſpoonful of *brandy*, add an ounce of *ſulphur*, with a quarter of an ounce of *burnt allum*; put them together in an earthen pan, and melt

 them

them over a clear fire. Into theſe melted ingredients dip ſome ſlips of *canvas*, or other coarſe *linen*; and immediately on their being taken out, ſprinkle over them the powders of *nutmegs*, *cloves*, *coriander*, and *aniſ-ſeeds*, which muſt be prepared in readineſs.

This *match* is afterwards burnt at the *bunghole*, ſo as the fumes may be received into the *caſk*. All veſſels uſed for any ſort of wine ſhould be ſcented as above.

To give Mead the flavor of Rheniſh Wine.

In the firſt place mix water and the juice of ripe grapes in equal quantities; and to every gallon of the above mixture, add two pounds of honey. In order to give the flavor, make a decoction of *Clary-ſeeds*, or *Galitricum*; more or leſs, according to the degree of taſte it is meant the wine ſhould imbibe. The decoction is made by boiling and ſteeping the ingredients with ſome of the liquor; when it becomes cold, it is to be mixed with the wine in the vat, after the *fermentation is begun* *.

The fermentation, &c. is to be managed according to the directions given in the article for making Mead; excepting this only, that the above

* When a flavor is to be communicated to wine, &c. the time to obtain the end moſt effectually is juſt at the beginning of the fermentation; every thing then added will communicate its taſte in a very powerful manner, which, put in after the fermentation is over, would be imperceptible.

mixture is not to be boiled. Nor ſhould any liquor be boiled, for the purpoſe of making wine, when the expreſſed juices of fruits make a part of the compoſition.

To give Mead the flavor of Frontiniac.

Proceed as with the above directions; only inſtead of the decoction of *Clary-ſeed*, or *Galitricum*, uſe diſtilled *Elder-flower-water*, or a decoction of preſerved *Elder-flowers* *.

To give Mead an agreeable roughneſs.

Let the water uſed be ſtrongly ſaturated with the juice of ripe *Sloes*, which may be done by boiling them in it. Mix this water when cold with an equal quantity of the juice of ripe Grapes †; and to every gallon of this mixture, add two pounds of honey. The fermentation to be managed as the articles above.

To give Mead the flavor of Raſberries, Currants, &c. &c.

Prepare the liquor by boiling, as in the directions given for making common Mead, with the ſame proportions of honey and water. When it is cool in

* See article of collecting and preſerving herbs, flowers, and fruits, &c.

† That called the Claret Grape is to be preferred.

the

the vat, and the fermentation juſt commenced, then put in the fruit, &c. more or leſs, according to the degree of taſte it is to receive. Let the fruit, or other flavourable ingredient, be mixed with part of the liquor, and paſſed into the vat through a ſieve. The fruit, &c. is to be previouſly prepared *.

To tincture Mead of a fine red colour.

Take of the *Grape*, well known in England by the name of *Claret Grape* †; they are of a fine blue colour, with a flue over them like plumbs. Let theſe be pulled from the ſtalk, and maſhed with the hands, when, after they have remained together with the huſks for ſeveral days, or about a week, the liquor will have acquired a deep purple colour, which is to be mixed with the Mead in the vat before the fermentation begins, the juice being firſt of all preſſed from the huſk.

Another way is to take ſome Turnſole, and ſteep it a night in ſome of the liquor; and having ſtrained the infuſion through a bag, the tincture is to be mixed in the vat; or the juice of full ripe Elder-berries will give a fine claret colour, at the ſame time it will communicate ſomewhat of its taſte.

* See the article of preſerving herbs, fruits, &c.

† Grapes, and all other fruit uſed for wines, ought to be perfectly ripe, as the juice of unripe fruits will hardly ever ferment at all; it will alſo cauſe the wine to be rough and acid.

To cure Mead when it is foul or ropy.

Take *Spirit of Wine*, about the quantity of a pint to a hogſhead, and it will refine it effectually and ſpeedily. This method is not to be uſed if the wine is at all ſharp or eager.

Another method is to put into the veſſel ſome powder of *burnt Allum*, *Lime*, or *Chalk*. Afterwards rack it off into a caſk well ſcented. See the way of ſcenting casks.

Alſo a *Lee* of the *aſhes* of *Vine Branches*, or *Oak*; the proportion of a pint to a hogſhead, being mixed with wine, infallibly cures the ropineſs of it.

To recover Mead when it is flat, or fretting.

When *Wines* become flat, they are recovered with the *Spirit of Wine*, together with a few *Raiſins* and *Sugar*, or *Honey* and *Raiſins*; theſe ingredients ſoon render them brisk and ſparkling, and give them ſpirits.

Fretting Wines may be cured by putting in a bit of raw beef, for them to feed upon.

Further Remarks on the making of Mead, &c.

Wines made with honey, or with honey and the juices of fruits, are much ſuperior to thoſe made with ſugar; being both of a higher and more vinous flavor, and alſo more agreeable to the ſtomach. *Common Mead* when badly made, as it generally is, has but few admirers; but when made with care, and a due fermentation aſcertained, it then becomes a moſt pleaſing, agreeable, wholeſome liquor, equal to the beſt of foreign wines, and perfectly inoffenſive to the moſt delicate conſtitution.

In order to obtain Mead (or indeed any other fermented liquor) in any degree of perfection, great attention muſt be obſerved in the making of it. A juſt proportion of honey and water is abſolutely neceſſary; too much or too little is equally pernicious. The method recommended of aſcertaining the proportions by a new egg, is preferable to the doing it by weight or meaſure; as the honey in this climate is much better one year than it is another. The wet and cold ſummers never produce it of that ſuperior quality we have it in hot and dry ſeaſons. When a juſt proportion of honey and water is procured, the next and chief buſineſs is to give it a proper *fermentation*; and on this partly depends the goodneſs or badneſs of every fermented liquor.

I have

I have recommended to procure a ferment with a little yeaſt, in caſe the liquor ſhould not work without; at the ſame time, if it will ferment without, it is better that it ſhould. If yeaſt is uſed, great care ſhould be taken that it is of the beſt quality, and perfectly free from any ill flavor, or it will be communicated to the wine. Mead, made with the mixture of the juices of ripe fruits, will always ferment of itſelf, if the fruit is perfectly ripe; and no other ſhould ever be uſed on any conſideration whatever.

Common Mead, or that whoſe compoſition conſiſts only of honey and water, will ſeldom ferment too much; and rather requires aid to aſſiſt the fermentation, than any thing done to reſtrain or retard it. On the contrary, when the juices of fruits compoſe a part, care muſt then be taken leſt the wine ferment too violently, thereby exhauſt too much of its ſpirit, and become eager and acid.

When the *juice* of *Grapes* is mixed with the Mead, the liquor is to be fermented without boiling: but when only the flavor of any *fruit*, *flower*, &c. is required, as *Raſberries*, *Currants*, *Elder Flowers*, &c. ſuch ingredients are not to be mixed with the liquor, till after the honey and the water is boiled, and the fermentation begun, according to the directions given for *making common Mead*. And it muſt be obſerved, that when the flavor only of any *Fruit*, *Flower*, or *Herb*, &c. is wanted to be given to Mead, the ingredient, which is to communicate the flavor, is never to be mixed with the liquor till after

after the ferment is begun, or the effect will be entirely loſt, or ſo faintly given as to be hardly perceptible.

Whilſt the Mead ferments, and decreaſes in quantity, the veſſel muſt often be refilled with liquor from the vat, in order that the ferment may paſs through the vent hole; for if the liquor be too low in the veſſel to admit the ferment to paſs off, it will cauſe it to be foul, ill-taſted, and tending to acid. And for the ſame reaſon, when theſe refillings become neceſſary, let them be done with particular care, leſt any part of the ſcum at top fall down, and mix with the Mead, by being too much broken and diſturbed.

Mead ſhould never ſtand upon the Lees longer than ſix months at moſt; and then ſhould be racked off into an empty veſſel, ſcented with the match. If it does not become fine after the firſt racking, the operation ſhould be repeated as often as neceſſary; that is, every month or two, after the firſt racking, till it becomes fine. Drawing wines often from the lees, cauſes them to be brisk, lively, and ſparkling in the glaſs; whereas, if they remain on the dregs, they become thick, dull, and often ropy.

The method of collecting and preſerving Herbs, Flowers, and Fruits, to be uſed in Mead.

All *Vegetables*, wanted for this purpoſe, ought to be gathered in a warm day, without wet, and dried

dried immediately by the *fire*, never by the *ſun*, however hot. The *colours* of *Herbs* and *Flowers* are for the moſt part changed or deſtroyed in drying them by the ſun's *beams*, or in the *ſhade* without *fire*; but, when dried by the *fire*, equal to the heat of the *ſun* in *ſummer*, it does not injure them in the leaſt, but on the conrary preſerves the livelineſs of their *colour*, *ſmell*, and *taſte*, more perfectly than by any other method. When perfectly dry, they ſhould be preſerved ſo till wanted in tin *canniſters*, *bottles*, &c. Their *flavors*, when wanted to be communicated to Mead, muſt be extracted by *decoction*; that is, by boiling ſome of the liquor, and pouring upon them; when it is cold, it is fit for uſe.

All *leaves* of *Vegetables* are in their greateſt perfection when at their full growth, and ſhould be collected juſt before their *flowers* appear. *Flowers* are ſo when in *full bloom*.

As the ſeaſon when *Raſberries*, *Currants*, &c. are ripe, ~~not being~~ *yet* ſo favourable to the making *Wines*, as later in the *ſummer*; therefore, when the *flavors* of ſuch *fruits* are wanted, which are of ſo corruptible a nature, they may be preſerved ſome months by being beaten with about twice their weight of fine ſugar, and kept in a cloſe *veſſel* till wanted; when uſed, the leſs quantity of honey will ſerve. Theſe fruits are to be gathered without the leaſt wet,

Various Experiments, of Uſe and Curioſity.

How to be ſupplied with freſh Honey all the Summer.

Put a ſtrong ſwarm of Bees into a large flat-topped hive, or box, that will hold about half a buſhel, to prevent their ſwarming too often, and which muſt be placed under cover. On the top of this hive there muſt be previouſly cut three or four ſmall round holes, of about an inch in bigneſs; over which place as many little *glaſs-hives*, each of them large enough to hold about a quart in meaſure; theſe *glaſs-hives* muſt be covered, to prevent the light, otherwiſe the Bees will never work in them. As the Bees will not breed in theſe ſmall hives, they will therefore be conſtantly filled with clear unmixed *Virgin Honey*, as often as they are removed; and which may be taken at any time of the day, without the leaſt difficulty, at the ſame time always replacing another glaſs *.

The ſmall *glaſs-hives*, or *cups*, may be of any form the proprietor pleaſes; but thoſe made in the ſhape of a *Bell* will be found moſt convenient to

* It muſt be obſerved, that no honey ſhould ever be taken from Bees after the firſt week in Auguſt, or there will not be ſufficient left to keep them the following winter. The honey taken by this method is the pureſt that can poſſibly be obtained.

take

take the *combs* from. There ſhould be a ſmall hole in the top of each glaſs, in order to admit a round ſtick the whole length of it, to which the Bees may fix their combs. If the Bees ſhould not readily take to build in theſe glaſſes, in that caſe place in them a piece of new or virgin comb, as the moſt likely means to entice them.

To give to Honey ſome particular flavors.

Place ſome *Orange Trees* in *bloom*, near your Bees, or plant a few ſquare yards of *Mignonette*, *Thyme*, or other *aromatic Herbs*, and your honey will contract the flavor of ſuch plants or trees, and acquire a taſte like that brought from the *Mediterranean.*

A Way to whiten Honey.

Spread honey about two inches thick on a tin veſſel, and expoſe it to a ſevere froſt, in the open air; turning it ſeveral times as the top gets white; and it will in a few days acquire a much whiter appearance.

A Method to increaſe Colonies without letting the Bees ſwarm.

Be provided with two of my boxes, made with the addition of holes of communication through one

one ſide of each box. The ſide holes muſt be furniſhed with ſliders, to open or cloſe the paſſages as occaſion requires. Into one of theſe boxes put a forward ſwarm, and place it cloſe by the ſide of the other empty one; at the ſame time drawing back the ſliders, in order to give the Bees a free paſſage into each box; for the ſide holes muſt be cut ſo as exactly to correſpond with each other. In three or four weeks, both theſe boxes (if the ſeaſon be favourable, and the ſwarm a good one) will be filled with combs, &c. As ſoon as this is perceived, let the ſliders be cloſed, and let each box have an empty one immediately put under it, in the ſame place they were before; thus they will become two diſtinct colonies *. It ſometimes happens indeed, though very ſeldom, that one of the boxes ſhall have no queen; in that caſe, unleſs the Bees in it can be furniſhed with one, they will immediately aſſemble to that in which ſhe reſides. But as the operation of furniſhing them with another Queen may be thought too troubleſome and difficult for general practice (though trifling to thoſe who are accuſtomed to them); I would therefore adviſe, when this happens, either again to open the ſliders, as before, a little longer, or to place the box which has no Queen in it, under that which has one, and ſo let them remain as one colony; for probably no Queen may be bred, eſpecially if it is late in the ſeaſon, before the boxes are ſeparated.

* This proceſs proves beyond a doubt that more than one Queen will live in the ſame colony, when there is ſufficient room.

It

It is to be obſerved, that the mouth or entrance of each box muſt be left open from the beginning.

To cauſe Bees to attach themſelves to any Perſon, Place, &c.

Firſt learn readily to diſtinguiſh the *Queen* or *Mother Bee*, which knowledge may ſoon be attained, by attentively examining *ſwarms* and *hives* of *Bees* when deſtroyed, &c. When a hive is turned up (in order to ſecure the Queen), ſhe is generally one of the firſt that appears in ſight, but muſt immediately be ſeized, or ſhe ſoon diſappears. Her Majeſty is no ſooner ſecured, but the other Bees will inſtantly follow in great crowds; and wherever ſhe is placed, there the reſt will immediately attach themſelves, to the great ſurpriſe of thoſe who are ignorant of the cauſe. To be able to diſtinguiſh a Queen Bee, is uſeful when a hive has loſt its Queen, and you wiſh to re-place it from one of thoſe that may happen to have two or more. Bees ſeldom ſting whilſt you are in poſſeſſion of their Queen.

An effectual Method of curing the Stings of Bees and Waſps.

The *Sting* of a *Bee* is generally more virulent than that of a *Waſp*, and with ſome people attended with very violent effects. The ſting of

of a Bee is barbed at the end, and conſequently always left in the wound; that of a Waſp is pointed only, ſo that they can ſting more than once, which a Bee cannot do.

When any perſon is ſtung by a Bee, let the ſting in the firſt place be inſtantly pulled out, for the longer it remains in the wound, the deeper it will pierce, owing to its peculiar form, and emit more of the poiſon; the ſting is hollow, and the poiſon flows through it, which is the ſole cauſe of the pain and inflammation. The pulling out of the ſting ſhould be done carefully, and with a ſteady hand, for if any part of it breaks in, all remedies then, in a great meaſure, will be ineffectual. When the ſting is extracted, ſuck the wounded part, if poſſible, and very little inflammation, if any, will enſue. If hartſhorn drops are immediately afterwards rubbed on the part, the cure will be more complete.

All notions of the efficacy of ſweet oil, bruiſed parſley, burnett, tobacco, &c. appear to me, on various trials, to be totally groundleſs. On ſome people the ſtings of Bees and Waſps have no effect: it is therefore of little conſequence what remedy they may apply to the wound. However, the effect of ſtings greatly depends on the habit of body a perſon is of; at one time a ſting ſhall take little or no effect, though no remedy is uſed, which at another time will be very virulent on the ſame perſon.

To whiten Wax.

After the wax is well ſeparated from the combs, and cleared of all the droſs and ſcum (in order to whiten or blanch it), it muſt be again melted, and formed into very thin cakes: theſe are to be expoſed in the open air, till they become white; and turned every night and morning, having equal need of the ſun and dew. When the outſides of theſe cakes become tolerably white, they muſt be melted over again; and the ſame proceſs is to be repeated till they become of the whiteneſs required.

The beſt Way to keep Honey.

Honey often proves prejudicial to delicate conſtitutions, from a cauſe which few people attend to, or even ſuſpect; I mean the method in which it is uſually kept. When honey is preſerved for any length of time in common glazed earthenware, it diſſolves the lead with which the ware is glazed, and becomes very unwholeſome, by mixing with its noxious quality. Honey, therefore, and all acid and ſaline ſubſtances, ſhould always be kept in glaſs, china, or common ſtone pots, or jars, which are glazed with ſalt.

FINIS.