

smell, which is caused by their winter breath and other exhalations, is the result. In a few years the bees acquire habits of indolence, and as a natural consequence, soon manifest it by their irritability, unlike those Colonies which are industrious and in a healthy and prosperous condition.

Large colonies never increase their stock in proportion to the swarming colonies. There is but one female in a large colony, and they can do but little more in raising young bees than to keep their stock good by replenishing them as fast as they die off or are destroyed by the birds, reptiles and insects, which are great admirers of them, and sometimes swallow them by dozens. Now if it requires five swarming colonies to be equal in number to the one first described, is it not difficult to imagine that five times as many bees may be raised by the swarming colonies; for one Queen will probably lay as many eggs as another.

The swarming hives are no more liable to be destroyed by this moth, during the swarming season, than others, if the hives are kept well replenished with bees according to Rule 10.

#### RULE XI.

##### On Feeding Bees.

If it is found that a swarm need feeding, hitch on the feeder, well stored with good honey, while the weather is warm in October; or place comb filled with strained honey in the chamber of the hive, or on the bottom board, or both at the same time, without dripping,—and the bees will store the honey in the lower apartment of the hive, if done while the weather is warm.

The apiarian should use the same precaution in feeding, as directed in Rule 4, to prevent robberies.

#### REMARKS.

The best time to feed is in the fall, before cold weather commences. All hives should be weighed and the weight marked on the hive before bees are hived in them. Then, by weighing a stock as soon as frost has killed the blossoms in the fall, the apiarian will be able to form a just estimate of their necessities. When bees are fed in the fall, they will carry up and deposit their food in such a manner as will be convenient for them in the winter.

If feeding is neglected until cold weather, the bees must be removed to a warm room, or dry cellar, and then they will carry up their food, generally no faster than they consume it.

A feeder should be made like a box with five sides closed, leaving a part of the sixth side open, to admit the bees from their common entrance with its floor level, when hitched on the front of the hive. It should be of sufficient depth to lay in broad comb, filled with honey. If strained honey without combs is used for feeding, a float, perforated with many holes, should be laid over the whole of the honey in the box, or feeder, so as to prevent any of the bees from drowning; and at the same time, this float should be so thin as to enable them to reach the honey. It should be made so small that it will settle down as fast as the honey is removed by the bees. There should be a tube inserted vertically through the float and made fast to it, extending upward through the top of the box in such a manner as to receive the honey from a tunnel and convey the same directly under that float. A light of glass should be placed in the back side, and a door to close and darken it at pleasure.

Great profits may be made in large apiaries by feeding cheap honey in the fall. The bees, being compelled to carry up and deposit the cheap honey in the lower apartment of the hive, (and they will live on that as well as any other,) their owners can compel them to carry as much pure white clover honey into the drawers the following season, there being no room to store it below. Swarms will feed out and deposit ten pounds of honey a day and night, each hive. Small drawers cannot be depended on as feeders, except in the spring and summer unless they are kept so warm that the vapor of the bees will not freeze in them. It would be extremely hazardous for the bees to enter a frosty drawer. They will sooner starve than attempt the experiment. Drawers may be used without danger from robbers, but when the feeder is used, robbers must be guarded against as directed in Rule 4.

Bees should not be fed in the spring unless they are nearly destitute of honey, because they fill up

the brood comb too much with honey; when fully fed in the fall, the bees store up the honey in such a manner as will be convenient for them in the winter, and notwithstanding the cells for raising young bees are filled up with honey at that time, the bees consume the honey and enter the breeding cells in the course of the winter, so that the Queen is not interrupted in depositing her eggs to raise young bees in the spring following.

A good swarm of bees in the Vermont Hive should weigh at least 25 pounds the 1st of December, in addition to the weight of the hive.

Care should be exercised, in fall-feeding, to supply them with good honey, otherwise the colony may be lost before Spring by disease. Poor honey may be given them in the spring, at the time when they can obtain and provide themselves with medicine, which they only best understand.

Sugar dissolved or molasses, may be used in the spring to some advantage but ought not to be substituted for honey, when it can be obtained.

#### RULE XII.

##### On Wintering Bees.

Turn over the drawers so as to prevent the entrance of the bees, or their breath, in September, or fore part of October. When cold weather commences, suspend the bottom board half an inch, and open the ventilator.

#### REMARKS.

The watery substance which is caused by the breath and other exhalations of the bees, and collects in the drawers in cold weather, should be kept out of them; because frost forms in them, and runs down through the apertures of the bees as often as it melts, and makes the bees damp and the combs mould; besides, this vapor penetrates and fills the timber (drawers and chamber) and causes a disagreeable smell the following season, and is the cause of introducing the little ants into the chamber.

There are three principal causes of death among bees in the winter, to wit: want of honey, (not bread never eat it except when in the larva state) want of air, and freezing.

Bees sometimes die of starvation, with plenty of honey in the hive at the same time. In cold weather they crowd together in a small compass in order to keep warm; and then their breath, and vapour collect in frost in all parts of the hive, except in the region they occupy. Now unless the weather moderates so as to thaw the ice, the bees will be compelled to remain where they are located until their stores are all consumed that are within their reach. One winter we had cold weather ninety-four days in succession, during which time the bees could not move from one part of the hive to another. I examined all my hives on the eighty-third day, and on the ninetieth day I found four swarms dead. I immediately examined the cause, which was as already stated. I then carried all my hives into a warm room and thawed them, so that the bees could move.

Too much swarming frequently occasions the loss of the old stock the winter following, because their companions are so reduced in number that the necessary animal heat cannot be kept up in the hive to prevent them from perishing by cold. All such stocks should be stored in a dry cellar or some warm room, where they can be kept comfortably during cold weather. It is believed that bees may be kept through the winter without losing them, if the apiarian is attentive to their wants. If destitute of honey, he will feed them. If suffering for want of air, (which is the most frequent cause of death,) he will ventilate them. If freezing, he will thaw them out, in short, if they are apparently dead, he will resuscitate and bring them to life and activity, which may be done in all cases (except when smothered) if attended to in season. In February 1833, I had a swarm that were starved by design. I resuscitated them three times without feeding in three successive days before life was extinct. The life of bees many times is in a state of suspension considerable time before their death, and may be resuscitated by human aid, when otherwise life would become extinct. I have resuscitated them repeatedly under various circumstances for myself and neighbours. Some of the best stocks I now own were once apparently dead. A screen bottom board should be used so as to let up the warm air into the hive, and at the same time enable the apiarian to control and keep the

bees in the hive during the process of resuscitation. The feeder should be used in every case, to give the bees exercise, and restore activity.

A cellar made in the side of a dry hill so covered as to keep out water, is a good storage for wintering bees. There should be two ventilators at the two most extreme parts of the cellar—one near the bottom and on its side, to admit pure air, the other through the top or covering to let the bad air escape.

#### RULE XIII.

##### On Transferring Swarms.

This operation should never be effected by compulsion.

*First Method.*—Insert drawer No. 1 into the chamber of the hive to be transferred, as early as the first of May. If the bees fill the drawer, they will recede from the Lower apartment and winter in the drawer. As early in spring as the bees carry in bread plentifully on their legs, remove the drawer, which will contain the principal part of the bees to an empty hive. Now remove the old hive a few feet in front, and place the new one containing the drawer where the old one stood. Now turn the old hive bottom up. If there are any bees left in the old hive, they will soon return and take possession of their new habitation.

*Second Method.*—Take drawer No. 1, well filled by any hive the same season—insert the same into the Chamber of the hive to be transferred, in September, (August would be better.) If the bees need transferring, they will repair to the drawer and make the same their winter quarters. Then proceed in the spring as directed in the first method.

#### REMARKS:

This management should excite a deep interest in every cultivator, both in a temporal and moral point of view. Temporal, because the lives of all the bees are preserved;—moral, because we are accountable to God for all our acts. We are not to be justified in taking the lives of animals or insects, which are but lent blessings, unless some benefit to the owner can be derived from their death, which will outweigh the evils resulting from such a sacrifice. Duty compels me to protest in the strongest terms and feelings against the inhuman practice of taking the lives of the most industrious and comforting insects to the wants of the human family by fire and brimstone.

When bees have occupied one tenement for several years, the combs become thick and filthy, by being filled up with old bread and cocoons, made by young bees when transformed from a larva to the perfect fly. Bees always wind themselves in their cells, in a silken cocoon, or shroud to pass their torpid and defenceless [chrysalis] state. These cocoons are very thin, and are never removed by the bees. They are always cleaned immediately after the escape of the young bees, and others are raised in the same cells. Thus a number of bees are raised, which leaves an additional cocoon as often as the transformation of one succeeds that of another, which often occurs in the course of the season. Now in the course of a few years the cells become so contracted, in consequence of being thus filled up, that the bees come forth but mere dwarfs, and cease to swarm. Combs are rendered useless by being filled up with old bread, which is never used except for feeding young bees. A greater quantity of this bread is stored up yearly than is used by them, and in a few years they have but little room to perform their ordinary labour. Hence the necessity of transferring them, or the inhuman sentence of death must be passed upon them, not by being hung by the neck until they are dead, but by being tortured to death by fire and brimstone.

It is obvious to every cultivator that old stocks should be transferred. I have repeatedly transferred them in the most approved manner, by means of an apparatus constructed for that purpose; but the operation always resulted in the loss of the colony afterwards, on a swarm which would have come from them.

When it is necessary to transfer a swarm from one Vermont Hive to another of the same kind, insert drawer No. 1 into their chamber in the spring, say the first of May. If they fill the drawer, let it remain there; if they need to be changed to a new hive, they will recede from the lower apartment and make the drawer their winter quarters, which should remain until warm weather.