

P50

middle of visit - practical side

10/95

A-13

~~8/15~~

II

A

Der Alte
thru &
what
I ~~will~~ do,
~~there~~
that is
the way
you
have
been
saved

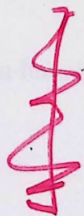
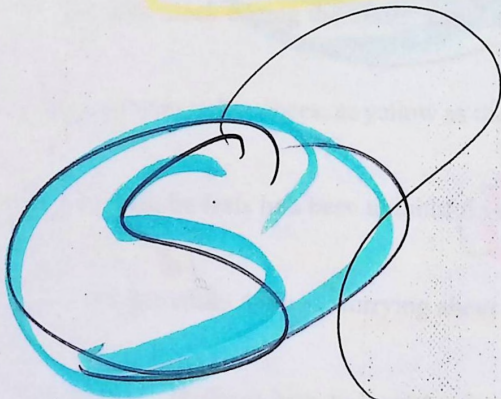
What Needs to Be Done in September

The colony will have gotten smaller because the old bees that die are no longer all replaced by young ones. As soon as the nights become cool, the bees in the hive contract into a cluster.

- By mid-September you should have finished feeding the bees, whether the honey flow is early or late in your area. At elevations above 1500 feet (500 m), the colonies should be all set for winter by early September.
- Take the empty combs on the sides of the brood nest out of the hive, and store them for winter.
- Examine the colonies for the last time before winter (see page 42).
- Wintering over two colonies, one on top of the other, is advantageous.
- Keep reading the scale weekly during the feeding period; afterward only monthly.
- Make appropriate entries in the record cards.

Start
of school
year

Alois
starts
a diary



X

Alois is familiar with the problem and the argument of Austrian versus Italian bees, and Italian bees are certainly well-recommended by most beekeepers, but he, nonetheless, feels as if he's been disloyal to Austria and should have taken the "Franz Josefs" as he called them. And indeed, they had a reputation for being very gentle. That takes care of A14.

He does like the Italian bees for one reason which is they have a marvelous color, sort of a brown shoe-leather of the mellowest and glowing sort, a very rich yellow tan, and he likes the three yellow segments of their bodies with black edging the folds. The Austrians are hairier and gray, not as attractive as yellow bees, as yellow as the yellow, golden Italians.

Nonetheless, he feels he's been unfaithful. A14

All the while Alois is worrying about keeping the temperature proper hive to hive. The bees have to be warm for the colony to be strong in the

II

A-14 10/95

~~P-14~~ ~~10/95~~

A-14
11/95

A

Dualite
gives
them
the next
winterless
bees hatch

What Needs to Be Done in August

August is the beginning of the bees' new year. During this month the next winter's bees hatch (see page 7). The more bees there are to winter over, the

18 sells winter bees

19 better the chance that the colony will be able to maintain the necessary temperature inside the hive. The warmer the bees keep, the stronger the colony will be in the spring and the more bees will be able to collect nectar and honeydew to turn into honey.

Dualite

Important For

- Last harvest of honey in areas with late flow.
- If you haven't done so yet, requeen old colonies (see page 34).
- If you haven't yet checked and reorganized the brood nest (see page 43), do so now.

id Plants for Bees

- Combine weak colonies (see page 34).
- At elevations above 1500 feet (500 m), feeding should start now, whether the honey flow is early or late. At lower elevations wait until early September (see page 36).
- As long as the bees collect nectar, weigh the scale hive daily, after the last honey harvest, weekly.
- Make appropriate entries in the record cards.

this is all I have done
for you
Work you have been
sawing

10/95

The first
honey is
extracted

Bees
hatching

elo Jr
leaves
for 5 miles

Bees
have a
convention
about

A 10 is
with

Adi.

Tx T.
receiving
no info
from C.O.

Recreation
of the Hittes
are going
to be dropped

dist. just trying to relate to him
DT comments
adult agent is like letting her into a house
one train

Note to myself: the problem here is why he'd be weighing at this early

stage. Unless I can work that out, to see why he's weighing at a time when

the hives are quiescent, I shouldn't get into it.

Trick came to him

At this point, DT gets a summary on a lot of Alois's worries. They're

a discussion by D.T. on having reported to
agents but focus on Alois.
 numerous. He has to remember all the time when he'll be working with the

bees—at this point, he's leaving them in their hives as instructed, not

bothering them. He has to remember to put light-colored gloves and a

beekeeper's hat with a veil, all white or light, mustn't wear dark clothes.

Seems as if wool, or dark clothes and somber colors seem to excite the bees

and irritate them. He worries whether he made a mistake by following Der

Alte's suggestion to take Italian bees for his hive. He wonders if that was all

Der Alte had, therefore was selling off what he needed to sell off.

It had been on an evening when
he had taken a woman out to see
his thing + in his uniform had started
to deal with them + got badly + long
no formation on time + he was in a hurry
and his new medical ideas in the field
which paid his company

Take a big leap forward
to proceed despite the story that
tell him's quality and the woman

Use disavowal

Agents
reports
2 was
present
with
a series
of his
work
when
my
mind
was
conscious
also

??

always examined that religion was that
 the weak in being ~~to~~ not in ~~being~~
~~that~~ a ~~strong~~ man could do ~~that~~ ~~that~~ ~~that~~
~~was~~ in a ~~place~~. ~~was~~ ~~with~~ ~~it~~ ~~need~~? ~~It~~ He was

Provide them with brewer's yeast as a substitute. During one cold spell he catches cold and worries that the queen has died, goes searching for her.

are a real reflection of his own health.
To be coming nearer to his own end.
A bottomless pit opens in his imagination
The ~~is~~ atheist notion of peace in
grave - his fear of treachery. What
is not like that. He

1
 medium board at 1/2 to 1/4 inch
 for a medium sized bird & about double the weight
 for birds it is worth the inconvenience

over

* Repetition is one example. A man
old lady who keeps asking you if you
want something to eat when she
knows you don't, an unwilling
a good family - then grows weary
at the increasing degree to which
we with the nearest fellow.

(*) People of olden times were hardly a
prize. Usually, they were easy to pick
up and use, but such utility was ~~usually~~
limited. They were too shaped to
corrupt one's molding of their nature
to ~~our~~ our immediate aims and would
certainly be much too stiff for the
flexibility we need in our best choices
when our immediate aims alter.
~~to them~~ ^{On} choosing a man or woman
well over fifty, we looked for a warp
in their nature, a distortion that
might leave them vulnerable enough
to be of use to shape for some outstanding
purpose. * Clear, however, was by
courage measure, an average life man
product. So there was little need to
pick him up, with runs that ^{38.5} ~~disturbed~~
just above his dreams were enough.

~~DT~~ (6 to 8) 22

From February, the hives become active. The sun is out. The queen

Albi- from that long ago fornication or set of fornications from same party, that is beginning to lay eggs and they're consuming more food—two pounds a

~~queen~~ *three lbs* day now, each hive. The temperature rises in the center of the cluster, up to

about 75 degrees and close to 100 degrees, a good temperature, while

outside, although it's only 50 degrees at most, some bees go out to bring

back water. Adi cannot get over the cleansing flight. He's overcome by the

amount of excrement there was in those bees, and he has to suppress giggles

at his mother's fury that all the laundry she'd put out had been stained. That

was because Alois had not alerted her to be careful.

Meanwhile, Alois has opened the hive and collected the dead bees

whom he starts to examine for illness. At this point the gassing could occur

in one of the hives. This could be a major business that DT does pay

attention to, as does Adi as well, and Der Alte comes over to assist.

also p 45

Glass after jay.

see p 23 continuation

(I)

From February, the hives become active. The sun is out. The queen

Also - from that long ago fornication or set of fornications, from June party, that is beginning to lay eggs and they're consuming more food—two pounds a

Costa Rica
day now, each hive. The temperature rises in the center of the cluster, up to

about 75 degrees and close to 100 degrees, a good temperature, while

outside, although it's only 50 degrees at most, some bees go out to bring

back water. Adi cannot get over the cleansing flight. He's overcome by the

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Glenn after joy
~~in one of the hives.~~ This could be a major business that DT does pay

attention to, as does Adi as well, and *see p23 continuation* Ber Alic comes over to assist.

also p 45

I

~~Decides~~

In one of the hives, there had been a great deal of restless humming

and fecal droppings near the hive entrance and very little sign of brood. The

cluster had reduced itself to the size of a fist and there were even stains of

excrement on the combs. They had to be gassed.

Decides not to call on Der Aht.

He obtains a

perverse strength

even having been

right to

Alois

Adi could do it himself. All you had to do was light a piece of

lectures Adi on killing the weak, weak people, just encourage
sulphur, put it in the hive, plug the entrance, put back the hive lid, and the

Adi

gas would kill the bees very quickly. He watches every moment of it and

afterward stays next to his father as a few of the dead bees are put in a

will you leave them?

small box. They'll be kept till Alois can have them checked for nosema

disease and achrin (sp?) disease. This is on p. 43. of book material.

Alois now puts up the netting around the hives for the ^{other} hive looks

next now, but come June —

healthy. He fears swarming.

It was like being on a very narrow mountain ridge with a steep fall to either side. For either way bees could get sick or they could get too healthy.

*Alois's beam line
He doesn't put the
to that his father
Pavice*

*Adi's father's
Adi's father's*

X

1/96 + 2/96

2/96 3/96

10/95

①

10/95

Care and Management

window to the brood chamber closes tightly. Drafts are harmful to bees, and the flight entrance provides enough air exchange for the hive.

Hives that are left outdoors must be covered with roofing paper that is weighed down with laths and rocks. To keep out mice, you should plug the entrance with blocks that have 1/2 inch slits in them or with wire screening. Both are available from suppliers of beekeeping equipment.

In the fall and winter, birds often catch bees that venture outside the entrance. To prevent this you can put netting in front of the hives. I myself don't use netting because so far I have found no evidence of birds preying on my bees. Often only those bees that are weakened by cold and have trouble returning to the hive are picked off by the birds.

Chores for Winter

You should inspect your hives periodically during the winter. Never open up the hives. Just look to see if the roofing paper has been damaged by storms and if the mouse blocks are still in place. Any damage should be fixed. Proceed quietly and don't make knocking noises. On these inspection tours you will see many old, dead bees. Remove them carefully, but don't disturb the colony. Place a few of the dead bees in a small box, and keep them in a cool place until you can have them checked for nosema and acarine disease (see page 53) at your state testing laboratory (ask your beekeepers' association for the address).

Winter is the best time to build new hives and frames (see page 24). You can also repair equipment that is not in use at this time of year.

This is also the time to assemble all the current year's records you have entered on cards for each hive and analyze the information. This allows you to compare the performance of the different colo-

nies. Keeping accounts (of expenses as well as income) shows you whether you have made a profit and how much.

If you keep your bees in a bee house, throw some cloths and blankets over the hives in February. The bees begin to forage for nectar and pollen (willow blossoms) in February and start a brood nest. For them to be able to maintain a brood temperature of 95°F (35°C), they need this extra insulation. Don't remove the covers until you open up supers for honey storage.

Spring Chores

As soon as the weather is warm enough in March, it is time for the first look into the hives:

Check to see if a functioning queen is present. A colony without a queen hums restlessly. Fecal droppings are near the hive entrance, and there is no sign of brood. If this is what you find, the only solution is to combine the bees with a "queenright" colony, a colony with a queen (see page 24).

If you have a weak colony with a cluster only about the size of a fist and the combs are stained with droppings, the bees must be gassed. The bees are too few in number and too sick to survive, and if they were added to a stronger colony, they would endanger those bees' health. Light a piece of sulfur (available from suppliers of beekeeping equipment), replace the hive lid, and plug the entrance. The sulfuric gases kill the sick bees very quickly.

Check to make sure that the bees have enough food close to the brood nest. Full combs should be moved over to replace the empty ones near the brood nest. Don't forget to replace the insulating lid after your examination of the hive.

The next management chores are spring feeding and various measures to prevent swarming (see page 26).

cheder with [A]

1/96 + 2/96

I

2/96

3/96

10/95

10/95

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Also, cannot do it
Call over Dr. A.H.E.
Dr. A.H.E. gets the
wound at the bottom
this year

check with [A]

I

to pick up the dead body, carry it away. Sometimes they will fly across a complete field before they drop it.

Alois is feeding his bees like crazy in order to stimulate the rearing of brood. He even buys a pollen substitute, brewer's yeast, ^{which the bees} and sets up a pollen feeder. ^{indeed they} The bees mistake it for pollen, in fact can use it as pollen, and pack

the brewer's yeast into their pollen baskets. Listening to the hives, Alois discovered earlier the colony that was without a queen had been humming restlessly, and then all the fecal droppings ^{within}—hence the gassing.

But the other colonies he has—let's make it two—are now almost ready to be uncovered, the roofing paper removed—the roofing paper that had been held down with lathes and rocks. Then he gets the report from the ^{dead}

bees he sent away; he's told that they're all right.

X

after the gassing

99
991?

Ha

3/96

8

Here, we
can stay
close
Alois.

What Needs to Be Done in March

In March the first catkins appear. These yellowish male flowers bear pollen that the bees carry to the greenish female flowers, pollinating them in the process. In warm weather, the female flowers are a good source of nectar. As larger amounts of pollen and nectar become available from willows, dogwoods, and other early-blooming plants, the hive becomes more and more alive. The bees need 3-4 pounds (1500-2000 g) of food a day during this month. The brood nest will by this time have spread out over three or four combs, and the population of the colony has started on its upward curve (see drawing on page 44).

As soon as the weather permits, it is time for the first examination of the colony:

• Check to see if the colony has a functioning queen (see page 30). If it does not, you must combine colonies (see page 30).

• A weak or sick colony must be gassed at this time (see page 58).

• Make sure there is enough food available close to the brood nest (see page 33).

• Check the hive's weight weekly now. Do it in the evening, after the bees have stopped flying.

• Make appropriate entries in the record cards.

delighted
surprised
warm
fear
warming

add to this

participating
the
types

X

44
30
58
33

(3)

IIa

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X

UPGLOWING - Ila

25

put the hive on the ground, pour kerosene on the bees and ignite them.

Check on WL22. And J31

next page

After the burning that night, Alois has nightmares about his colony swarming and at this point it may be necessary to get into a description of swarming and a study of the appropriate pages—I won't do it here.

His further questions about bees have been answered. A few did die in the course of the winter and had been carried out of the hive by other bees

on certain warm days—days which weren't too cold. Already by February,

he could tell by weighing the queen had resumed egg-laying. And in

March, the first bees were out foraging for the first nectar. This he can tell

by the sounds he hears through the tube.

Alois explains to Adi that there's a small part of the bee's population that always takes care of the dead. They're undertaker bees strong enough

X

H a

9

He has always wanted to make a discovery—that has always been something important to him. And he thinks he sees something in the pattern of the dance which he can't quite define that shows other bees where one bee has discovered a place where the flowers are filled and ready and waiting.

next page

HD
Burr
p 28

He checks the hives' weight weekly and it's greater all the time. The bees are beginning to cover the honey cells with a thin layer of wax, a sign they've gotten the water content reduced down to—Alois has learned this from books—down to between 17% and 20%. The honey is ready for the taking and Alois is overcome with the fact that the bees must make

in the honey
see p 8 next page

but not yet! Don't crush the queen,
something like 40,000 trips and visit perhaps as many as 4 million blossoms just to harvest one kilogram, 2 lbs of honey.

D.T. I confess to
being unfriendly myself.

20,000 trips for 1 kg.
10020,000 trips for 1 kg.
1000 trips for 100g

X

Another day, Queen bees?

her +
pump
+
funderi
far
Queen
(5)

Ⓟ
p 27

Earlier still on p. QQ1, Alois noticed there were round dances and

wag-tail dances. He and Adi watch how the guard bees sniff every bee who

comes by and once in a while they reject one because he doesn't smell right.

Adi resents it when his father blows smoke into the hive as he works there,

as he hates the odor himself and feels for the bees.

IIa

October? — April? May? June?

Perhaps some fuller section taken from A-10 about how the queen is

See p 40

spotted and how Alois manages to get her. This is on the day when they're

(first collection is it too early for the taking??)
Alois

collecting the honey and he doesn't want the queen to get squashed as they

pull out the combs and put them back. So sometimes she's travelling

between combs and an accident could occur. So on A10 there's a

description of how the queen is gotten out.

must have

We're into April. Flowers and the pollen are coming from many trees,

oak trees, plum trees, peach-berries, beeches, cherry trees, maples, pear

3/96
must
page
A-10

29
X X

help +
pump
+
feeding
the
Queen

~~EF~~

(6)

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comes by and once in a while they reject one because he doesn't smell right.

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Queen? — about? May? June?

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See p 40

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(first collection is it too early for the taking??)
~~Adi~~

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3/96
next
page
about
A-10

29

X

31 M

Ask why do you love this our best friend
 Dr H/K

4 xeroxes

J-31

X

3/96

2/96

attached to his depression 31

tears in Dr H's eyes

195 also been like people around
 Adi. I will never be wach. 31A

On the Threshold of the Hive

or cold, but of loneliness. From the crowd, from the city, she derives an invisible aliment that is as necessary to her as honey. This craving will help to explain the spirit of the laws of the hive. For in them the individual is nothing, her existence conditional only, and herself, for one indifferent moment, a winged organ of the race. Her whole life is an entire sacrifice to the manifold, everlasting being whereof she forms part. It is strange to note that it was not always so. We find even to-day, among the melliferous hymenoptera, all the stages of progressive civilisation of our own domestic bee. At the bottom of the scale we find her working alone, in wretchedness, often not seeing her offspring (the Prosopis, the Colletes, etc.); sometimes living in the midst of the limited family that she produces annually (as in the case of the humble-bee). Then she

31B
 city people
 after the
 to be at his
 we - I don't

also in
 + adi.
 Yes, like
 the bees
 he
 cannot
 be alone.
 He goes
 to the
 location.
 210

31

* Also I make an experiment

Barthel
 two days

195

keeping
 the bee
 alone
 until it dies

in to
 f the
 linary
 rkers.
 to a
 eature
 n the
 leaves
 d that
 ws of
 s that
 proper
 nstant
 immer
 l with
 th it
 to re-
 swim-
 he air.
 nt the
 re, she
 hunger

2/96

QA-11

II-5

A Short Introduction to Bees

(4)

How Bees Defend Themselves

* There are always some hive bees stationed at the entrance as guards, and almost every bee that approaches is sniffed. If the guards recognize the characteristic odor of the hive, the bee is allowed to enter. A field bee from another colony that is carrying nectar or honey is allowed to pass too. Bees not carrying food may be potential robbers, however, and are driven away.

Bees hardly ever get lost trying to find their way home to the hive because in good flying weather there are not only guard bees stationed at the entry but also other workers that fan the hive scent toward the returning foragers by beating their wings fast with the rump raised high. This helps the field bees recognize their particular hive.

If wasps or hornets approach the hive entrance, their evil intentions are obvious. These insects are not only carnivorous but they also like to eat honey. Their appearance triggers instant attack. Additional hive bees quickly come to the aid of the guards. In such a battle the bees sometimes resort to their venomous stings, which they can extract again after use from the unelastic chitin shell of a wasp or hornet. If a bee stings a human or some other mammal, however, the elastic tissue of the stung victim contracts around the wound, and the barbs of the sting become embedded. When the bee flies off, she leaves the sting behind and with it usually the stinging mechanism and nerve strands. Having lost these parts of her anatomy, she dies.

If the sting with its poison sac is not removed instantly (see page 14), the venom is automatically pumped through the sting into the wound.

*Also has
read up
on the sniffing -*

* Reason for visit
in late February to [A]
[A] is engaged in [A] (Adi)
love of his [A]

collected the first honey are now dying off, and how battered and old they look as Alois examines them. Worn-out wings, hair lost from their bodies. But the young bees are taking their place and this occasions his delight. He feels as if he's really begun. These bees will be his, not Der Alte's.

He worries about the weather. There are days when he's forever changing the insulation, removing it on a warm day, putting it back if the night will be cold. Honey is being made in the combs but he still supplies bee candy, then worries about swarming during a cold spell. He has to provide them with brewer's yeast as a substitute. During one cold spell he

catches cold and worries that the queen has died, goes searching for her

finds her, debates whether to replace her, worries whether he has given her

much as he loved Franz Joseph he was
never worried as much about him as these war,
his cold. then he considers if all these forces

his cold. ^{himself}
are a real reflection of his own health.
To be coming nearer to his conclusion.
A bottomless pit opens in his imagination.
The ~~is~~ ^{is} ~~at~~ ^{at} ~~the~~ ^{the} ~~notion~~ ^{notion} of peace in the
grave - his fear of treachery, which is not like that. He had

3/96 99-1

A Short Introduction to Bees

photo on page 37). When the water content has been reduced to between 17 and 20%, the honey is ripe, and the bees seal the full honey cells with a thin cover of wax. As soon as this is done, the beekeeper can start extracting honey (see page 36).

Depending on the productiveness of the plant sources, bees must make about 40,000 trips and visit between three and five million blossoms to harvest 2 pounds (1 kg) of honey. The capacity of a bee's honey stomach is about 50-60 mg.

A bee colony that is located in a forested area can start harvesting honeydew in June. This honeydew is produced by aphids of the Lachnidae family and various scale insects of the Lecanidae family.

These insects suck the sap of pine, fir, and spruce needles and sometimes also of the leaf stems of oaks, maples, and other deciduous trees to absorb the nutritional substances they need. The rest of the sap is excreted and hangs in shiny droplets on the needles or leaves of the trees. In Europe a distinction is made between honey that comes from evergreen trees and honey from deciduous trees: The former is called forest honey; the latter, leaf honey.

Honeydew, which is processed in the hive just like nectar, has an inferior flavor and is not properly acceptable as honey.

The honey that is deposited in combs is intended for rearing the brood and as food for the cold winter months. The carbohydrates contained in it supply the bees with the energy needed for their activities.

Bees need not only carbohydrates, which they obtain from nectar and honeydew; they also gather pollen, which supplies them with protein. While they fly from flower to flower, they brush the pollen off their hairy coats with the help of brush-like hairs on their legs and pack it into pocketlike indentations, called pollen baskets, in their hind legs (see drawing on page 7). There the pollen is mixed with a bit of honey the bee carried with her from the hive and kneaded into a solid clump. An experienced beekeeper can tell what flowers a bee has visited from the color of the pollen pellets. Back at the hive the bee strips off the pollen into an

empty cell, where young hive bees compress it by "stamping" it in place with their forelegs and heads.

Round Dance and Wag-tail Dance

When a bee has found a good source of food within a radius of about 300 feet (100 m) and on level terrain, she can announce this to the bees in the hive by performing what is called a round dance. What she does is to fly around rapidly in a circle.



Bees perform the "round dance" to communicate to other field bees that there is a food source within 300 feet (100 m) of the hive.

first to the left, then to the right (see drawing above). Some of the surrounding bees touch the dancing bee and then start dancing, too. With the olfactory organs at the tips of their antennae they have picked up the scent of the flower, which lingers on the field bee's hairy coat. A precise description of the location is unnecessary if it is within 300 feet of the hive, but the abundance of the source is indicated by the speed of the dance. The faster the dance, the richer the source and the closer to the hive. A food source that is farther away requires that more information be communicated. Direction and exact distance are expressed by means of the "wag-tail dance." Here the bee dances straight ahead on the honeycomb while wagging the tail end of her rump back and

A

Alain Buisson

3196

Discovered by Dr. T. J. R. & developed by Dr. T. J. R. & developed by Dr. T. J. R.

10/10/10 (P2)

QQ*

A Short Introduction to Bees

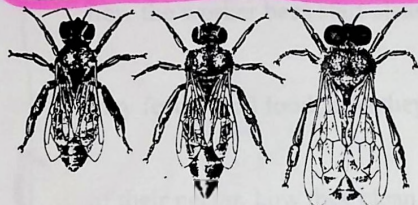
Division of Labor in a Honeybee Colony

Honeybees are social insects and could not survive as single organisms. In the summer a typical colony is made up of a queen, some 50,000–70,000 worker bees, and up to 2000 drones (male bees). Division of labor determines everything, and each of the three castes specializes in performing its particular tasks.

Worker

Queen

Drone



The three kinds of occupants of a beehive—worker, queen, and drone—shown in relative size. The tripartite structure (head, thorax, and abdomen) of the insects is clearly visible. Three pairs of legs are attached to the thorax and are equipped with combs and brushes used by the worker bees to brush pollen from the hair on their bodies into the pollen baskets on their hind legs. The two pairs of wings also grow from the thorax.

Worker bees live only about 40 days, and the first half of their lives is spent working inside the hive, attending to the brood (see page 6). Worker bees act as nurses, build and renovate comb cells, feed the queen and drones, which are unable to feed themselves, and guard the entrance to the hive (see page 11). The young bees that work within the hive are called house or hive bees. When they are about 20 days old, they start leaving the hive to forage for nectar, honeydew, and pollen (see page 8) and are then called field or forage bees.

The sole function of drones is to mate with the virgin queen (see page 7), although their presence in the hive may also help maintain the temperature necessary for the proper development of the brood, that is, about 95°F (35°C).

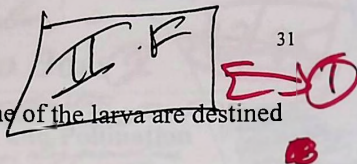
Comb Building

Bees live on combs where they raise their brood and store food. The beekeeper (or apiarist) places rectangular wooden frames with thin sheets of beeswax (comb or wax foundation; see page 24) inside the hive. As soon as the house bees are 10 days old, they settle on the comb foundation and secrete wax to build, or draw, cells. The wax appears in the form of small flakes or plates between some of the segments of the bee's abdomen. It is then picked up with the mandibles and masticated before being used for the building of comb cells.

The hexagonal honeycomb pattern of the cells is embossed on the wax foundation, and this facilitates the bees' job of drawing the comb. The bees build cells on both sides of the foundation. These cells are tilted upward slightly and measure about 1/8 inch (5.37 mm) across. They are used for rearing new workers and for storing honey and pollen. The bees would build cells of the right size and the same regularity without the pattern on the foundation. Having the pattern to follow saves them time, however, and also forces them to build cells exclusively for worker larvae. As the beekeeper knows

The queen is the sole female with fully developed ovaries. From March until October she lays between 1000 and 2000 eggs a day—under extraordinary circumstances up to 3000—an output that represents about twice her own weight. The queen also secretes a pheromone (the so-called queen substance) from the mandibular gland in her head. This scent secretion, which is taken up by the worker bees attending to the queen and passed on in minute quantities to all the bees in the hive, stimulates and inhibits certain basic behaviors and physiologic processes and thus significantly affects the life and social order of a colony.

* K. L. R. is not helpful. The queen is not helpful. Bees have done this. P5



From his books, Alois has learned that some of the larva are destined

to become workers and drones and so are only fed brood food and then a

mixture of honey and pollen. But future queens keep getting fed with

secretions from the nurses' brood food glands, a special food called royal

jelly. On p. 6—this is April, p. 6, DB 6—there's a description if needed of

how the worker bees start cleaning cells as soon as they're hatched, how

they feed brood food, how they're next assigned to relieving the field bees

of their nectar, how they clean the hives, build honeycomb, guard the

entrance—this is for the first 20 days of their lives and for the next 20 they

go out to collect nectar and pollen. "When all the cells in the hive are filled

with brood and honey and pollen and there is no more comb for the queen to

lay her eggs, the worker bees are spent producing brood food and this

triggers the impulse to swarm." If interested in the continuation, go to p. 7.

Again, the fear of swarming.

*Conservation
Area of the day*

X

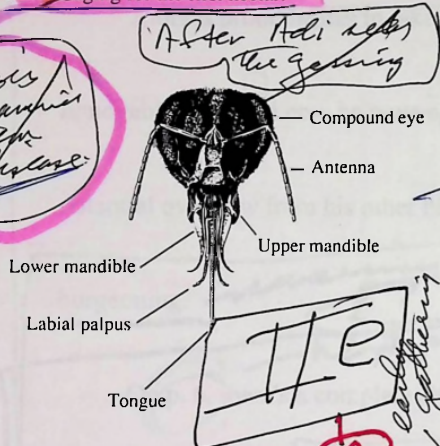
2/96

Extend to Adi on division of labor A Short Introduction to Bees

between 46 and 50°F (8–10°C) on the outside. The stronger a colony is when the winter sets in (10,000–20,000 bees), the easier it is for the bees to maintain the needed temperatures.

In January and February, if the outside temperature in the northern, eastern, and midwestern states rises to 50 or 55°F (10–12°C), the workers take two or three cleansing flights. The winter cluster breaks up temporarily, and the bees fly outside to eliminate their feces. Bees of a healthy, undisturbed colony relieve themselves only outside, never in the hive. The small, yellowish squirts are quite easy to see in the snow.

Most winter bees survive until spring. A few older ones die in the course of the winter and are carried out of the hive on mild days. In February the queen resumes egg laying, and in March the bees start foraging for the first nectar.



The head of a worker bee. With their large compound eyes bees are able to perceive ultraviolet as well as polarized light. The upper and lower mandibles are used to chew honey and pollen and to knead wax. Bees feel for the nectaries of flowers with their labial palpi, and they have sensory receptors in the antennae that register odors and outside temperature. The tongue, or proboscis, with its taste buds is used to suck the nectar from the nectaries.

Feeding and Pollination

When a worker bee is about 15 days old, she begins to make some orientation flights to become acquainted with the surroundings of the hive. By the time she is 20 days old, she is ready to work as a field bee and starts collecting nectar, honeydew, and pollen whenever the weather is warm enough (60°F, 15°C) and dry.

Nectar is a sweet secretion produced by a flower's glands, which are called nectaries. To get at the nectar, the bee must penetrate deeply into the corolla, where the nectaries usually lie buried. In this process the hairs on her body pick up pollen grains, and since individual bees specialize in particular flowers, visiting only one kind of blossom on any one flight (flower fidelity), they automatically pollinate the flowers with the pollen that clings to them.

The bee absorbs nectar by means of her tongue, or proboscis, and sucks it into her honey sac or stomach, which is connected by a funnel-shaped valve to the digestive tract (see drawing on page 7). The bee absorbs only as much nectar into her digestive system as is needed for her survival.

On the way back to the hive, water begins to be eliminated from the nectar in the honey sac and passed to the intestines. At the same time the nectar is enriched with substances produced by various glands of the bee. When the field bee returns to the hive, she unloads the processed contents of her honey sac into empty cells of the comb by means of her proboscis or passes on the nectar to hive bees, which also process the nectar and then store it in empty cells.

Other hive bees pick up the unripe honey, which is still very thin, process it with enzymes they produce, and then deposit it in other cells. This procedure is repeated over and over until the nectar has turned into honey. Some bees are located between the honeycomb and the hive entrance, beating their wings very fast to move the water that is evaporating from the honey out of the hive (see

* Adi watches this of her school. Hear the late

Clara?

~~###~~ P

~~HB~~

Klara is full of a feeling of spring. She takes Pauk out with her,

speaks to her, tells her to listen to the silence and the whispers of the

A conversation w the flowers. "Oh, I am so silly!"

flowers. The balm of the air is like love to her. Her body repairs from the

pregnancy and she thinks that in the spring, nature is having her party, not

the people, and God is full of radiance.

She is more than delighted to have a daughter. She is sure that she will have a great sweet child from

Alois is proud he has to take one of the hives he built with the

removable trays and now he must open it, install it with some of the

potential overflow from his other hive and feels that his colony is

burgeoning.

inspiring women
he reads the manual.
next page

the devils always go into the small of their backs. They cannot even see them, but they can inspire her to talk.

On p. 6, there's a complete description in April of the kind of eggs

that are developed. Alois contemplates it, decides that the nature of royalty

he has been reading about the future coronation of DT
is contained in there. This might connect to DT's subsequent description of

the coronation day, and the special qualities of the royals who come to it.

D.T. heart - I will describe that

Go to p 31 of summary text

→ p 31

April 96

4/96

2/96

Adi visit

April

Care and Management

Catching the queen

For E.C.

Adi's visit

If you have a leaf hive, you will need one or two frames with foundation and eight or nine with empty combs, a queen cage, and a queen-catching glass.

While you actually work in the hive, you should blow a little smoke into it now and then to calm the bees (see page 64).

The steps described in the following paragraphs are the same for both a movable-frame hive and a leaf hive.

To make sure that the queen does not get lost or hurt in the process of shifting frames, she should temporarily be isolated for her own protection. Search systematically through the combs to find her. When you have spotted her, invert the bulging end of the queen-catching glass over her. She will then start crawling up the glass tube. Remove the plug from the queen cage, set the bulging end of the queen catcher over the opening, and blow the queen into the cage, which you then close again with the plug. Experienced beekeepers remove the queen by hand, grasping her wings carefully with two fingers and guiding her into the cage.

Attach the queen cage with some wire to a brood comb from the brood chamber so that it is clearly visible, and return the comb to the brood chamber. Then move two or three other brood combs from the brood chamber into the super (in a movable-frame hive) or into the honey chamber (in a leaf hive).

If you fail to locate the queen, you must brush the bees off the combs that will be moved into the super or the honey chamber. Use a soft broom or a large goose feather, and hold the comb over the brood chamber of a movable-frame hive or the tray of a leaf hive.

Above, left: Removing honeycombs from a movable-comb hive. To calm the bees, a puff of smoke is aimed at them. Right: Lifting the wax covers off the honey cells with an uncapping fork.

Below, left: An extractor with the top opened. Right: The honey flows from the extractor's cock through a double strainer into the honey bucket.

Add one or two frames with foundation and a frame of empty comb next to the combs in the brood chamber. When the brood chamber is again filled with frames, you can release the queen into it. Then lay the queen excluder on top of the hive body housing the brood chamber and put the super with seven or eight frames of empty comb on top of the excluder. This super is now ready to be filled with honey.

If you have a leaf hive, set the empty combs you have gotten ready into the honey chamber, reinstall the windows of the honey chamber and of the brood chamber (the latter with the building frame), and replace the heating pad. Since they now have plenty of space for storing honey again, the bees can go on with their work and the danger of swarming is, for the time being, averted.

Shrinking the Colony

When a colony's population increases rapidly in the summer, with 1000-2000 new bees hatching every day, space congestion is a major factor in swarming. You must take steps to prevent overcrowding. When you examine your colonies, remove one or two sealed brood combs with the bees on them (but without the queen) and replace them with empty combs or with foundation. The brood combs can be added to a weaker but healthy colony, or you can use them to form nuclei (see page 41).

This way you relieve the colony of about 5000-10,000 bees and give the remaining workers enough space to keep brooding activities going. You can repeat this procedure after one or two weeks, but don't remove bees more than three times. This method is about 80% effective in preventing swarming. It only works, however, if it is applied before the bees have started nursing brood in queen cells; that is, before the larvae are being lavishly fed with royal jelly.

As soon as you discover queen cells either in the building frame of a leaf hive or along the edges of the combs in movable-frame hives, you must take swarm-preventive steps by relocating the colony

Another day, Guard bees

28

*nest +
prop +
feeding
the
Queen*

Earlier still on p. QQ1, Alois noticed there were round dances and

wag-tail dances. He and Adi watch how the guard bees sniff every bee who

comes by and once in a while they reject one because he doesn't smell right.

Adi resents it when his father blows smoke into the hive as he works there,

as he hates the odor himself and feels for the bees.

(D)

Another? April? May? June?

Perhaps some fuller section taken from A-10 about how the queen is

See p 40

spotted and how Alois manages to get her. This is on the day when they're

(first collection is too early for the taking??)

collecting the honey and he doesn't want the queen to get squashed as they

pull out the combs and put them back. So sometimes she's travelling

between combs and an accident could occur. So on A10 there's a

description of how the queen is gotten out.

Ha

nest + room
ITC
(D)
ITC

We're into April. Flowers and the pollen are coming from many trees,

oak trees, plum trees, peach berries, beeches, cherry trees, maples, pear

3/96
nest
prop
ITC
A-10

X

An
ab
bre
and
dra

3/96

QQ-10

ILB

(3)

A Short Introduction to Bees



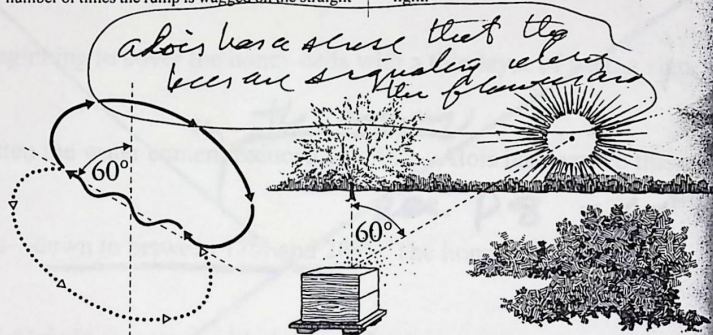
The "wag-tail dance" is used to convey information about a food source that is located more than 300 feet (100 m) from the hive.

forth. Then she circles back—without tail wagging—to the beginning of the straight line, dances along it again, and then circles back, turning the other way this time (see drawing above). The number of times the rump is wagged on the straight

line within a given time period indicates the distance between the hive and the food source. The slower the wagging, the farther away is the food source.

The sun is used by the bees as a reference point in conveying the direction in which the food is to be found. The angle formed by the line from the hive to the sun and the line from the hive to the food source is the same as the angle between a vertical line and the straight line of the dance (see drawing below). If the straight line of the dance points straight up, this means that food is to be found by flying directly in the direction of the sun.

As the position of the sun moves, so does the angle of the dance. If the sky is overcast, a small break in the clouds is enough for the bees to determine the position of the sun because they are able to detect the vibrations of polarized light in the patch of blue. Even when the cloud cover is unbroken (as long as it is not too thick), bees are able to sense the position of the sun because they sense ultraviolet light.



The wag-tail dance also conveys in which direction the food source is to be found. The angle formed by the line from the hive to the sun and the line from the hive to the food source corresponds to the angle formed by a vertical axis and the direction of the straight middle line of the wag-tail dance (the dance is performed on the surface of the combs, which hang down vertically).

X

HB

He has always wanted to make a discovery—that has always been something important to him. And he thinks he sees something in the pattern of the dance which he can't quite define that shows other bees where one bee has discovered a place where the flowers are filled and ready and waiting.

next page

*HB
Four
p 28*

(2)

He checks the hives' weight weekly and it's greater all the time. The bees are beginning to cover the honey cells with a thin layer of wax, a sign they've gotten the water content *in the honey* reduced down to—Alois has learned this from books—down to between 17% and 20%. The honey is ready for the taking and Alois is overcome with the fact that the bees must make something like 40,000 trips and visit perhaps as many as 4 million blossoms just to harvest one kilogram, 2 lbs of honey.

see p 8 next page

*D.T. I confess to
being infatuated myself.*

X

Another day, Guard bees?

28

next page + finding the Queen

Earlier still on p. QQ1, Alois noticed there were round dances and

wag-tail dances. He and Adi watch how the guard bees sniff every bee who

comes by and once in a while they reject one because he doesn't smell right.

Adi resents it when his father blows smoke into the hive as he works there,

as he hates the odor himself and feels for the bees.

(1)

October? April? May? June?

Perhaps some fuller section taken from A-10 about how the queen is

See p 40

spotted and how Alois manages to get her. This is on the day when they're

(first collection is it too early for the taking??)

collecting the honey and he doesn't want the queen to get squashed as they

pull out the combs and put them back. So sometimes she's travelling

between combs and an accident could occur. So on A10 there's a

description of how the queen is gotten out.

We're into April. Flowers and the pollen are coming from many trees,

oak trees, plum trees, peach-berries, beeches, cherry trees, maples, pear

3/96 next page A-10

X

spring. That way, there'll be more bees, more nectar, even more honeydew to turn into honey.

He worries that he was taken by Der Alte, and should have waited for the spring. It may be a long winter for the bees. Will they have the vitality

and the strength, since they hatched in August, to go through a long winter?

Would it not have been better to have waited for May and June and a new colony of bees? What irks him is how often Der Alte said to him, "This is

all work I have saved you."

*D.T. I was getting worried
w. Alois' worries.*

Next week or two

Nonetheless, what Alois does not do in work, he spends in worry. So

He is fatigued by the thought of future
he feels somewhat tired with the responsibility. He's beginning to spend

in the afternoons
time going over to the Fischlham tavern, not really enough work to do. He

half enjoys it, half resents drinking with dolts. He even thinks, once or

twice when very drunk, of going to visit Der Alte but the thought of the

aging

See p 12

see p 12 (winter section)

see p 13

[Signature]

X

but intricate thought?
bar-ter

smelly hut repels him. The more he thinks about living with winter bees,
having to feed them all through the winter with sugar and water, studying
the temperature constantly, weighing the scales, the more he consoles
put into winter feeder
himself with the thought that if they're not good, if they're not in good shape
when spring comes, he would, at least, be able to combine the two colonies
he has at present, assuming they are weak, to make one stronger colony and
then, if necessary, he will buy more bees in early spring.

[note to myself: the only value I can see so far in this dictation is that
these are precisely the hangups I will run into when I try to write it. Maybe
this will give me some purchase on the scope of the details and the
problems.]

Note: This, plus next 3 lines on p 10 come
He does keep tormenting himself. Perhaps he should have waited to
this was clear at his weakest!
take a colony in the spring. And then realizes one of his motives had to be
the whole comes in the week. Come after first 2 lines on p 12.



X

*that blessings do not come from God but from hard work

Gives up the honey for a week

to be occupied with something through the winter. He goes into a flurry of

activity, ~~painting~~ ^{the boxes} building a couple of ^{new} hive boxes and painting them. Might

get into details on the nature of the boxes. Or DT could mention that he was

provided with all the details and was bored stiff. The colors, by the way,

were ultra-violet, blue, and yellow. DT's devils flood him with details.

~~tempted him to look up details~~

This is from LEX. He can give them one pint of sugar water—that is one

part sugar to one part water, every other day; he can feed them bee candy, a

couple of pounds every two weeks, or he can give the hive a pint of diluted

honey, half water, half honey, every other day. He has to make sure he uses

honey only from his own bees which means he now has to worry that Der

Alte provided him with the right honey. He has to make calculations of

how much food will be needed. It comes to twenty pounds perhaps, for one

hive box.

During the abstinence week, he makes the calculations over and over.

this ends "The Worker,"
Alone to himself, "Cool"
Bergman's last under the
that is the end

Reheat

p 16 book Henry

from p 32 notes

B from p 13-14

X

DT is absolutely bored with the information. A piece of comb, 4 by 4 inches, contains about 12 ounces of ~~food~~ or honey. The calculations are endless. If bee candy is used, one has to figure 10 per cent more than calculations for honey and water, or sugar and water. Now ^{Alois} ~~he~~ begins to

worry about mouse invasions. He reduces the size of the entrance, changes his mind. Looks it up in a book, and attaches a mouse screen. [Note, see p.

43.]

He decides to build a framework for bird ^{nests} he will put up in the spring.

He starts to instruct the children about what they must not do in the spring. They mustn't leave honey or food combs exposed. They mustn't leave the hives open for long at any time, no matter how warm the day.

a minimum
 7 double-space pages
 up to here.

STET
 a
 alone

X

~~They must not spill syrup. If any spills they must wipe it up thoroughly,
every last drop. *Feller colony.*~~

He hopes the colonies given to him by Der Alte are strong because he has just read in a book that if two colonies are weak, it is sometimes valueless to combine them, that all one can do is kill the queen who is probably a poor sort anyway, and add these inferior combs to a mediocre colony that has at least a good queen. Not a good one, where they might pollute it.

Ⓐ
↓
pg

Alois quiets down
November and December are quiet. The sugar feeding goes on, the routine gets built up. Alois discusses marketing with Klara. She likes a local storekeeper with whom she's gotten mildly friendly. He tells her not to make any deals yet because there's a possibility it could be more interesting with Der Alte. Tedium, tedium, says DT to himself.

Alois remembers the rule

X

In the meantime, Klara is very pregnant. And Adi is fascinated by the size of her belly and wonders what kind of creature can be inside. He has still not put together the birth of Edmund, to wit, that time before, Klara's belly had been so very large and Edmund had been so tiny. ^{Will (the)} The same again. *He is still hoping for a child he can really talk to, and instruct*

In the Fischlham bars, Alois is beginning to be seen as an expert.

Some of the advice Der Alte has given him, much of which he has picked up in books about bees over time, he presents as his own wisdom. He has become virtually the local bee expert. One farmer even walked over one Sunday afternoon to ask for advice. *on how to get started*

Adi, all the while, as if to pay a direct compensation for such bluffing—for Alois does not fool himself he is bluffing—is virtually ^{he} ~~obsessed~~ *obsessed* with the fear that disease will strike his colonies. ^{keeps believing} ~~like the worst of a coward~~ *Anxiety* There is a long description on LEA, 11/95, about how you mix the sugar and water, heated

Sp
L
E
T

from
p16
Clara
sequence
p13
or
p16

ⓑ
↓
p10

X

from the aglets
but not boiled, stirring until the sugar is completely dissolved, and then you give the food to the bees in special feeders. A 5 liter jar with a cover of mesh, in this case usually, fine blonds which he had to send for. And this full jar is placed upside-down on the bunghole above the brood combs—there's a vacuum within the jar and that keeps the sugar water from pouring out but the bees can absorb it through the tiny spaces in the [*cloth* ~~word?~~] mesh.

They have to be fed one liter of sugar water a day and after every feeding he has to wash with clean hot water. Each colony gets about a liter a day.

Daily work.

[Actually, the more I read of this LEA and the feeding, the more complicated it gets and so I may have to stay away from it or slur over it. It seems very technical and slightly contradictory. For which months it applies, for example.]

X

He checks the hives once or twice a month but doesn't open them up,

Adi (p 5)

just keeps weighing them—fights the temptation to open them and look.

Adi + excitement of Der Alte's life can come here

Keeps feeding sugar syrup. By December, Alois Senior has his first

nightmares about swarming—might get into that descriptively. DT does

pay attention to those fears.

DT's insight

Alois - seen as a child for so many children
marrying p. 12.

Klara is very pregnant.

Alois

He needs to talk to Der Alte. He decides to market his honey with

him. That will enable him to be able to visit him without pretending to be a

friend.

Counters with Klara to small shop
the other the shop-keeper to embarrassed to
tell me you don't trust Der Alte
and yet you choose him over

He dreams of the bees, working in total obscurity, working in the

darkness, and thinks of how they guide themselves with their antennae and

their eyes. He learns from books again how many facets there are to their

eyes. Is it a thousand? The experts seem to disagree. He wonders and

note p 16

Der Alte
the thunder
that
golden
in 9
person
clay
the way
center to see in
a man, but a lot
know he was of
ridiculous due

Ben Alte's

decides that if humans speak of a sixth sense, do these bees have some

species of seventh sense that penetrates into the caverns and catacombs and

labyrinths of darkness? *This is not certain whether the computer or the human is.*

This comes forth in bar talk when he and the others are very drunk, so

p13

drunk they will not remember well enough to be able to laugh at him next

day.

In turn, Adi sits for a time on Christmas Eve out in the snow by the

hives praying for the continued life of the bees. This interests DT—he

It has decided that the fantasy mouse screen has been

cannot quite explain it. And *Adi* is terribly worried that a mouse will invade,

Insert P jump 19

or perhaps there is one in there already, and he summons in himself

whatever power to destroy he may have. DT, fascinated with this

capability—we won't get into that unless the imagery is enriched and

When he grew up, he would be able to save time by his power to destroy. an old saying if you can find the dream an appropriate dream

D.T.

X

improved and one knows what one's doing with this—if he could, he would

kill the mouse with his thoughts.

*(Later when the dead mouse is
indisposed, Aloi feels illumined. This is followed
by a congratulatory dream—his thought of the mouse
is a small gleam.)*

In turn, Alois, a week before Christmas, has been worried about mites

MOVE TO APRIL

and parasites and is tempted to open the hive and check a few bees—cut

them open and look at their intestines. Will the intestines be reddish-brown

and healthy? For if they suffer from nosema disease, they'll be milky white.

There's note on this page 54 that the sense of the note can be moved

to April if that looks to be better.

Alois worries about wasps getting inside the hive. There are guard

bees behind the entrance and any individual wasp ^{could} ^{even} be chased, but

what if several attack at once? In the spring, he knows he can find bottles

with narrow necks, fill them up perhaps a quarter full with honey and water

*Judith— I can't find page 18
of this section. Can you FAX it to me.
Just p 18, not this one.*

later

and the wasp will go through the narrow opening, fall into the liquid and

drown. *Der Alte: More details. Can they send nothing but Alois' worries. The heart of the said for milk runs if that worries are the cause to pick up from a sleepers mistle breath*
 Alois begins to worry about birds. When the queen flight takes place, *and insects are often too fat to fly*

a bird could catch her and eat her. He has heard of such disasters. He puts

out ant bait around the hives and continues to worry about mice. With the

cold weather, what's to keep a mouse from wanting to be warm, in there

with the bees? He still worries about birds and builds a scare-crow that he

puts up about 15 feet away from the hives.

This brings us to the end of December. The only question that

remains intact is whether the gassing that will take place in the hive should

take place as early as December with the help of Der Alte—and when Adi

sits out there on Christmas Eve, he's mourning the death of all the bees that

were gassed. Or whether we have to keep it until later, the spring perhaps.

Decide on route

E
↓
P16

P16

X

LEA

Fall
Winter

Care and Management

10/95

9/95

this hole, and an empty hive body placed over the cover with the candy. Or you can simply fold back a corner of the plastic and place the bee candy on the plastic, but this causes more loss of heat.

If you have a leaf hive, remove the combs in the honey chamber and the queen excluder. Place the cover with the bunghole directly on the combs of the brood chamber and the bee candy on the bunghole.

Or you can feed the bees a sugar solution made of three parts sugar to two parts water. The following table shows the proper mixing proportions in kilograms and liters:

Sugar (kg)	Water (liters)	Amount Produced (kg)
1	0.7	1.2
2	1.3	2.4
3	2.0	3.6
4	2.7	4.8
5	3.3	6.0

The sugar and water are mixed together, heated (but not boiled!), and stirred until the sugar is completely dissolved. Liquid food must be given to the bees in feed troughs or special feeders. The most common type of feeder for both movable-frame and leaf hives is a 5 liter jar with a cover made of a fine bronze mesh. The full jars are placed upside down on the bunghole above the brood combs. The force of the vacuum keeps the sugar water from pouring out but allows the bees to absorb it through the tiny spaces in the bronze mesh.

In addition to feeder jars there are also food troughs in drawers (holding between 5 and 6 liters) that fit exactly into the hive body on top of the brood chamber.

Leaf hives are available, with a feeding trough holding 1 liter built into the side wall.

The bees should be fed 1 liter of sugar water a day. The feeder must be washed with clean, hot water after every feeding.

Here is an example of how the feeding works:

You estimate that a colony occupying two hive bodies has stored about 5 kg of food. Assuming that the bees need about 15 kg to make it through the winter, there is a shortage of 10 kg. By mixing 9 kg of sugar with 6 liters of water, you get 10.8 kg of winter food. If you feed liquid syrup, you can give each colony 1 liter a day or 5-6 liters per week.

Feeding the bees daily is more work than less frequent feeding, but the queen will lay more eggs. If you feed Candy for Bees, or Hard Candy for Winter (see page 00), start by putting half a 15 kg package on the bunghole. Depending on how much food you expect your bees to need, you can add more as needed later. Feeding bee candy always has the effect of stimulating brood production.

Regardless of your method of feeding and whether you rely on an early or late honey flow, the feeding should always be completed by mid-September. If you live at altitudes above 1500 feet (500m), the winter feeding should be completed by the first of September.

Important note: The last time you check your hives, you must ascertain if there is enough food to last the winter. All the combs occupied by bees should have at least two-thirds of the cells capped by the end of September or beginning of October; that is, they must be filled with food. If this is not the case, supply extra food in liquid form immediately.

Sept 15 Oct November

Last Preparations for Winter

After you have removed and cleaned the feeders, you should collect all the record cards in October. On days when the weather is above freezing, and when there is only minor flying activity, you can repaint outdoor hives with an odorless paint that is safe for bees (buy the paint from a supplier of beekeeper's equipment). Make sure the covers fit tightly, and if necessary, make a tighter seal by fitting a sheet of clear plastic or a cloth of natural fiber over the hive body. If you have a leaf hive, install the insulating lid and check to make sure that the

castles
Branth

Core and Management

The Swarm

the architects, masons, wax-workers, and sculptors who form the chain and construct the combs; the foragers who sally forth to the flowers in search of the nectar that turns into honey, of the pollen that feeds the nymphs and the larvæ, the propolis that welds and strengthens the buildings of the city, or the water and salt required by the youth of the nation. Its orders have gone to the chemists who ensure the preservation of the honey by letting a drop of formic acid fall in from the end of their sting; to the capsule-makers who seal down the cells when the treasure is ripe, to the sweepers who maintain public places and streets most irreproachably clean, to the bearers whose duty it is to remove the corpses; and to the amazons of the guard who keep watch on the threshold by night and by day, question comers and goers, recognise the novices who return from their very

MBC

MBC

X

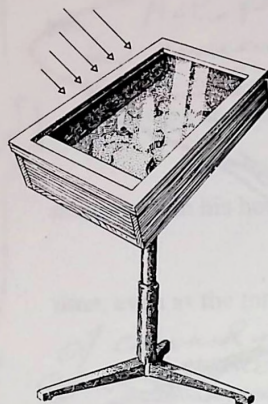
LE_x

10/95

9/95

~~8/95~~

Care and Management



A solar wax melter that uses solar energy to melt old combs. The sun's rays, which hit the sloping glass top, heat the inside of the box to as much as 180°F (80°C), and a slate bottom stores the heat. Beeswax, which melts at about 150°F (65°C), drips into a receiving pan and hardens overnight.

late brood production is usually not necessary because the woods normally provide food until August. (If there is no honeydew, you should of course start feeding to stimulate brood production.)

The nectar, honeydew, and pollen that the bees collect and store from August on (from natural food sources or food provided by the beekeeper) are not enough to carry them through the winter and into the spring, and you must help them with additional feeding.

You should start the fall feeding in early September (two weeks earlier at altitudes above 1500 feet, 500 m), whether the honey flow is late or early. Note: Forest honey must be extracted before it is given to the bees.

You must assess how much food the bees will need. A common estimate of the food needs of a colony wintering over in one hive box is 17–22 pounds (8–10 kg); bees wintering over in two hive boxes need about 33 pounds (15 kg).

You can determine approximately how much the bees have already stored for the winter by using the following information:

- A piece of comb measuring 4 × 4 inches (10 × 10 cm) contains about 12 ounces of food or honey.
- A comb in a Hoffman frame (usually 4½ × 16½ inches, 11 × 42.5 cm) and with sealed cells on both sides holds about 4 pounds of food or honey.

Figure out how much food the bees are short by subtracting your estimate of how much the bees have already stored from the amount needed for survival (see above). If you use bee candy, however, you must give the bees about 10% more than the amount you calculated. The candy must be processed by the bees before it is ready for storage, an activity that requires energy, which has to be provided in the form of food.

If you have movable-frame hives, remove the cover and the plastic sheet and place an insulating cover of appropriate size and with a hole in it on top of the combs. This "bunghole" should be 3¼ inches (80 mm) in diameter. The bee candy is placed on

strong colonies. Only strong colonies can take full advantage of the spring honey flow and collect an optimum amount of honey. In areas where the honey flow comes early one cannot count on harvesting honey after the end of July. To encourage the bees to keep rearing brood, you should start feeding them after removing the supers (see page 40). There are three possible methods: you can give them half a pint of sugar water (one part sugar to one part water) every other day, you can feed them bee candy (2 pounds every two weeks), or you can give them half a pint of diluted honey (half honey and half water) every other day. (Make sure you use honey only from your own bees!) Continue the feeding until the end of August. If there are no natural pollen sources, you must also make ready some pollen substitute (see page 25).

In areas with late honey flow, feeding to stimu-

start his colony in Sept. feeds them sugar water

~~On January 21, Pains born, and as a reflection of that, Adi begins to~~

~~Too soon?~~

Later

get tougher and tougher with Edmund. The details for this are not present

yet. Achafter? Tenderinas + cruelly followers
by concern, care, + desertion. Klara + tebe
He weeps for an hour at tea after reading

~~In the bar, Alois celebrates but complains at the same time. There are~~

now seven in his house and he speaks of how much noise there is all the

time, even as the tumult in the bar is louder.

time, even as the tumult in the bar is louder. ^{P.T. on the propeller}
~~of crowd near the solid entrance, against the~~
~~of the dead, Vatsia, open where the~~
 A few days after the birth, there's a huge bee defecation on the snow.

A few days after the birth, there's a huge bee defecation on the snow.

→ Coming home from the bar, I roughly always start to

~~Aleis had been listening to the inside of the hives with a rubber tube against~~

the hive entrance and he could hear them humming. He assumed there

might be as many as ten to 20,000 bees in each box, each hive. And they're

using an awful lot of food, more than a pound a day, every day through

January. Despite himself, he knocks on the box from time to time, listens to

the changes in the sound. He enjoys it much more than the infant's cries.

Falls into a good deep sleep. D.T. is
amused at the pleasure his ^{material} ~~material~~
that they can give him inner understand
at last

He dreams of the interior of the hive as if he were floating among them, as if he had died and become a bee. Awakens to see an unwitting vision of hell. *bees defecating in their hives.* *Detail*

the ¹⁵ Then comes the bee defecation. It is a great relief to him. Part of his dream had been loaded with the terrors that he as a bee was suffering with the others with a severe bowel disease. But he keeps waiting for the colony to erupt. Bees were clean. Bees would not tolerate defecating in their own nests (except for some drones, perhaps.) No, they would fly in the cold weather before they would take such a chance as that. And the weather is cold. It's a long spell of cold and he worries and thinks of all the excrement building up in them, how awful it is. *In the morning it's* And then comes a warm day and out

they come, and they're all over the place, their droppings in the snow in *smell of bananas - the excrement of honey.* every direction, it spreads out, 50, then 100 feet around the colony, a huge

circle of yellow spots and Klara's laundry is part of it, part of ^{Paul's} Paul's diapers.

It is an immense defecation. Alois paces it off and discovers it's 100 long steps in every direction before the snow is white again.

There's a talk with Adi, and he decides to use the real words for the situation. "Everybody shits," he tells the boy, "everything shits, all things living. You learn how to get rid of shit or it lives with you and it ruins you.

You keep yourself clean, do you hear? These bees are ^{wunderbar.} wonderful. They

hold it in all winter, ^{so} but they won't dirty the hive, and you don't either."

"What about ~~Adi~~?"

"What about him?"

Adi → He still has it in his pants.

Adi naturally has dreams of dirtying the hive. Remembers the time

when Alois Junior put a daub of excrement—^{Adi's} his own excrement, actually

that he'd been carrying through the house, then ^{Junior put a dab} put it on Adi's nose. Also.

After his

after his father's talk, he has another great desire to visit Der Alte and broods

over whether he could follow

on the path to his house—could he find it by himself again?

Everything looks so different in winter.