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The Western bee-keeper. Vol. I, no. 6 June 1, 1899

Denver, Colorado: J.W. Bailey, June 1, 1899

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Vol. 1 No. 6

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
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F. L. THOMPSON, EDITOR.

Published Monthly.

Office: 2341 Fifteenth Street.

Entered as second-class matter at the post office at Denver, Colo.

Address all communications for
the editor to F. L. Thompson,
Box 74, Montrose, Colorado.

Address communications pertaining
to subscriptions, advertising, etc.,
to the publishing office.

● ● 50 Cents per Year. ● ●

VOL. I. DENVER, COLORADO, JUNE 1, 1899. NO. 6.

Mr. John Carnahan, of Fruita, is now bee-inspector in Mesa County, Colorado.

Mr. I. M. Kelsey explains the occasional success of the plan of stopping an absconding swarm by throwing water or dirt among the bees, by supposing that whenever the queen is thus brought down so that she will not take wing again, the swarm will stop, but that otherwise it will not.

Large hives do not here necessarily mean strong colonies at the end of the summer without special management, or pains taken to procure a special race of bees, because the amount of brood diminishes rapidly from the middle of June, owing to the tendency of our Italian bees to clog the brood-nest with honey. If we want all the honey-gathering bees we can get until towards the close

of August, for the second crop, then we want all the brood we can get until at least the middle of July. Mr. J. S. Bruce had better success in this last year than ever before, by putting the combs of eggs and larvae on the outside, and the sealed brood in the center, just before the flow.

The wintering losses in Otero County, Colorado, will average four per cent. So far as heard from, the losses all over Colorado average ten to fifteen per cent. Pres. Lovejoy, of the Utah Association, writes; "While in some individual cases the losses will run from 25 to 75 per cent., and perhaps a few localities may average from twenty-five to fifty per cent., then again I have received letters from the west, central and southern parts of the state, stating that they have had no winter losses;

and from the best information I have received I think about eight to ten per cent., would be a near estimate in the upper localities, such as Wasatcha Co. We find that the bees as a rule winter safely in frost-proof houses, while with those left on the summer stands the loss is often serious."

Judging from the discussions at our meetings, very few bee-keepers seem to be aware that drone-comb may be largely avoided by contracting the hive when hiving a swarm to five or six frames. I have practiced this plan more and like it better than any other when increase is wanted. With some queens, there will be some drone-comb, but not nearly so much as when the whole space of the hive is given. The remaining space should be filled out with a dummy until the combs are built, when it is to be replaced with worker combs or full sheets of foundation. The super should be put on as soon as the swarm is hived, to give it the necessary room. By this plan an abundance of white honey in the sections is secured, and much of the expense of foundation saved.

Mr. R. D. Willis last season hived two swarms in a super of sections apiece, with excluders above, and other section supers above them. They were so allowed to remain until the close of the first crop, when brood chambers of combs were added below, into which the queens at once went,

while the super they had formerly occupied was filled with honey. The portion that had had brood in was not spoiled for cull honey by the short occupation of the brood. He likes the plan as it secures a large amount of first crop white honey in the sections.

I once hived nine swarms in a single super apiece, with excluders, without sections, with section supers above, and had not a single cell of pollen in the section honey. In fact I have never seen more than one cell of pollen in section honey in Colorado.

How to separate swarms that have united is a tough problem, and prevention is better than cure. One method is to keep the queens' wings clipped, so that the masses of bees may be properly apportioned at ones leisure if they do form; but if one does not clip, many unions may be prevented by having a large smoker constantly ready to keep a cloud of smoke in the air between the two swarms; or if one of them has already settled and the other is likely to come to it, by directing the smoke so that it hinders the flying swarm from coming near, and also by vigorously waving gunny-sacks where the swarm of approaching bees is most aggressive. These are the methods employed by Mr. H. Porter, who also uses the gunny-sacks very effectively in that manner to keep a swarm from entering another hive, as second swarms are very apt to do.

Mr. Theo. Lohf hives his swarms in two or three section supers, leaves them a day or two, and then before the queen begins to lay breaks them up, putting each super over some other colony which is backward for any reason, without paying any attention to the whereabouts of the queen. He says this plan is very successful, for the swarm draws out the foundation considerably, and the colony which thus receives an accession of busy bees and work on the way pitches right in and carries the work along. When all his backward colonies are thus served, he commences over again, giving them second supers of bees and sections, and so on, sometimes having as many as five supers on the hive at once. Of course he needs to be watchful not to give supers of bees to any colony that is making preparations to swarm. By this plan no extra hives are needed in preventing increase.

I advise as many as can to test the new fixtures of plain sections and fences purely by way of experiment. Many great advantages are claimed for them, which it is important to have reliably established. But this is not yet done, and therefore beginners, or any one else, should not invest in them this season from any other than an experimental point of view. The plain sections themselves seem to have some advantages, which time will show, but it is very doubtful whether the form of separators to go with them

that is now being boomed and pushed will be permanent, and likely that those who invest heavily in them will find themselves in a year or two with a lot of out-of-date fixtures on their hands; indeed, this has already happened with the 1898 fences. It is entirely unsettled, for example, whether that which constitutes the fence proper, the spaces between the slats, is any essential part of the system, and whether complete communication lengthwise, which is not afforded by the 1899 fences, will not hereafter be found necessary for the best results.

In hiving a swarm which has settled on a bush or limb, if at all inconvenient to carry a hive to and from the spot, I would not do so. I have hived a great many swarms by merely spreading a sheet of burlap, procured by cutting open a gunny-sack, on the ground beneath the cluster, gently depositing thereon the branches on which the bees are clustered, gathering up the corners of the sheet, and carrying them to where they are wanted. A cover from a Parks shipping-case crate, which is large and light, is excellent to first spread the sheet on, as then it need not be gathered up at the corners; or the cover alone, without any sheet, may do. When dumping the bees on the ground before the hive, it is a good plan, recommended by R. D. Willis, to sprinkle them with a little water to prevent them from taking wing

and entering neighboring hives, as many of them often do. Mr. E. Willis uses a sack the mouth of which is kept open by a hoop to shake the swarm into from the limb. The sack is then carried to the hive, inverted over the frames, and given a shake so that the cluster falls on the frames without getting out between the edges of the sack and the hive, and quickly adjusts itself to the conditions.

At the meeting of the Utah State Bee-Keepers' Association at Salt Lake City on April 8, the following officers were elected for the ensuing year: President, E. S. Lovesy; first vice-president, George Hone; second vice-president, R. T. Rhees; secretary and treasurer, J. B. Fagg; assistant secretary, G. E. Garrett. The following county vice-presidents were chosen: Salt Lake, F. Schach; Utah, William Peay; Wasatch, J. A. Smilh; Davis, W. E. Smith; Boxelder, J. Hansen; Weber, O. Folkman; Juab, Thomas Billston; Sevier, C. Christensen; Washington, Mrs. Woodbury; Foele, B. Barows; Cache, Henry Bullock; Morgan, T. R. G. Welch; Millard, S. Teeples; Emery, Chris. Wilcock. The next meeting will be at Salt Lake on Oct. 5.

Among other things the president said "One of the most gratifying features of the industry last season was the firm demand for our products. And the indications are that the demand will be equally good this season, without any regard to the extent of the honey crop. Our bee products

have been pretty well advertised, and Utah honey is considered par excellence on all markets where it has been sold.... Our bee-keepers should be better organized for the disposing of our products at least. The old adage of every one for himself and Nick for the whole is foolish in this respect, for it often causes a stupid and unnecessary falling in prices."

Pres. Lovesy also said that with the excellent foul brood law that Utah has, and with the improved methods of handling the disease, there should be no serious trouble in keeping it down. The law is so worded that bee-keepers don't have to wait for days or weeks before it can be applied; and while it can remain dormant when not needed it can be also applied for the benefit of any bee-keepers in any county and at any time by making application to the inspector in their respective county or district. There need be no trouble or delay after the bee-keepers take action to get the law in force. It is possible, with the aid of this law, if the bee-keepers throughout the state would take a keen interest in the matter, what little disease there is among the bees could be stamped out.

TIMELY GATHERINGS.

Abbreviations: American Bee-Journal, A.; American Bee-Keeper, K.; Canadian Bee Journal, C.; Gleanings, G.; Progressive, P.; Sontland Queen, Q.; Review, R.

SIZE OF HIVES.—J. E. Crane finds eight frames enough for good queens when bees are prop-

erly protected and secure early forage, because they begin swarming while as yet no honey is in sections and little in the brood-chamber. (G.) (Here, the bulk of the swarms come after the main flow has commenced.) To have enough field bees when the flow starts, says Adrian Getaz, requires a full brood-nest nine weeks before, hence a strong colony the preceding fall, hence large hives throughout the season, and bees reared at no time are useless consumers. (G.)

"If a man is going to put his capital into an extra hive and set of combs for each of his colonies, he will get more bees, and consequently more honey, if he has a queen for each of these new hives; in short, if he has them occupied by regular colonies. . . . Our capital in bee-keeping is not in the queens. Queens cost us practically nothing. Our capital is in hives and combs. We want our capital fully occupied. . . I would use a brood-chamber of such a size that an ordinary queen can easily fill it with brood. With me, that is an eight-frame Lagstroth hive. Some of you may say that I lose the bees that the eggs they could lay would produce. Not so. I have those eggs laid by another queen." W. Z. Hutchinson. (R.)

C. P. Dadant says it is the number of queens that survive the winter, and what those queens are likely to do, that make the bee-keepers' prospect better or worse; hence the fullest capacity of all the queens, in large hives, is

wanted; and if some hives must be contracted because their queens are not so prolific, the combs removed may be used for increase. His experience is that about one-third of the queens are crowded in a ten-frame brood-chamber, and that in an eight-frame hive, not over one-tenth have enough room, and why many think otherwise is, they never used a hive larger than a ten-frame. (G.)

Large hives, Mr. Hutchinson answers, overwork queens, and they will soon fail, causing queenless colonies and empty combs in early spring, so that then queens are valuable; but if each queen had fewer combs, next year would show a larger proportion of queens to combs. Plenty of good queens may be had without cost in spring by hiving swarms in small hives, which then prevent from dying unseasonably, and all the combs in the apiary are occupied, the same result Mr. Dadant strives to attain by having each queen spread herself. (R.)

Chas. Dadant says the queen does not lay at will. The eggs come out when they are ripe, and the queen can not stop their exit, as is proven by putting a black cloth under a swarm drummed from a box hive, and observing the eggs dropped by her. If his queens were killed by overlaying, not in one, but even two years, he should lose more than three queens every month from eighty colonies, and during the six months when there are no drones to mate the young queens that would replace them, fifteen of his colon-

ies would die every year, as the death of a queen in winter is the death of the colony; yet his winter losses in that home apiary of eighty colonies do not exceed two or three per cent. on an average; and last winter in an out-apiary of eighty colonies, 50 in Quimby eleven-frame hives, and thirty in Langstroth ten-frame hives, ten of the latter died and only two of the former. (G.)

"I don't see that that overworking and dying theory counts for anything. Unless I am entirely mistaken, the rule is that all queens in strong colonies are superseded, and that supersedure usually comes toward the close of the harvest, when it causes no loss, so it's just as well if a queen doesn't last more than a year." Dr. Miller. (G.)

E. R. Root says the question is not whether a certain number of bees shall be raised by one queen or more than one queen; because he thinks it is conceded that during the working season a large colony will have more working bees in proportion to its size than a small one, for just as it takes fewer rods of fence per acre for a large field than a small one, so fewer bees are required to keep up the necessary animal heat per square foot of brood, and more are thus released for field work. (G.)

L. Stachelhausen points out that at the beginning of the flow the queen of a strong colony will

be crowded by the bees, while the queens of two weak colonies, which together are equal in population to the one strong one, will continue to lay freely; hence the proportion of unsealed brood, which consumes much of the honey gathered, will be greater in the two weak colonies than in the strong one, and the latter will store more honey as surplus than the two weak ones; therefore it does make a difference whether the desired number of eggs was laid by two queens in two small hives, or by one queen in a large hive. He adds "It may be that by complicated manipulations of the brood-frames and other knacks in the spring a colony can be made as strong as the average colonies get if left to themselves in large hives; but if the same thing can be attained with large hives, then I look upon this repeated manipulation as just so much time and labor lost. In this respect it is noticeable that all advocates of manipulating the brood-frames in spring use small frames, or at least small hives." The editor says: "For several years I kept bees in three sizes of hives—eight-frame, ten-frame and eleven-frame, and my apiary is still in two sizes, eight-frame and ten-frame, Langstroth size, capacity; and I well know that the most populous colonies in the apiary are not always found in the larger hives. . . . The trouble in this hive-argument is that the advocates of large hives assume that the men with small hives begin the season with weak col-

onies. This is not true. Eight Langstroth combs well covered with bees at the opening of spring is not a weak colony. . . . In my locality the white honey harvest comes on before the colony in a large hive has its combs filled with brood. The honey that ought to go into the supers goes into the brood-nest; and this is not all, the colony is into an undesirable condition or storing in the supers. . . . In other localities, and under different management, a large hive may be all right." (R.)

Mr. Getaz has a location, in mountains of Tennessee, that seems to correspond more nearly to Utah and Colorado conditions than any other in the East, though not quite so cold. He says "Early in the spring when the weather is yet cool, a colony of bees does not raise more brood than it can well cover and keep warm. The result is that the strong colony will raise more brood in proportion to its strength; and will maintain that proportion until its brood-nest is full. The next result is that both the large and the small brood-nests will be full at about the same time, and will be kept full the remainder of the season. . . . If 80 colonies of 12 combs each give the same surplus as 120 colonies of 8 combs each, what is the difference? Well, not much. There would be a saving of time in manipulating; perhaps less feeding to do and less swarming, that's all. In my locality, however, the 80 colonies of 12 combs would give a better surplus than the 120 of 8 combs. . . .

Now there is more or less nectar, in small quantities, to be gathered during the later part of the summer and the fall; and it is the strong colonies that do the best in this gathering. . . . and gain both in population and stores. . . . Next comes the winter. Experiments in regard to the amount of stores consumed have often been made, and have invariably shown that the strong colonies consume less in proportion to their size than the weak ones. . . . I winter my bees on their summer stands, in well-protected chaff hives. The winters vary greatly in temperature; there are plenty of days warm enough for the bees to fly, alternating with cold spells of freezing weather that seldom reach below zero. During the mild winters, the strong colonies rear some brood, which helps them materially; . . . they not only begin to raise brood much earlier, but they also rear more in proportion to their population; and are ready to enter the supers much sooner than the smaller ones." (R) The Editor says it a strong colony began breeding in mid-winter in Michigan, it would either perish outright or prove greatly inferior in numbers later, because of the diarrhoea brought on by breeding without flight. (Here, the bees as a rule rear brood in January.)

C. Davenport, of Minnesota, says his large colonies in large hives, wintered in the cellar, do not retain their strength in the spring, and very few queens lay more than enough eggs to more than supply a ten-

frame hive with brood that will attain the honey-gathering age for the short clover flow; hence he would not advocate a larger hive than the ten-frame for the northern states. He thinks this size the best for those who have not the time or inclination to feed. He himself can obtain more honey per frame, work, feed and capital invested from the eight-frame hive.

(A.) (Here all the eggs laid up to the beginning of the flow, and a month later, not only those laid previous to 35 days before the flow from alfalfa are also to be considered.

"Having operated seven apiaries myself, located from three to fifteen miles apart, I feel that I speak from experience when I say that locations vary greatly, even when only a few miles apart." A. E. Manum. In a location where the honey season is short, with little or none to expect from early or late bloom, he thinks large hives should be used; for although less surplus will be secured per hive, yet on the other hand no feeding will have to be done. One year he fed \$2100 worth of sugar to 727 colonies in small hives, while at the same time a colony in a hive half as large again required no feeding; and in good seasons that colony in the large hive stores as much honey in sections as any colony in the same yard. As the prices of honey and sugar are so near alike, it does not pay to feed sugar. He continues "Were I to change my hive I would choose

one with eleven frames, because if at any time one wishes a small brood chamber he can very easily contract the large hive to suit his wants, . . . though the majority of queens that have been carefully reared will during the height of the season occupy to good advantage eleven combs, which means strong colonies for winter and correspondingly strong colonies in the spring. . . . In a locality with a honey flow of long duration and the bees run wholly for comb honey, and by a person who can give them close attention at all seasons, and also where an increase is desired, I would favor the small hive." (K) (Mr. Manum's experience, while very extensive, has not made him acquainted with a factor to be taken into account fully as important as the length of the forage period, namely, the large amount of winter stores consumed here in the West.

"The only reasonable excuse for feeding bees at the present price of honey is to insure a better food for wintering than is obtainable from fall flowers." T. F. Bingham. (P.)

MANAGEMENT.—"In using large hives and large colonies it is absolutely necessary that swarming should be controlled. Unless this is done the large hives are a failure. If swarming occurs neither the swarm nor the parent hive will be able to do more than regain its normal strength during the season, with all the chances that the process may be repeated the following year." A. Getaz. (G)

"An early start in the supers lessens the crowding of the brood combs with honey, and the larger force at work in the super the less pressure in the brood chamber. If we could just get every colony at work

at once in the supers and with the very beginning of the flow, I verily believe it would reduce swarming at least one-half." R. C. Aikin, (P.)

F. Coverdale says a colony in a brood-chamber filled solid with brood from the bottom and very close to the top-bars will usually do considerable work in sections before swarming, with far less liability to swarm at a l—one reason why young prolific queens lessen swarming. (A.)

H. H. Hyde helps to prevent swarming by placing the frames having the most unsealed brood at the outside of the hive at the beginning of the flow, and repeating ten days later. (P.)

A. Getaz does not wait until white wax is seen on the frames, but puts on his supers a few days before the flow, with full foundation and all the drawn combs procurable, and protects the supers by an outer case, to afford the warmth necessary for secreting wax and building comb. (R.)

J. A. Golden hives his swarms in two supers of sections on the old stand. The queens are kept clipped. The queen is caught and caged in a section with wire-cloth tacked around, containing a partly drawn comb, and placed in the center of the upper super, and on top of the two supers he sets the parent hive. Five or six days later in the evening all the bees are shaken from the old hive in front of the supers, all the queen-cells cut, the old hive replaced on the bottom board and the supers above, and the queen released. Hence no extra hives are needed. (A.)

W. B. Ransom produces straight comb honey without separators by keeping the whole strength of the colony together and requeening with a virgin queen hatched in the colony. (G.)

A. Hansen of California obtains his best results in extracted honey from three story eleven-frame hives, with the queen ranging over all. (G.)

A swarm to which frames with starters are given should not be also given empty

combs, says G. M. Doolittle. The ovaries of a queen stay comparatively dormant for the first 36 hours after a swarm is hived; and when a swarm "finds a start in comb already made, enough for all the queen will under such circumstances occupy for the next four days, they seem to conclude that the queen has enough worker comb for their needs, so go to building store comb to hold the honey which the large force of workers is bringing in, and continue at this size of cells, which is always of the drone size, till the queen has filled all of the worker comb with eggs, when they very reluctantly begin to build worker comb, and the queen as reluctantly crosses over the frames of honey to begin laying in another part of the hive from which she first established her brood-nest." He cites a case of a hive containing combs built in that way which was more than half filled with drone comb, and had not yielded surplus in five years, while the others gave 50 to 100 pounds. (P.)

Sections Illustrating

Our Grading Rules.

On the next page is a half-tone of six sections of each grade, selected by some members of the Colorado State Association shortly after the convention. The description that follows is based on a personal inspection of the sections. For the rules see page 120.

1—1. White comb, completely capped; full weight; surface straight, and even clear to the wood all around; two small holes below.

1—2. White comb, with a scarcely perceptible tinge toward the bottom (in the photograph, this section is upside down); completely capped; full weight; surface and holes as in 1—1.

1—3. White comb, with a slight water-soaked appearance along the bottom, and a very slight tinge of



yellow; completely capped; good weight; comb slightly rounding, with the outside row of cells along the top and sides on a slightly lower level than the others.

1-4. Shows a good white appearance, with a slight tinge of yellow; completely capped; good weight; surface slightly tapering next the wood; four

holes, two scarcely noticeable.

1—5. Color not just white, but not much stained—some of the cells show a water color in a small part of their surface, which gives a somewhat darker appearance as a whole than the others; all capped except about six cells at the bottom; good weight; straight surface, clear to the wood, except that the bottom projects a little beyond the surface of the comb, though not beyond the edge of the scallop; four holes.

1—6. Comb very slightly propolis-stained; some of outside row of cells unsealed; weight a trifle under medium; straight surface, rounding off around the edges; three fair-sized holes.

2—1. Slight tinge of yellow; outside row of cells mostly unsealed; weight a trifle under medium; surface straight, rounding off at edges; four holes, three rather large, one scarcely noticeable.

2—2. Fairly white comb, with slight propolis strain near top; about one-half of outside cells unsealed; weight medium; surface mostly straight, a little irregular at edges, with a burr comb near the top; one hole; wood slightly stained.

2—3. Rather white comb; eighteen or twenty unsealed cells near the top; rather light weight; surface somewhat rounding, and rather far back from the edges of the wood; two holes, one small; some stain on wood.

2—4. Good white comb, very slight yellow tinge at top; outside cells mostly sealed; full weight; surface projecting $\frac{1}{8}$ inch beyond wood, showing abrasions, and not quite level; three holes; wood not much stained.

2—5. Comb relatively dark, though not absolutely so—prominently yellowed by propolis; most of outside cells unsealed; good weight; surface straight, rounding at edges, burr-comb near top, four small holes; some stain on wood.

2—6. Darkish yellow, not quite so intense as 2—5; outside cells sealed except at bottom, where they have no

honey at all, which together with large holes makes inferior attachment; weight under medium; surface straight, rounding off at edges; four holes, one rather large; some stain on wood.

The second grade sections shown are rather below the average of second grade Colo., honey, but selected to bring out the points. No amber honey was available at the convention, but that feature would not show anyhow in a picture. The six sections shown are second grade white honey, though not necessarily white comb. By medium weight is meant about fourteen ounces, and by full weight, about sixteen ounces.

Proper time to Requeen.

BY WALTER MARTIN (COLORADO).

Mr. G. M. Doolittle seems to misunderstand the answer given as to the best time to requeen a colony or apiary as asked at the Colorado State Bee-Keepers' Convention. In answering that question I did not mean to convey the idea to requeen a colony the day it swarmed, either the swarm or the parent colony. In fact I think it would be unwise to do so. But I would wait three or four days after swarming at east, or if I did not want increase would requeen just before swarming. What was meant by swarming season was during the honey-flow; at such time the bees are not so irritable; are also well stocked, and could better afford the loss of a queen for a few days. At such times queens are more easily procured and at less expense, and my experience is that they are more readily accepted than during a dearth of honey-flow. I never had general success at any season in removing a laying queen from a colony and immediately releasing a strange queen in same. But some times they will receive a very young virgin queen just hatched, but I never considered it a successful plan.

Size and kind of Hives and Frames.—Tall Sections.—Bottom Starters.—Loss from Clipping.

BY H. RAUCHFUSS (COLORADO).

If I were to start over again, I would adopt the ten-frame dovetailed hive, with closed-end frames. One can get as much honey from the eight-frame hive; but that is not the point. Last spring at one of my out-apiaries I found a number of eight-frame hives in the latter part of May that did not average a pound of honey apiece.

They were strong and had abundance of brood. What would have been the result if they had not been inspected? I fed them by giving them supers of extracting-combs which had been extracted late the previous fall and had retained a good deal of honey, which, of course, was all granulated, but the bees did not throw a bit of it out. When there are plenty of bees they can liquefy honey all right.

To return to the subject, those colonies should by all means have been in ten-frame hives. Then I think Mr. Hutchinson is getting it down a little too fine by his argument that we want as much profit as possible per hive and per comb, not per queen, because queens have little value. Even if the queens had no value, the bees have, and large hives make proportionally larger colonies. We are apt to be misled by the power of adaptation of a colony to a small hive. I have seen colonies in one Heddon story apiece that were in normal condition; that is, they had the proper proportional amount of bees, brood, and honey—they had as much honey in proportion to the bees and brood as ten L-frame hive; but the way the average colony spreads itself in the spring when two brood-chambers are given it instead of one, is sufficient evidence that a single eight-forme story is too small. On an average, a colony on twenty frames will fill more frames

with brood before the flow than a colony on ten frames.

I have had a small number of Heddon hives for a number of years, having had as many as sixteen colonies at one time in two-story hives, and have never made any attempt to get the bees out of them, but have even put more colonies in them when they died out; and yet at the present time I only have two or three colonies left in Heddon hives. They wintered badly. The only reason seems to be the bee-space that cuts the brood-nest and the cluster in half. I have had no chance to observe the way normal colonies in Heddon hives build up in spring compared with other colonies of ordinary strength, for I never had a strong colony in a Heddon hive. After a colony had been in a Heddon hive a year, it would never come out strong. The only strong colony I ever saw in a Heddon hive was one that had built its combs crossways, in a three-story hive, and it was a powerful one.

Another objection was the mass of burr-combs, filled with brood, that the bees would build between two hive-sections. The bee-spaces were correct, but the bees wanted to make solid sheets from top to bottom, and filled in the interspace with drone-brood and honey, which it was impossible to keep the bees out of when broken by removing one story, so that when it was replaced great numbers would be killed. If it were not for those two objections, wintering and burr-combs, I would like the Heddon hive, as it is well calculated to favor manipulations. But I would not rely on it to find queen-cells without removing the frames. I found queen-cells close to the end bars all covered up with comb so that they could not be seen from above or below the frames.

I have had some colonies in eight-frame deep hives of L length. They built up remarkably well in the spring, and made rousing colonies, and I thought surely I would get good results

from them in comparison with the others. But I did not—not even when they were run for extracted honey. Evidently there was too much room for honey between the brood and the surplus apartment. For our climate, the Langstroth frame seems all right—we do not want a deeper or a shallower frame. If we could put the bees from deep hives into shallow ones at the proper time, we would get big results. This can be done by having them in two regular-sized stories all the time except during the flow. The main cluster will not be divided in two as in the Heddon hive, as they will mainly occupy one of the two stories.

I have tried several that way with good results. It is not such an expense as one would think to have an extra story for each hive. They are necessary for non-swarming manipulations; and if one does allow his bees to swarm, he has to have extra hives anyhow.

I don't think the bees will commence work in the the tall sections as quickly as in the square ones. In upper chambers of frames, they do not build combs so readily in deep frames as in shallow ones. I once put a set of hive-bodies with starters over about twenty-five colonies, and not one of them commenced on the starters. They build from below up.

It made a great mess. Some of the combs were eight inches high. I finally got them to start from above by putting comb of brood in the upper chamber. It struck me then that a bottom starter would be a good thing in sections. I think with Mr. Danzenbaker, that bottom starters have little influence in making well-filled comb, but that is not the point; though as long as they help a little in that way, it doesn't hurt any. I use them because they get the bees started to work sooner. Foundation has a great influence on comb-building. Every bee-keeper has noticed how a section will sometimes be left en-

tirely empty, just because it has accidentally lost its foundation, while all the others will have combs built to completion. What holds good in that case holds good in the other, in the influence of foundation. If foundation could be conveniently fastened all around the section, it would be better yet. Especially when only starters are used at the top, bottom-starters are a good thing.

As to thin combs, there is more wax in a thin comb in proportion to the amount of honey than in a thick one. On the other hand, a thin comb is better filled at the edges. The thicker a comb is, the more rounded it is apt to be at the edges.

When one clips his queens, it is a loss to have the hives sit close together when swarming is allowed; for when the swarm returns to the new hive which has been set in the place of the old one by the bee keeper, it scatters more or less, and many bees enter neighboring hives and get killed.

TIMELY DISCUSSIONS,

At the meeting of the Denver bee-keepers on April 12, a letter from another queen-breeder was read; and all in need of queens were requested to communicate with F. Rauchfuss, Box 378, Denver.

Mr. Cornelius said he had moved bees in every month in the year. He prefers a spring wagon, and cool weather. In summer the entrances are closed, and a screen put on top. If very warm, the moving should be done at night or in the early morning. If the screen gets too crowded, he sprinkles them to allow the air to enter. Mr. Martin mentioned an occasion when he had both the top and the entrance provided with screens, and still was compelled to open them up to allow them to cluster outside.

Mr. Divinny advised to place hives on a stand or trestles in the shade, with an eastern or southern exposure. They may do well in the sun, but that does not demonstrate they would not do better in the shade. In his early experience he lost fifteen colonies by absconding and melting down of combs by having the hives in the sun. Mr. F. Raucnfuss said he did not see that as much benefit could not be had by facing hives north. Mr. Milleson objected to placing hives on the ground, as by so doing he would lose most of his bees by the toads. He advises stands at least ten or twelve inches high, as he has seen toads reach up as high as ten inches. He gives each swarm a comb and spreads a wet gunny-sack over the frames; and has not lost a swarm in five years by absconding. Mr. Bates keeps his empty hives in a cool place and has no trouble with swarms absconding. He prefers an eastern exposure, as he notices the bees get to work earlier.

At the meeting of the Uncompahgre Valley bee-keepers on April 1, Mr. Nichols asked whether it was a fact that the bees do not cramp the queen in a small hive. Mr. Anderson replied that if little honey was stored in the outside combs when the flow starts, there is less inducement to crowd the queen; that the size of the hive is not so much the point as whether the storage of honey is started below or not. Mr. R. D. Willis asked whether bees do not always fill the lower story before they go above. Mr. Anderson said not necessarily; they should be given a bait comb or two, with plenty of room. Mr. Bruce said the honey flow is long here, and comes with such a rush at the start that as quick as some brood hatches, the brood-cells are filled with honey; that if anybody made a fault of putting on supers too early and giving too much room, it was he, but if there is a cell empty below, it will be filled first.

Last year his sections were light, averaging 21 pounds to the case, and if he had crowded his bees a little more, they might have been heavier. Mr. Nichols said he had always put his supers on early, but could not make the bees build comb fast enough to hold the honey—the first thing he knew, the hive was chuck full of honey below. He thought it possible that this might be obviated by using full sheets of foundation in the sections, as he uses 1½ inch starters, and full sheets would give occasion for three times as many bees to work on the cells. He endeavors to fill the hive in the spring by spreading brood and adding empty combs. Mr. Wm. Willis gives plenty of supers in time, and they never crowd the queen below. He has never had to resort to bait comb. If the bees are given all drawn combs in the super, they will fill it a few days ahead, but only a few days. He uses an outside case or deep cover for each hive, that covers two supers, and when no supers are on sits on the bottom-board, and his bees do not leave the supers nights and have no difficulty in comb-building. Mr. R. D. Willis said he wanted nothing smaller than a ten-frame hive.

At the meeting of April 16, held at the apiary of Mr. Nichols, Mr. Baker asked whether it would benefit a new swarm to give it an empty comb for a start. Mr. E. Willis said it might benefit a very early swarm. Mr. Bruce said a single comb given would be further drawn out and made too wide by the bees. Mr. Wm. Willis thought not, as the queen would lay in it right away. His plan, however, is not to use an empty comb, but a comb of unsealed brood, in order that the swarm shall not abscond; then a swarm hardly ever leaves, and only left once for him. When one of his swarms, that had been formed by several swarms going together, started to abscond, he put in a

frame of brood, and it instantly stopped. Mr. R. D. Willis said that if the swarm has no queen it will raise queen-cells on the brood-comb given and swarm. He hives his swarms on alternate full sheets and empty combs, so as to get no drone-comb, and has not found that the combs are drawn out wider than the sheets when completed. He uses combs between the sheets so that the foundation will not sag when a swarm is hived on them. Mr. Thompson gave Mr. Doolittle's reason for not giving a swarm empty combs in part of its space, allowing them to build the remainder, which is that the queen in that case does not keep up with the workers which consequently build store-comb or drone-comb more than they otherwise would. Mr. E. Willis said he had never seen drone-comb built in the center of a hive.

Mr. Heath asked the question "Are the large quantities of drones in a hive a necessity, or has nature made a mistake?" Mr. Bruce said the ablest writers estimated the loss in honey caused by the unlimited production of drones at the value of one dollar per colony. The bees are not working for the same object as we are. Mr. Wm. Willis said this was the hardest thing to control, and the only way to do so is by using full sheets of foundation, which is tedious work to put in and wire. One cause of an overplus of drones is too much drone-comb; another is an old queen that lays drone eggs in worker cells. Such a queen is old enough to kill. When drones are allowed to go into section supers late in the season, the bees leave the top tier of cells uncapped. He lays that to the presence of the drones, as he has noticed it in hives that have an over-production of drones. Mr. R. D. Willis said he had started in three or four years ago to give full sheets, leaving a $\frac{1}{2}$ or $\frac{3}{4}$ inch space below, and had had plenty of drones for apiary purposes. He thought

a small proportion, say four square inches, of drone-comb in each hive was ample. A good way to get drawn worker combs is to put full sheets in the top story of extracting hives, as then they are built clear to the bottom-bar. Mr. Thompson said he had not found that full sheets of foundation were necessary to be sure of getting worker combs. He cut out a great deal of drone-comb last spring, removing all such frames, and putting in their places frames of worker-combs from colonies that had died. The combs that had been mutilated by cutting out drone-comb were saved until the flow, then put one at a time in the brood-nest of weak colonies or nuclei, which invariably filled them out with worker-combs, doing much better work at patching than could be done by hand. As soon as one of these colonies became strong enough to build drone-comb, it would not be given any more. In this way the expense and work of foundation is saved.

Mr. R. D. Willis asked whether it paid to hunt out all the old queens and kill them and replace them with queen-cells. Mr. Wm. Willis said it pays to kill all those that lay drone-eggs, and when one does not want to keep track of the old queens, he can clip his queen, let the colonies swarm, and catch and kill the old queen when she comes out with the swarm. He favors clipping as much for this reason as anything. Mr. Bruce said it was a damage to kill a queen any time before the swarming season, and even in swarming-time a week or so of egg-laying would be lost by doing so, which is valuable for producing workers for the second crop. He thought the bees will take care of superseding. R. D. Willis said that is not always the case. He had one colony that gave abundant surplus one year, and the next year was weak all the season through.

At the meeting on April 30, held at the residence and apiary of I. M. Kelsey, Mr. Bruce said when a swarm started to come out which he did not want to come just then or was afraid that it would unite with another, he stopped the hive and left it for ten minutes, and in no instance it swarmed again, but it always killed its queen. He had tried it perhaps six to ten times. Mr. E. Willis said he tried it once, but forgot about it until three or four hours afterwards, when he found a large part of the bees smothered. He also said he could always stop an absconding swarm if he saw it soon enough by dashing water in the hive. Many bees would be apparently drowned, but would revive after lying in the sun awhile. Plenty of shade and space are effective in the prevention of absconding.

On the expediency of an artificial swarming method, Mr. Nichols said he tried dividing when new in the business, and had his hands full. It was a hard job to not miss queen-cells, and he had more natural swarms than ever. Yet as a rule he cannot get enough swarms to make up winter losses. Some of the weaker colonies, those that have old queens, are more inclined to swarm than the strong ones, and he has to hive them back to get the honey. But to make artificial swarms by taking some brood and bees from a strong colony, and giving a queen-cell, is all right. Mr. E. Willis said his experience was about the same. Mr. R. D. Willis said that one winter he read the A B C of Bee-Culture, and next season divided straight along, giving the queen to the new stand. The result was that the queen had but few bees, and the other part was a long time without egg-laying, while it was raising a new queen. He now thinks the only right way is to raise the queens beforehand, and give queens or cells at the time of the division, and it needs an experienced hand

to do it. He thought many colonies with old queens do not build up strong enough to swarm, hence do not renew their queens often enough, and the apiary runs down; and that it pays to get about a dozen queens every two or three years and select the best of them to raise young queens from. Mr. Thompson said that last season he had treated an out-apiary by the plan of adding an extra story with an excluder a week or so before the flow, putting the queen with two frames of brood in the upper story, adding some combs, and nine days after, moving the upper story to a new stand and cutting out all but one of the queen-cells below. It was fairly successful but some cells were missed and a few swarms lost and it was a great deal of work. The plan is not to be recommended in that form, but young queens ought to be ready to give to the old stands shortly after the division is made. The parts with the old queens did much excellent work in patching mutilated combs and filling empty frames with worker combs while they were building up, and many of them gave a super or two of honey during the second crop.

Page 89, column 2, line 19, read "slan s" for "stands"; 97-1-16, "hires" for "helps"; 97-1-36, "treated" for "tested"; 97-2-38, "out" for "home" 17-2-22, "those" for "three."

The Denver Bee Keepers' Association will hold its next monthly meeting in the State Capitol Building, on Wednesday, June 14th, in room 33, second floor.

All interested in bee-keeping are requested to attend. Remember the membership fee is only 50c. for gentlemen and 25c. for ladies, which entitles you to the lowest prices on bee-supplies. A single purchase, often, more than reimburses the amount. Those seeking knowledge in apiculture should not fail to attend.

R. H. Rhodes, Pres. Walter Martin, Sec.

(SEE PAGE 110, PARAGRAPH 3.) Mr. Hutchinson replies that if a large colony keeps up the animal heat more economically, this is an argument on the other side of the question, as the honey harvests come at a time when the heat often drives the bees from their hives. (Here, the argument is valid, on account of our cold nights, that drive the bees from the supers.) He believes no experiments have been made to determine whether, other things being equal, a large colony will store more honey, proportionally, than a small one, but it is his belief that it does not. He doubts if there is an experienced queen-breeder who has not been astonished at the wonderful amounts of honey stored by nuclei. He does not favor abnormally strong colonies, his preference being those of moderate or medium strength. (R.)

(SEE PAGE 110, PARAGRAPH 1.) Mr. Doolittle replies that the majority of the good to large yields of comb-honey reports have come from those using small hives, or those contracting the brood-chamber during the honey-flow down to that used by those by those recommending small hives. He thinks the size of the brood-chamber has little to do with the wintering of bees, as his bees in nine-frame Gallup hives more often come through three to five months steady confinement, with the mercury often from 5 to 25 degrees below zero, in good condition than otherwise. (G.)

G. M. Doolittle has found that

with any but the nucleus-box plan of artificial increase more or less of the old bees will go home, and not stay where they are put. By this plan, as soon as any of the colonies have bees enough to spare from two frames, they are shaken through a hole into one of these boxes through a large oval funnel, with an outlet $2\frac{1}{2}$ inches in diameter at 10 A. M., closed up, and left in a shady place until 5 P. M., when a virgin queen in a cage with a candy stopper made so that it will take the bees half a day to liberate her is added, and the box left until sundown the following day, when it is opened and the bees allowed to run in a hive having a comb with a small amount of brood, a honey-comb, and two or three empty combs. The nucleus-box is provided with a wire-cloth frame on one side which may be pried off. One colony is used for raising queen-cells, by the plan given last month, and these cells when ripe are put in a queen-nursery to hatch. A little later a small colony can be formed from each decent colony wintered over, including the one which is raising queen-cells, twice every week. Plenty of combs are kept on the strongest colonies so that plenty of stores may be had for winter. As the season advances, more bees are used each time in making the colonies. (G.)

Just before going to press, we are informed that J. B. Dodds has lately been appointed bee-inspector for Jefferson County.

GRADING RULES.

Grading Rules for comb honey adopted by The Colorado State Bee-Keepers' Association, Dec. 2, 1898:

NO 1.—Sections to be well filled, honey and comb white, comb not to project beyond wood, wood to be well cleaned; cases to weigh not less than 21 pounds net per case of 24 sections, but cases in lots must average 23 pounds net.

NO 2.—Includes all amber honey, and all white honey not included in No. 1; to be fairly well sealed, and not weigh less than 18 pounds net per case of 24 sections.

CULLS—All cull honey shall be sold in the home market.

[In addition, the following description of cull honey has been suggested by good authority: All sections that have more than one-third of one side unsealed, all combs not sufficiently attached for shipment, including those sections of which the top or bottom-bar has become accidentally detached from the comb; all connected combs, or those that bulge very much, or have very prominent burr combs, or leak very badly, or are cracked from any cause; all sections that average less than 18 pounds net per case, and that very small percentage which have the wood badly mildewed, or the combs very badly spotted or daubed with propolis]

HONEY QUOTATIONS

Denver, Apr. 25—Supply of both comb and extracted nearly exhausted. Comb honey, No. 1, \$2.50 to \$2.75 a case.

“ “ No. 2, or candied \$2.25.

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As there is practically no honey now reserved in the west, it does not seem worth while to print eastern quotations at present. There seems no particular reason for anticipating low prices this

season. Wintering losses all over the country have been heavy, and California rains have been too late to count on. From present indications Colorado will not increase its output this year.

Bee-keepers wishing to sell honey, or exchange bees, honey or other articles for anything, will be given three lines in this space for 10 cents each insertion.

Beeswax wanted for foundation making. CHAS. DADANT & SON, Hamilton, Illinois.

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