

1802

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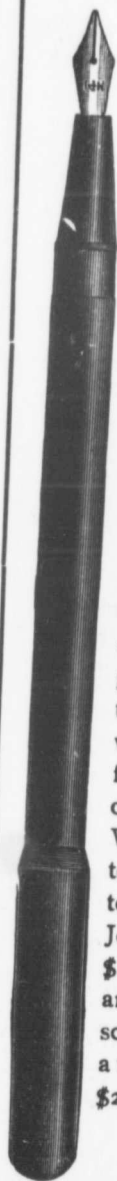
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The Canadian Bee Journal

BRANTFORD, CANADA

**The
Canadian Bee Journal**

Devoted to the Interests of Bee-keepers

JAS. J. HURLEY, Editor

Published monthly by
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Brantford, Ont.

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Vol. 20, No. 10.

NOTES AND

SPRAYING A

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A subscriber has of the London F September, 1912, ing marked parag BRUSSELS, SEPT evaporator has ag tions for the fall se the proprietor reop upwards of a dozen apple crop this year good one. The pla McDonald of spray the blossoming sta successful, as the been thus treated a with fruit. The pri eties and dried app fact, the apple buy made their appeara of the country. F very abundant. Plu lific crop that they on the market

We have drawn t editor of the Free lating to the spraying doubtless he will cor pressions that may h the minds of his read

O.B.K.A. CON

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October, 1912

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The Canadian Bee Journal

PUBLISHED MONTHLY

JAS. J. HURLEY, EDITOR, BRANTFORD, ONTARIO, CANADA

Vol. 20, No. 10.

OCTOBER, 1912

Whole No. 572

NOTES AND COMMENTS

SPRAYING APPLE TREES IN BLOOM.

A subscriber has forwarded us a copy of the London *Free Press*, dated 24th September, 1912, containing the following marked paragraph:

BRUSSELS, SEPT. 23.—The Brussels evaporator has again commenced operations for the fall season. Mr. Weymouth, the proprietor reopened last week with upwards of a dozen hands employed. The apple crop this year is an exceptionally good one. The plan adopted by Mr. G. McDonald of spraying the trees during the blossoming stages has proven very successful, as the orchards that have been thus treated are completely loaded with fruit. The prices for shipping varieties and dried apples are very low. In fact, the apple buyers have not as yet made their appearance in this section of the country. Fruit of all kinds is very abundant. Plums are such a prolific crop that they are almost a drug on the market

We have drawn the attention of the editor of the *Free Press* to the law relating to the spraying of fruit trees and doubtless he will correct any wrong impressions that may have been formed in the minds of his readers on the subject.

O.B.K.A. CONVENTION

We understand that the annual Convention of the O.B.K.A. will be held in Toronto, on Tuesday Nov. 12. At the time of writing we have not received the program of the Convention, but we gather that steps have been taken to ensure a very profitable and interesting meeting.

NATIONAL BEE-KEEPERS' ASSOCIATION.

We are asked to announce that the Delegate meeting of the National Bee Keepers' Association will be held in Cincinnati, Ohio, February 12—13, 1913.

While all sessions will be open to the members and visitors, some sessions will be devoted wholly to business, through the delegates.

At least one session each day will be set aside for the members to discuss such subjects as may be decided upon later, notice of which will be given out by the Secretary.

The subjects that will likely be selected for discussion will be of national character, rather than pertaining to the production of bees and honey.

APICULTURAL SOCIETY OF THE PROVINCE OF QUEBEC

The Secretary of the Quebec Beekeepers' Society informs us that the annual meeting of members will take place at the Government Offices, Montreal, on Wednesday, 13th November next, the proceedings to commence in the morning at 10 o'clock. All beekeepers will be cordially welcomed by the officers and members of the Society. Mr. A. O. Comiré, St. François du Lac, Que., is the Secretary, and visitors are requested to write him, announcing their intention to be present.

THIN HONEY

Some bee-keepers we know have been so careless this season as to keep considerable quantities of honey exposed to the moist atmosphere. In consequence, the honey has absorbed water to an alarming degree. Mr. Bray's article in this issue will be found very instructive in this connection.

MR. SLADEN

Mr. Sladen's advent among us has given universal satisfaction, and is regarded as a matter for self-congratulation. Dr. Miller's greeting is characteristic:

The CANADIAN BEE JOURNAL is crowing over the acquisition of F. W. L. Sladen, F.E.S., as assistant in apiculture to Dominion Department of Agriculture. I'd crow, too. In fact, I feel like crowing that he is on this side the ocean. Those Canucks can't keep him all to themselves, you know. He's too big a man.

"MENDELISM AND THE BEE"

In an early issue we intend to print Mr. Sladen's lecture on "Mendelism and the Bee," which we believe is the most authoritative statement that has so far been made on this most important subject. Mr. Sladen has the proofs in hand, and our readers will doubtless look forward to its appearance in our columns.

MR. LOVELL AND HAECKEL

A writer in *Gleanings* is quarrelling with Mr. J. H. Lovell because the latter has referred to Haeckel as "one of the most eminent of living biologists," and devotes a long paragraph to the vilification of the scientist who has done so much to solve some of the most interesting problems of life. Haeckel is

beyond the reach of the mud-balls of uncharitable criticism. His reputation as a sound thinker is world-wide, and is not to be undermined by the attacks of unchristian minds which delight in the scattering broadcast of such epithets as "atheist" and "common forger."

CLOVER PROSPECTS

The season this summer has been an ideal one from the point of view of the *optimist!* The spirit of thankfulness pours out at the sight of the alsike, which promises so splendidly for next year's crop. More seeding appears to have been carried on this year in consequence of the cool, moist weather, so that the rain has not been altogether an unmixed evil. A croaker, however, has just whispered that he fears the condition of the clover is too soft and green to stand a real hard winter.

OBSERVATIONS MADE WITH BLIND BEES

Monsieur Gaston Bonnier continues to make his interesting observations in bee life. In his last communication of 19th April to the Academy of Science at Paris he stated that foraging bees were guided in their return to the hive neither by the sense of smell nor of sight. By means of numerous experiments, M Bonnier showed that the eye in the bee, though so wonderfully developed, is not employed to direct her in the return home. Without going further into details, it is enough to give the following particulars. The foraging bees whose eyes had been covered with a layer of blackened collodion, and therefore rendered sightless, were equally as well able to find their hives as those that could see, and the sense of smell, which is located in the antennæ, cannot be summoned to their

aid, as the scent at a distance though the air can return from the hive.

M. Bonnier had been dipping from the colonies foraging bees had begun to fly to the hive. This with a mixture of tallow.

Other sweets placed in a part of some of the first branches, and bees, but not by the second lot marked with red green-colored bees the first lot of marked bees to that the bees went in two directions in this case the test 200 yards in length at the base.

M. Bonnier believes a special sense—such as homing pigeons

THE VALUE OF

At the moment of the exhibition of honey at the Honey Show to be held next month. The mention of any such prize list is portentous for the bee-keeper—at least, is usually a prosperous one. His prosperity comes from hustling on his part in the little circle of labors he succeeds often in spite

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OSPECTS

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aid, as the bees can only appreciate
scent at a limited distance; and even
though the antennæ be removed, she
can return from any distance to her
hive.

M. Bonnier put some branches that
had been dipped in syrup at a distance
from the colonies, and the next day the
foraging bees had discovered them and
had begun to fly to and from the syrup
to the hive. These bees were marked
with a mixture of green powder and
tallow.

Other sweetened branches were
placed in a parallel direction at a dis-
tance of some six yards or so from the
first branches, and were visited by field
bees, but *not* by those marked green.
The second lot of bees M. Bonnier
marked with red. The next day the
green-colored bees continued to fly to
the first lot of branches, and the red-
marked bees to the second, proving
that the bees were able to distinguish
two directions in a very acute angle—
in this case the two sides being about
200 yards in length and only six apart
at the base.

M. Bonnier believes that bees have
a special sense—a sense of *direction*,
such as homing pigeons possess.

THE VALUE OF EXHIBITIONS

At the moment of writing it is diffi-
cult to gauge the prospects of an exhi-
bition of honey at the Fruit, Flower
and Honey Show to be held in Toronto
next month. The elimination of all
mention of any such show from the
prize list is portent of ill omen. The
bee-keeper—at least, the professional—
is usually a prosperous individual, and
his prosperity comes without much
hustling on his part outside his own
little circle of labors in the apiary. He
succeeds often in spite of himself. He

produces an article which is its own
advertisement. In the minds of the
general body of the public, honey is
an article in which the degrees of com-
parison do not exist. It is honey, an
article standing quite alone among
comestibles. Its production is limited,
for reasons too well known to bee-keep-
ers to require enumeration. Hence, the
necessity for "boosting" honey does
not arise, even in this age of clamant
advertising. There is also, perhaps, a
tendency amongst bee-keepers to abstain
from revealing the mysteries of their
craft. A fear exists in the minds of
many of them that any ostentatious
display of the ease with which the
ferocious insect (?) may be subdued
would lead to a great influx of amateurs
into the ranks of the bee-keeping fra-
ternity, and subsequently to the lower-
ing of the prices of honey. These fears,
for our own part, we believe to be un-
founded. There is a natural prickly
hedge surrounding the profession which
very successfully protects bee-keepers
from the competition of those who
would not take bee-keeping seriously.

In all contests of a friendly nature
there is an element which sometimes
gets lost sight of—the spirit of emula-
tion, which does so much for the ad-
vancement of human affairs. Success
is amply rewarded with the laurel sprig
or the hand-grip of congratulation.
When the merely commercial spirit
dominates the actions of exhibitors, the
human element becomes deadened, and
the value of exhibitions is greatly les-
sened.

We believe that it should be made
possible for the rank and file to take
part in these exhibitions; in fact, the
small bee-keeper should be borne prin-
cipally in mind when schedules are
being arranged. The mammoth exhibit
may serve a useful purpose as a decor-

ative display of produce, but as a means of bringing together representative samples of the best honey the country produces the small exhibit is preferable. The cost of sending the latter to exhibitions is very small and would not act as a deterrent upon anybody wishing to exhibit. In this way the complaint as to the costliness of exhibiting would completely disappear.

"STINGLESS" BEES

On another page we print an article by Mr. Sladen on "Stingless Bees." Of great interest, and one that most bee-keepers will recognize as being most plausible, is Mr. Sladen's suggestion that the stinging instinct of the bee is really composed of two distinct protective acts. The loss of the sting means death to the bee, and it is not inconceivable that the complete or partial dropping of the stinging character in some races marks a distinct advance in the evolutionary process. The buzz of the angry bee is sufficient for practical purposes as a means of protection, and there is no reason why, in the course of nature, a self-destructive character like that of "inserting the sting" should not disappear.

We cordially endorse Mr. Sladen's opinion that Canada may prove a very suitable country for the establishment of mating stations, and is likely to provide a good, if not the best, breeding ground for any artificial variety of bee, whether its special characteristic be "stinglessness," honey-production, disease-resistance, non-swarmling, or mere beauty."

INHERITANCE OF FECUNDITY

In the case of bees the question of improvement is complicated by the fact that, generally speaking, the character to be modified is not directly inherited

by the queen. For instance, it is not in the queen that improvement in these characters is sought, but in the workers, who, however, play no direct part in the perpetuation of the race. Perhaps, therefore, for all practical purposes, the question of fecundity is of greater importance to the bee-keeper than the other characters that have recently been brought under discussion in this connection. The prolific queen produces a larger army of workers, which gather, other things being equal, a proportionately larger harvest.

The question of fecundity, then, is one that deserves deep consideration in this discussion of improvement, and any enquiry into the manner in which the mechanism of the inheritance of fecundity acts is of great importance in the intelligent study of the genetics of the honey-bee. Such an enquiry has been made by Dr. Raymond Pearl, of the Maine Agricultural Experiment Station, who has described, in an interesting paper read before the recent Eugenics Congress in London, England, the results obtained by him in his investigations regarding fecundity in the domestic fowls. These results in some respects are novel and unexpected, and they furnish for the first time, a clue as to the precise manner in which the character of fecundity is inherited. The following brief summary will indicate the points of importance in Dr. Pearl's paper.

1. Fecundity is obviously a character depending upon the interaction of several factors or groups of factors.
2. Different *breeds* and *strains* differ widely in their laying capacity.
3. These differences in fecundity are inherited in accordance with the simple Mendelian scheme.
4. Departures from the normal of egg production are accounted for by the presence or absence of corresponding factors.
5. The factor for the abnormal pro-

duction of eggs transmitted by the female.

6. There is segregation of fecundity.

These results may serve as a lar investigation in bees. Great different strains of the manner of character is indicated to bee-keepers they may eliminate non-productive strains.

A BEEKEEPER

Mr. Tickner's known English work just written a principal character of the scene being in village. This author's "Honey Bee" is an interesting work in bee-keeping read and we look forward with interest to receiving your new book.

"STINGLESS"

Canadian Queen

BY F. W.

My attention has been attracted by a paragraph in a Canadian publication stating that Mr. B. B. Essex, England, has produced a stingless Italian queen with I have not seen Mr. statement, but "stingless" in the sense that they do not sting on human beings in the East and there is no reason why they should not

duction of eggs is sex-limited, and is transmitted by the male parent, and not by the female.

6. There is a definite and clear-cut segregation of high fecundity from low fecundity.

These results on fecundity in fowls may serve as a guide to pursuing similar investigations in the same character in bees. Great differences exist in different strains of bees, and a knowledge of the manner in which this particular character is inherited will undoubtedly indicate to bee-keepers a way by which they may eliminate from their yards the non-productive strains.

A BEEKEEPING NOVEL.

Mr. Tickner Edwardes, the well-known English writer on bee lore, has just written a novel in which the principal characters are bee-keepers, the scene being in a south of England village. This author's "Lore of the Honey Bee" is one of the most charming works in bee literature we have read and we look forward with much interest to receiving Mr. Edwardes' new book.

"STINGLESS" BEES

Canadian Queens for England

BY F. W. L. SLADEN.

My attention has been drawn to a paragraph in a Canadian newspaper stating that Mr. Burrows, of Loughton, Essex, England, has succeeded in producing a stingless bee by crossing an Italian queen with a Cyprian drone. I have not seen Mr. Burrows' original statement, but "stingless" bees, in the sense that they do not use their stings on human beings, are common in the East and there seems to be no reason why they should not be acclimatized in

Britain or in any other bee-keeping country.

When investigating the bees of India in 1897 I paid a visit to the apiary of native bees kept at the jail at Darjeeling (altitude 7,000 feet), in the Eastern Himalayas. These bees were always handled without the use of either smoke or veil. I myself examined a hive in this way, and I did it roughly, to see if it was possible to get the bees to sting, but it was not. An angry swarm gathered around my hat and head, and after I had left the hive twenty or thirty bees followed me wherever I went, but I gradually got rid of them by dodging behind bushes.

It would seem that stinging, which is really an act of defence, depends upon two characters, which may be inherited separately, (1) the "flying to" the molester and (2) the insertion of the sting into him. In our Western bees both of these characters are present, the former one in a modified degree. The Himalaya bees possess only the first. They only threaten to sting.

Some years ago some pure Cyprian queens from Cyprus were introduced into my apiary in England. Their workers threatened a good deal, but were little inclined to use their stings. But the workers produced by their daughters, which, of course, were mated by drones of the English black bee, not only threatened, but used their stings freely, unless they were skilfully handled. As a rule, the half-breeds produced by crossing two different races are more inclined to sting than either race, but there may be exceptions. For this reason one would hardly expect Italians crossed by Cyprians to produce stingless qualities. If Mr. Burrows has obtained a practically stingless bee from such a cross he is to be congratulated, because it is known to be a good honey gatherer in most parts of the world, while the Himalaya bee is probably much inferior in this respect.

It should be noted that "stinglessness" is one of those characters that would immediately disappear should the bee possessing it get crossed with ordinary bees. To get the benefit of such a character it would be necessary for the queens heading each colony to be purely mated. In England, owing to the fact that the apiaries are situated very near together, the great majority of the queens bred get mated by drones of the ordinary English black variety, and I think that in order to get the purely-mated queens at a reasonable price it would be necessary to import them from some country that is thinly settled and yet possesses a warm enough summer climate for bee-breeding. Canada would probably be the best country. There ought to be no difficulty in delivering Canadian-bred queens alive in England. During the past nine summers I have received at my apiary near Dover, England, weekly parcels of queens from West Virginia, U.S.A., from about mid-June to about mid-October. My figures are not at present available, but from memory I should say that about 90 per cent. of these queens have arrived alive. They have come by mail and have cost only two cents each for transmission. The workers accompanying them have generally arrived in sufficiently good condition to post them on in the original cages to purchasers in any part of the United Kingdom, including out-of-the-way places in Scotland and Ireland.

"Stingless" bees may, or may not, be a success, but in any case it would seem that Canada is likely to provide a good, if not the best, breeding ground for any artificial variety of the honey-bee, whether its special characteristic be "stinglessness," honey-production, disease-resistance, non-swarming or mere beauty.

Ottawa, Ont., Oct. 9.

[The newspaper paragraph in question is as follows:

"The stingless bee is the next product of a man's ingenuity. Mr. Burrows, an apiarist of the town of Loughton, in Essex, after two years of experiments, has obtained a species of bee which can be handled by a child in perfect safety. He mated the Cyprian drones and the Italian queens, the result being the production of harmless insects, which, however, are splendid workers. It is claimed that they are less liable to disease than the ordinary honey-gatherer.

"It appears that the new product has a sting, but it is useless as a weapon of offence. Yet they die when they lose it."

Mr. Morley Pettit, to whom the *Farmer's Advocate* referred the statement, replied in our contemporary as follows:

Of all the newspaper stories made out of whole cloth, this is the limit. As you know, no radical change in the life and physiology of any organism has been materially accomplished with only two years' experimenting, and as all bee-keepers know, if you cross Cyprian drones with Italian queens, you will get a result that is far from stingless. My earliest recollections of life in the apiary are of a particular corner of the apiary where bees of just this parentage had their hive. I was always careful to keep as far from that part of the apiary as possible, and whenever it was necessary to open those Cyprian crosses I always managed to have the smoker going particularly well, as the Cyprian bees and their crosses are the crossiest bees that any bee-keeper ever undertook to handle. The Cyprians are particularly good workers, but from this characteristic of being hot-tempered and unreasonable, and almost impossible of control by smoke, they are not kept to any extent for commercial purposes.

Most bee-keepers who have handled bees containing a dash of Cyprian blood will be skeptical as to the possibility of obtaining a "stingless" bee from the Cyprian-Italian cross. Nevertheless, as Mr. Sladen has shown, "no radical change in the life and physiology of any organism" would be involved. There is no *radical* or *physiological* difference between a quiet and an extremely bad-tempered colony.—ED.]

The lamentable display at the recent Toronto, say the occasioned considerable apiarists. It was regulation enforcement taking away the honey formerly put one exhibitor put he had shipped ing notice that led to retail unregular concession *Farmers' Advocate* on exactly the beekeepers make tive and suggestion ordinary concession wares as food d much modified rase of honey ex informed and ex *Farmers' Advocate* lowing comment

"It seems the only persons having tailing without pa privilege has no from them. Some surely have to be exhibit of honey at al, because it is or tive farm displays t say that the possi \$300 in prizes would ment to get beekeeper without the tailing honey, especially advertising, but ex Canadian National such a science that undertaking considerable glass that has to be requirements of the to this we have the good, and beekeeper

THE HONEY EXHIBIT AT TORONTO.

The lamentable failure of a representative display of honey to materialize at the recent National Exhibition, Toronto, say the *Farmers' Advocate*, has occasioned considerable discussion among apiarists. It was the result of a new regulation enforced by the management taking away the privilege of selling honey formerly allowed exhibitors. Only one exhibitor put in an appearance, and he had shipped his honey before receiving notice that he would not be permitted to retail unless, we presume, as a regular concession. It seems to the *Farmers' Advocate* that the case is not on exactly the same footing, because beekeepers make an exceedingly attractive and suggestive display which ordinary concessionaries who simply sell wares as food do not. At least a very much modified rate should be made in case of honey exhibitors. From a well-informed and experienced apiarist the *Farmers' Advocate* has received the following comment upon this subject:

"It seems the beekeepers were the only persons having the privilege of retailing without payment for it and this privilege has now been taken away from them. Some arrangements will surely have to be made to have a good exhibit of honey at the Canadian National, because it is one of the most attractive farm displays they have. You would say that the possibility of taking over \$300 in prizes would be sufficient inducement to get beekeepers to set up an exhibit without the extra privilege of retailing honey, especially when it is good advertising, but exhibiting honey at the Canadian National has been reduced to such a science that it is a very expensive undertaking considering the amount of glass that has to be put up to meet the requirements of the display. In addition to this we have the fact that prices are good, and beekeepers who have sufficient

enterprise to go to Toronto are able to sell their honey at good prices without going to that expense, and from an advertising standpoint it does not seem necessary to the average beekeeper to set up an exhibit at the Canadian National. On the other hand, there is the fact that an exhibit at Toronto advertises honey for all beekeepers of the Province as well as for the individual who puts up the exhibit. From this standpoint, it would seem that the Beekeepers' Association should undertake the matter and a healthy rivalry should be stimulated amongst counties by preparing county exhibits. An effort is being made by the Secretary of the Ontario Beekeepers' Association to induce County Associations to set up exhibits of this kind at the Fruit, Flower and Honey show held in Toronto in November. I understand the Middlesex County Association is considering the matter of putting up an exhibit of this kind. Some of the other counties are also taking the matter of putting up an exhibit of this kind. Some of the other counties are also taking the matter into consideration, but it is doubtful whether very many county exhibits will be placed this year. The shortage of the crop in the East will hinder very much coming from those counties and will also hold prices up to such an extent that very little honey will be left in the hands of beekeepers by the time the Fruit, Flower and Honey Show comes around."

BEE-KEEPING IN BRITISH COLUMBIA

Victoria and New Westminster Fairs.

To demonstrate the possibilities of beekeeping in British Columbia, the Department of Agriculture commissioned Mr. E. F. Robinson, of Victoria, to prepare an exhibit of honey etc., for the Victoria and New Westminster fairs. The same exhibit will be taken to the Lethbridge Dry Farming Congress. The

is the next proximity. Mr. Burne town of Lough-two years of ex-ried a species of lled by a child in ated the Cyprian n queens, the re-tion of harmless er, are splendid ad that they are han the ordinary

new product has less as a weapon die when they

o whom the Far-ed the statement, orary as follows: stories made out is the limit. As change in the life ay organism has plished with only ting, and as all ou cross Cyprian queens, you will r from stingless. ns of life in the lar corner of the just this parent- was always care- that part of the whenever it was a Cyprian crosses have the smoker l, as the Cyprian are the crossest per ever under- yprians are par-s, but from this ng hot-tempered d almost impos- ke, they are not commercial pur

ho have handled of Cyprian blood o the possibility gless" bee from ss. Nevertheless, wn, "no radical d physiology of d be involved. physiological dif-et and an ex-olony.—E.D.]

honey is the product of Mr. Robinson's own bee farm at Shawnigan Lake.

The section devoted to apiculture in the main building throughout the week drew immense crowds. The exhibit promoted by the Department of Agriculture and entrusted to Mr. Robinson, who never tired of explaining and expounding the mysteries of his craft to spectators who merely came to look but remained to learn was an immense success from a propagandist point of view. Diagrams were shown depicting the life history of the bee and also its physical structure; there was a hive of bees (not making honey, since they cannot reach any flowers to obtain the wherewithal), and also every kind of modern apparatus for their comfort and propagation, shipping cages for queens, queen cell protectors and queen nurseries and introducing cages. Ranged on shelves were jars of translucent honey, golden combs, and cakes of rich wax. Mr. Robinson has worked out the number of wax discs requisite for the making of a pound of wax and finds that 1,344,000 must be secreted, while the bees consume 16 lbs. of honey when engaged in producing this amount. Some excellent photographs of hives in situ complete one of the most interesting exhibits in the show; this will also be taken to that at New Westminster and Lethbridge.—Communicated.

NEW STATE BEE-KEEPERS' ORGANIZATION IN MASSACHUSETTS

Upon September 14, at the State Mutual Restaurant, Worcester, Mass., Mr. J. B. Levens of Malden, O. F. Fuller, Blackstone; J. L. Byard, Marlboro; A. A. Byard, West Chesterfield; N. H., Arthur Monroe, Spencer and Dr. B. N. Gates of Amherst, met at an informal dinner for the purpose of discussing the advisability and method of forming a state beekeepers' association for Massachusetts. The invitation to this meet-

ing was extended by Dr. Burton N. Gates of the Massachusetts Agricultural College, acting as Secretary of the Hampshire, Hampden & Franklin Beekeepers' Association who voted last spring to further the organization of a State Society in which there should be representation and co-ordination of the various local societies of the State.

The sense of those present in Worcester was so unanimously in favor of the movement that it was voted to form an association to be known as the State Beekeepers' Association of Massachusetts. Provisional officers were elected by unanimous vote as follows: President, John L. Byard, Vice President, J. B. Levens, Secretary Treasurer, Burton N. Gates.

The constitution and bylaws were discussed, a memorandum drawn up and authorized, and submitted to a committee composed of presidents and others of the several societies now existing. It was further voted to hold the first annual meeting of the organization on the second Saturday in January, 1913, as a joint meeting with the Worcester County Beekeepers' Association in Worcester. It was furthermore voted to announce this organization through the courtesy of the CANADIAN BEE JOURNAL.

Briefly the organization is designed as a medium of union and co-ordination of the various local societies in Massachusetts for the purpose of devising and promoting measures that are of general interest to the beekeepers of the State and to encourage the organization of local co-operation in the several districts of the State as well as to promote and impress upon the public the importance and value of the beekeeping industry.

Since this organization is distinctly in the interest of individual beekeepers of the State, the Secretary solicits your suggestions and will gladly correspond with those interested.

(Signed) BURTON N. GATES, Secretary.
Amherst, Mass., Sept. 25, 1912.

BEE-KEEPING IN CALIFORNIA

Among the the Panama—San Diego, the open air beek stalled on the there will be t house, extract thing necessar, bees are mana operations atte tion and remov of honey are will also inclu and a queen-r taining represe varieties of hon employed in rai improved strain

The idea of su come of recent producers of S ably of San Die thought that a n knowledge of tl fornia as a bee prove of profit t fresh fields and timate enterprize tal, as well as tages to those a business.

Professor Ralph iversity of Califor President of the keepers' Associati recently, and afte position site, deci fact that the big held in a natura filled with wild fl ducing plants th tion, in one of t ground adjoining did site for a beek

A novel feature be plats of all the e growing. The can

BEE-KEEPING AT THE PANAMA-CALIFORNIA EXPOSITION

Among the many unique features of the Panama-California Exposition in San Diego, there is being planned an open air beekeeping exhibit to be installed on the exposition grounds where there will be fully equipped with honey house, extractor and tanks with everything necessary to illustrate just how bees are managed, and how all of the operations attendant upon the production and removal, packing and shipping of honey are carried on. The exhibit will also include a comb honey apiary and a queen-rearing department, containing representatives of the several varieties of honey-bees and the methods employed in raising and introducing the improved strain of honey gatherers.

The idea of such an exhibit is the outcome of recent meetings of the honey producers of Southern California, notably of San Diego County, where it was thought that a more widely disseminated knowledge of the advantages of California as a bee-raising country would prove of profit to those who are seeking fresh fields and pastures new for legitimate enterprise requiring limited capital, as well as of educational advantages to those already engaged in the business.

Professor Ralph Benton of the University of California, and J. W. Ferree, President of the California State Beekeepers' Association visited San Diego recently, and after looking over the exposition site, decided that in view of the fact that the big fair in 1915 will be held in a natural park of 1400 acres, filled with wild flowers and honey producing plants that a well selected section, in one of the canyons and high ground adjoining would prove a splendid site for a beekeeping exhibit.

A novel feature of this exhibit will be plats of all the cultivated honey plants growing. The canyon will be utilized

in producing a natural mountain honey range with all the native wild honey plants so famous in California growing and in full bloom, yielding their nectar to the energetic little creatures whose business in life is to lay up sweetness. This feature is the idea of John S. Harbison, the veteran bee king of California who brought the first bees to California by way of the Isthmus of Panama in 1857. In view of the fact that the San Diego Exposition will celebrate the opening of the Panama Canal in 1915, Mr. Harbison considered it quite appropriate that a bee and honey raising exhibit be installed in San Diego. It will be the largest and most complete the world has ever seen.

HORIZONTAL FRAME FOR OBTAINING QUEEN CELLS

Dr. Miller has the following "Straw" variant Dines' method of obtaining queen cells:

Franz Richter, the wide-awake lookout man of *Bienen-Vater*, has my thanks for helping out about who originated that way of getting cells built in a horizontal frame. It should be labeled "Made in Austria," not "Germany." J. Stumvoll was the originator, and I got it from *Bienen-Vater* and mentioned it in a *Straw*, April 15, 1909, p. 224.

BUTTERFLY BREEDING.

Who would think it would pay to breed butterflies? Yet this is what Mr. H. W. Head, who lives at Burniston, near Scarborough, England, is doing. Mr. Head, who is one of the best known entomologists in Yorkshire, was the first to breed the butterfly in captivity, and today owns the largest butterfly farm in the British Isles, covering between three and four acres, mainly devoted to

Able and keen entomologist as he is Mr. Head confesses that the pleasures of the breeding of butterflies and moths.

Dr. Burton N. Asst. Agricultural Secretary of the & Franklin Bee-who voted last organization of a there should be ordination of the of the State. present in Worcester was voted to form known as the State on of Massachusetts were elected follows: President, J. Vice President, J. Treasurer, Burton

bylaws were drawn up and ed to a committee and others of the existing. It was the first annual zation on the square, 1913, as a the Worcester Association in rthermore voted nization through CANADIAN BEE

tion is designed and co-ordination ocieties in Mass- e of devising and at are of general ers of the State organization of several districts to promote and e the importance eeing industry. ion is distinctly vidual beekeepers tary solicits your dly correspond

GATES, Secretary.
Oct. 25, 1912.

collecting are lost when one has to make a business of it, and he probably knows better than anyone else the pleasures of the entomologist.

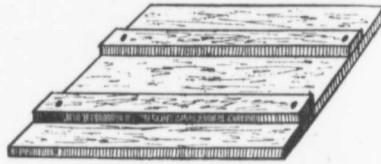
After five years' hard work he has got the haven into very good order, and now only waits favorable summers to reap the reward of his labors. For a matter of 28 years he has made a business of butterfly breeding, and he has now a wonderful collection of between three hundred and four hundred varieties of British and foreign butterflies and moths, and a set-up stock of four hundred thousand, all produced on his farms at Scarborough and Burniston, respectively.

The farm is stocked with all kinds of trees and weeds—indeed, one part is a veritable jungle—for the purpose of providing caterpillars and butterflies with the particular food they require. One species of caterpillar thrives upon one kind of plant and another species upon another; and Mr. Head has taken infinite trouble to provide himself with the rarest plants in order to produce the rarest of moths and butterflies.

In the rearing of hybrids Mr. Head has been remarkably successful. He has raised altogether well on to a dozen, and he recently showed specimens of a yellow form of the green-veined white butterfly, the sale price of which is about \$7.30 each. But what he is always on the lookout for are "sports," i.e., butterflies or moths of well known types, but differently marked from the ordinary. There is a good demand for these, and a single specimen will fetch pounds. It is all a matter of luck. Since he has been in business Mr. Head has tried to breed a black variety of the tiger moth, but he has not succeeded. At the haven live butterflies are not supplied. The live stock does not go beyond the caterpillar, or the fertile eggs of any particular kind of butterfly or moth that may be wanted. Mr. Head's clientele is cosmopolitan and world-wide in extent.

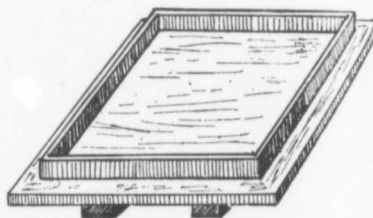
PAPIER MACHE BOARDS FOR THE BEE-KEEPER

When a newspaper has been read and is finished with, its destiny is largely a matter of chance. Very often it spends a part of its latter days, before its final disintegration, as a useless



A. Under side of baseboard.

encumbrance, helping to increase the harboring places for dust and vermin. In some households paper accumulates at a very rapid rate, and frequent bonfires become a necessity. Perhaps the best method of disposing of old newspapers is that adopted by some German bee-keepers, who convert them into pulp and then by means of an easily constructed press into papier maché. This material can be used for many purposes, and the following notes and illustrations, taken from the *Munchener Bienenzeitung*, will enable bee-keepers to man-



B. Frame in position on baseboard.

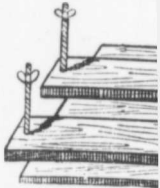
ufacture papier maché for themselves:

Papier maché boards have been used with much success as hive-covers. They have proved heat-retaining, clean and protective against mice. They may be cut to any size with a sharp knife or with a fine-toothed saw.

It is necessary to have a press for

their manufac-

keeper can eas-
Get two stro-
square frame,
thick and as lo-
four thumb-scr-
(See diagrams.)
be fixed the fra-
the latter is firm



C. Cove with thumb-screw corresponding to board.

board. The other fastened that the moved when the and ready to take

The second board that will just fit. illustration will show boards are attached. The frame of greater in length than size of the hive, and the papier maché considerably.

To prepare the papier maché is cut into small pieces in water for several thoroughly at intervals necessary to put in the pressing is successful



D. Closed

The frame is filled with the cover put on and If the plate is considered other lot of pulp can

In two days the papier maché be taken out of the frame the sun till quite hard cut into the desired size

BOARDS FOR THE PRESS

has been read its destiny is ice. Very often latter days, be- tion, as a useless



baseboard.

to increase the ist and vermin. per accumulates d frequent bon- 7. Perhaps the ng of old news- y some German y them into pulp an easily con- er maché. This many purposes, es and illustra- chener Biene- keepers to man-

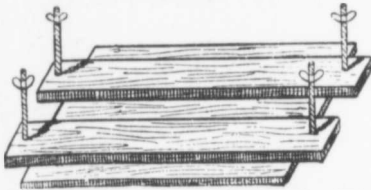


on baseboard.

for themselves: have been used ve-covers. They ing, clean and They may be sharp knife or ve a press for

their manufacture, which any bee-keeper can easily make.

Get two strong and smooth boards, a square frame, four narrow boards as thick and as long as the base board, and four thumb-screws of suitable lengths. (See diagrams.) On the base board is to be fixed the frame, but only one side of the latter is firmly attached to the base



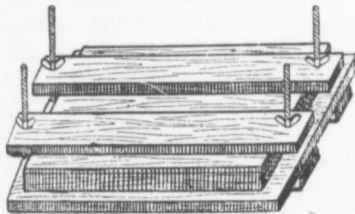
C. Cove with the two narrow boards corresponding with those on baseboard.

board. The other three pieces are so fastened that they can be easily removed when the paper board is made and ready to take out of the press.

The second board is made of the size that will just fit into the frame—the illustration will show how the narrow boards are attached.

The frame of the press must be greater in length and breadth than the size of the hive, as during the drying the papier maché boards shrink considerably.

To prepare the pulp.—Any old paper is cut into small pieces and left soaking in water for several days, being stirred thoroughly at intervals. It is not necessary to put in anything to bind it, as the pressing is sufficient to do that.



D. Closed press.

The frame is filled with the pulp and the cover put on and screwed down. If the plate is considered too thin, another lot of pulp can be added.

In two days the plate or sheet can be taken out of the press and dried in the sun till quite hard, when it may be cut into the desired size.

FIELD CROP BULLETIN

A bulletin issued by the Census and Statistics Office covers the crop conditions in Canada for the month ended September 30. It states that during this month disastrously wet weather continued to prevail over most parts of Canada, especially over the provinces of Quebec, Ontario and Manitoba. At September 30 large areas of grain, both in the east and west were still either uncut or were exposed to the wet in stook. Much damage has been caused by sprouting and in the Northwest provinces second growth has in numerous instances caused uneven ripening and consequent lowering of grade. Frosts during September in these provinces did some damage; but as a rule only late sown crops including flax, were seriously affected. In parts of southern Ontario the ground is so wet that many farmers have abandoned the sowing of fall wheat for next year.

The estimates of yield published a month ago could only be regarded as of preliminary value, because in consequence of bad weather and late season harvesting operations had made so little progress.

The new estimates of yield obtained from correspondents at the end of September confirm generally the previous estimates for most of the crops, but in as much as very little threshing had been possible and large areas of grain were still unharvested, it is feared that the final estimates, after completion of the threshing, may turn out lower than the figures now given.

For spring wheat the estimated production is 188,816,600 bushels as compared with 189,904,500 bushels last year. For fall wheat the estimate is 16,868,700 bushels compared with 26,014,000 bushels last year, the total estimated wheat production being therefore 205,685,300 bushels as compared with 215,918,500 bushels in 1911, a decrease of 5 per cent.

The yield per acre is 21.08 bushels for all wheat as against 20.77 bushels last year. Oats show a total production of 381,502,000 bushels compared with 348,585,600 bushels last year, the yield per acre being 41.39 bushels compared with 37.75. Barley is estimated to yield a total of 43,895,100 bushels compared with 40,631,000 bushels last year, the yield per acre being 31.00 bushels against 28.94. The total production of rye is 3,086,000 bushels against 2,668,800 bushels in 1911, the yields per acre being respectively 20.75 and 17.41 bushels. Of oats, barley and rye increases in the total production as compared with last year represent percentages of 9, 8 and 15. The estimated production of peas is 4,202,400 bushels, of beans 1,106,800 bushels, of buckwheat 10,924,100 bushels, of flaxseed 21,143,000 bushels, of mixed grains 17,940,900 bushels and of corn for husking 14,218,400 bushels.

The average quality of these crops at harvest time, measured upon a per cent. basis of 100 as representing grain well headed, well filled, well saved and unaffected to any appreciable extent by frost, rust, smut, etc., is as follows:—spring wheat 83.70, oats 86.01, barley 84.48, rye 80.82, peas 66.41, beans 68.81, buckwheat 80.87, mixed grains 90.59, flaxseed 83.86 and corn for husking 71.92 per cent. Of these crops wheat, oats, barley and flaxseed are above the average quality for either of the two previous years. Rye is slightly below the average. Flax is well above the quality of both 1911, (75 p.c.) and 1910, (73 p.c.).

WINTER INJURY TO FRUIT TREES

PROF. J. W. CROW

The following is an outline of the conclusions reached so far with regard to the factors that effect winter injury of fruit trees.

A. Factors which affect the general air temperature of fruit plantation.

1. Slope of land—North slope gives

more even temperature as the heating effect of sunshine is considerably lessened. Sun-scald may be somewhat lessened on slopes because of the more even temperature, but as rule sun-scald is particularly a local problem, and is concerned only with the exposure of any given portion of the tree to the sun's rays.

2. Presence of large bodies of water. This also regulates temperature, and tends to keep it more uniform. In addition it also furnishes moisture by evaporation and thereby checks evaporation of moisture from the twigs and the surface area of trees. This is especially important during the winter time, as actual injury seems to be due in many cases to the dryout rather than to the actual degree of cold experienced.

3. Windbreaks.—Windbreaks check the force of wind and thereby reduce evaporation, important in summer but more important during winter conditions. Under normal or dry temperature conditions, windbreaks tend to widen the daily range of temperature, but when trees are wet, as after rain, windbreaks tend to check exaporation, but equalize the temperature of the twigs themselves. Evaporation of moisture from the surface of the twig under the influence of wind may reduce the temperature of the twig to a point several degrees below that of the actual air temperature.

B. Factors which influence maturity of the tree. It is well known that late growth in autumn greatly increases the danger of winter killing.

1. Character of Soil.—Lighter soils appear to give better results in northern districts. This may be because they are warmer, and it is of course true that light soil warms up quicker in spring and cools off earlier in the fall. It is stated by some that vines and trees generally mature earlier on clay land than on sand. It is probable, however, that trees thrive better on lighter soil in the north because of the check of root activity,

which occur early autumn.

2. Underrunning water in soil and by prolonged growth.

3. Soil Temperature.—In orchards cover in summer, or soil moisture, and opening of the well nourished moisture are, after killing, although these conditions quite possible to the disadvantages of the advantages of maturity. On this not yet in a position.

4. Fertility.—Fertilizer causes possible to over cover crops, and into the soil under Potash, phosphate tend to cause early.

5. Pruning.—Vigorous rather pruning in stimulates growth, trials may be early.

C. Factors which influence the vitality of the tree. The previous mentioned regulate growth also is presumed that the tree should be regulated so as to prevent the tree should be forced to bear.

1. The Preceding crop of fruit exhausts the tree much more killing. No tree should to overbear; if necessary should be removed. A certain amount of done by intelligent hand thinning is a great many cases.

as the heating considerably less. It may be somewhat because of the more as rule sun-scald problem, and is the exposure of any tree to the sun's

bodies of water. temperature, and uniform. In addition, moisture by evaporation checks evaporation of twigs and the surface. This is especially in winter time, as it may be due in many other than to the experienced.

Windbreaks check and thereby reduce it in summer but during winter conditions of dry temperature winds tend to widen temperature, but after rain, wind-exaporation, but the effect of the twigs is to reduce the temperature to a point several of the actual air

influence maturity. It is well known that late frosts greatly increase the danger.

Soil.—Lighter soils result in northern orchards because they are of course true that the danger is greater in spring and fall. It is stated that trees generally lay land than on heavy soil, however, that trees on heavy soil in the north have less activity of root activity,

which occurs when the soil cools in early autumn.

2. Undrainage.—A surplus of water in soil delays cooling in autumn, and by prolonging root activity also prolongs growth.

3. Soil Treatment.—In cultivated orchards cover crops are sown at mid-summer, or somewhat earlier, to extract moisture, and thereby cause earlier ripening of the wood. Trees in sod, if well nourished and not starved from moisture are, as a rule, less liable to winter killing, although it may be said that these conditions are seldom found. It is quite possible that in sod orchards the disadvantages of grass may outweigh the advantages derived from early maturity. On this particular point I am not yet in a position to speak positively.

4. Fertility.—Excess of nitrogenous fertilizer causes late growth. It seems possible to overdo the use of leguminous cover crops, and get too much nitrogen into the soil under certain conditions. Potash, phosphate fertilizers and lime tend to cause earlier maturity of wood.

5. Pruning.—Winter pruning or rather pruning in the dormant season, stimulates growth, and in northern districts may be easily overcome.

C. Factors which influence directly the vitality of the tree. Any of the previous mentioned factors which stimulate growth also affect vitality, but it is presumed that these factors are being regulated so as to produce normal growth. The tree should not be starved, nor should it be forced beyond a certain point.

1. The Preceding Crop.—A heavy crop of fruit exhausts vitality and renders the tree much more liable to winter killing. No tree should ever be allowed to overbear; if necessary surplus fruit should be removed by hand thinning. A certain amount of thinning may be done by intelligent winter pruning, but hand thinning is a positive necessity in a great many cases.

2. Mechanical Injuries.—To my mind the most important fact I learned in connection with winter killing is that of the weakening effect of borers, unprotected fractures, sun-scald, canker and so forth. I think that fully 90 per cent. of the winter killed or injured trees I have seen this year have had some sort of contributory cause in operation previous to the cold winter itself. All wounds should be carefully protected from drying out and decay. Hope to be able in a short time to give some good information concerning material for covering wounds.

3. Fungous Diseases and Insects.—This point has been partially covered in the preceding paragraphs, but the fact of a foliage disease, such as apple scab, interfering with the nutrition of the tree is frequently overlooked for form and density of head. Trees should be headed low and should have low hanging branches left especially around the trunk. Scaffold should be more or less upright, and should be so arranged on the trunk to avoid formation of forks. The head of the tree should have a contributory of branches of such an arrangement that when properly pruned there is very little danger of their breaking down by weight of snow.

4. Character of Winter Season.—Trees store food material in the forms of starch and sugar. These are utilized for growth and nutrition purposes throughout the entire year. In the chemical process of nutrition one of the products of the breaking down of starch and sugar is water. In the winter season it is probable that this respiration water is very important in preventing serious drying of the twigs and branches. If the cold is very severe and long continued an abundant store of manufactured food is of very great assistance to the tree. It will be observed, of course, that most of the factors previously mentioned bear on this point. It is probable that the question of stored vitality

is at the root of all problems in fruit growing. An additional factor which influences vitality is the character of the preceding summer. If this is abundant in sunshine there will also be abundant store of food material. If sunshine is deficient, leaf and twig growth is likely to be excessive and vitality low.

D. Additional factors which exercise considerable influence on winter injury are:

1. Variety.
2. Latitude.

3. Altitude.—Altitude and Latitude determine, of course, the length of the season and in a general way the character of the climate.

I have not yet come to the conclusion with regard to the color and smoothness of bark. I expect a light colored bark is a prevention against sun-scald, at any rate it is well known that a shade white-wash is effectual to a large degree in preventing this form of injury.

Do not know that the rough bark is beneficial or dangerous, but should be inclined to leave it on if there is danger of sun-scald.—From *O.A.C. Review*.

NUMBER OF EGGS LAID BY A QUEEN

BY DR. C. C. MILLER

(From *American Bee Journal*.)

Schweizerische Bienenzeitung contains a very interesting article, page 257, written by Dr. Bruennich. He quotes Doolittle, without at all questioning his authority, giving 5000 eggs laid in a day by a queen whose colony however did not store so much honey as other colonies with queens less prolific. Dr. Bruennich thinks, however, that in America, where heavy yields are obtained, there must be a heavier drain on the strength of a colony, and so a greater amount of brood reared. Of course, he says, with this greater demand on the queen her life

must be shortened, and so it is credible that in America a queen is no longer profitable in her third year, while in Switzerland she still performs in a satisfactory manner her maternal duties in her fourth year. (Dr. Bruennich, although they may be exceptional, there are not lacking queens here still doing good work in the fourth year.)

Last year he took numerous measurements of different colonies. He obtained the contents of each comb by multiplying together the two diameters of the ellipse of brood and then multiplying that product by 8. In his best colony brood-rearing began about Feb. 10. (This was no doubt outdoors, where brood-rearing begins earlier than in the cellar.) The amount of brood, small at first, remained moderate throughout March, ascended with great rapidity throughout April, and held its maximum, throughout May. Then a rapid decline throughout June to less than half the maximum, continuing to decline less rapidly throughout July, increasing slightly to the middle of August, then declining rapidly from the beginning to the middle of September, when it ceased entirely. But the bees were fed in August without which Dr. Bruennich supposes the decline would have been constant.

No doubt weather and pasturage had much to do in the case, and different years would give different results. The thing that will seem surprising to most readers is that at the height of her laying this queen did not exceed 1600 eggs per day, although the colony was strong and stored a good surplus. The laying for the entire season is estimated at 160,000 eggs, and half a million for a lifetime.

May 21, when the brood was at its maximum, it occupied 79 square decimeters, or 1225 square inches. March 11 it was 14 per cent as much; March 28, 29 per cent; April 12, 32 per cent; April 24, 60 per cent.

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In connection Bruennich presents a picture of the laying by means with it he gives of two other considerable difference line of the three figure presents study. The probability, if not a thought of the much more nearly out the season, beginning and the most striking difference the three queens in best queen, kept throughout the whole it show a sharp decline characteristic in queens that that their laying while

In this case the early harvest with feeding made a success. In case of it might not that else greater and longer shown for No. 13 for an early flow. been kept up in June meant an unnecessary summers later on what to be done. Yet work for winter if the d

The probability is left to their own majority of superseded the close of the honey however, a queen is the season. In such keeper may pat him with the thought that more concern about rest of the season: crop, since with that in the hive there will

The Curved Line of Laying.

In connection with this article, Dr. Bruennich presents to the eye a striking picture of the varying of the queen's laying by means of a curved line. Along with it he gives the curves of the laying of two other queens. While there is considerable difference, the general outline of the three is much the same. This figure presents material for interesting study. The probability is that 9 out of 10, if not a larger proportion, have thought of the laying of the queen as much more nearly a straight line throughout the season, with an ascent at the beginning and descent at the end. The most striking difference in the laying of the three queens is that while No. 13, the best queen, kept the brood up to its maximum the whole of May, Nos. 6 and 19 show a sharp decline in that month. Is it characteristic in general of the better queens that that they will thus keep up their laying while others decline?

In this case there was evidently an early harvest with no fall flow. The feeding made a slight elevation in August. In case of an important fall flow, might not that elevation have been much greater and longer continued? The curve shown for No. 13 is no doubt the best for an early flow. If the brood-area had been kept up in June, it would only have meant an unnecessary number of consumers later on when there was no work to be done. Yet what about young bees for winter if the drop came too soon?

The probability is that when bees are left to their own devices the great majority of supersedures occur at or near the close of the harvest. Occasionally, however, a queen is superseded early in the season. In such a case the beekeeper may pat himself on the back with the thought that he need have no more concern about that colony for the rest of the season except to harvest the crop, since with that young queen reared in the hive there will be no thought of

swarming before the next year. But if he is observant he will notice that he will also have very little trouble with harvesting the crop of that colony. It will be satisfied with a single super, if it even deigns to notice that, while other colonies will need several supers. The beginner will feel puzzled at this, for with a young and vigorous queen he will be likely to expect extra results. A study of that curved line will help clear up the matter for him. If the life of a worker in the busy season is six weeks, even if there be no diminution of the brood-area until the first of June, there will be no diminution of the field force until the middle of July. In other words, to harvest the early flow, say the white-clover crop, we are dependent upon the eggs laid in May, with perhaps some help from the last of April and the first part of June. Bees reared in the first part of April will not live to see the harvest, yet they are of exceeding importance, for they are needed to care for the immense area of brood in May.

Now consider the cause of supersedure early in the season. That supersedure occurs because of a failing queen. If it occurs the last of May, the restricted laying throughout that month means a feeble force for the harvest. No matter how vigorous the new queen, her work comes too late to count on a white-clover harvest. "But," says the beginner, "I had one queen superseded the first of May, so that the new queen was in plenty time to provide for the crop, yet that colony yielded almost nothing. Another queen was superseded early in April, and yielded still less. Surely, that was early enough, was it not?" In the first case the new queen may have done excellent work, but no amount of laying will be effective if there is not a sufficient force of nurse-bees to care for the brood, and the laying of the old queen had been so poor that the nurses were too few to

allow the new queen to do much in May. In the second case the new queen was early enough, but for some reason queens reared so early are not worth their salt nine times out of ten. Fortunately it does not often happen that queens are superseded thus early.

Measurements of Brood

Desiring to know how conditions in my apiary would compare, I took some measurements July 30. I followed his plan of measuring, and multiplied the length of the area of brood in each comb by its depth, and then multiplied that product by .8. In No. 10, a colony of very yellow bees but very poor storsers, I found 1235 square inches of brood surface. In No. 13, a hybrid colony and one of the very best storsers in the yard, there were 1373 square inches. I do not know how that compares with the amount of brood present in May, but I doubt if there was much more in May.

The remarkable thing in the case is the difference between Dr. Bruennich's measurements and mine. In Dr. Bruennich's best colony there were 1225 sq. inches of brood in May, and about 235 sq. inches July 30. It will be seen that my best colony had, July 30, nearly six times as much brood as Dr. Bruennich's on the same date, and 12 per cent. more than his colony when at its maximum in May.

It may be remarked in passing that 13 does not prove to be an unlucky number with Dr. Bruennich or me. No. 13 is his best colony, and my 13 one of the very best.

It should be mentioned that this year the season is exceptionally late, the latest, I think, I have ever known, and other years I might not find so much brood present July 30. As Dr. Bruennich says, and as every observant beekeeper has found, the amount of storing done by a colony is not always in proportion to its strength or the amount

of its brood. It will be noted that in my apiary No. 13 had only 11 per cent. more brood than No. 10, while No. 13 had five supers and No. 10 only two, and I think No. 13 was more nearly crowded for surplus room than No. 10.

If nothing else is to be learned from these observations and comparisons, there is at least confirmation of the old saying, that bees do nothing invariably. Marengo, Ill.

—From *American Bee Journal*.

THE WINTERING PROBLEM.

Guesses vs. Facts—The Need of More Complete Data on Which to Base Conclusions.

BY ARTHUR C. MILLER

(From *Gleanings in Bee Culture*)

The symposium on wintering in *Gleanings* for September 1, is interesting, particularly in its graphic illustration of the careless "rule-o'-thumb" method of reaching conclusions prevalent among people not trained to the precise methods of the scientists. Just so long as deductions are made from the faulty, imperfect, and incomplete observations as recorded there, just so long will the practices based thereon fail to bring anything like uniform results.

Citations of some of the factors not noted by the writers will serve to illustrate the imperfection of the data. One will fail to state thickness of packing or material used; another, the nature of the outer case, whether it is thick or thin stock, and is virtually air-tight or on the contrary, is or is not covered with a water-proof paper; the color, etc. Another, stating one or other of these, fails to say whether tight covers are over brood nest or cushions, and whether the bees have a passage over tops of frames under these or not. A few other items may be enumerated, such as frames side or end to end entrance; size of the

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latter; direct prevailing winds; atmospheric conditions (average velocities); queens old or late; pollen nature of stores; bees were overfed at all after or supplied; subject to thartry; whether above or below ter.

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In taking ten of the hive, the most imperfect. on top of frame only one item—near the upper how near the wri the cluster close t or even up over t one, two, or three thick top bars? on the thermomet there an air-space meter read through was it taken out? way to get hive t is to use special stems, placing en hive so the temper the floor, halfway both near and dis may be secured. of cluster and a should be obtained. or other packing

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The Need of More Which to Base ons.

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latter; direction it faces; direction of prevailing winds; any gales or unusual atmospheric conditions; size of colonies (average variable in different years); queens old or young; breeding stop early or late; pollen stores, large or small; nature of stores and abundance; whether bees were overhauled, and frames changed at all after final stores were gathered or supplied; whether the location is subject to thaws or fogs, or on the contrary; whether snow on ground was above or below normal most of the winter.

Everyone of the foregoing has its bearing on the results; and how few of even the more important ones have been mentioned by the writers. One person attributes his success chiefly to one factor, while the next man lays emphasis on quite a different one; yet as a matter of fact the favorable results are quite as likely to be in spite of either item which these men deem so important.

In taking temperature of the interior of the hive, the methods recorded are most imperfect. Putting a thermometer on top of frames over the cluster gives only one item—namely, the temperature near the upper side of the cluster; and how near the writers fail to state. Was the cluster close to the top of the frames or even up over them? Or were the bees one, two, or three inches below the inch-thick top bars? Was the cushion laid on the thermometer and frames or was there an air-space? Was the thermometer read through a plane of glass or was it taken out? There is one accurate way to get hive temperatures, and that is to use special thermometers with long stems, placing enough of them in the hive so the temperature of the air near the floor, halfway up and at the top, both near and distant from the cluster, may be secured. Also, the temperature of cluster and air directly above it should be obtained. In addition, if chaff or other packing is used, temperature

of this over the top of the cluster, and distant from it, is desirable.

The special thermometers are made so the scale to be read is above the hive, and readings can be made without removing the thermometer or disturbing the bees. The readings should be made hourly, both night and day, at least in the fall and spring, while in the really cold weather six times in the twenty-four hours may do.

The "curves" plotted from these readings in hives differently protected can be compared with "curves" from similar data taken in unprotected hives; and with the outdoor temperature a real basis of work will be reached.

Mr. Britton cites his results with glass-topped hives from which he removed the top packing and later substituted black tarred paper. The disastrous results could have been foretold without need of demonstrating. Moisture was bound to collect on the cold glass, and drop back on the bees. With an entrance as small as stated, and with eight to twelve inches of packing around the hives, no other result could be secured. The black paper could afford no material relief under such circumstances. His citation of results of colonies in his attic serves to call attention to the fact that bees so placed have their hives surrounded by a temperature of about 50 degrees F. all winter.

As examples of how bees thrive under conditions as opposite as possible to the warm-packing theories, the following may be cited. These I have perhaps referred to before, but they are well worth repeating. In the western part of New York two colonies were left to their own devices after having set, early in the season, inside of large cupboard-like structures which served only to shut off the sun. Four or five entrances about three by twelve inches gave ample circulation of air through the cupboards. The floor of these was 18 inches above ground. The bees were

in ten-frame Langstroth hives set on three-inch rims, and without cover of any sort. When I saw them in March there were visible several fins of comb built above the top bars, and the bees were sticking to these and hanging below the frames, just rousing big colonies—plenty of air, to be sure, but no dampness.

The other example is more in Mr. Britton's line. A ten-frame Langstroth hive made of glass, and having a top of wire cloth, was placed on a slat stand about two feet above the ground. Over the hive was placed a box nearly a foot larger each way than the hive. The front end of this box, except for a narrow board at the top, was knocked out. There was no bottom to it. In this hive was a good colony of bees. Shaded on all sides except the front, free circulation of air around it, with cold glass sides and ends, and entrance 14 by half an inch, and wire-cloth top allowing free draft through it, that colony thrived for three summers and winters until put in to another hive. This was at Rhode Island, twenty eight miles from Mr. Britton's.

The exponents of heavy packing are asked to explain how the bees in these two instances could live, to say nothing of being exceptionally strong and healthy. It is to be hoped that they will not all speak at once. Also, they are requested not to remark that "one swallow does not make a summer" for there were in this case, and one of them made three summers and—three winters.

Four items are pretty definitely shown, however, by the symposium on wintering; namely, the need of dryness, the advantage of some means of preventing condensation above the cluster, the necessity for windbreaks, and that several hives grouped close together and packed in some "non-conductor" do accumulate heat in the packing above and near the hives. But—yes, *but!* Does the value of the packing lie in keeping the bees

warm in winter, or in the spring and fall? In the fall, when they are putting the finishing touches on their supplies, and in the spring when breeding, Think twice, please, before you answer. That protection is of advantage from *early* spring until late fall has been pretty conclusively demonstrated; but what amount of protection is as yet in dispute. Some want the whole hive including supers, inside of packed walls; others want merely double walls, and still others think protection about the supers suffices.

Results suggest that colonies in hives wholly protected, even if only by a deep telescope cover or thin outer case, do better from spring until fall than those having only the supers protected. If this is correct, then it is fair to believe that results from fall until spring "wintering," we call it, are much dependent on fall and spring protection. In other word, safe "wintering" lies more in keeping the bees warm when they are getting ready for cold weather, and when they are getting ready for the harvest, than it does in trying to keep them warm in winter itself.

To summarize: We as yet have only a little and fragmentary knowledge of the real conditions which exist within the hive from fall until spring inclusive. Until we know more about those conditions we can not intelligently devise apparatus to assist the bees. Until we know those facts we are as likely to make and use unnecessary apparatus, costly to construct and costly in labor to use, as we are to omit importance. Or, to put it in the language of modernism, without exact knowledge we can not get down to a rational dollar and cent basis of beekeeping.

If our experiment stations will use their means and apparatus in obtaining the desired knowledge, they will help us far more than they have yet done. Such research work is in their line, and they can do it much better than the

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commercial beekeeper, even though the latter has the necessary training. To ask them to abandon their random experimenting and find out facts for us is what we should now do.

Providence, R. I., Sept. 12.

WINTERING BEES

Read before the Colorado State Beekeepers' Association Convention in Denver, 1911.

BY OLIVER FOSTER.

In preparing bees for winter, shall we provide for their protection from extremes of cold and heat by packing the hives, or shall we leave them unprotected? This question should be considered with reference to several other conditions which must be taken into account.

Mr. A. carries his bees into the cellar, where he scrupulously maintains a uniform temperature of from 43 to 45 degrees. He has found that a much lower temperature than 43 degrees will result in a loss of many colonies and poor results generally, but he succeeds well with the higher temperature, and his experience is in harmony with all who winter in cellars.

Mr. B. maintains, on the other hand, that cold does not hurt the bees in the least. He leaves his colonies right out of doors, in ordinary single-walled, unprotected hives, with the full summer entrance wide open and with perhaps an additional large opening at the top of the hive, right over the bees, which opens into a space between an inner and an outer cover, this space having free communication with all outdoors through spaces under the upper cover at ends or sides.

His bees winter well, even though the mercury falls to zero or far below, and though the snowy blizzards often rage throughout the winter. And Mr. B.'s testimony agrees with that of many

others who have no use for winter packing and whose bees generally come through the winter and spring in good condition.

Why this difference of opinion and practice? How is it that A. and B. both succeed, each with his favorite method so different from that of the other, while various compromises between these two extremes do not as a rule give good results? I think we must look for the answer to this question in the fact that other important factors are figuring in the problem.

A. lives in a lower altitude, where the atmosphere is heavy and comparatively damp, and where cold weather continues for several months at a time in winter, with no warm days to enable the bees to fly and renovate their conditions. B. lives in Colorado's rare and dry atmosphere, where every two weeks or oftener throughout the winter the bright sunshine warms his unpacked hives and all outdoors as well, arousing the bees from their hibernating stupor, affording them the opportunity to take a cleansing flight, and to gather into their winter nest and into their now empty honey sac a fresh supply of stores from the outer combs and to reduce it to its proper consistency as to moisture for immediate use.

After this renovating spell they can crawl into the empty cells within the cluster or take their position with those that are delegated to form the outer protecting crust of the cluster. These crust-forming bees assume a state of almost perfect hibernation, in which condition almost any degree of cold is harmless to them for a limited time or until their honey sacs need replenishing, when another warming-up spell and a change of shift are necessary.

Mr. A.'s bees in the cellar have no such natural season of warming up; consequently, the bees of each individual colony must, of their own accord, and at such times as their necessities

require, work themselves up to the necessary degree of heat and activity for a similar renovation, although the cleansing flight is denied them until the spring setting-out time arrives. However, if all other conditions are perfect under the protection system, the flying spell seems to be unnecessary for long seasons.

A uniform temperature of much below 43 degrees is probably unfavorable to the other and more necessary renovating operations, hence the advantage of a warm hive during long, protracted cold. Moreover, the air in Mr. A.'s cellar becomes unavoidably foul, and much damper than the air that sweeps through Mr. B.'s apiary and hives. For this reason heat is necessary to enable the bees to force out these very injurious elements from their quarters.

As I see it, the first essential condition for good wintering is a good quality of stores, gathered or stored from feeders after part of the brood is hatched, so that it is deposited within easy access to the contracted cluster of bees. The next important requisite is thorough elimination from the cluster of bees of the impurities and surplus moisture which are constantly emanating in greater or less amount from their bodies as waste material.

This is accomplished in either one of two ways—the one by the expulsive power of heat, the other by means of a free circulation of cold, fresh air; the one under the warm protection system; the other under the open-air, unprotected system.

The principles involved are quite different, but the end accomplished is the same—a dry winter nest. There are two methods of drying clothes on a cold winter day. One way is to hang them by a hot stove, where the heat turns the moisture into vapor, and, expanding the steam, expels it from the fabric. The other way is to hang the clothes out of doors, where they instant-

ly freeze stiff, but where the freely circulating, cold dry air soon absorbs the very ice and carries it away as frozen vapor. These two principles employed in drying clothes illustrate the two systems under which bees in winter quarters are kept dry and free from impure air. The one we might call the warm protected system, the other the cold free-air system.

According to my experience and observation, a weak or unpopulous colony needs warm protection. Especially is this true if their stores are not of good quality, or if they are short in quantity and scattered throughout the hive with much empty comb near the contracted cluster of bees. Again, some kind of protection is necessary in localities where cold weather is long continued, in a cold damp climate, or in a low altitude. It seems that a weak and unprotected colony requires too great a proportion of their bees to form that protecting crust I have mentioned, so that there is not a sufficient number of bees remaining to form what should be the main body of the cluster within this outer crust, where a little more heat should be maintained, the bees remaining less dormant and slightly active, and so able to minister to the needs of the colony as to heat and nourishment. When all, or nearly all, the bees are required for the more dormant crust, the colony perishes.

The best method of packing I have found, and I have tried about every form is to set the hives together in bunches or piles so that all their adjoining sides either on the bottom boards, bodies or covers. They should be placed four abreast facing south or southeast and the front end should be left exposed to the sun. The top and the northeast and west sides of the bunch may be packed with straw or chaff if desired and the packing held in place with boards and rocks or with burlap and baling wire. I think it is a good plan in case of weak colonies to place a second tier of four

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or five on top and bottoms re two tiers and sheets of tin temporary bottom sheets a bee space upper sides by top and back.

To avoid contraction and sticking, with heat tin shoved in between removed bottoms retain the pack bunch of hives from bees need be the hives in spring stands, since the yard is entirely should be done where and all locations bees on their first *ers' Review.*

RIPENING HONEY

The Plan, While in Conditions, is

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BY W.

I was pleased to by Mr. Ireland, *pre* *bury Beekeepers'* issue of May 1, re ripening of honey, what he says. Mr. great deal of experience much good for the in this country; but I do not think his sive. There is more reputation as a beel a proper understand and I trust he will I help to throw a light conditions prevailing in close on to three years engaged as a gov

or five on top of the first, with covers and bottoms removed from between the two tiers and these replaced by single sheets of tin or sheet iron. To form temporary bottom boards of these metal sheets a bee space is formed on their upper sides by tacking strips on the sides and back.

To avoid confusion the entrances are contracted and separated as far as practicable, with here and there a sheet of tin shoved in between the hives. The removed bottoms and covers are used to retain the packing or to protect the bunch of hives from storms. No mixing of bees need be feared when separating the hives in spring upon their summer stands, since the appearance of the whole yard is entirely changed at once. This should be done when few bees are flying and all locations will be marked by the bees on their first flight.—From *Beekeepers' Review*.

RIPENING HONEY ARTIFICIALLY

The Plan, While Possible Under Certain Conditions, is Not to be Advised

Generally.

BY W. B. BRAY

I was pleased to see the remarks made by Mr. Ireland, president of the Canterbury Beekeepers' Association, in your issue of May 1, regarding the artificial ripening of honey, and wish to confirm what he says. Mr. Hopkins has had a great deal of experience, and has done much good for the beekeeping industry in this country; but in this one thing I do not think his experience is conclusive. There is more than Mr. Hopkin's reputation as a beekeeper depending on a proper understanding of the subject, and I trust he will not be offended if I help to throw a little light on the conditions prevailing in New Zealand. For close on to three years I was permanently engaged as a government apiary in-

spector, and my work took me into every part of New Zealand.

In his article on page 632, Oct. 15, 1911 Mr. Hopkin's admits the possibility of another factor in the ripening process than evaporation—namely, a chemical change in the sugars. This would be the continuation of the process of inversion commenced by the bees, by which the proportion of sucrose is gradually reduced. For this reason alone it would be desirable to leave the honey on the hive till later in the season. Though it may be merely a matter of taste, the editor is right when he says that the honey which has the finest aroma is that which is extracted from well-sealed combs. It can be called flavor, aroma, bouquet, body bite, or anything else, but the quality is there. I remember extracting some honey which had been on the hive all the winter, and entering it in the show which was held too early for new season's honey to be entered. The judges said that mine was the only sample that had a good flavor.

But it is in the process of evaporation that a good honey can most easily be spoiled if it is attempted artificially, as then it depends entirely on the state of the atmosphere. Every one knows that a certain amount of water is held in suspension in the air. The amount will depend on the nearness to the sea, the nature of the soil, the configuration of the country, the temperature, and the variation between night and day temperature. For instance, in the hottest weather in my own locality the nights are cool and even cold, so that the moisture evaporated during the day is precipitated. A wind off the sea will lose its moisture in crossing a high range of mountains, and become a dry wind. A very rainy district does not necessarily have a humid atmosphere. It will depend, then, on the temperature of the air. In a warm climate, near the sea, and over low-lying land, the air is heavily laden with moisture. The humidity in

any one locality may or may not be fairly constant, as a good deal will depend on the lay of the country and the direction of the prevailing winds. In the South Island of New Zealand the air is comparatively dry, and I have known cases where thin honey has been extracted and successfully ripened in tanks. In the North Island, however, the conditions are very humid, particularly in Taranaki and Auckland provinces, on the west and northern coasts respectively.

The evaporation of the surplus moisture of an unripened honey will take place if the humidity of the air is low enough to allow it to absorb more moisture. On the other hand, honey will readily absorb moisture from an overladen atmosphere. Each beekeeper can test the humidity in his own district by keeping a jar of already well-ripened honey exposed to the air, and watching the surface become thin and watery. If a hydrometer is used to test the specific gravity the honey should be well stirred before testing. The beekeeper can then judge for himself as to whether it is safe for him to expose his honey to the air at all. In the humid climate we have in Taranaki and Auckland provinces I would advise that nothing but well-sealed honey be extracted, and that it be put in air-tight vessels the same day. If it is necessary to store it in a tank, the top should be close fitting. For the reason given in the second paragraph of this article, I would not advise any one to extract any but fully or three parts sealed combs if he wishes to do justice to his honey and his customers. Honey that is unsealed at the end of the season, and that has been on the hives for some time is ripe enough to extract.

Mr. Hopkins says he successfully ripened a large crop in tanks in 1883; but I think the conditions must have been exceptional for that locality for that year, or else it was an exceptional locality in the Auckland province. In a government bulletin he has advocated the

artificial process of ripening, and numbers of beekeepers have taken it up. The result has been that a lot of soured and fermented honey has gone on the market. The use of the hydrometer will not correct the fault of excessive humidity in the air. The ripest honey (and it is very seldom that all green honey is being extracted) settles in the bottom of the tank; and when a sample is drawn out to be tested with the hydrometer it gives a fairly high specific gravity. Even if the hydrometer is put into the tank, it does not give a proper test, as the thin watery honey is in a layer at the top. It is the last to be drawn off and the first to ferment. Many beekeepers have not bothered to use the hydrometer, thinking it quite sufficient to leave the honey in the tank a week or two, often regardless of the condition it was in when extracted. It is this ignorance of the conditions governing the case that has caused a great deal of the harm done in this country by Mr. Hopkins' advocacy of the artificial method.

In 1910 I acted as judge at the Warkato show (Auckland), and the Hawera show, (Taranaki). At the former show I found several entries fermented. The same occurred at the Taranaki show; and out of 17 entries in the granulated class only four were properly ripened. I had to advise the beekeepers to discontinue the artificial method. The conference of beekeepers' associations in 1910 protested against the method being advised in Bulletin No. 18. In the Auckland salerooms I have seen honey running out of the tins.

It is possible to ripen honey artificially where the conditions are favorable; but it is questionable whether there is any advantage gained. The late W. Alexander was in a favorable locality, and kept 700 colonies in one apiary. He was thus able to keep the extractor going as fast as the new honey came in, and it saved the necessity of providing extra supers. The beekeeper with one apiary

can get along with one of supers, and one of combs. The beekeeper would prefer to attend to the supers while the honey is being extracted is one job is making the honey in abundance, and able to use it all night, and whether the amount increased at all honey.

Salt is a substance which absorbs moisture, and where salt becomes the same. I have sections; but I plan to prevent would be to place in the room where would keep the Devauchelles B
—From *Gleanings*

ST. JOHN'S BEE SHOW

- WI
AI
- Best display of honey, 50 lbs.—1, Asbell; 3, W. Todd
- Best display of honey, 100 lbs.—1, W. G. Todd; 3, G. Todd
- Best Clover honey, 1, W. G. Asbell; Todd
- Best Buckwheat honey, 1, Anna Peters;
- Best display of honey, 20 lbs.—1, Asbell
- Best display of honey, 20 lbs.—1, Todd
- Largest samples

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can get along well enough with a couple of supers, and extracting only the sealed combs. The bee-keeper with out-apiaries would prefer to provide the extra supers, and attend more to the putting-on of supers while the honey flow lasted. The extracting is done afterward, and the one job is made of it at each yard. During the honey-flow the bees secrete wax in abundance, and are more contented if able to use it up in sealing the combs. The work of evaporation is carried on all night, and altogether it is doubtful whether the amount of the crop is increased at all by extracting the green honey.

Salt is a substance which readily absorbs moisture, and it is safe to say that, where salt becomes damp, honey will do the same. I have had no experience with sections; but I should say that a good plan to prevent them from "weeping" would be to place a box of unslaked lime in the room where they are stored. It would keep the air dry.

Devauchelles Bay, N. Z.

—From *Gleanings in Bee Culture*.

ST. JOHN'S EXHIBITION PRIZE-WINNERS.

APIARY.

Best display of extracted granulated honey, 50 lbs.—1, G. Todd; 2, W. G. Asbell; 3, W. Todd.

Best display of liquid extracted honey, 100 lbs.—1, W. G. Asbell; 2, Mr. Todd; 3, G. Todd.

Best Clover honey in comb, 20 lbs., —1, W. G. Asbell; 2, Mr. Todd; 3, G. Todd.

Best Buckwheat Honey in comb, 20 lbs.—1, Anna Peters; 2, W. G. Asbell.

Best display of liquid Buckwheat honey, 20 lbs.—1, G. Todd; 2, W. G. Asbell.

Best display of liquid extracted Clover honey, 20 lbs.—1, W. G. Asbell 2, Mr. Todd.

Largest samples of extracted honey

from different flowers.—1, W. Todd; 2, G. Todd.

Largest and best variety of uses to which honey may be put.—1, W. Todd; 2, Mrs. Jas. McKay; 3, Mrs. I. K. Good.

Pure Beeswax, 10 lbs.—1, W. G. Asbell; 2, W. Todd.

Best foundation for brood chamber.—W. Todd; 2, G. Todd.

Best foundation for sections.—1, W. Todd; 2, W. G. Asbell.

Best section super for top storey.—1, W. G. Asbell.

Best apiarian supplies.—1, G. Todd; 2, W. G. Asbell.

Largest and neatest exhibit of the apiary.—1, W. G. Asbell.

Best colony of Italian bees in observation hive.—1, W. G. Asbell.

Best colony black bees in observation hive.—1, W. G. Asbell.

Best colony any other variety observation hive.—1, W. Todd.

Best exhibit of bees in embryo.—1, W. Todd; 2, W. G. Asbell; 3, G. Todd.

Full colony of bees in movable frame hive.—1, W. Todd; 2, G. Todd.

Most instructive exhibit.—1, W. G. Asbell.

Largest and best display of comb honey.—1, W. G. Asbell.

Largest and best exhibit of extracted honey.—1, W. G. Asbell.

Largest and best display of bees in observation hives.—1, W. G. Asbell.

Best case comb honey.—1, W. G. Asbell.

Best one pound of beeswax.—1, W. G. Asbell.

Best 10 lbs. extracted honey.—1, W. Todd.

Best frame of honey for extracting.—1, W. G. Asbell.

Best exhibit by boy under sixteen.—1, G. Todd.

Best exhibit by lady beekeeper.—1, Mrs. Jas. McKay.

Bees in embryo.—G. Todd.

Best general exhibit.—1, W. G. Asbell.

- Best full colony of any race of bees.
1, W. G. Asbell.
- Best 10 lbs. granulated honey.—1,
Best box 24 lbs. extracted honey.—
1, W. G. Asbell.
- Best display beeswax.—1, W. G. Asbell.
- Best display beekeepers supplies.—
1, G. Todd.
- Best colony bees shown by boy under
16 year.—1, G. Todd.
- Best 24 lbs. extracted honey by boy
under 16 years.—1, G. Todd.
- Best colony Italian bees by boy under
16 years.—1, G. Todd.
- Second largest exhibit of comb honey.
—1, W. Todd.
- Second largest exhibit of extracted
honey.—1, W. Todd.
- Best Beeswax exhibit.—1, W. G. Asbell.
- Best general exhibit.—W. G. Asbell.
- Best exhibit by lady beekeeper.—1,
Mrs. Jas. McKay.
- Specials for Charlotte County Only**
- Best frame black bees in observation
hive.—1, G. Todd.
- Best frame Italian bees in observation
hive.—1, G. Todd.
- Best any other variety of bees.—1,
W. Todd.
- Largest and best general exhibit.—
1, W. Todd.

RENDERING THE WAX.

Some beekeepers consider beeswax useless, hence give no attention to securing this product of the apiary. In this they are seriously in error, since experience tells me, as well as others who make money out of bees, that converting every saleable product into cash is necessary to offset the losses to which bee-keepers are always subject.

As with all marketable products, the value of beeswax depends upon the quality, and the quality and marketability of this product depend upon the care exercised in rendering the wax.

To have it retain its natural color it must not be over-heated. Over-boiling will convert it into a grainy mass having the appearance of pulp. It is possible to change cakes of wax into powder by over-boiling. If you find something resembling mud at the bottom of the cakes you may rest assured that it is wax, but its color can only be improved by dry melting.

One precaution is to avoid melting the combs with water in pans that contain iron, as iron will cause the wax to turn black. Another is to refrain from using acids in rendering wax. As a general rule, those who make use of acids use them in entirely too large quantities. The use of acids removes the smell of the bees from the wax.

Before beginning the melting, take the old combs and crush them as much as you can, then put them in clean water and melt them. It is not necessary to use press until after you have taken out the best of the wax. Use a press only

If you spoil the wax during the boiling and get it into the grainy condition described above, that part which is grainy and which is more or less dirty and contains considerable water, must be returned to good condition by subjecting it to dry heat. Even then you will not have as good beeswax as you would otherwise have had.

UNITING BEES

BY ERNEST EATON.

A striking peculiarity of bee life is that if strange bees obtain entrance to a hive with intent to rob, they are at once detected and expelled, or killed; but if loaded with honey they are joyfully received. This knowledge, properly applied, enables us to mix bees apparently indiscriminately, and the ability to unite colonies is at times as useful and necessary as it appears difficult to the novice.

With the object of preserving or

strengthening if left to win to the intent generally per the chances small lots are they require t great that it i ways to winte

Bees may b the year, but October is the weather causes the combs, and they do not fly distance.

Many novices erating without little more know have resulted union, the who frames are conc than a few min

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strengthening weak lots of bees, which, if left to winter singly, would succumb to the intense cold, the operation is generally performed during October, as the chances of successfully wintering small lots are slight, and the attention they require the following spring is so great that it is more profitable in many ways to winter them in one lot.

Bees may be united at any time of the year, but for wintering purposes October is the best month, as the cool weather causes the bees to adhere to the combs, and at this time of the year they do not fly much, or to any great distance.

Many novices make mistakes in operating without realizing that a very little more knowledge or trouble would have resulted in an almost perfect union, the whole process, where bar frames are concerned, not taking more than a few minutes.

One of the main factors in ensuring success is to realize that it is absolutely necessary that the bees should be brought to *precisely the same condition and only one queen be left.*

A puff or two of smoke administered at the entrance of each lot will frighten them and cause them to fill themselves with honey, after which open the hives, space the combs so as to admit daylight to the floor board, and lift the combs with the adhering bees, placing them alternately amongst the combs of the receiving hive, or, if preferred, they may be lifted *en bloc*, and placed at one end. Where there are more combs of bees than one hive will accommodate, select those with brood on them, cover them up, and the union is complete, after placing a wide board from the entrance to the ground to make the bees mark the spot, and also to prevent them returning to the wrong hive, thus avoiding fighting.

The most frequent cause of fighting, however, is the manner in which the union is made. A necessary part of

the process is to subdue the bees properly, and where there are no unsealed stores this is almost impossible. It is useless attempting a union until they are properly filled with honey, as hungry bees are never easily united, and if, therefore, there are no unsealed stores, the bees must be fed a day or two prior to uniting, or sprinkled with syrup before operating.

Success lies in having the bees about the same strength, in the same condition, and quite free from irritation.

Where stocks are a distance apart, bring them close together by moving a foot or two at intervals of a day or so, and whilst on this ground it may be as well to correct an erroneous impression that prevails amongst a section of apiarists, who buy driven bees to strengthen weak lots, viz., that these condemned bees can be united to those on combs by running them in at the entrance. The advocates of this plan know as much about the operation as (to use an Americanism) would fill a filbert, as the fact that bees which are not on combs never successfully unite with those on combs, is apparently ignored.

A method by which a union may be accomplished is to remove the oldest queen, shake the bees of the established stock off the combs upon the alighting board, and then, as they run into the hive again, throw the condemned bees amongst them, afterwards replacing the combs. Even this method, with the extra labor, is not always certain, and if fighting ensues, the smoker should be freely used, and the hive sides thumped and jarred, to frighten the bees, which will generally restore order.

If it is impossible to get stocks close together, deprive the stock of its queen and brood. Two days afterwards it can be readily united to any other colony in the apiary which is in possession of a fertile queen, with the certainty that they will stay. The fact that the bees

are rendered queenless and broodless, and that they have no means of raising a queen, explains why they will, when joined to another stock with a fertile queen, remain where they are put.

Bees which have been in transit, confined, or overheated, should not be placed together until they have cooled down, placing them near the hive to which it is intended to unite them, arranging the hive so as to permit flight, and leaving them in this condition for 24 hours.

They can then be united with perfect safety by the method mentioned.—From the *Irish Bee Journal*.

Honey Wanted

A firm with whom we have connections wishes to get in touch with a producer who has extracted honey for sale.

J. J. Gibbons, Limited

119 WEST WELLINGTON ST.,
TORONTO

Wanted to Purchase!

**100 COLONIES OF BEES
In Good Condition**

Must be absolutely free from disease. Bee-keepers having colonies for sale will please communicate with

G. DELLER

care Canadian Bee Journal, Brantford, Ont.

BEE-KEEPERS, AWAKE!

BEES AND SUPPLIES FOR SALE

One of the Finest Outfits in Canada.

DO you realize that it is almost impossible to-day to buy a choice outfit of bees and supplies ready for business in Ontario. Do you realize, further, that you can pay a good price for this property and with proper care clear from 50 to 75 per cent. annually on your investment? This is your opportunity. Seize it now. Don't wait. Write to-day. Outfit consists of 200 colonies of bees, 240 extracting supers, 120 comb honey supers, 200 queen-excluders, 100 four-colony hive stands, 45 four-colony wintering cases, 2 choice honey houses in panels, 2 foundation mills, reversible extractor, wax press, capping melter, etc., etc. Good location; bees do not have to be moved. Wish to sell at once, giving possession August 1st. If not sold, might run on shares for term of years with reliable bee-keeper. Owing to health of my family, wish to return to California in fall. Address A. Laing, Lynn Valley, Ont.

BEWARE OF FOUL BROOD

Brief Instructions for Treatment.

In a honey flow, in the evening, remove the colony from its stand and set in its place a clean disinfected hive containing clean frames with foundation starters. If the weather is very warm, place an empty hive under the one containing the starters for a few days, to give a good clustering place for the swarm. Cover the entrance with queen-excluding metal. Now shake the bees from the combs of the old hive into the new; but if any fresh nectar flies out in shaking it will be necessary to brush the bees. Get these combs immediately under cover, and clean up very carefully any honey that may be around, so robbers from healthy colonies cannot carry home disease.

When the diseased colonies are weak in bees, two or three should be put together into one clean hive so as to get a good-sized colony. In doing this diseased colonies must be united with their next-door neighbor and not carried to another part of the apiary.

All combs from the supers as well as from the brood-chambers of the diseased colonies must be either burned or melted and boiled thoroughly before the wax is fit to use again. The honey that is removed is entirely unfit for bee feed and should be buried deep enough to be out of the reach of any bees.

For fuller particulars in reference to Foul Brood see Bulletin No. 197, issued by the Ontario Dept. of Agriculture, which will be sent you on application to the Director, Fruit Branch, Parliament Buildings, Toronto.

When writing to advertisers, please mention the Canadian Bee Journal.

October, 1912

Want a

Advertisements received at the words, each Payments stri amounts are to keeping. Write sheet from any side of the pap many times ad must reach us each month.

WANTED—OFF son's crop o buyer to furnis portation charg tainer when w Shetland, Ont.

HIVES—Wanted stroth hives, hand, Ham & N Crutcher, Bee-kee

WANTED TO B any quantity. sale. Root's goo Bell, 4 Cherrier

WANTED—I wor for your this either comb or e tins. Write me. G Ont.

WANTED—Your c er-colored Italia for \$7. Select virg France & Son, Pla

WANTED—To buy Bee-keepers' supp the A. I. Root Co.'s F. W. Bell, 4 Cherrier

WANTED—Represe locality to mail Grocery Mail Order spare time will ea Any one can do t nished free. Domin sor, Ont.

FOR

FOR SALE—25 colon A good locality be George Ott, Arkona.

FOR SALE—A limite colored Italian Q ranted purely mated. Howe, Black River,

FOR SALE—Queens a ages. A good strain for honey, now ready anteed. W. D. Achor U.S.A.

WAKE UP!

BEES FOR SALE
Outfits in Canada.

It is almost impossible to get a good outfit of bees for business in Ontario further, that you get this property and from 50 to 75 per cent investment? This outfit consists of 2 extracting supers, 200 queen-excluder stands, 45 four-frame stands, 2 choice honey extraction mills, rex press, capping location; bees do wish to sell at August 1st. If not hares for term of keeper. Owing to wish to return to A. Laing, Lynn

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as in reference to No. 197, issued by Agriculture, which will to the Director, nt Buildings, To-

Advertisers, please Bee Journal.

Want and Exchange Column

Advertisements for this column will be received at the rate of 50 cents for 25 words, each additional word one cent. Payments strictly in advance, as the amounts are too small to permit of book-keeping. Write copy of ad. on a separate sheet from any other matter, and on one side of the paper only. Say plainly how many times ad is to be inserted. Matter must reach us not later than the 23rd of each month.

WANTED

WANTED—Offers wanted for this season's crop of Light Extracted Honey, buyer to furnish tins and bear all transportation charges. Mention size of container when writing. Miss F. Palmer, Shetland, Ont.

HIVES—Wanted, a few 10-frame Langstroth hives, in good condition, second-hand, Ham & Nott goods preferred. A. Crutcher, Bee-keeper, Burns, Ont.

WANTED TO BUY—Wax and Honey in any quantity. Bee-keepers' supplies for sale. Root's goods a specialty. F. W. Bell, 4 Cherrier St., Montreal.

WANTED—I would like to contract now for your this season's light honey, either comb or extracted. I can supply tins. Write me. G. A. Deadman, Brussels, Ont.

WANTED—Your order for untested, leather-colored Italian Queens. One 75c; 10 for \$7. Select virgins, 10 for \$4.50. N. E. France & Son, Platteville, Wis., U.S.A.

WANTED—To buy, Bees, Honey and Wax. Bee-keepers' supplies for sale, especially the A. I. Root Co.'s line of goods. Address F. W. Bell, 4 Cherrier St., Montreal, Que. tf

WANTED—Representative wanted in each locality to mail circulars for Cut-Rate Grocery Mail Order House. Few hours' spare time will easily earn \$20 weekly. Any one can do the work. Outfit furnished free. Dominion Grocery Co., Windsor, Ont. tf

FOR SALE

FOR SALE—25 colonies of bees and outfit. A good locality here for keeping bees. George Ott, Arkona, Ont.

FOR SALE—A limited number of leather colored Italian Queens for sale. Warranted purely mated. \$1.50 each. Geo. B. Howe, Black River, New York.

FOR SALE—Queens and half-pound packages. A good strain of 3-banded Italians for honey, now ready. Satisfaction guaranteed. W. D. Achord, Fitzpatrick, Ala., U.S.A.

BEEES FOR SALE—Forty-five colonies Italian or their crosses, in 8-frame Langstroth hives. Good colonies and free from disease. Apply to Stephen McNeill, Conn P.O., Ont.

GOLDEN QUEEN BEES, ready to mail, at \$1.00 each; six for \$5.00. This stock has been favorably reported upon in black brood localities; also for foul brood. J. B. Case, Port Orange, Fla., U.S.A.

FOR SALE—Golden Italian Queens; tested \$1.00, select tested \$1.25, untested 70c each, dozen \$8.00. After July 1st: Un- tested 60c each, dozen \$7.00. Send for price list. D. T. Gaster, Rt. 2, Randleman, N.C., U.S.A.

FOR SALE—10,000 lbs fancy honey, light and dark amber, barrels and 60-lb cans, same as we use for bottle trade; dark amber, 10c. Exhibition White Wyandottes, \$1.00 per set; baby chicks, 15 to 20c. Queens, \$1.00. Todd Bros., Milltown, N.B.

ITALIAN QUEENS after May 1st. Robey, Alexander or Case strains. Untested, 75c; tested, \$1.25 breeders, \$3.00; Carniolan, Cyprian, Caucasian and Banats, untested, \$1.00; tested, \$1.50. Honey packages and supplies. W. C. Morris, Nepperhan Heights, Yonkers, N.Y., U.S.A.

LAST Spring we were a hundred or more colonies short in filling orders. We are prepared to book orders for ten-frame Langstroth colonies, 75 per cent, pure Italian, balance Italian and Carniolan mixed; all from Southern States in Spring. Guaranteed free from disease. R. F. Holtermann, Brantford, Ont.

ITALIAN QUEENS—3-banded, finest quality; raised in latitude 59°. Tested: June, \$3.00; July, \$2.50; August, \$2.00. Breeders: June, \$6.00; July, \$5.00; August, \$4.00. Rebate of 25 per cent. when purchased by the dozen. Alexander Lundgren, 12 Tomtebogatan, Stockholm, Sweden, Europe.

QUEENS Italian Type Carniolans
Nuclei and bees by the pound a specialty. FIVE SEPARATE MATING YARDS. Satisfaction guaranteed or money refunded. 20 years' experience. Write for circular. F. M. KEITH, 83½ Florence Street Worcester, Mass.

There are two places for your trade mark; first on your goods and second in the minds of the buyers. It should be as distinct in the latter as the former.

The people who are constantly trying to get something for nothing usually end by getting nothing for nothing.

GOLDEN QUEENS and 3-Band Italians



Mated in separate yards five miles distant. Bred from Improved Long-tongued and Red Clover stock—the best honey-gatherers that money can buy. Reared by Doolittle or Miller plan.

Untested Queens, to be ready May 1st, 1.75 cents; 12 for \$7.50; 50 for \$25.00; in lots 100 to 500, \$45.00 per 100.

Tested Queens, ready May 15th—one for \$1.50; six, \$8.50. No bee disease in this country. Safe arrival guaranteed.

J. B. ALEXANDER, Cato, Ark.

A NEW ERA IN BEE-KEEPING METHODS

DO YOUR BEES upset your calculations by swarming just when you don't want them to?

DO YOU WANT to know about a system of management that will give you absolute control of swarming with the minimum of labor?

IF YOU ARE INTERESTED in a system of bee management that stands for economical methods of manipulation; in short, if you want to be complete master of your profession, send your address to

J. E. HAND
Birmingham, Ohio

and receive full particulars by return mail.

THE Canadian Co-operator BRANTFORD, ONT.

The Official Organ of The Co-operative
Movement in Canada.

Published Monthly by The Co-operative Union
of Canada.

SUBSCRIPTION 50c. PER ANNUM

Write for Sample.

Long Tongued Red Clover Italian Queens.

Northern Bred Queens, bred for honey gathering and good wintering qualities. Will have a limited number for sale this season. These are unquestionably as good Queens as can be procured anywhere. **\$1.25 each, selects up to \$3.00.**

F. A. Metcalfe
—BOX 75—
FENELON FALLS, ONT.



Carniolans Italians and Banats

The Simon Pure Article are now ready to mail at the following prices

Untested
Each 75c. Per doz. \$8.

Tested
Each \$1.25. Per doz. \$12

MY CIRCULAR FREE

GRANT ANDERSON
San Benito, Texas

CARNIOLAN QUEENS Superior Line Bred Strain

PRICES FOR U.S., CANADA, MEXICO,
CUBA

Select Untested
June, July, August, September, \$1 each,
\$9.00 dozen.

Select Tested
June, July, August, September, \$1.50 each,
\$12.00 dozen.

Ask for Prices in Lots of 50 or More

Ask for our paper "Superiority of the Carniolan Bee," giving description, best methods of management and our system of breeding. IT'S FREE.

ALBERT G. HANN
Scientific Queen Breeder

PITTS TOWN, N.J.

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We are now a
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Write for Prices

Remember, we
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BEDFOR

Bee-KEEPERS

THE SECRET OF
SUCCESS IN BEE KEEPING
 IS TO KEEP YOUR COLONY STRONG,

TO DO THIS YOU MUST HAVE
Good Laying Queens

Which we Guarantee at the following Prices:

GOLDEN	3 BAND ITALIAN	CARNIOLAN
Untested—1 for \$1.00	6 for \$5.40	12 for \$9.60
Tested —1 for \$1.50	6 for \$8.40	12 for \$15.60
Nuclei with Untested Queen—1 Frame \$2.50	2 Frame \$3.50	Six 1 Frame \$15.00
“ “ “ “ “ “ “ “	1 Frame \$3.00	Six 2 Frame \$20.40
“ “ “ “ “ “ “ “	2 Frame \$4.00	Six 1 Frame \$17.40
		Six 2 Frame \$23.40

The drones used in our Apiary for Mating purpose are reared from the very best selected Queens which is as necessary as the selecting of a good Queen for Queen rearing.

For good Queens and quick service you can not do better than place your order with us. We guarantee safe arrival and satisfaction. Directions for building up weak Colonies will be mailed to you for 10 cents.

The above Queens are all reared in separate yards.

W. J. LITTLEFIELD

R. F. D. No. 3

LITTLE ROCK, ARK.

FINE ITALIAN QUEEN BEES

All authorities agree that the Italians are best to withstand diseases. Get our strain of Italians, which are hardy, strong and vigorous.

We are now able to supply Queens PROMPTLY at the following prices, safe delivery guaranteed:

UNTESTED QUEENS
 Reared from best queen mothers.
 \$1.00 each, 3 for \$2.75

TESTED QUEENS
 These are large, prolific young queens, whose bees are gentle and sure to please.

\$1.50 each, 3 for \$4.00, 6 for \$7.50

SELECTED TESTED QUEENS
 The very best we can supply.
 \$2.00 each, 3 for \$5.00

Write for Prices by the Quantity

Remember, we are sending these promptly. Your orders are respectfully solicited.

F. W. JONES

BEDFORD, QUE.

Bee-KEEPERS' SUPPLIES

MOTT'S ITALIAN BEES
 Strain of also Carniolans

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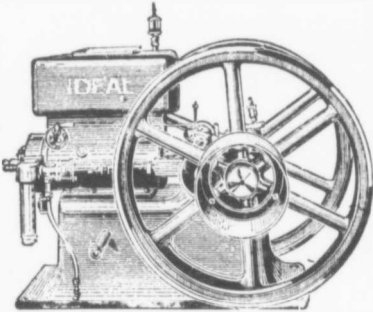
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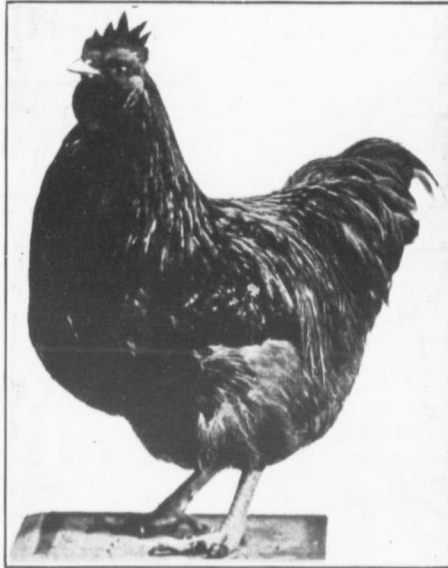
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