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THE AUSTRALIAN Bee Bulletin.

A MONTHLY JOURNAL, DEVOTED TO BEE-KEEPING.

Edited and Published by E. TIPPER, West Maitland; Apiary, Willow Tree, N.S.W

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AUGUST 29, 1907.

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Australia.

WOULD not it be nice if Australian beekeepers had the beautiful clover fields of Great Britain, and North America, suitable both for grazing as well as beekeepers. When the honey trees are cleared away to make wheat fields good bye to bees.

CONTROLLING SWARMS.

Queen-cells are starting, the hive is full of bees ?

[How would it do reversing the hive, taking one or two brood frames out, with queen or queen cells, and placing in fresh hive in original stand ?]

THE BAD SEASONS TWO YEARS AGO.

Many beekeepers in New South Wales and Queensland suffered severely this season, losing many of their swarms, the consequence of a warm spring, followed by a cold spell which destroyed the hatched and hatching larvæ.

Now the spring is coming see that each hive has a good prolific queen.

The past honey season has been practically a failure in Southern California.

In the East of Scotland in June there was a sixty-hour continuous fall of rain.

A Scotchman says he paints the covers of his hives with three coats of boiled oil and Portland cement.

Bees cannot, from the formation of their jaws, puncture grapes, but when

other insects have done so they will carry away the juice below the skin.

An American urges beekeepers to plant honey trees for fence posts.

Methal Salicylate rubbed on the hands is said to be a remedy for stings.

If both wings of a queen are clipped, she may fly, but not with only one clipped.

Mr. Frank Benton's trip to the East in search of new races of bees, has been, so far as we read it, a thorough failure.

A Dr. H. F. Mason, in producing malted honey, says he aims to produce a food having both the flavor of the honey and the malt.

The average amount of honey taken from a British hive is 50 pounds, double the American average. The record "take" from any hive was 1000 pounds, from a stock of Cyprians.

At the Lincoln meeting of the "Royal Show" in England, there were 130,000 people, and the takings for admission amounted to £10,142. Beekeepers had a canvas roofed shed, with a frontage of 178 feet.

In past generations when skeps only were used, it is said there was much less disease among bees than since the introduction of bar-framed hives. Would the practice then of cutting out the combs have had to do with it?

In removing hives one of the simplest ways of closing entrances is to tear heavy burlap or some material of this kind into strips as long as the hive is wide, and about two inches in width. To close the entrance, simply fold it double and push it in with a piece of section box or knife-blade.

A few years ago, bulk comb honey was practically unknown. But to-day there is scarcely a beekeeper in the United States that has not heard of it and how it is produced. It is now the principal product of South-west Texas, and is gaining foothold further.

The First Modern Bee Farm in Australia.

In the January issue, page 222, I related an incident of 25 years ago, namely: Exhibiting first hive of Italian bees, January 26th, 1882. No exception has been taken, nor any priority claim put in. But my third sentence begins with the words: "As I had shortly before started the first modern bee farm in Australia." O Lord, what a commotion! How preposterous! What bluff! Brotherly feeling—much feeling arose to dispute such assertion; but the longer the conflict continues the more mixed the contestants are getting, so that they begin to throw that honour at one another like fighting gloves. The argumentors constitute a clover-leaf of three, out of the many thousands of beekeepers in Australasia, but what they lack in size they make up in weight and noise. Mr. Garrett claims Mr. Peterson; Mr. Jones says Mr. Carroll ought to be the first, but he corrects himself in the July issue and chucks the honour at Mr. Hopkins; Mr. Hopkins names Messrs. Fulwood, Glass, Bonney, Hood and Nevean. Mr. Jones' extracts from letters of Mr. Carroll explain themselves nicely, without any further commends. The sale of bee goods was the line Mr. Hopkins says he began with. But had anyone made beekeeping his sole occupation as a livelihood? I contend that keeping bees for a living—as I have done for 26 years in Australia—is the most important point. Looked at in that light all controversy falls to the ground, the matter is sifted.

We should also take into consideration that the practical knowledge and experience of the individual is an important part and makes a decision all the easier. The inefficient practical knowledge was the stumbling block that kept bee culture in such primitive state up to the time of my arrival in 1881—not 1883, please note, Mr. Hopkins and others, who seem to know my affairs better than I do.

In 1881, at some fruit stalls in the old building where the Victoria Market now stands, honey was exposed for sale in tubs, comb and liquid together, and containing brood and pollen, etc., with dust and dirt settled thereon added. Such was the state of affairs then. Some grocers had honey in glass jars, but that was imported from America. Where were the modern beekeepers? What were they doing to allow such things to exist from 1872 to 1881? What claim have they to modern beekeeping? What more did they know about bees than what they had read and learned from their limited experience? When I wanted a four-frame extractor I had to send to America for it until I got a wheel-casting sent from Germany and then made them here. I did considerable travelling, partly to see how matters stood, partly to buy bees, and thus I got a good insight in the then beekeeping. Everywhere the want of knowledge of the proper management was plainly noticeable; but there was also a distinct desire to gain better information, if possible.

Under these conditions I started. Now, fortunately for me, I had been trained at one of the best managed bee farms in Germany, and had then managed large bee farms in other parts of Europe, obtaining the most flattering testimonials. With these in my possession I arrived here and soon found friends, Mr. Angus MacKay included. My task was by no means an easy one at first, but nevertheless I succeeded to establish and propagate the Italian bees, to make beekeeping a paying industry, and induced the old-style beekeepers to go in for new methods. Soon the consumers of honey were offered a clean and wholesome diet in both comb and liquid honey. Bee farms began to spring up in all directions, and persons, who had comfortable situations gave these up so as to be able to devote all their time to bees. Yes, practical management made bee culture what it is. Is it then a fact that my labor, my emblem, my teaching, my showing and

explaining has been all in vain? Have I done nought to make beekeeping what it now is? Can it be proved that I let my light shine, that I bluffed, that I blew my own trumpet, and all for my own benefit? If so, I beg everyone's pardon; otherwise I may be excused for retaliating on such insinuations and for paying these compliments back with interest, though I regret I had to do it, but as even the worm will turn, etc., so do I, and who gets hit has only himself to blame when he gets hurt. If therefore I do not fall in with my humble apology, I have my reasons and the impartial readers may judge for themselves whether I am acting rightly or wrongly.

W. ABRAM.

The Italian Bee Farm,
Beecroft, near Sydney.

Human Breath Revives Bees.

We take the following from the "Glasgow Weekly Herald":—

"Your bees are doing well this spring. Here are a couple of dead ones, though," said the visitor.

"Give 'em to me and watch me blow on 'em," said the bee man.

He laid the inanimate bees on a fence rail and breathed softly on them. They stirred feebly, they kicked out their tiny legs, in a moment they flew away.

"Nothin' revives bees like human breath," said the bee man, chuckling. "Its better'n cordial to 'em."

"They like it, do they?"

"Like it? No they hate it—hate it like pi'son. That's why it is when a bee lights on ye, so long as ye hold yer breath 'twon't sting."

"The inner side of every cloud

Is always bright and shining;

I therefore turn my clouds about,

And always wear them inside out,

To show the lining.

A NOTE ON THE DAILY LIFE OF THE HONEY BEE.

PROF. F. KUHLMANN IN "AMERICAN BEEKEEPER."

The object of the task outlined was to determine through closer and more prolonged observation than has usually been the case, some questions that appealed to the writer and others as a fundamental interest. The observation were carried out mainly for the purpose of seeing, first what was the daily rhythm of rest and activity of the bee. And second, what the differences were, if any, between the activities of the young bees and the old. The second is obviously the wider and more difficult problem. One season of study has yielded some scattering results of considerable interests along this line, but the present note will limit itself to a statement of the results of the first question. These, in the writer's opinion decide the main object of the inquiry although more observation are admittedly needed to decide a number of interesting details, questions the present results themselves have raised.

The observations were made on two colonies in single comb hives, the comb being covered with glass sides placed within half an inch of the surface of the cells of the comb. All the bees could thus be seen at work in the hive. Each colony contained about 1,800 worker bees. Both queens were of the Italian variety but had been mated with a mixed variety that was mostly Italian. The queen of the first colony was an old one, being in its third year. That of the second colony emerged in July in the hive on which the observations were made. The observations on the first colony were made in May and June, while most of the fruit trees were in blossom. Those on the second colony were made in July, August, and September. The method was that of pure observation, the life and activities of the bees being in no way interfered with

excepting they were given an empty comb when the old one became crowded with brood, and that, during actual observation, the comb was exposed to diffuse daylight during the day, and to a weak artificial light at night. When more light was required to see what they were doing with antennae, mandibles, or tongue a small artificial light was turned on at close range on the individual bee under observation, for a few seconds at a time, none of these things seemed to seriously affect their behavior, not at all noticeably to ordinary observation. It was particularly desired to make the observations as minute and detailed as it was possible to do, so that some sort of quantitative statements of the results could be made. Consequently they were summarized in notes at least every five minutes, generally oftener, and the exact time the bee was engaged in every kind of activity noted. But, except where the occasions required it, no individual bee was kept under continuous observation throughout the day. Instead of this the observations were made generally in 20 minute periods one every hour or every 3 hours. The observations on individual bees were limited to two queens, and eight marked workers.

I shall give first the results on the two queens. Some statements will necessarily not be contributions to our previous knowledge, but are included for the sake of giving a complete picture of the bee's life.

The queens work is all within the hive. She remains on the surface of the cells, never entering one except with the abdomen to deposit an egg at its bottom. The number of eggs laid in the course of 24 hours varies largely with the general condition of the hive, but it may normally reach two or three thousand. Says Cook: "The activity of the queen is governed largely by the activity of the workers. The queen will lay sparingly, or stop altogether, in the interims of storing honey, while on the other hand she is

stimulated to lay to her utmost capacity when all is life and activity in the hive." At any time of the day or night she may be seen moving over the cells the workers generally making way for her, frequently several being arranged around her, patting and rubbing her with their antennae, and offering her food. But at times she may be quite unattended, and the workers even hardly getting out of her way. As she moves along she frequently pokes her head into a cell, and if it is empty and clean, may dip her abdomen into it and deposit an egg. She seldom persists in the same kind of activity for longer than ten minutes at a time on an average, much less than this. She may move along for several minutes without doing anything else, or may look into many cells, depositing eggs at the rate of two to several a minute. Then she may stop for an interval and sit more or less perfectly quiet, resting, or "barbering" (I use this term as descriptive of the activity common to most insects, and termed by others "making their toilet") herself thoroughly, or fed for half a minute or so. I transcribe the following from my notes as a typical 20 minute periods of observation: Observation on the young queen time, 4 p. m. "1. Rests, attended by 7-11 workers, licking and barbering her. An occasional slight move. 2. Barbers herself 20 seconds. Rests 2 minutes and then moves. Deposits an egg in 10 seconds. Egg in 10 seconds. Egg in 15 seconds. Egg in 10 seconds. Seven cells looked into. 3. Egg in 12 seconds. Egg in 12 seconds. Moves. 4 cells looked into. 4. Moves. Sits still 30 seconds, not attended. Sits still 2 minutes, attended by 7-11 workers." The main characteristic of her doings is the greatest sort of irregularity. She alternates from one thing to the other often at only several seconds intervals. From merely observing her at different parts of the day and night it is not noticeable that light or darkness makes any difference to her. She seems about as active at night as during the day, and in about the same way. The following table

however, gives my results in figures, on the two queens, with respect to three things, egg-laying, feeding, and resting. The old queen was watched for fifteen minutes every hour for a continuous period of 24 hours, omitting three hours, from 12-3 a. m. It was in the latter part of May when the hive was quite busy gathering pollen and nectar, and the comb about a fourth filled with brood. The results are grouped in 3 hour periods, and then expressed upon a 20 minute basis.

OLD QUEEN.

	A. M.				P. M.			
	3-6	6-9	9-12	12-3	3-6	6-9	9-12	
Eggs	12.8	9.4	11.2	10.6	9.4	12.0	8.0	
Times fed	1.5	4.0	9.0	3.0	0.0	3.5	2.5	
Min. rest	4.2	6.6	9.2	9.4	10.0	8.8	8.4	

Above table covers twenty minute periods.

More observations were made on the young queen. During her egg-laying period she was watched at irregular intervals for eight days. The period of continuous observation was 20 minutes, usually one every three hours. The next table gives the results, expressed in the same way as in the preceding.

YOUNG QUEEN.

	A. M.				P. M.			
	3-6	6-9	9-12	12-3	3-6	6-9	9-12	
Eggs	8.8	7.8	7.4	5.4	9.2			
Times fed66	.65	.37	1.37	.55	.82		
Min rest	1.17	1.81	1.89	2.66	2.39	1.00	4.10	

Above table covers twenty minute periods.

AVERAGE FOR THE TWO QUEENS.

	A. M.				P. M.			
	3-6	6-9	9-12	12-3	3-6	6-9	9-12	
Eggs	12.8	9.1	9.5	9.0	7.2	10.6	8.0	
Times fed	1.08	2.33	4.69	2.19	.28	2.16	2.5	
Min rest	2.69	4.21	5.55	6.03	6.18	4.90	6.25	

Above table covers twenty minute periods

The observations were not extensive enough to establish any small differences there might have been between the activities of the day and night. The figures are too irregular. But it seems evident that there is no great difference. She is about as active during the night

as during the day. There is some slight suggestion that she is a little more active during the very early morning, and then becomes gradually less so until midnight. See the lower column of figures in the last table. Another interesting suggestion is the difference in the amount of resting for the old and the young queen. The young queen rests less than a third as much as the old. The observations on the worker bees were of three kinds. First, watching individual bees that had been marked with water colors, in the same way as the queens were watched. Counting the number of bees that came in per twenty minutes with pollen during the day, and, third, counting the number of resting bees in the hive every hour during the day and night. A mere glance at the hive at any time will show that the workers do not all rest or are all active at the same time. At any time of the day or night one may find "resting" bees in the hive. They rest either on or in the cells. On the cells they are usually along the margin of the comb where there are fewer bees to run into and over them, and usually here her rest is disturbed every minute or so by another bee running into her. When the number of resters is larger there is frequently a complete ring around in the margin of the comb where nearly all the bees are sitting quietly, while the central area remains more or less active. As a rule a period of continuous resting on the cell is not longer than a minute or so, on an average probably less than this, although off on the side where the other bees do not run much it may reach half an hour. This would seem to depend almost entirely upon how crowded and active the hive is. In the cell she may rest for several hours at least I have observed them remaining in the same cell for that length of time. When in a state of profound repose she has every appearance of a dead bee. She seems to hang on loosely to the cell, and when in a vertical position frequently tilts backwards, apparently almost ready to fall off. Such dead rest periods are

broken by a few seconds' breathing every several minutes, by movements of antennæ and feet, and by disturbances from the other bees. I transcribe the following from my notes as a typical twenty minutes observation on a resting bee, on the comb: "Dead rest for twenty seconds, when touched by another worker, and she moves antennæ about for five seconds. Dead rest for thirty seconds, when she suddenly starts, moves legs about for fifteen seconds, and antennæ for thirty seconds. Dead rest for two minutes, except slight tremor of right antennæ, and breathing for a few seconds. Dead rest for forty seconds, when touched by a worker and she sways to the other side and moves antennæ about for fifty seconds when she is pushed out of the way by a running worker. Moves antennæ about for two minutes. Dead rest for thirty seconds. Breathes for two seconds. Dead rest for one minute except breathing once and movement of antennæ for five seconds. Dead rest for thirty seconds, excepting a few jerky movements of antennæ. Run into by a worker and she moves about for fifteen seconds. Dead rest for forty seconds, when touched by a worker. Moves antennæ about for ten seconds. Dead rest for one minute, when touched by a worker, and she starts and moves antennæ for five seconds. Dead rest for one minute, except a few movements of antennæ, and breathing once. Dead rest for one minute when she suddenly starts, moves antennæ about for thirty seconds. Dead rest for one minute when touched by a worker, and she moves antennæ about for ten seconds. Dead rest for one minute, when she suddenly starts and tips forward. Dead rest for fifteen seconds, when she moves antennæ about for thirty seconds."

To be continued.

You want a strong colony -- the strongest you can get to raise queens in. Take the queen away, and cells will soon start. Then get West cell protectors.

SWARMS AND SWARM DECOYS.

C. W. DAYTON.

By my plan of managing swarms several birds are killed with a single stone. Other plans require the queen to be hunted out. In the swarming season that is a tedious job. Thirty queens a day is a good day's work. But if they are allowed to swarm naturally they bring their queens out of the hive themselves and may be caused to alight in one cluster, in which condition the bees can be run through a piece of perforated zinc into one large box, leaving their queens behind, in a separate apartment. Thus the whole day's labour is reduced to a few minutes of easy work.

In dequeening by this natural swarming there is no loss of eggs and brood. This saving of the brood is the salient feature of the Alexander plan. But the Alexander plan involves the long search for the queen and the building of an unprofitable set of brood combs. So does "shook swarming."

My colonies are requeened by cells obtained from the colonies which swarm first. Those choice cells which are prepared by the bees and eggs laid in them by the queen. I save no cells from the later swarming colonies, because the latest to swarm are the poorest stock. It takes a heavier honey flow to make a poor colony swarm, but a very light flow of honey to cause a good colony to swarm as the amount of honey coming into the hive is about the same in the case of the different colonies. Thus we are able to distinguish where our best stock is and improve the present grade by requeening from the best. It is only necessary to keep a record of the "swarmed" colonies and insert the cells at the proper time. New queens obtained in this way do not cost 10 cents each. What makes queens worth one dollar is the artificial rearing of cells and forming of nuclei, feeding propagation of drones, advertising, uncertainty of demand, watching the mail, fussing with shipping cages, etc.

DECOY HIVES.

In customary practice nearly all apiarists arrange the colonies so as to face as differently as possible to cause the swarms to settle distinct from one another. If there are clumps of bushes, or trees or buildings, they are set about these objects, facing outward. When a swarm first issues it seeks a somewhat open space where the bees fly back and forth in circular fashion until the last of swarm is out of the hive. Then they may rise up or drift away to other parts of the apiary yard. But as they fly they gather more compactly together. The bees sally forward and circle back again toward the rear of the flying swarm. Then they circle forward again extending the circles farther than before. There is a difference in the sound, or, pitch of sound at the front of the flying swarm from that at the rear. One is quick and sonorous, the other, slow and dull. The same bees which make one variety of sound make the other, according to what part of the swarm they are situated in. It requires an amount of motive force if not considerable judgement to produce sound of a particular kind in one spot and restrain it in another.

By my swarm system I aim to have the swarms settle together as much as possible. Therefore the hives are set around the outside facing a central open space and in the centre of the open space is where I arrange my swarm decoy, or "settling seat," as the Frenchmen term it. I use live queens—the real attracting objects—an old queen and a virgin, or even several of each. Queens are plentiful at that season, being the time when I destroy the old ones for the substitution of new, and as for virgins, I find from four to a dozen in every hive that casts a second swarm. Then they are reared by artificial methods also. For the decoy real, live bees are used. From the first swarm which issues, or from some over populous hive I get about four quarts. Cage them two or three days with the queens and they will never go home and

they will remain on a pole anywhere. Sometimes these bees are shaken into a screened box and kept separate from the queens through the night. Then when they are placed with the queens again in the morning, they will make a great commotion or fanning, or those actions by which bees indicate their joy or satisfaction. It is very attractive to other bees to say the least.

You can search for and cage the queen of a clustered swarm. Leave the queen with the swarm in the cage until 10 o'clock the next day. Then place the queen and about a pint of bees on the alighting board of your prepared hive and the swarm will soon come down from the tree and go into the hive. Or if the hive is held so that the air from the fanning bees is wafted against the clustered swarm, it will cause an immediate uneasiness and action. After this you can take the hive down in the orchard and hide it and your swarm will come after it; or, if it is set in the cellar the bees will accumulate about the screened windows. The bees will follow the hive and queen as surely as a hungry dog will follow you for a chunk of meat that he knows is intended for him. When they get located in this hive they will work with a vim that is not known in other kinds of treatment.

I used to think that this fanning and buzzing of bees to call each other was merely air or sound, but there is indication that it is scent, and Mr. Pratt, (Swarthmore) claims to have discovered a special scent organ.—*American Beekeeper*.

YOUNG MAN (Experienced Apiarist), open for engagement for Coming Season, or would Work an Apiary on Shares in any district. Apply to "APIARIST," c/o E. Brewer, Finch Street, Beechworth, Victoria.

Our experience has been that very light colored bees (or goldens) are not as good as darker strains, more liable to disease, and poorer honey gatherers.

PRICES OF HONEY.

Melbourne Leader.—Honey: The market is only moderately active, and no alteration in values has occurred. Prime clear garden lots are selling at from 2½d to 2¾d, and medium to good classes at from 2d to 2½d. Beeswax.—Prime clear was obtainable only in limited quantities, buyers offering up to 1/3 for lots that can properly be so classed. There are fair supplies of medium quality available, and for these sellers are receiving from 1/1 upwards.

Melbourne Australasian.—Prime clear extracted, 2¾d to 3d; medium qualities from 2½d; inferior and congealed, lower. Beeswax.—In good demand, 1/2 to 1/3.

S. M. Herald.—Honey, 60lb tins extra choice extracted 3¼d to 3½d, prime 2½d to 3d, good 2½d, inferior and candied 2d. Beeswax.—Bright 1/3 to 1/4, dark 1/2 to 1/3 per lb.

HONEY.—

Stocks are considerably reduced, and there is no difficulty in selling choice quality at 3¼d. Medium lines range from 2d to 3d., according to quality.

BEESWAX.—

This line is plentiful and is slightly easier at 1/2 to 1/3.

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HONEY CAKES.

Honey-cakes, if properly made, may be said also to be according to everybody's taste, and are sometimes more useful than pure honey itself, for, strange enough, there are some persons who are unable to bear the taste of honey in its natural form, whilst I have not seen any one who would not relish honey-cakes; I know even some to whom the doctor has forbidden the use of sweets, and on whom honey-cakes produce a good effect.

From personal experience I am of the opinion that honey-cakes would advantageously take the place of many drugs, and are much to be recommended to sick persons who suffer from a weak stomach, or who have but little appetite, for being so slight, and at the same time so highly substantial, they are easily digested without fatiguing the patient. One never gets weary of eating them day after day, as is often the case with pure honey. These advantages are enough to wish that the way of making them should be known in every bee-keeper's home.

Honey-cakes should not be eaten hurriedly, but allowed a sufficient time to ooze away, so to say, in the mouth. When newly made they are very light and dry. Some will find them too dry, but they will improve with age, and, if left in the open will quickly absorb moisture which will make them soft.

Now, the following is the way to proceed in making them: I generally take forty or fifty pounds of honey at a time, and as much flour, so that they may last for many months. But for the sake of beginners I must give lower figures. Take then three pounds honey, three pounds flour, half ounce powdered ammonia, a small teaspoonful of ground cinnamon, half teaspoonful of ground cloves, and six ounces of orange peel cut very small. The three last-mentioned ingredients are not essential, but they improve the taste. Ammonia is necessary. To those who would object to it, I may

explain that it does not remain in the cake, but evaporates during the baking process, its function being to raise the dough.

DIRECTIONS.—Pour the honey in a copper or enamelled pan, and set on a stove or quick fire. When it boils, draw it aside and remove the scum. Then pour the honey into the vessel in which the paste is to be made; leave it to cool; then add flour and mix it up well. This is the remote preparation, and the paste may be left in that condition for weeks and months without fear of deterioration. The proximate preparation is made on the day on which the cake is baked, and consists in adding the other ingredients, when the paste is worked thoroughly up again. The ammonia must first be placed in a cup, pour on it a few drops of cold water and stir it well, so as to form a thick paste, then mix it up with the rest. Then take a piece of the paste, roll it out into a cake not over quarter inch thick, and cut up into convenient sizes as desired. This done, put the cakes on a flat tin (which must be greased beforehand) and bake from twelve to fifteen minutes in a hot oven.

Simplex Bee Hive.

We acknowledge receipts of a copy of the "Colton Daily News" (California) in which is the following article:—It is in praise of a certain hive called the Simplex. We do not know it and therefore copy without remark.

Colton, Cal. May 23rd, 1907.
Mr Carl Ludloff, Colton, Cal.

In reply to your inquiry concerning my experience with the working of the Simplex Bee Hive, will say that I bought two of your hives about April 1st, and on the third day of April I put a small swarm in one of them and on the 4th day of May I took 60 lbs. of as fine honey as I ever saw from them and to-day I see that they have at least 20 lbs. more. I placed a swarm in the other one about

the 20th of April, and they have eight frames full of honey and brood; both have done at least four times as much as those I have in box hives and the ordinary frame hives. I wish to say I am not in the bee business for profit, but merely making a study of them from a scientific standpoint, but from what I have seen I believe that any one with or without experience could with your improved hive make bee raising highly profitable, and I predict that when people once investigate your hive you cannot make them fast enough to fill your orders. I believe that it is possible to get 100 per cent more honey from your hive than anything else on the market.

I believe that you will have great success in the manufacture and sale of this hive.—Yours truly,
M. O. HERT.

APIS DORSATA.

The reports of the India Office agree that *A. dorsata*, mentioned generally under native names, could not be domesticated on account of its intractable character. The chief points noted are:—1. It is said to be exceedingly vicious, often attacking man or beast on the smallest provocation. 2. It preserves the same habits and appearance where ever its habitat. 3. It has never been known to build its nest under shelter but mostly on isolated trees and overhanging rocks. 4. After the honey season the bees will desert their nests and often travel for long periods and great distances, even crossing such mountain chains as the Nilgherris in their course. 5. They build single combs. 6. And approach them from north, south, east, or west. 7. They rarely remain in one locality for more than three weeks, departing as flowers become scarcer.

Near Darjeeling (Eastern Himalayas) they are called Cargoos, and are an object of fear and dislike. They are said to

travel as much as 100 miles before settling. Are inclined to fly somewhat clumsily and to visit flowers rather listlessly. Their value for crossing with *A. Milifica* is questioned because no crosses have been found between *A. Dorsata* and *A. Indica*, and similar bees in India. One writer is quoted as having had seven hives or colonies fed and fixed for the winter, but that they left in the spring leaving by 20 and 30 each bunch having a queen. Clipping queens proved fatal.
Extracted.

RANGE OF FLIGHT.

Mr. Cowan in his work on "The Honey Bee," gives some evidence that the bee may travel at the rate of one mile in less than five minutes. That it could maintain this rate of speed for any length of time is, however doubtful. In the case of the working bee, only its return flight is possibly continuous. I have followed bees from flower to flower until they might be a mile from home, and have repeatedly drawn the attention of others to the home-coming of my bees. As they cross the valley they become visible to my naked eye on a calm afternoon about 200 yards away. The time taken to cover that distance could easily have been ascertained if I had thought the knowledge of any use. But the outgoing flight of the worker is to my mind appreciably faster than the incoming for obvious reasons. I have noticed that various correspondents assert that the queen bee and drone are exceedingly rapid in flight, but they adduce no grounds for this except that the queen after circling round the hive almost immediately disappears from the ken of the observer.

One reason for this is that the direction of the flight cannot be forecast, and the circling motion is bewildering amid the thousands of workers coming and going; it may be that the visual powers of the

watcher are not capable of seeing an object the size of a bee at any great distance. My own sight happens to be singularly powerful, and in favourable circumstances with the afternoon sun glancing from the wings of bees, I have repeatedly made observations as stated above; but, if I may take the rate as approximate up to one mile, and grant that the queen goes faster—say, fifteen miles or even twenty miles per hour—a rate which gives us one mile in four minutes or in three minutes—then the following observations during last year's mating season may be of some use, I am, however, quoting from memory, but being anxious to know how far queens might fly, I repeatedly kept watch in hand during the marital flight. The initial flights rarely exceeded two minutes, sometimes not one. Two years ago I waited patiently for twenty minutes and this is the longest time that I can confidently assert for. This for the faster rates would mean five miles or six and two-third miles continuous flight at the uniform rate of fifteen miles or twenty miles per hour. Assuming then that the queen's flight was in a straight line and uniform in rate she might have gone $2\frac{1}{2}$ miles or 3 1-6 in one direction. This would be quite sufficient in a country populous in bees in every "airt," but there are only two directions here where strange drones might be met with, and the chances of the queens going in either are as one to, say, 180 chances. Should the queen continue the spiral flight she starts with, she could not have gone far in that time. Indeed, I could give an approximate drawing of a spiral that I particularly took note of. Now a circle at a radius of 280 yards from the hive would give a circumference of one mile, while a radius of 560 yards would give two miles. I think, taking a spiral that might extend from a quarter of a mile to 560 yards from the centre would amply account for any time the queens were absent, and would give them sufficient time to meet a hapless mate in some direction.—D. V. in *British Bee Journal*.

THE HEDDON HIVE.

Dr. Miller, referring to the Heddon hive, writes: "A curious thing about the Heddon hive is that more seems to be said in its favor in Australia and Canada than in this country." Without discussing the merits or demerits of the Heddon hive, let me whisper to Dr. Miller that, aside from the apiary of F. J. Miller, have not seen in my travels a Heddon hive for years. Doubtless there are more, but I do not know of ten men in Canada who have adopted the Heddon-hive system. I am quite sure that not two per cent of the hives in Canada are Heddon hives. I have no doubt that the Heddon hive has its advantages; but whether it has more advantages than other hives is a question which I have not been able to answer to myself in the affirmative. R. F. Holterman, *Canadian Correspondent in Gleanings*.

A BRAVE LADY.

A SWARM SETTLING ON HER FACE.

A Miss Richards, of Mabe, Cornwall, was watching her bees, when a swarm suddenly settled on her face and neck. Fortunately, she had courage enough to allow them to remain undisturbed, and eventually the bees were successfully drawn off and hived, without having caused the slightest injury to her.—*British Bee Journal*.

KEEPING RECORDS.

Some bee-men use a slate or paste-board card, others advise a note book. Paint the inside of the top lift of each hive with white paint; then with a pencil mark on the inside of the lift the date and nature of each operation. Simply stoop sideways, standing behind the hive, and write on the left-hand side parallel to the corner. There is enough space round one lift to keep record for eight or ten years.—*Extracted*.

CAPPINGS.

D. H. Cogshell, a noted American Bee-keeper, send to the "American Bee-keeper" a description of a veil he uses:— Out of thin gingham and over-shirt is made that comes up even with the shoulders, and the sleeves long enough to come to the nuckles, where a piece of rubber cord holds it snugly around the hand. An opening is cut for the thumb, so that only the fingers and thumb are exposed. A rubber tape around the waist keeps it snug there also. The veil proper is made is made of bobbinet, which I obtain at millinery supply houses and comes 18 inches in width. It is cotton goods and very strong. This is sewed around the top of the over-shirt, and is large enough to pass freely over the brim of the hat. An elastic cord, permanently secured, holds it snugly around the crown. Now for the vision part of it:—I cut a piece of black wire-cloth about nine inches square and hem the edges with strips of oil cloth or strong muslin, first lapping over the edges of the wire-cloth so that the points will not punch through the binding. Now cut out an opening in the front of the bobbinet, having the top come on a line with the hat brim. Make the shirt loose enough so that it can be easily put on and taken off. When one wants a drink he can easily slip the rubber off over the hat crown and drop it down conveniently. To keep the blouse up snugly, I attach a piece of rubber tape across the back from shoulder to shoulder which holds it in place nicely. I rub paraffin over the back of the cloth covering the hands, which fills the fabric and prevents stinging. With this rig I can work all day in the buckwheat season and never have a single "bee in my bonnet."

Honey cakes made of honey and flour only, are recommended by a writer in the "American Bee Journal."

A writer in the *British Bee Journal* suggests the prevention of swarming by killing queen-larvæ in their cells in order to kill them, and by so doing prevent swarming. He asks how much of a jar (or shake) is needed in order to dislodge the larva? If this could be safely done, might it not be possible to go round an apiary once a week, and lifting every brood-chamber so many inches, let it drop suddenly, and thus kill the embryo queens in every cell where they might be?

[We use splints or thin sticks to support comb in frames. Have done so for seven or eight years and am quite satisfied with their use.—Ed.]

The following interesting par we take from the writings of Louis Scholl in *Gleanings*.—"The year 1906," "will be long remembered as a year of an unusual amount of bloom of all kinds, and yet it was one of the poorest years I ever saw for bees in this locality. The year 1907 has so far had the fewest flowers, since many years, caused from the excessive drouth of last season, and the bees seem to be doing even better than at this date last year. We wonder if we shall be surprised with a bountiful honey crop in 1907.

If you have Italian bees you need never trouble about moths in the hives.

Eucalypts are being very largely planted in California for purposes of fuel, for fence-posts, railway-sleepers, &c. The Santa Fe Railway Company is planting them by the million, as are also private planters. The growth is very rapid. *E. rostrata* (red gum) will make a growth of 10 ft. in one year from the seed. About 20 species are being cultivated. The seed is sown in shallow boxes in the summer pricked-off in the same sized boxes, 2in. apart, holding 100. The plants are ready for permanent planting the following spring, being about 15in. to 18in. high. A knife is run along the box both ways, cutting each plant out in a block. Plants are set rather deep; for forest purposes about 5ft. or 6ft. apart, to encourage straight timber, the ground is kept cultivated and free of weeds.—*Exchange*.

It is an open question whether the farmers who are specialists in some one pursuit, are as well off financially or otherwise as those who pursue a mixed husbandry.

HONEY AS A PERFECT FOOD AND AS A PREVENTIVE OF FATIGUE.—Honey is an excellent food in the prevention of fatigue, owing to the fact that, while it builds up the body (or, rather, makes up for the loss of tissue), it does not tax the system. The latter is not called upon to throw off or get rid of a mass of perfectly useless material, for it is undoubtedly true that not 1-200 part of honey is actual waste. Not only so, but it is in a state of partial digestion before being eaten, and, in addition, the exquisite flavour of much of our honey induces a free flow of saliva—a very necessary aid to digestion. It is believed that, after passing to the stomach to become natural glucose by the aid of the usual digestive ferments, it later becomes glycogen through the operation of the liver. In this manner it is converted into heat and work. It is given off by the body in the form of carbonic acid and water. This is the latest theory of the digestive process as applied to honey. It differs from sugar in two important particulars—first, it does not require to be “inverted,” or converted into glucose—a process which frequently leads to diabetes, or kidney troubles, and it also possesses an aroma and flavor which sugar does not, and which is so necessary to good digestion by inducing the saliva to flow. It contains other valuable ingredients not found in sugar.—Exchange.

Motor cars travelling along English roads, raising great quantities of dust, are a source of annoyance to apiarists, making the honey dusty.

A correspondent of the *American Beekeeper* says he imports the larger share of the honey which comes to Germany, from foreign countries, about 3,000,000 pounds in all, for which he pays from

\$4.28 to \$5.23 per hundred. The import duty on this honey amounts to \$4.76 per hundred pounds. It is shipped in the square cans, two in a box, and after the boxes are weighed, nine per cent is allowed for the packages.

An American writer says:—With regard to the various sounds made by bees, I was again trying my “fishing,” as your correspondent from Midlothian called it, with a young virgin queen. I had put down the mating-box in which I kept this queen with a few bees some few yards from the spot where I was standing, and between the box and myself was a row of evergreens. In removing the queen I had let out several workers, and the queen was seen to fall on the grass followed by three or four drones. I also observed two or three worker-bees had gathered round her. These were, I believe, those which escaped from the box and had in some way managed to find their mother-bee. When I removed the queen these bees began hunting for her in all directions, but what struck me as strange was that the moment I let her fall on the grass, although they were some little distance off, they at once seemed to hear the peculiar buzz of the drones hovering round her, and hurried to the spot, getting between the queen and the drones as if to protect her from them. This happened time after time. Whether the queen uttered any sound I cannot say, but the peculiar buzz of the drones was heard distinctly, at which the queen seemed much agitated, and when they came too near she would repulse them with her hind-legs if the workers were not at hand at the moment to get between her and them. I am convinced these were her own bees, as I never had the same happen when the bees in the box with her were not let out, yet I was close to the hives with thousands of bees passing every moment. It was a most interesting sight to see the drones fighting round the queen, flying at one another and butting like rams. The big black

drones seemed to come off best in the encounters. This may explain why it is hard to get pure Golden Italians.

For four months I suffered greatly from rheumatism, pains in my legs and feet, being at times quite unable to walk. It started in the hips and gradually spread to the ankles, and so severe was the pain at times that sleep was impossible for some hours after retiring to bed. This got worse until one night at the end of December last, during which I never got a wink of sleep. In desperation I next morning went to one of my hives and secured a few bees in my net, and, sitting by the fire, applied nine bees one by one in such a way as to cause them to sting one of my feet near the ankle. I left the stings in the flesh, and placed my feet in hot water. In doing so I had some vague hope of getting relief, at least in one foot, but never expected such instant effect as followed, and in a few minutes every vestige of pain had left both legs and feet. Five months have now passed since what I state above without a single trace of any pain being felt. I might also say that the pain of nine stings was hardly any more than that of one, and didn't trouble me at all.—*Extract.*

The Illinois beekeepers were recently anxious to pass a Foul Brood Bill. One beekeeper however wrote a lengthy letter to the chairman of the committee in the Senate—before whom the Foul Brood Bill was to pass—that he is “the largest bee-keeper in the State of Illinois,” and he “does not want a foul brood law.” He “can see after his bees himself.” Also says, “It is a combine that are asking for the law, that will permit them to burn a man's beehives so they can sell him more,” etc. The Bill passed the Senate, but was defeated in the House on its passage; the objection being—“Don't like to create a new office.”

The smelting works, Salt Lake Valley, have been the cause of the destruction of a number of apiaries. Ten years ago there were ten thousand colonies of bees, now not ten left.

A writer in *Gleanings* says:—After having tried all the so-called systems of queen rearing and mating, I have found them all lacking some essential point for my practical use. In experimenting along the lines of queen-mating in full colonies (which I do altogether now) by placing division-boards made of queen excluding zinc, some solid boards, and queen-excluders made for the purpose between the brood-chamber and the surplus department, and being rushed with work one day, failing to replace these division-boards, etc., after examining a colony, I found on returning, six days later, that four virgin queens, which were placed therein for mating purposes, were all mated and laying, with the excluders and division-boards standing on the outside rear of the hive. I had used these division-boards and excluders with from four to ten queens in a hive, and many times after the virgins were mated—probably not had ready sale—I kept the queens laying in their several compartments for some time; and the bees going through the excluders above, intermingling with all the queens in the hive and filling a second story in a few days, made me sit up and take notice.”

Prices of honey, in London, England:—Section-honey put up in double-glazed wood section-cases (costing sixteen shillings per gross) at 9½d. per section. French (Narbonne) extracted honey quoted at eleven pence per pound, English was priced at ten pence. Both were put up in screw-cap glass jars. Taking the average all round, seemed to be about the price asked in London. Two years ago a large grocer in the S. E. district of London was retailing tall sections at 8½d. each.—*British Bee Journal.*

At the Conference of Victorian Beekeepers last month a deputation waited on the Minister for Lands on certain questions. The following according to a contemporary was the replies of the Minister to such:—The understanding was that bee rents were only charged for Crown lands. If specific cases were

proved to exist in which rents for bee ranges over private lands were charged refunds would be made. The cost of ascertaining what land was covered with dead timber on bee ranges would be more expensive to the beekeepers concerned in most cases than paying rent for dead timbered areas. In case of illegal trespass on land adjacent to bee ranges immediate action would be taken by the department on reliable information being given. Beekeepers would get notice as to intended ringbarking. He was favourably considering the idea of granting 10 acre bee sites, but it must be understood when that area was granted no sites would be granted to the same beekeeper elsewhere. As regarded delays in granting permits, of course they could not be sent by return of post. The officers had to make inquiries to prevent overlapping, &c., and other interests had to be safeguarded. He would see there was no undue delay in future. Respecting the observance of the two mile distances between bee ranges, he would see if he could not meet the deputations views. Effective occupation should be certainly insisted on. The department would be able to meet the beekeepers' desires as to fencing sites on rough survey. He was not going to allow any selection on the blue blocks areas, as in his opinion the bee industry was an expanding one, and should be fostered. His officers had informed him that the graziers went to that country with a full knowledge of what their tenure was to be, and his view was that they were now asking the department to determine their contract and practically assist to extinguish the bee industry. That would not be done. He could not say there would be no ringbarking allowed because thinning would be required at times and would be advantageous; but he would place very strict restrictions on ringbarking, and would arrange probably that it should be done at certain times and under supervision. He wished to add that he found the officers of the Lands Department were doing the business of

the country remarkably well. Whenever complaints of delays had been made, in his experience, there had been full and satisfactory explanations given, and he must ask that people in complaining would not make general statements. Specific allegations would be enquired into. It was no use granting bee sites on land that might shortly be alienated. He would look into the cases mentioned, and ascertain the causes of delay.

A writer in the *British Bee Journal* says:—As an instance of how long combs can be useful, let me relate the following: In the early days of last month I was asked by Mr. Claude Lonsdale, of Carlisle, who is one of the pioneers of the bar frame system and the use of comb-foundation in this district, to look in his hives, as he thought the combs might want renewing. The combs in use had been in the hives and had never been disturbed to the best of his knowledge, for twenty five years, and it might be more. The hives, three in number, were old and dilapidated, and on removing the roofs I found the bees had wintered with no more covering than a double thickness of calico, with a hole for feeding in the centre. The top-bars of the frames had rotted away at the ends in one hive, and the combs rested on the bottom of the hive. The combs were as black as ink and tough as leather, otherwise they were quite good with not a trace of disease in any of them. One which I carried home as a curiosity has hardly a cell put out of use, and was the only one which did not contain either eggs, brood, or honey. What interested me most was, of course, the bees which had been hatched and matured in cells so old. As far as I could tell after a careful examination, they were quite as large and perfect in every way as any bees I have seen, and all the hives were simply boiling over with bees, ready for supers any time.

[We have noticed various occasions where bees have been busy tearing down and renewing old combs.—ED.]

In the Isle of Wight, in the south of England a disease is said to be raging which to the bee-expert is as terror-inspiring as anthrax to the cattle-man, and should it spread over England, as it has done over the Isle of Wight, there will be no need of bee-societies, for there will be no bees. Whether anything will be discovered to prevent its spread remains to be seen.

The Board of Agriculture have sent a special inspector who says:—"As a result of the investigations which have been made up to the present, it appears that the disease is one of the digestive system, and might be described as distension of the hind intestine. The colon and adjacent part of the rectum are enormously distended with a congested mass of material consisting chiefly of pollen grains. The distended colon exerts pressure on the large abdominal air-sacs of the tracheal system and so interferes greatly with their function. The insect in this way is unable to expand them with the air, which is necessary for flight, and this feature coupled with the additional weight in the digestive canal, renders the insect incapable, when badly diseased, of flying about. The movements of the legs are not impeded, but it only seems to have energy to crawl about in a lethargic fashion. The fact that it cannot fly is not, however, due to paralysis of the wing muscles. Affected stocks in the winter show symptoms similar to those of dysentery, and there appears to be some connection between the dysenteric conditions noted in the diseased hives and the disease under consideration. The death of the bees seems to be brought about finally by blood-poisoning, partly by the accumulation of toxins derived, from the congested mass of waste material in the colon, and to some extent by the imperfect oxygenation of the tissues, owing to the pressure exerted on the abdominal air-sacs. The demand for nitrogenous food seems to be one of the most marked characters of the disease, but why the demand should arise is a question which it is not at present possible to answer."—*British Bee Journal*.

SWARMING TIME.—A writer in the "British Bee Journal" says there is room for some latitude in the intelligent management of swarms and swarmed stocks. When increasing, the brood-nest of the earliest swarm should be split up into two-frame nuclei, with young queens, and as later swarms come off, their brood-combs can be distributed among the new colonies. I have found this an excellent way of making profitable increase. Where increase is *not* desired, and no spare hives are available unwished-for swarms are not easily dealt with. Personally I cannot afford to keep a lot of empty hives awaiting chance tenants and know just how it feels to have swarms coming off regardless of their owner being without homes to shelter them. Necessity, the mother of invention, led me to devise a simple and effective method that works admirably. Nothing is required beyond a few extra brood-boxes containing frames fitted with "starters." Directly the swarm is secured, substitute a box of eight empty frames for its brood-nest. Give it two frames of brood, replace section-racks, return swarm and along with it every bee from the removed portion. The latter is placed bodily, with excluder between, on top of any hive being worked for extracted honey. A week later examine the swarm, removing full supers, also any frames containing drone-comb, or those only partially worked out; these latter can be given to nuclei. Leave none but built out comb filled with eggs or larvæ and move the lot to each side, leaving centre open. From the hive they were placed on take a selection of the original frames—combs crammed with brood, now mostly sealed over. Put these right down in centre of the awaiting hive, allowing eleven frames in all. Give more supers, and note results. You save the expense of superfluous hives, you cure the swarming fever effectually, and, finally, you secure the best possible results, such as consolidated workeager colonies always give.

✻ CORRESPONDENCE. ✻

G. A. Z., Queensland.—We had a beautiful winter, bees ought to do better the coming season. No dwindling took place this time.

W. F., Bungowannah.—The past season has been a very poor one for honey in this district I only got about half a ton from sixty hives.

W. R. C., Grovely, Enoggera:—Last week I started to feed twenty four hives of bees, they are from fair to strong for this time of year; stimulative feeding. I had some cappings I washed them in hot water, "tank water," the water was nice and sweet and a little thicker than raw "necture." I used an entrance feeder and gave it to them at about 2 p.m. The day was half cloudy and half shining, the feed was just warm when fed. The next morning I found dead bees at the entrance of nearly every hive. They were full with honey, some dead, some could move their legs. I want to know what caused these bees to die? they are Italians and Hybrids. This is something that has always got over me. I have had strong colonies die out in the same way while other hives getting the same feed were not affected. The feed in this case was quite fresh. The A.B.B. is very constant and punctual to time. I would like to inform you that——is pushing the bee industry at his very utmost, and the average price of honey is from a penny to a penny farthing per lb. I was a member of the Q.B.K.A., and was glad to leave it on account of that kind of thing. I am well acquainted with bees, there has been no robbing, every thing is all right in that respect. I am going to try three or four queens in one hive and if I can accomplish one simple little thing I will succeed. Ah la, Alexander!

[Would there have been extremes of temperature from the time you fed till next morning? If there are those whose interests are contrary to

those of the producers, the producers should certainly use their own judgment how to act in the matter.—Ed.]

W. G., Campbelltown.—I have no bee news to tell you, and the weather is very dry and we could do with a week's rain.

J. F. D., Mildura, Vic.—I am sorry to tell you I and my partner lost 110 colonies through some kind of dwindling which was prevalent throughout the state at the time. However I gave up the business and went to N. S. W. for nearly a year. Last year I bought four colonies and increased them to twelve. This year I intend to increase to twenty which shall be my limit as I am living in the town, and do not want to be declared a nuisance. There are a large number of settlers here who have land from the town allotments of one eighth of an acre up to 200 acres and grow fruit of various kinds, especially raisins. A good many keep a few hives of bees as a side product to obtain pocket money and have honey for themselves. Some of these people sell their honey locally for a penny per lb. So you see it is no use trying to make a living out of honey alone here against these odds. Hence the downfall of our Branch Association.

J.G., jun., Waratah Apiary, Gunnary.—Please find enclosed my subscription for the "A.B.B." I like your paper very much, and I reckon it is a journal no beekeeper should be without. I have experienced a pretty hard winter here, having had to feed pretty well half of my bees through June and July, they are coming on alright now. Ironbark is in bloom and wattle is just beginning, brood started in nearly all the hives. I lost about eight hives out of sixty-five, but some of my neighbours who kept bees in boxes complain of losing nearly all. This year promises to be very good about here for honey, all the trees being well budded. Bees are very busy when the weather permits. Wishing you a prosperous season and success to the "A.B.B."



ROBBING.

While to the experienced eye, robber bees are generally quite easily distinguished, yet those just starting in bee-keeping are often perplexed to know whether the bees are being robbed or not as young bees at play often resemble robbers. Robber-bees are generally so filled with honey that they are conspicuous for their size when leaving the hive; but a young bee taking its first flight is often just as conspicuous from the load of excrement it is anxious to void. Robber bees often run up the sides of the hive or a long way out on the alighting-board before taking wing, and a young bee when taking its first flight, more often than otherwise, does the same thing. Robber-bees turn with the head toward the entrance of the hive when taking wing, so as to mark where to come back for another load of honey, and the young bee on its first flight always turns thus with its head toward the entrance so as to mark its location, so it may always thereafter know just where home is. Thus we find robber-bees, and young bees on their first flight or play-spell, acting almost exactly alike. But if we look closely we shall see that these young bees are much lighter-colored than are the robber-bees, very many of which are dark and often shiny by having the fine hairs on the back of the abdomen all scraped or worn off by their many encounters in trying to enter other hives.

However, I know of but one sure way for inexperienced persons to tell when a colony of bees are being robbed, and that is by killing two or three of the mistrusted bees and dissected them so as to expose the honey-sac. If this sac is empty there is nothing wrong, but if you find a bee leaving a hive with its sac full of honey, rest assured that robbing is going on, for bees in a normal condition should always be conveying honey to the hive, not from it.

Then another way of telling is to keep the entrance of any hive suspected of

being robbed closed so that only a few bees can go in and out at a time, so that if robbing is going on, no large amount can be carried off in four or five hours; then look after such hives toward sunset, and if the commotion is still kept up about the entrance of these hives while the bees have quite generally settled down to where there are only a few flying you can rest assured that such hives as have bees rushing in and out of the entrance thus late in the day, while most of the rest of the colonies are becoming quiet, are being robbed, or are robbing other colonies. It is now quite easy to tell whether they are robbing or being robbed, for if robbing, as the air begins to get cool and heavy, the loaded bees will drop short of the entrance; while the hive that is being robbed will show many bees that are unable to take wing with their heavy loads on first trials.

If you mistrust that only one or two colonies are at the work of robbing, sprinkle a little flour on the robber-bees as they go out from the colony being robbed with their loads of honey, having an assistant stand at the hives you suspect are doing the robbing, and if the returning bees are covered with flour, you are positively sure that you have found at least one of the colonies which is doing the stealing. If more than one is at work at this robbing, mark the strongest one, and as soon as darkness has stopped the flying of all bees, carry the colony that was being robbed and put it on the stand of the marked strong colony, and put this strong colony on the stand just occupied by the colony which was being robbed. Do this in the evening as soon as the bees stop flying. Don't allow yourself to think that you leave them there for a few days till pollen becomes plenty, or the bees mainly forget about this stealing affair, when, near sunset of some nice day they are to be set back on their own stand again, examined as to their strength in bees and stores, adjusting the entrance to suit the size of the colony, and reducing their stores by

taking away combs of the same till they have only what you think they can reasonably protect and shutting them on the combs you have allowed them by means of a dummy. In this way any colony that is of any value (alone) can be saved, and if too small as to numbers of bees to hold its own, then it should be united with another colony, doing this at this time, so that the bees when they have their flight the next day may mark their location anew, as they will always do after being a week in the cellar.

If we are careful to adjust the entrances to suit the size of all colonies just after their first flight in the spring, and take away all surplus of stores from all colonies which are few in bees, shutting them on the combs left, as I have above advised, we shall have very little trouble with robbing. Here, as elsewhere, in bee-keeping, "an ounce of prevention is worth a pound of cure." I especially recommend this prevention part too, and all others who are not entirely familiar with this part of bee-keeping.—*American Bee Journal*.

Distance Cross Bees Attack.

Dr. Miller, in answer to a question, "How far from their hives are cross bees likely to volunteer an attack," replied:—I think it is a variable point. It depends a great deal upon the bees. If I understand the question it is, how far from the hives will the bees volunteer an attack? You may go to a hive and the bees will run after you a great deal farther away from the hive than that point where they would volunteer an attack, supposing they are coming towards the hives; but I understand the question is how far you are safe from a volunteer attack. If you had asked me twenty years ago I would have said that two rods away you would be quite safe. If you had asked me last year I would have told you 20 or 25 rods, and I don't know how much farther the thing is going. Really, that's my question, and I am asking for in-

formation. I want to know how much that thing will increase.

[We have had some experience in this matter. On one occasion we had a swarm in an old hive, and felt we had better place it in a better one. Left doing so till we had finished our other work, about five o'clock in the evening. It would seem that then all the 'larrikins' were at home. They made a slaughter on everything within 150 yards, cats, dogs, poultry, children coming from school, everything they could come at. We finished our work, however, being ourselves well stung. Next day that hive was as quiet as any in the apiary.—ED.]

If you cannot have sections well built down without bottom-starters, by all means use them; if you don't need them you may as well save the trouble and expense.

A Mr. C. M. Church, in conjunction with the Roots, of "Gleanings," is experimenting with a tent for queen fertilizing. It is said to have been a perfect success.

It is a much discussed question the distance bees travel, and whether the drone, the queens, or the workers travel fastest. Five miles has been stated by some. We would like a good honey flow within a mile and a half distance.

It is now the depth of winter with us. We have not looked at our bees for some two months. Frost and ice are every day visitors, and should time permit us, if we go to our apiaries within a few weeks it will only to see by looking down into the frames they are not too short of food.

We have received different times, communications of bees dwindling and dying where sugar has been fed to them. The question arises, in the manufacture of sugar is there any chemical used that would be the cause of such dwindling. We have always used honey when it was necessary to feed, either combs of honey from other hives, some kind of feeder, or diluted with warm water, poured on the combs, which are then placed in the hives in place prepared for them.

AMONG THE BEES.

POLLEN.

The food necessary to maintain life in animate creation may be generally classified as nitrogenous and non-nitrogenous. The first is required for the growth and repair of muscular tissue, and in the case of bees is obtained from the pollen of flowers. This substance is the fertilizing powder necessary for the reproduction of seeds of plants. At this season of the year bees begin active breeding, and the growth and development of the young larvæ before sealing depending very largely on this flesh and muscle giving food, bees have to carry in a vast supply in order that the successive hatchings may be brought to full fruition. As in many other admirable provisions of Nature, we find that animate and inanimate creation "work together for good." Just when crocus flower, willow catkin, and elm blossom exhibit a lavish display of this flower-dust, bees develop the need for it, and both are blessed. Nature is very bountiful in her supply of pollen, because in even common flowers there may be thousands of grains. The very shape of these tiny atoms almost seems to lend aid to the insects in carrying them to their hives, as we find they are so formed that they can be easily packed, being studded over with a number of sharp points or angles, which formation helps to bind the individual grains into a mass. Then there is in the very substance of most kinds of pollen an adhesiveness—especially in the early part of the day, or during moist weather, say after a shower of rain—which gives the many grains a power of becoming one semi-solid mass of the exertion of the gentlest pressure.

It will be noted that bees gather most of this indispensable bee-bread in the early part of the day, their instinct teaching them that it is then collected with a saving of labour. As a rule, although not an inviolable one, bees collecting this farina, while foraging for pollen, visit

only one species of flower. Consequently their loads are of one shade of colour, according to the nature of the flower visited, and it will be found that, in general, cells are filled with one kind. The process of loading-up is a very interesting one, and can be observed on almost any garden flower. The crocus affords an excellent coign of vantage for study. If the blooms are numerous, the process is a short one. More interesting, perhaps, is it to observe a number of bees on a large clump of malva, and the adroit procedure, on broom blossom is a study in itself. On both these flowers young bees especially roll themselves in gay abandon over the anthers, and rub up against style and stigma, until they become veritable dusty millers or regular masses of gold. Ancient bee-men, when they saw these young bees coated in yellow-golden dress, representing a fair percentage of the foraging home-comers fully counted on full colonies sure to be a success.

In the early part of the season, before pollen-bearing flowers are numerous artificial pollen can be supplied in the form of various kinds of meal, and the process of loading up the pollen-baskets may be leisurely observed in any receptacle used to supply it. An old comb smelling of honey is an excellent bait to attract the bees to this source of supply. Bees, as is well known, are provided with corbiculæ, or pollen-baskets, at the junction of the fourth and fifth segments of the hind leg of the worker. The opening can be closed at the insect's will and when full a number of lancet-shaped hairs round the margin serve to keep the pellets in position on the journey home. In depositing it in the hive, the insect places the lower part of its body in a cell, and scrapes out the burden with its other legs, pressing it down, so that it can be seen in a succession of layers. As a rule it is stored in the centre of the comb next to the brood, so that it may be within easy reach of the nurse-bees, and as the brood extends it is found in the height of

the season only in the outside combs. While in some parts of the country an overplus of pollen is gathered, so that it becomes a nuisance in the hive, generally bees wisely gauge the true quantity required. When stored late in the season cells are only partly filled, and the remainder is occupied with honey. Undoubtedly this is a wise provision to preserve the stored pollen for use in early spring, when breeding begins. In considering the manner in which pollen is utilised, observation and analysis combine to prove that the nurse-bees "manufacture" a combination of honey and pollen to administer to the larvæ, and this is given to them from the time they are weaned from the use of royal jelly until they are sealed up, on or about the ninth day from the laying of the egg. The marvellous increase in bulk during the last of these days shows what an immense quantity of pollen must be consumed. In certain parts of the country an early supply greatly aids the bees in urgent breeding, and to provide it artificially in the hives feeders are on the market with a space for feeding with nitrogenous substances of various kinds.—D. M. M. in *British Bee Journal*.

SOMETHING ON QUEEN-REARING.

Well-bred queens should be good for three full and vigorous seasons of laying, some for the fourth, but some for only two seasons. It is scarcely safe to trust a queen after she has produced rousing colonies for two harvests, yet I do trust many of them for the third, but I do it after judging of them after many years of observation. I do not believe I can tell you how to judge if she is capable for a third active season; you will have to get that by observation and practice. I clip for two purposes, perhaps the main reason being to keep them from going off with a swarm, if I should be a little late in getting to work the colony. Then I rarely ever allow a swarm hived, either a

natural or forced one, without clipping the queen to prevent loss by absconding. When a swarm is hived, if the queen was clipped the previous year, she gets this record: "6—20, S. hived—o. q." If she has not been previously clipped, or if a past season's queen, but recently clipped the record is "6—15 s. hived, clipped." The first two numbers of course are the month and day; the first entry for the colony for that season should be preceded by the year date. I have given you the main reasons why I clip; now I will tell you when. I do this in the spring whenever I can get sight of the queen. Whenever in your locality you can safely handle the bees previous to the honey flow, and before they get very strong) go through every colony and trim off bur combs and otherwise slick up things so that the combs will handle very freely without catching and scraping. Every bur-comb and brace-comb should be removed, and this done in the early season before there are many bees to be in the way. Now when doing this work, watch for the queen, and, when found, if her wing is already clipped enter the fact on the record as "o. q." If the colony record shows two consecutive seasons "o. q." she is ready to be put out of commission after that season's crop of bees for the harvest has been produced, unless she shows unusual vitality, when she may wait for the third "o. q.," but lots of them will not be found for the third one, or, if so, will disgust the owner by failing just when he can least afford to have the failure. But do not hunt too long; if not found with reasonable effort or disturbance wait until the next overhauling, when the bur-combs being out of the way and combs handle so slick and easy, you can locate her without trouble. For clipping I carry a little pair of scissors in my vest-pocket; they are about as long as my finger, and, when I locate the queen out comes those scissors, and they follow her until I get a blade under a wing, when off it goes.—R. C. Aikin, in *American Bee Journal*.

DAIRYING.

AYRSHIRE CATTLE.

In the library of the Wisconsin College of Agriculture are two large volumes descriptive of the domestic animals of Great Britain, prepared by Prof. Daniel Low, of the University of Edinburgh, in 1840, at the direction and expense of the British Government. The same is finely illustrated by large cuts of the various breeds. These illustrations are valuable for the reason that they enable us to see what was the shape and prevailing type of that day, 66 years ago. Prof. Low, devotes considerable space to the Ayrshire cow. He says that in 1790 the breed was not recognised or regarded as worthy of special mention. In 1825 they were described by Mr. Ayton as a "puny, unshapely race." They were then mostly of a black colour with white on face, back and flanks, and few of the cows yielded in the flush of the season more than one and a half to two gallons of milk. Prof. Low thinks the Alderney breed was mixed with these black Ayrshires at an early period. These facts show us to what a wonderful extent modern breeders and skilful mating have done in changing the Ayrshire breed to its present great excellence as a milk producer, and in the almost total change of colour and external characteristics.

A COW AT HER BEST.

When is a cow at her best? According to a bulletin issued by the Wisconsin Dairy Station, a cow is at her best during her fifth and sixth years, up to which time the production of milk and butter-fat by cows in normal condition increases each year. The length of time a cow will maintain her maximum production depends on her constitutional strength, and the care with which she is fed and managed. A good dairy cow should not show any marked falling off until after ten years of

age. Many excellent records have been made older than this. The quality of the milk produced by heifers is somewhat better than that of the older cows, for a decrease has been noted of one to two tenths of one per cent. in the average fat content of each year until the cows have reached the full age. This is caused by the increase in weight of the cows with advancing age. At any rate, there seems to be a parallelism between the two sets of figures for the same cows. Young animals use a portion of their food for the formation of body tissue, and it is to be expected, therefore, that heifers will require a larger proportion of nutrients for the production of milk and butter than do other cows. After a certain age has been reached—on the average, seven years—the food required for the production of milk or butter-fat again increases both as regards dry matter and the digestible components of the food. A good milking cow of exceptional strength, kept under favourable conditions, whose digestive system has not been impaired by over-feeding or crowding for high results should continue to be a profitable producer till her twelfth year, although the economy of her production is apt to be somewhat reduced before this age is reached.

ABOUT THEIR SIZE

A Washington man, wishing to take his family into the country for the summer, one day crossed over to the Virginia side of the Potomac, to look at a small farm, with a view to renting it.

Everything was to his liking, and negotiations were about to be completed says "Harper's Weekly," when the question of also hiring the farmer's cow came up. It was an excellent cow, the farmer declared, and even after feeding her calf she would six quarts of milk a day.

"Six quarts a day!" exclaimed the Washington man. "that is more than my whole family could use."

Then, suddenly observing the calf following its mother about the pasture he added—

"I'll tell you what I'll do! I'll hire the small cow. She's just about our size.

Some idea of the extent to which maize is grown in the United States can be formed from the fact that the area devoted to its cultivation there, is 78,000,000 acres an extent of country greater than the whole of Great Britain. The quantity of maize gathered in one year in the United States has been greatly in excess of the quantity of wheat harvested the world over.

A calf's stomach is like a cheese vat or milk after the rennet is added. The rennet taken from a calf's stomach coagulates the milk in the cheese vat the same as it coagulates the milk in the calf's stomach. Every cheese-maker knows that rennet will not act upon cold milk in his cheese vat, neither will it act upon the cold milk in the calf's stomach, until the calf has warmed that milk to a proper temperature. Cold milk causes the calf to shiver, deranges his digestive machinery, and renders him unable to make a thorough assimilation of his food and seriously impairs his future usefulness as a feeder. He usually turns out a pot-bellied, bristly-coated runt, when if a little warm milk could have been put in his milk before feeding he might have turned out a fat, sleek-coated fellow, a satisfaction and a profit to its owner.

CLEANLINESS IN THE APIARY.—A learned doctor and a learned editor lately gave their separate ways of clearing off the stickiness of the fingers caused by handling frames or broken combs. One took up a handful of grass and rubbed the fingers clean. The other went one better using a handful of sand or earth, and after cleaning with this proceeded with manipulations.—*Extracted.*

CONTROLLING SWARMS.

F. Loverdale, in the "Beekeepers' Review," gives the following plan:—Open a hive that is preparing to swarm, cutting out and removing the brood, leaving the honey parts in the frames, and this colony will take right hold of business from the start, and will be no more likely to swarm than would a natural swarm. In this case the brood combs are set in a box with a screen cone in one side, and moved up close to the entrance of the old hive; and this colony makes a boomer to work in sections as the young bees are constantly reinforcing the old stand. This plan keeps down all increase and gives an excellent crop of honey of prime quality, if any is to be had. There should be enough honey cut out with those brood combs to last until all bees are hatched.

A curious book on bee-keeping was published some four or five years ago by a man named Malerlink. Here is a specimen of his literature:—Transported to Australia or California, our black bee completely alters her habits. After one or two years, finding that summer is perpetual and flowers forever abundant, she will live from day to day, content to gather the honey and pollen indispensable for the day's consumption; and, her recent and thoughtful observation triumphing over hereditary experience, she will cease to make provision for her winter. Buchner mentions an analogous fact, which also proves the bees' adaptation to circumstances, not slow, secular, unconscious and fatal, but immediate and intelligent; in Barbados, the bees whose hives are in the midst of refineries, where they find sugar in plenty during the whole year, will entirely abandon their visit to the flowers.

[Was ever such rot written?—Ed.]

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