The Australian bee bulletin. Vol. 15, no. 12: March 28, 1907

West Maitland, N.S.W.: E. Tipper, March 28, 1907

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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
Circulated in all the Australian Colonies, New Zealand, & Cape of Good Hope.

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E. TIPPER. EDITOR & PUBLISHER. WEST MAITLAND & WILLOW TREE.

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MAITLAND, N.S.W.—MAR. 28, 1907.

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REARING OF DRONE BROOD.

Our plan is to cut out all drone comb as we find it. If a honey flow is coming in, the space so cut out will be filled up again. The cut-out comb goes into the wax-pot. Some bees will put drone comb in again. Others, especially with young queen, will put worker comb in. Old queens rear very much more drone brood than young ones.

We draw your attention to "Home and Farm and Fanciers' Review" in this issue. The journal is under new management, and all farmers, etc., who have not seen it, are requested to send for specimen copy. Note change of address.

LEAVING FRAMES ON FOR WINTER.

W. REID, SEN.

In answer to question on page 242, I would very much prefer to leave top-storey on hives for winter chock full of honey. Of course there are times when it would be better to take off top-storey. Say hive contains nine bottom frames, Langstroth or other large frames, all full of honey except about one frame charged with brood, it would be better in this case to take off the super in any cold climate; but, on the other hand, if the two outside bottom frames are full of capped honey and the balance mostly

charged with brood and top frames full of capped honey, that hive is in good condition for winter by leaving the super on. My experience is that the hive so provided is in the best condition. About three or four bottom frames well charged with brood, from 40lb to 60lb of honey, a good water-proof hive, a good quilt on top of frames, say two chaff bags so as not to be exposed. If the bags come out over sides of the hive they take the rain and convey the water into the hive. Never use ruberoid, enamelled, or any kind of water-proof cloth on top of frames in a cold climate. Ruberoid is the best cover I have tried for outside over cover. Iron is too hot in summer. Wood will swell in wet weather and crack in dry. A good sheet of bark free from cracks, perfectly water-proof, is a first-class cover. Just let the bark come well over all round; this keeps all rain clear from the hive. White box bark will last for several seasons. Bark is generally objected to for two reasons, unsightly and arbours spiders. The bark is better than a cold leaky hive.

Bunkum—I did not answer this par. because I thought your reply was all that was needed. Will Mr. Macdonald take it from me that every word in that letter referred to is solid truth without the slightest exaggeration.

Drone Comb—How to Prevent—Have your combs built in the fall of the year. Avoid having combs built by hives containing old queens or very strong colonies or any hive containing virgin queens. Place full sheets of foundation or frames with starters between well-finished combs. I make my own foundation starters thus: Take frame, place a piece of stick similar to bottom-bar; place this on under side of top-bar and run hot wax along on frame tilting so as to make a hollow. When the hot wax is set remove this stick and the wax is stuck fast, forming a foundation starter. This stick must be straight, be held firm on frame, must have a very smooth surface, and welted every time. The bar to which the foundation has to be fastened must be perfectly dry. If the guide stick is cut a little out of square the foundation will have a V formation, being a wider wall on the underside of top bar. Where the foundation sticks, tapering from say eight of an inch to nothing, and when finished reaching the whole length of under side of top-bar of frame and about quarter of an inch deep. I prefer to place each of these frames between two well-finished brood frames for bottom hive in Autumn. I have been very successful in getting the best of super combs finished in drone combs, as I prefer drone combs for top-box by placing each frame with starters between well-finished capped combs of honey, in strong colonies. I one time got five strong colonies of wild bees, placed them in a hive containing 23 shallow frames 4¼ inches deep inside measure, and one Langstroth frame containing eggs only from my breeder queen, destroyed all drones and their queens. Result—32 splendid queens and 23 well-finished super frames, nearly the whole of the combs being drone. By a careful study of the bees we can do a lot towards having worker combs built in lower box, and drone combs in our top super. To sum up, have worker combs built in Autumn in medium hives with young laying queens for upper storey in strong hives; if convenient with virgin queens or whilst breeding young queens.

DADANT METHODS OF VINEGAR MAKING WITH HONEY.

Some time ago, through the courtesy of Mr. A. E. Vinson, I received a small pamphlet entitled, "Timely Hints for Farmers, No 60" published by the Experiment Station of the Universiy of Arizona. The special subject of this No. 60, is the manufacture of honey-vinegar. It is replete with good ideas and practical information. One thing attracted my attention. It is the comparison of different samples of vinegar as to the amount

of unfermented matter in proportion to to the acetic acid in each sample. I submit the table:

Composition of Arizona Honey-Vinegar.

	Acetic Acid.	Unfermented Matter.	Ash.
	Percent	Percent	Percent
(1) Fort Lowell.	2.11	0.87	0.29
(2) Phœnix	4.24	22.81	0.39
(3) Buckeye.	3.81	6.58	0.44

No 1 is a vinegar, 6 months old, in which the honey is nearly all fermented to alcohol, but is still undergoing acetic fermentation.

No. 2 is a very striking example of the loss of saccharine matter. Alcohol fermentation is very seriously retarded by even small percentages of free acid and in this case it is doubtful if any of the remaining sugar ever becomes vinegar. Furthermore, the unfermented honey sweetens the sourness to such an extent that it tastes but slightly more acid than a vinegar half its actual strength

No. 3 also shows considerable material which escaped fermentation. This is often due to adding fresh washings to partially made vinegar. The alcoholic fermentation must in all cases, precede the acetic, for even small amounts of acetic acid greatly retard or entirely prevent the activities of the yeast cells. In other words, acetic acid is a direct poison to yeast, and no further addition of washings or honey should be made.

The above description is taken from the pamphlet. The conclusions are so much in accord with my experience that I cannot help calling attention to them. Too many people try to make honey-vinegar without the previous alcoholic fermentatation.

To make good vinegar the sweetened water must undergo alcoholic fermentation first. The more thorough this fermentation is, the better and stronger the vinegar will be, because a thoroughly fermented article turns to vinegar more easily than a sweet drink. It is not advisable to allow the honey-water to take its chances on fermentation. It is true that honey usually contains germs of fermentations, which are gathered with it from the flowers, but those germs are of different kinds. It is always best to use some kind of yeast to start the alcoholic fermentation. This pamphlet recommends cake yeast. Personally, I much prefer the fermenting germs of fruit, especially of grapes.

My readers are not ignorant of the fact that the highest grade of vinegar was originally made from grape-wine. The name "vin-aigre" is French, and signi- "sour wine." We can therefore make the best vinegar from the natural yeast of grapes. A few pounds of grapes, crushed, for a barrel of vinegar, will start an alcoholic fermentation much resembling that of wine. If the temperature is right, and the proportion of honey and water of the right degree, a prompt and thorough alcoholic fermentation will follow very shortly, and as soon as it is over the acetic fermentation may be induced by the use of vinegar or vinegar-mother. For both the alcoholic and the acetic fermentations a fairly warm temperature is necessary—from 75 to 90 degrees. At lower temperatures the fermentation is slow, and when very low it ceases altogether.

This pamphlet recommends the most speedy method, which consists in allowing the vinegar to trickle slowly through the shavings made of beech, which have been prepared by soaking in strong vinegar. The purpose of this is to allow the air thoroughly to oxidize the liquid, for it is only by the action of the air that the development of the ferment can take place. Any method which exposes the liquid to warm air while the process is going on, will accelerate the fermentation.

I have thought best to bring this matter again to the attention of the beekeepers generally, because I

have had occasion to examine different samples of vinegar lately. I was selected as judge of the bee and honey exhibit of Illinois State Fair this year, by the action of our State Bee-keepers' Association. Among other premiums there was one for the best honey-vinegar. Of the six or eight samples exhibited, only two were entirely devoid of a perceptibly sweet taste. Two samples contained, to my judgment, more honey than vinegar. It is evident that none of the exhibitors had realised the necessity of causing a thorough alcoholic fermentation in the liquid previous to the acetic fermentation. The conditions required by the premium list demanded that each exhibitor of vinegar should supply with the sample a written recipe for making the vinegar. In not a single instance did the recipe contain instructions for providing some kind of yeast or germ to start the first fermentation.

I must here add that it is possible to prepare honey-water in which the elements of fermentation are entirely absent. My first attempt at making honey-vinegar years ago, resulted in a dead honey-water. I had used the very best of clover-honey diluted in clear water, and had put it away in a warm cellar in earthen jars, in full confidence that I would soon have good vinegar. Six months afterwards my honey solution was still sweetened water, with a mouldy scum over the top of each jar. Air was not lacking, but the fermenting germs evidently were absent. At the suggestion of my father I added some grape-juice, poured the entire lot into a barrel warming a part of it sufficiently to bring the entire mass to about 75 degrees; within 24 hours the liquid was fermenting, and in a few days it was thoroughly fermented and beginning to sour.

To make good vinegar we must have clean honey, soft water, and good, clean, barrels. In many instances our farmers spoil their wine, their cider, or their vinegar, by using musty barrels that have been kept in a damp place without proper care. If you have no barrels in which to make the vinegar, buy empty whisky barrels or syrup barrels iron-bound, which still have the smell of the whisky or of the syrup, and fill them at once with your solution. If you wish to keep the barrels pure and wholesome after they are empty, cleanse them first thoroughly. A small piece of chain tied to a string and lowered into the barrel, the string holding through the bung hole will help cleanse every corner. Put in three or four gallons of hot water, put the bung in, and shake thoroughly. After the barrel is clean, drain the water and allow it to remain, bung down, for two or three days, until it it dry. Then lower into it a small piece of brimstone-rag lighted with a match. When it is burnt out bung the barrel tight and you may trust it to remain sweet till the next season.

Brimstone rags are made by melting brimstone over a fire in an iron skillet, and dripping strips of cloth into the liquid sulphur. These rags may be kept on hand for this purpose, as well as for killing the moth. The rag serves as a wick, and the brimstone is more easily handled in that shape than in lumps. We keep them on hand all the time.—C. P. Dadant, in *American Bee Journal.*

CAPPINGS.

Prof. H. A. Surface, who is closely watching the alfalfa-in-the-East matter, writes, "It is my opinion that it yields honey only when the season is dry, and when it is permitted to grow until the proper time . . . I note that one of our railroads has sowed it extensively along the banks of the road, apparently to cover the soil and hold it . . . I must admit that it has not been an important honey-producing plant in this State, although the present outlook may be good for it.—*Gleanings.*"

The following interesting experience is given by a writer in the *American Bee Journal*:—In 1869 (I think it was), I

purchased a fine queen from Mr. Langstroth, reared a few queens from her that season. I put her into winter quarters with one of my strongest colonies, and wintered them in the cellar. In April following, after they had been returned to the summer stand, I passed the hive one day and found my fine queen lying dead on the alighting-board of the hive. On opening the hive I found black bees and a black queen on perfect terms of peace with the Italians. Upon enquiring of a neighbour, I learned that a weak and starved-out colony of his black bees had deserted their hive on the day previous to the discovery of the loss of my fine queen. The black queen was, of course, not burdened with eggs, while the Italian queen she destroyed was laying eggs quite freely. The bees in this case left to the queen the matter as to which should head the colony. The Italian queen in this case was reared the year before, so that she was not any older than the black queen, and possibly not as old as I do not know just when the latter was reared. Her being lighter and more active than the Italian queen, on account of not being burdened with eggs, was in all probability the true cause of her ability to destroy the Italian queen. As to why the Italian colony permitted the black colony to enter their hive on terms of peace is a matter I cannot account for, farther than to say that in this case it actually occurred, and that I regard it as a real occurrence, and not in strict harmony with the law that governs the honey-bees. Some seasons I have had bees accept queens that had just emerged from their cells, and last year I could not get them to accept a virgin queen at all. Why this difference in the willingness of bees to accept a virgin queen as soon as hatched, one season, and flatly refusing to do so some other season, is an unsolved problem; or, at any rate, no one has yet pointed out the true reason as to why such difference in the temper of bees is made manifest. One time when I was in Mr. Langstroth's apiary at Oxford, Ohio, an Italian queen emerged from a cell just at the moment he opened the hive to see if the queen had come out, as he was expecting her to emerge at any time. He removed her at once, placing her upon a comb covered with strange bees. The hive he placed her in was closed immediately, and in about half an hour we looked to see how, she had been received, and found she was moving about leisurely among the bees This, he told me, he often did when he had such a place for a young queen, and I judged it to be a fact that bees would invariably accept queens just hatched, from any colony. But experience has taught me that there are many exceptions to this rule if a rule we may properly term it. I am of the opinion that when there is a free flow of honey bees are more liable to hurt a strange queen than they are when there is little or no honey to be collected.

Here is a high ideal:—"A breeding-queen should be the very best in at least 500 tested queens." The other 499 are not to be destroyed, but they are not to be bred from. They may do for the man who simply *rears* queens; the chosen one only is fit for the man who *breeds* queens; It may be a stretch of the fancy to express a desire that we should have such queen-breeders in this country. "Like begets like. A prolific female produces daughters that are also prolific, though not all to the same degree; but it is an established law — or a principle — of breeding that excessive prolificness in the female tends to produce prolificness in her offspring, at least above the average for the race. To secure this in queen-breeding hundreds of queens must be bred and tested every year, and only a very few chosen to continue the work during the following season."

Covering for Hive Roofs.—Without being able to give exact figures, I may say the conclusion arrived at was that zinc unpainted was one of the worst coverings to adopt for hive roofs. I find that all metals. and especially those with a smooth, shiny face, are great conduct-

ors or attractors of heat. On the other hand, I am a great advocate for covering hives with zinc as one of the best and neatest coverings (I use No. 9 sheet zinc) if given two or three coats of a good white paint. The paint gives the hives a more finished appearance, and, white being a non conductor (i.e., not so easily affected by extremes of temperature as other colours), it keeps the hives cooler in summer and warmer in winter. I had hives standing side by side, the roofs covered with zins painted and unpainted, and while the unpainted roof in hot weather was almost unbearable to the naked hand, the painted one was quite cool to the touch.

Preservatives for Hive Wood.—It is now some 15 or 16 years since I first used carbolineum as a preventative for hive-wood, and I have found it of the greatest value for preserving the roofs and legs of the hives I cannot advocate its use for the body-box or for floor-boards, because of its being as objectionable to bees as to all other forms of insect life. My own experience is that the carbolineum penetrates the wood, so that in two or three weeks' time, according to the weather, it is wholly absorbed, and the surface is then quite dry. If exposed to the sun it will go through ½in. pine or deal boards in about three hours. I have found it a good plan to place boards measuring about 2½ft. by 3½ft., well-dressed with carbolineum, flat on the ground under the legs of all my seven hives. This is also an easy and effective way of keeping grass and weeds from growing round the legs of the hives, and obstructing the bees when passing in and out. The boards referred to are set quite firm and perfectly level, so that a hive may be put down on any board with the knowledge that it needs no levelling, and any hive may take the place of its neighbour. In this way I have secured the great advantage of interchangeable stands. I may say that I am never troubled with ants, and they will not go near carbolineum.

IN REPLY TO MR. ABRAM.

Briagolong, Gippsland.

Editor A.B.B.,

Dear Sir.—I was sorry, although not surprised, that Mr. Abram failed to attempt an answer to my questions in your last issue; especially so, as to my mind, the soundness of several of Mr. Abram's previous theories rested on my questions being disposed of, and when asking the questions I certainly thought that I should not be forcing Mr. Abram into the realms of clairvoyance.

Mr. Abram says I am "a stranger too." Well, as far as not being personally acquainted with, or a customer of his, such is the case; but strange to say, I very nearly became acquainted with Mr. Abram, a great many years ago. I refer to an occasion on which Mr. Abram visited the apiary of my father, W. Garrett (who was at the time absent in Sydney) situated at Glenbrook, on the Blue Mountains, and refused to leave his name. This apiary was the second my father had established, the first being at Greenwich, near Sydney, where he had a small apiary, all of frame-hives, in the years 1877-8, some three or four years prior to the appearance of Mr. Abram in Australia as manager for a syndicate, two of which were Alfred Bennett of the Sydney "Evening News," and a Mr. McDonald, jeweller, of Sydney. I may also mention (with apologies to Mr. Abram's advertisement), that Mr. Henry Peterson, of Wattle Flat, near Bathurst, also had an apiary established, and produced section honey also about the years 1877-8.

Of course, Mr. Abram's limitation to one small district would account for his being unacquainted with many, who, like myself, know no other calling than bee-keeping from their childhood.—I am, etc., E. Garrett.

CAPPINGS.

Honey Lemonade.—For those who appreciate the taste of honey, and who enjoy cool drinks in hot weather, the following may be of interest. Prepare lemonade in the usual way, but use a good thick extracted honey instead of sugar. A delightful new flavour is obtained that is quite different from the taste of honey or of ordinary lemonade.—*Exchange.*

Shaking Bees Off.—With all colonies that adhere very tenaciously to their combs, and at all times when there is no honey coming at the time when it is necessary to shake the bees from their combs, they are caused to fill themselves with honey, when they will tumble off their combs as easily as "tumbling off a log," when the *how* of the matter of shaking is understood, which is as follows: Place the projecting ends of the frame on the ends of the two middle fingers of each hand, and then with a quick upward movement or toss, throw the ends of the frame against the ball of the hands, or that thick part of the base of the thumb. As the frame strikes the hand let the hands give a sudden downward motion, which gives a shock the bee is least expecting, and as the frame strikes the fingers it is again tossed back against the hand, and so on till all, or nearly all, of the bees are off. The principal is that the bee is on her guard all the while to keep from falling off downward, thus holding on tenaciously with that intent in view, so is not easily shaken off by any downward motion, which is the one generally given when the novice undertakes to rid his combs of bees. By a sudden stopping of the upward, and a quick downward motion, the bees are thrown off their guard and dislodged from the comb in an upward direction.—Doolittle.

A writer in the *British Bee Journal* says: The honey-producing character of a certain race or variety of bee may certainly vary very much in different climates. In the climate of some parts of the United States the honey-producing character of the Italian bee is exceedingly good, but in the climate of Great Britain, which during the honey-flow is much colder, more cloudy, and more windy than that of the United States, the Italian bee is not a good honey-producer, and the English bee is a better one. This shows that breeding for the improvement of the honey-producing character in Britain must be carried on in the British or in a similar climate; also that the English bee is a better bee to work upon than the Italian. Crossing the English bee with sufficient Italian blood to enable one to brighten the colour for practising selection by colour improves it for the purpose of breeding for the improvement of the honey-producing character, because it gives it increased prolificness in spring vigour, and variability.—The same writer also says: It has become evident that selection by colour has already changed the bees from variable cross-breds into a distinct variety with many characters that are fast becoming fairly constant; at the same time a great improvement in the temper has been noticed.

Prices of Honey.—Another writer in *British Bee Journal* says: I notice the editor of *Gleanings* has been labouring, by excerpts from vol. xxxiv. of the B.B.J. to convince Dr. Miller that his assertion in an editorial note in a previous number of *Gleanings*, in which it is stated that English comb-honey sells at 48 cents. per 1-lb section, is correct. I contend that this quotation is entirely wrong and gives an erroneous impression to our "wide-awake" cousins in the U.S.A.—an impression that is more than likely, ere long, to attracts to our markets the large output of honey from Cuba. The plain truth of the matter is that the few parcels of English and Scotch honey which change hands wholesale at anything over

1s. (24 cents.) per lb. are few and far between, either section or in jars. The bulk of our English honey of good quality ranges in price from 6d to 7½d per lb. (12 to 15 cents) in bulk, and in sections from 6d to 10d (12 to 20 cents.) each. Large orders generally have to be sent carriage paid, and also with sections glazed or in glazed cartons for nearly all parcels priced at £4 4s per gross. The price at which honey in sections of good quality sells retail in London is easily proved by the prices marked on them in the shop windows. These range from 9d (18 cents) in cutting grocery concerns to 1s (24 cents) each in first-class dairy establishments; ½-lb. screw-cap jars are on sale at dairies, price 6d, and 1-lb. jars at 9d to 1s, according to qualities.

The following curious par. we take from the *British Bee Journal*: Complaints about Bees.—"Sir! That innate selfishness of some people is beyond belief. My neighbour insists upon keeping bees in spite of my protest. Recently I was standing immediately in front of one of his hives, and by a pure accident kicked the affair, when a bee savagely and viciously attacked me, and I was seriously stung, sir! Yet he refuses to have them destroyed! Sir, I consider his action is a menace to the safety of the community, and I appeal to all right-thinking readers of your columns to subscribe to a National Neighbourly Defence Fund with which I may invoke the aid of the law and teach him a lesson of brotherly love."

I remember some 30 years ago, before I had learned the value of early brood-rearing or the art of securing a strong colony in time to gather the crop of honey as soon as it appeared, nearly all my colonies were short of stores, while many of them were weak in numbers also I thought that the strong colonies could take care of themselves, but the weak ones I must feed. I fed them, but left the strong ones to shirk for their feed. When clover came into bloom I found those that were strong early were almost without brood, and fast getting weak, while those that were the weakest in early spring were my best colonies, and gave me very much the most surplus honey. Had I been a stranger to the resources of our section I might have thought we were overstocked. I believe that by judicious feeding when flowers yield little honey, the number of colonies in any given section may be very largely increased—I think it safe to say doubled, without any danger of overstocking. T. S. Crane in *Gleanings*.

Cleaning Glass Honey Jars.— Wash the bottles, rinse them in clean water, and invert them in a wire sieve (the cinder sieve washed clean will do very well). Turn a couple of chairs back to back, place your wet jars in the sieve on the backs of the chairs (placed just far enough apart to hold the sieve full of bottles), then light up your little oil stove and stand it on the floor between the chairs, and in a short time your jars will be perfectly dry. A paraffin lamp will answer the same purpose, but will take longer.

The Fruit World published in Melbourne has the following.—Now that red gum and yellow box have bloomed, honey is coming into the market more freely; the price is falling, and the middleman is holding off until he can get it at 22/- per cwt. He knows he can buy at that figure if he but waits awhile, for the average bee-keeper, as a rule, is nearly always short of funds. Once in a while he secures a good yield; then he experiences a bad season, and so on, with the result that he rushes his honey into the market to obtain a little ready cash. The grocer wanting cheap honey visits the auctioneer, and rather than lose a customer, the latter allows the grocer to purchase at almost his own price; thus, when supplies are good, values are almost decided by the retailer. The bee-keepers need of money forces him to sell without a good reserve being fixed.

2000 different species of ants in South America.

Ants hate tar for two reasons—its vile smell, and it sticks to their feet.

A young queen bee has far less tendency to swarm than an old one.

In manipulating keep well to the rear of the hive. Don't interfere with the flight of the bees.

The total value of honey imported into Great Britain in 1906 was £33,197. The total value for the year 1905 was £34,763.

In a recent law case in England the judge decided there "was no more property in bees than in birds that alighted in trees."

An electro heated honey knife has been invented in Italy. It is claimed the heat is distributed evenly throughout and it is of a uniform temperature.

Before the cold weather sets in see that all your hives have sufficient honey to keep them going. A comb of honey may be taken from those which can spare to give to those which are short.

As cold weather is now approaching, and some leisure time for bee-keepers, painting of hives should be seen to. White lead, boiled oil, is the cheapest groundwork for paint.

Keeping Down Drones : In the spring cut out all drone comb, especially in hives of inferior or black bees. It can be made into wax. If you have a real good queen you can let the drone comb all stay. The drones of this hive will benefit the whole apiary.

It is an unsettled question in Germany if queens ever mate after having laid eggs. These authorities agree that a queen mates not before the fifth day of her life and usually begins to lay eggs not before the tenth. If a queen fails to mate, she begins to lay eggs when about five weeks old, rarely, if ever, any sooner.

A Yankee says he saw a swarm of bees coming out of a hole in a cliff in the Mississipi Valley about three times the size of a hogshead, and they filled the entire space and had the appearance of a black cloud coming out of a hole. He did not know how long the bees had been coming out of the hole, but the swarm was two miles wide, 1½ miles thick, and 20 miles long, and that they were two hours in passing a given point.

A proclamation has been made by the Governor of Victoria as follows (in brief) : DECLARATION.— That the unalienated Crown Lands mentioned hereunder, shall be available for being licensed for the purpose of being used for bee range areas; that is to say, the counties of Bogong, Dargo, Tambo, Tanjil, Borung, Dundas, and Lowlan. Singed, R. TALBOT. By His Excellency's Command, J. E. MACKAY, Commissioner of Crown Lands and Survey.—Exchange.

DEATH OF DR. DZIERZON.

This veteran bee-keeper celebrated his 95th birthday on January 16. He died Oct. 16th last, and it is with sincere regret that we have now to announce his death.

The Rev. Dr. John Dzierzon was the oldest bee-keeper in Germany, and to him is due in a great measure the progress made in bee-keeping in Europe during the last century, and he stands out prominently as an eminent man.

The life of Dr. Dzierzon was a simple and uneventful one, and was similar to that of hundreds of clergymen in Germany. He was born on January 16, 1811, at Lowkowitz, near Kreuzburg, Upper Silesia. He attended the school of Lowkowitz till his tenth year, and was afterwards transferred to the University of Breslau, where he attained such excellence in his studies that, after having finished his course, he had been first in every class of his college, and left the University in the autumn of 1830 with a certificate as having passed No. 1.

From early childhood young Dzierzon had a great partiality for bees. His

father kept a few colonies in log hives, mostly placed in an upright position; these were at the time the kind in general use in Silesia. He always found the greatest pleasure in the contemplation of the indefatigable industry of bees, and while studying at the University he was in the habit of taking his walks near to an apiary, or where a colony of bees occupied a hollow tree, so that he might enjoy the sight of the industrious insects and listen to their joyful humming.

His fondness for bees made him choose a calling in which it would be possible for him to follow the bent of his inclination.

Dzierzon was ordained on March 16, 1834, and having acted as chaplain in the Shalkowitz District of Oppeln till July, 1835, he received a clerical appointment at Karlsmarkt. This brought him a very small income, but as in succeeding years it suited him entirely, it never occurred to him to seek a more richly endowed living. The garden of his parsonage was a tolerably large one, and his first care was to arrange a place for bees. He soon stocked it with some colonies from his father's apiary in the old-fashioned hives mentioned above. His bees did very well in them. He, however, was not content with these primitive hives. but proceeded to make various changes in them, so that he might have a more perfect control over his bees. These changes gradually led up to the invention of movable combs, which enabled him to take out a full-brood-comb, or honey-comb, and insert it in another hive. He introduced bars, to which the bees built the combs, and as these were usually attached to the sides of the hive (there being no side bars) Dzierzon conceived the idea of opening the hive at the back so as to enable him to cut the attachments. At the commencement Dzierzon used single hives called "Lagers" and "Standers," but afterwards constructed hives to hold two, three, six, or eight colonies, in order to economise material and space. Owing to the advantages thus gained the number of his colonies increased in a few years to four hundred, and he was constantly making new hives and planting out-apiaries in the neighbouring villages. He had twelve of them, but his apiary at Karlsmarkt was chiefly used for observations and experiments; and after his introduction of the Italian race, for breeding these bees and keeping them pure. This apiary was visited by numerous people desirous of increasing their knowledge in bee-keeping, especially by schoolmasters, many of whom came by desire and at the expense of the Government. He was at all times ready to communicate the results of his experience to his visitors; he also made known his views in the *Frauendorf Journal* which enjoyed a large circulation at that time. These articles were afterwards collected and published in the form of a pamphlet entitled "Pfarrer Dzierzon's Improved Method of Bee-keeping." This pamphlet was very incomplete, and induced Dr. Dzierzon to publish his views in a more complete form, which work, after passing through several editions, was published under the title of "Rational Bee-keeping," the latest and most complete edition of which appeared in the year 1878. In 1880 this edition was translated into English by Messrs. H. Dieck and S. Studderd, and edited by Mr. C. N. Abbott, who then introduced it to the British bee-keepeers. The last book he wrote, "Der Zwillingstock," was published in 1890. From 1854 to 1856 he published "The Bee Master of Silesia," but the greater part of his observations and experiences appeared in the *Bienenzeitung*. In this publication appeared his views on *Parthenogenis*, and for eight years, from 1845 to 1853, he had to fight hard to defend his theory, which met with the most strenuous opposition, and it was not until he introduced Italian bees in 1853 that he was clearly able to demonstrate the correctness of his statements. Baron von Berlepsch at first vigorously opposed it; but was at length convinced of his mistake, acknowledged his error, and openly declared he would come into

Dzierzon's camp "with bag and baggage." Dzierzon's theory, according to which the drones originate from unfertilised eggs, and all impregnated eggs produce females, gradually found adherents and recognition among men of science; and its correctness was proved by the microscopical and physiological researches of Professors Dr. von Siebold and Leuckart.

In recent years M. Dickel made a violent attack upon this theory, and stated that all eggs laid by the queen were fecundated, and that the bees themselves determined the sex of the bees by means of a secretion from special glands. Dickel and Dzierzon met at the annual congress of bee-keepers in Salzburg in 1898, where they vigorously defended their theories in the presence of a large gathering of bee-keepers. Dzierzon's arguments were so forceful that they constantly elicited applause. He has had his partisans and detractors; some, like M. Perez, have discussed the theory most courteously, a few others have done so with extreme rudeness, especially to a man of his age. It is gratifying to find that Dzierzon lived long enough to see his theory triumphantly vindicated before he passed away from amongst us.

From all parts of the continent, and from many of the reigning sovereigns, Dzierzon has received distinctions and honours. One of the first which he received was that signed by Archduke John in his capacity of President of the Agricultural Society of Graz. The honorary title of "Doctor" was conferred on him by the University of Munich. At the Bee-keepers' Congress at Darmstadt, the then reigning Grand Duke of Hesse invested him with the Order of Ludwig, and from the Emperor of Austria he received the Order of Francis Joseph. The Emperor of Russia conferred on him the Order of St. Anne and the King of Sweden the Order of Wasa. He has also been made an Honorary Member of a great many societies, and his name is known in every portion of the globe.

To Dr. Dzierzon we are indebted for the various artificial substitutes for pollen. With his eye ever open to discover any means that would be of assistance to his bees, he observed them bringing from a neighbouring mill rye-meal, before they were able to procure a natural supply for the food of the larvæ; and ever since bee-keepers have been in the habit of supplying the bees with artificial pollen in spring.

So vigorous was his fight against the disease that three years later, in 1851, he was able with pride to point to the four hundred colonies of healthy bees which he had worked up from the ten survivors of the disaster.

His apiary passed through several troubles. At one time seventy hives were stolen, then twenty-four were lost in a flood, and sixty were destroyed by fire.

In consequence of various ecclesiastical troubles which occurred at Karlsmarkt he decided to leave the place where he had lived forty-nine years. He removed to Lowkowitz, the place of his birth, in 1884, and took up his abode with his nephew, the youngest son of his brother, whose wife accompanied him to the last in his visits to conventions of bee-keepers. At Lowkowitz he lived a happy, peaceful. and contented life, his time being wholly taken up with his bees.

About a year ago Dzierzon was taken ill, and the worst was feared, but his vigorous constitution enabled him to rally, and during the spring he got better. Towards the autumn, however, his strength began to give way, and he sank rapidly, until the end came on October 26. To bee-keepers his loss is great, and his name will always stand out prominently in the history of bee-keeping in the nineteenth century.—*British Bee Journal.*

We acknowledge receipt of a new publication "The Dinner Hour," published by Arthur Norwood, 10 Dean-place, Sydney. Very interesting on general matters, "The Rabbit Pest" and "Australian Defence" taking leading parts.

Swarms, Ancient And Modern.

BY COLONEL H. J. O. WALKER.

Many are the odd places in which bees have swarmed and tried to establish themselves since the far-off day when, leaving their rocky homes and the primæval forest, they became associated with mankind. The appearance of swarms is often mentioned by the ancient Greek and Roman historians, and it is curious how much importance was attached to the movements of bees—to whom, indeed, a divine origin was attributed—and how sometimes good, and sometimes evil, omens were foreboded from them. Clustering on the standards of an army, or on a general's tent, they persaged victory or defeat, according to the interpretations of the soothsayers.

Herodotus, according in the 3rd Book of his History the defeat of the Greeks and Cyprians by the troops of Darius, about 500 B. C.; writes: "The Amathusians cut off the head of Onesilus because he had beseiged their city, and taking it to Amathus placed it over the gates, where, when the head had hung for some time and become hollow, a swarm of bees entered and filled it with honeycomb. Upon which the Amathusians consulted the oracle, and were admonished that they should take down the head and inter it, and make a yearly sacrifice to Onesilus as to a hero, and that if they did this their affairs would prosper. This was done accordingly and the sacrifices continued up to my time." The incident will recall to mind the swarm mentioned in the Book of Judges as having taken possession of the carcase of the lion slain by Samson, the Israelitish champion, the carcase doubtless been reduced to hide and bone by the action of animals and a scorching sun.

Cicero, the great Roman orator, in his 1st Book of Divination, quoting Philistus, historian of Syracuse about 400 B. C., tells a tale of swarming that will make a serious call on the believing powers of the modern bee-keeping. When Dionysius the Elder, afterwards ruler of Sicily, was marching through the island he urged his horse into a river, where it was carried away by the torrent. Failing in spite of great efforts, to get it out, he was walking along despondently when "suddenly he heard a neighing, and looking back he was glad to see his horse coming along quite lively, with a swarm of bees hanging to its mane. Of such importance was this omen that a day later he had begun to reign."

It was a tradition that in their infancy Plato, Pindar, Virgil, and other men of eloquence had been visited by the bees which built honey-combs about them as as they lay in their cradles. The same incident is said to have happened to St. Ambrose about 340 A. D., and according to another legend of the church, a swarm of bees accompanied St. Dominicus on his journey from England across the Irish Channel in the 6th century, A. D. A disciple of St. David, he had been learning bee-keeping with a view to the improvement of the craft in the sister island, and when he went on board a swarm accompanied him. Unwilling to deprive the hospitable brotherhood of such valuable property he returned to the Abbey, the bees going with him; but they would not be left behind, and in the end Father Dominicus took with him the swarm, to found, with St. David's blessing prosperous colonies in the Comitatus of Dublin, at a place still known in the days of the 17th Century Chronicler as *Ecclesia Apiarii*, otherwise Lannbeachaire, the Beemaster's Church.

There is no reason to doubt the thrilling episode related by the Rev. John Thorley in his "Melisselogia, or the Female Monarchy, London, 1744, how the bees gathered on the head and shoulders of his maid-servant, Anne Herbert, and how she stood it out bravely until the queens had been caught and the swarm drawn away from her.

It may be noted that in 1826 two French bee-keepers J. and A. Martin, wrote a treaties in favour of open-air treatment,

PRICES OF HONEY.

Melbourne Australasian.—Honey, is dull at 2½d to 3d for prime to choice extracted. Cloudy and dark is difficulty of sale at 2d. Beeswax—1/2 to 1/3 .

Melbourne Leader.—HONEY.—There is very little business in this line. Prime clear garden lots are obtainable at 3d., medium to good being on offer at from 2d to 2½d. BEESWAX.—Trade is restricted to clear samples, which are quoted at up to 1/3, medium to good trades are to be had at from 1/1 to 1/2.

S. M. Herald.—Honey, 60lb tins extra choice extracted 3d, choice 2½d, prime 2d, medium 1¼d. Beeswax.—Dark 1/1 to 1/2, bright 1/3 to 1/4 per lb.

Maitland Mercury.—Honey, 2d to 2½d. per lb. Small tins 2/3 to 2/6.

HONEY.—

During the past two or three months, sales have been very slow, but with the approach of the winter months we anticipate a better demand. Choice Western District Honey is selling from 2¾d. to 3d. per lb., dark coloured and strong flavoured lots ranging from 1½d. to 2½d. per lb. with a poor demand.

BEESWAX.—

The price for prime clear samples has improved and we can sell special lots at 1/4 per lb.; medium lines 1/3

Les Ruches a l'iar libre, Paris. The combs were to have a removable canvas case for winter and spring.

His Majesty's mails have before now been held up by a swarm of bees having taken fancy to a pillar-box and gone in through the slit, and a few days ago it was reported that one had entered a dog kennel to the discomfort of the rightful owner. In my own experience, the most curious choice of a dwelling has been a rabbit hole in the bank of a plantation. The poor bees were smoked out with sulphur before I had heard of it, but a part of the combs they had built was still visible in the open burrow

Quite recently I heard, from a lady who has started bee-keeping not far from where I live, that a swarm had left its hiving skep and taken refuge in a railway lamp-post, where it seems scouts had been observed on the previous evening by the station-master. When my friend arrived on the scene, most of the bees had withdrawn into the hollow of the post, and it is much to her credit that, by dint of digging under the post and smoking, they were successfully hived in the course of an hour or two.

The moral of my story of swarms is an old one:—Bees do nothing invariably." if rightly considered this is their greatest charm.—*British Bee Journal*

How Animals doctor Themselves.

Man might often take from the lower animals a lesson as to the care of himself when ill. All sorts of animals suffering from fever eat little, lie quiet in dark, airy places, and drink quantities of water. When a dog loses his appetite he knows where to find dog-grass, which acts as a purgative and emetic. Sheep and cows when ill, seek certain herbs. Any animal suffering from chronic rheumatism keeps as far as possible in the sun.

A virgin queen entering the wrong hive, on returning from her mating trip is said to always supplant the laying queen.

At a conversazione of the British Bee-Keepers Association a Mr. White stated he was sorry it should go forth that there was only one place from which good heather honey could be obtained. There were a great many places in this country in which heather was grown. This class was supplied from southern parts of England the Midland Counties, Surrey and Hants, and although perhaps it was not the same consistency as that of which they heard so much from Scotland, still it was honey appreciated by the public, and at some shows. Honey from Surrey heather had taken first and second prizes so that he considered it a pity that the Scotch heather honey should be vaunted as the only satisfactory honey of that type. Besides, a great deal turned upon taste in such a matter. He knew people who came year after year to the Crystal Palace to buy heather honey that had been obtained in Surrey.

CORRESPONDENCE.

F.A.McK., Coonamble Line. — Bee-keeping is only middling here, that is where I am situated. If not removed from here by next season I'll shift my bees into a more suitable place in the locality where I can attend to them. I sincerely wish you and the A. B. B. every success, and hope to be a subscriber again to your very valuable little paper.

W. J. B. Tyndale, Clarence River, N. S. W.—Matters in connection with the bees are a bit slack just at present. We have had far too much rain since Xmas. The next flow we will have here this season will be from the Ti-tree. This is the poorest honey we get, it being dark in colour and rather too strong to the taste. Hoping that you are doing well and thanks.

D.N.McL., Geurie.—There has been a splendid honey flow in this locality this season, but, with the exception of a few, beekeepers have not been able to reap a harvest from it, owing to last dry season wipeing out nearly all the bees. I have only a few left, and these I have been trying to sell.

G.H., Caloundra.—I have been keeping bees for the last 17 years, but I have not seen one bee collecting honey or pollen from blood wood so I have come to the conclusion that the blood wood about our part has no food for bees.

E.B., Gouldville,—The bees in this district have not been doing much good for some years. This year my bees have done worse than ever, so I think I know more about apiary work than the bees do about gathering honey.

THE OLDEST AUSTRALIAN BEE-KEEPER.

HONOUR TO WHOM HONOUR IS DUE.

Your correspondent, Mr. W. Abram, certainly can never be accused of hiding his lights under a bushel, and some of his pretentions as apicultural distinction may be just and legitimate for aught I know but when he claims (page 222. Jan. issue) to have started the first modern bee-farm in Australia, I must in justice to this state, and our old pioneer bee-keeper, points out that his claim is a most unwarranted one. While I believe that the honour belongs to the late Mr. J. Carroll of Enoggera, Queensland, I am quite positive that it does not belong to Mr. Abram, as Mr. Carroll had a modern bee-farm in successful operation years before Mr. Abram ever reached Australian shores. From 1872 to 1880 Mr Carroll sent hundreds of colonies of bees to different parts of Australia in two frame hives, also extractor. Langstroth pattern hives, honey knive, etc. etc. As early as 1872 Mr Carroll received a silver medal at the Ipswich Show for bar frame hives, and in 1874 received a prize medal in N. S. Wales for centrifugal honey extractor, also one for simplisity bee-hive. I hope Mr. Editor, in the face of above facts, that Mr. Abram will admit that he blew his trumpet rather too hard. Anyone wanting verifications of above facts should write to the Brisbane Newspaper Co., who publishod a very interesting little work on bee-culture for Mr. J. Carroll as far back as 1874.—I am, H. L. Jones, Goodna Queensland.

THE INFLUENCE OF BEES ON CROPS.

"You have a splendid crop, thank God!" was once said at a harvest supper in the Old Country. "What do you thank God for?" was the reply; "didn't I put plenty of manure in the ground?" If we were to put the question, "What are the chief necessaries in the production of your crops?" to all the agricultural societies in the States, many of them would probably answer, "Deep and frequent ploughing, the loosening of the soil, keeping the surface well open, judicious manuring, good seed, freedom from weeds, and favourable seasons." No matter what branch of soil-culture an individul may be engaged in, or what crops he is growing, if he be market gardener, agriculturist florist, or orchardist, the answer, perhaps not in as many words, would be tantamount to the same. The florist and orchardist would add pruning to their catalogue of the necessary requirements. There are tiny agents employed by Nature that dwarf into utter insignificance all the modern implements of husbandry that are in use to ensure "an abundant and heavy harvest." They are seldom taken into account. These tiny agents are an absolute and concomitant necessity for the production of a crop from any member of the vegetable kingdom. The wind and insects are the agents employed for the fertilisation of crops. The two mentioned are the chief, but there are many others of a subordinate character that Nature

frequently enlists to aid in the reproduction of the various members of her plan-life. The members of Nature's great vegetable army, in regard to their method of reproduction, have two distinct characteristics by means of which they perpetuate their species and varieties, *i. e.*, some are termed flowerless and others flowering plants—*cryptogamic* and *phanerogamic* respectively. Ferns, mosses, seaweeds, &c., are included in the former, but this article has nothing to do with the reproduction of these cryptogamic plants.

Flowering plants, "the herb yielding seed and the fruit-tree yielding fruit after its kind, whose seed is in itself," are the portions of the subject I wish to deal with. How herbs yield seed, and how fruit-trees yield fruit, appears strange, if we take into consideration the too frequent destruction of the very many agents more especially the honey bee, that husbandmen in their blind ignorance are constantly waging war upon. "Smear the trees with poisoned honey," "Destroy the bees of the bee-farmer," or "Burn down the tree where there are bee nests," is the too constant advice given by well-educated fruit-growers, but whose knowledge of bee life is far below zero. Nature has been very lavishing in the distribution of her varieties of indispensable helpmates for the land culturists. The tiller of the soil, after the necessary preparation of the land and all the mechanical aids he brings to bear in assisting the earth to yield her increase, and to produce her crops of cereals, vegetables, and fruits for our imperative use, is solely dependent on outside agents, over one of which he has little or no control. I refer to the wind. In insect agency—of these the principal ones are members of the bee family—he can to a certain extent regulate the supply and demand.

The chief agent employed in the fertilisation of the seed that supplies us with the "staff of life" is the wind. Seeds that are so fertilised are termed anemophilus. But life's luxuries—cherries, plums, and other drupes or stone-fruit generally—are fertilised by insects; so are the pomes and all apple-like fruits, citrus fruits, berries, &c. Insects make the labours of the fruit-grower a great certainty—make "assurance doubly sure.' Without them all his labours would end in a wretched and miserable failure. We are entirely dependent on insects for the fertilisation of our fruit. Seeds or fruits that are thus dependent on insects for reproduction are termed entomophilus. It is a true and wise saying, "No bees, no fruit." Nothing can be more fallacious than the idea that bees injure crops. There is no more widely entertained opinion amongst fruit-growers and florists than this. Let a fruit differ somewhat in form tint, flavour, or general appearance from that of the same crop on the same tree, the innocent bee is accredited with having "inoculated" that particular member of the fruit of that tree. I have heard it said, when examining the fruit on a naval orange tree, where the characteristic mark in some of the fruit was very prominent and in others almost inconspicuous, that the latter was caused by *bees*; and this, too, from men of prominent positions in the agricultural world. If an ornamental flowering plant produce a bloom differing somewhat from the rest of its kind, or sport, the bee is said to be the culprit.

Jam-makers, during preserving seasons very frequently when the bees come to clean up the waste syrup, and perhaps steal a little from that not found in the waste tub, cause, by means of boiling water, the destruction of millions of these tiny and industrious workers. Men do not understand that if they were to carry out this slaughter of the innocents with too high a hand, they would have little or no fruit to preserve. It may be interjected that butterflies, moths, beetles, and other members of the insect world fertilise our fruit crops as well as the bee family. True; but they leave behind them whole armies—well-drilled armies—of caterpillars, grubs, or maggots. These destroy the very fruit their parents fertilised

defoliate the trees, cause sickness inducing disease, and ultimately the destruction of the orchard. This cannot be said of the bee. Butterflies, &c., fly from tree to tree and orchard to orchard, laying a few eggs here and a few there. It is difficult to confine or introduce them to a district, and when once there it is a greater difficulty still to exterminate them. Insect fertilisers, other than bees, are nearly all solitary and houseless wanderers, and it is a work of patience and labour to mitigate their ravages, and the little good they may do as fertilizers is greatly counter, balanced by the great mischief wrought by their offspring. On the other hand bees are social, are domestic, are under control, can be increased or diminished according to requirements.

The advent of a bee-keeper in a fruit growing district is not a blessing in disguise, but a blessing so prominent that a traveller passing through a fruit district by express train during fruit harvest can always see the handiwork of the bee. The orchardist cultivates the trees from which the bees get their pollen and the bee-keeper his honey harvest, and the fruit-grower in his turn is almost entirely dependent on the bee-keeper for his harvest of fruit. Between bee-keepers, fruit-growers, florists, &c., there is a mutual provident association so strongly united that to repress the former is to destroy the profits of the latter.

Another interjection : " Have not the bees been the chief agents in the destruction of some of the best varieties of melons, pumpkins, cucumbers, and other members of *Cucurbitaceæ* or gourd order that have been introduced into the State ? If by this it is meant that certain varieties of these very useful vegetables have entirely disappeared, and have been replaced by inferior ones, the result of cross-pollenisation, the bee for a while must plead guilty, because the whole of the order *Cucurbitaceæ* is entomophilous, and the bee plays the chief part in the cross-pollenisation. The fertilisation of the whole of the gourd order is so easily controlled that the bee must be acquitted, although he has pleaded guilty, on the ground that the growers have wholly contributed to the result by their indolence, carelessness or ignorance. A little ignorance in these matters is far more dangerous than the proverbial little knowledge.

The essential organs of plant-life—that is to say, those organs wholly contributing to reproduction—are so prominent in the larger type of blossoms, such as pumpkins, fuchias, the flowers of most fruit-trees, maize, &c., they can be seen with the naked eye and their functions easily demonstrated by or to anyone having the " observing eye." There is no necessity for a costly set of microscopic appliances, nor scientifically fitted-up laboratories, nor years of apprenticeship " to boot " to become an expert in the use Nature makes of the essential organs of flowers. The primary function of flowers, and, indeed, the only use flowers or blossoms are to the trees that bear them, is that of reproducing or perpetuating its species. The most essential parts of a flower are the stamens and pistil. These essential organs are most vigorous, healthy and free from blemish in the eaalier parts of the day. Just after the corolla bursts these unfurl, the anthers become distributive—*i. e.*, the pollen they contain is sufficiently matured to be wafted by the wind, or gathered by insects or other agencies for fertilising purposes—and later the stigma becomes receptive. The atmosphere during these early hours, in spring time, as a rule, is characterised by a dead calmness, or at the most by gentle breezes. This calmness is most beneficial, and is a highly necessary agent in ensuring successfully the fructification of entomophilous fruits. The more frequently the bees trip to and fro from home to orchard and orchard to home, the greater and better are the results that follow their labours.

I have used the terms bloom, flower, and blossom indiscrimately. They are synonymous. The two former are gene-

rally applied to the flowers on ornamental plants, and the last to fruit trees.

To understand how the all-important work of fertilisation is carried on by bees and other insects, it will be necessary to have a slight knowledge of the functions each portion of a bloom has to perform.

The pistil, is divided into ovary, style, and stigma. The stigma is the end of the style turned inside out. It has four very peculiar characteristics: First, it is skinless; secondly, it is adhesive—if it be applied to down or a light feather it will adhere to it; thirdly, it is porous; and in the fourth place, it is covered with a lot of hair-like hooklets. These peculiarities in the stigma form important parts in the economy of fertilisation, taken in conjunction with the offices performed by bees in relation to fruit and the reproduction of plant-life. The style is traversed internally by a canal forming a tube, which is the connecting link between the stigma with the ovary.

The stamens are the masculine reproductive organs, and, like the pistil, different portions of it receive different terms—the anthers, and filaments. The filaments are thread-like appendages, and are generally attached to the base of the corolla, and not to the ovary, as in the case of the style; neither is it tubular. Their office is to support the anthers, and to keep them in their proper position. The anthers, generally two in number, are situated at the summit of each filament. They are of different forms, according to the class of fruit borne by the tree—round angular, elongated, or sometimes twisted. When the blossom first opens, the anther is usually of a bright colour, generally yellow. Its upper surface is a flat, smooth disc. As the day advances and the anther matures each one opens with a longitudinal slit its entire length. It can then be seen that each anther is a pocket or sack filled with pollen—a very fine dust-like flour. Pollen is of a variety of colours—white, red, pea-green, &c., are of frequent occurrence—but the predominating colour is some shade of orange.

By watching at the entrance of a beehive, different bees will be seen to enter with pollen of various shades, although they prefer to work on those blooms that are yielding the greatest quantity. By taking a piece of honeycomb containing bee-bread, and cutting a cell filled with it longitudinally, strata of various colours are always to be seen. In flowers they are fertilised by insects, the pollen is usually of a sticky nature. This property is availed of by the bees. By this they knead it into small pellets and neatly pack it in the pollen baskets on their hinder legs. The pollen of pumpkins and other members of that family, on account of its non-adhesive quality, they cannot so treat, but carry home in the hairs of their bodies. The pollen of blossoms fertilised by the wind is also non-adhesive. Pollen grains are of various forms, according to the class of plant it is taken from.—A. Gale, in *N S W Agricultural Gazette.*

Preservatives for Hives.—Spirits of Tar a Good One.—Spirits of tar makes an excellent wood-preservative. This was recommended by a chemist as a substitute for carbolieum, and which would answer the same purpose.

Bees Can't Puncture Grapes.

"The American Bee Journal" published the following from Mr. C. P. Dadant, President of the National Bee-Keepers, Association, concerning the belief in some places that bees destroy grapes:

Mr. Editor:—Referring to the article on page 757, by Mr. John Kennedy, I wish to reassure him in favour of the bee. The bees *can not* puncture grapes. This may be tested thoroughly by inserting a few bunches inside of the hives. Such grapes as may have been already punctured or damaged by the handling will be cleaned out by them; the others will wilt in the hive and will often be found glued fast by the bees, that aim to cover them with propolis, as they do with any thing which they can not remove.

In addition to birds and other insects than the bee, there is great loss caused by the fruit bursting from overfulness. I would suggest that this may have been the trouble in the case mentioned, for when the fruit ripens, it often swells with juice to such an extent that the skin can not contain it, and the result is a bursting, which always begins at the stem-end, as mentioned by Mr. Kennedy. If the bees are short of food they discover this at once, and begin sucking at the ruptured spot, so they might be suspected of causing the damage. If the bunch is picked off, the sap quits running, and the the berry is much less likely to burst. So when you insert a bunch of grapes in a hive of bees, there is but little chance of that sort of damage happening. To me, the most positive evidence that the bees cannot puncture grapes is that they suck everything clean in the damaged grapes, and leave the unpunctured ones. I have actually seen them starve on sound grapes.

In addition to these evidences there is pysiological fact. The bees' mandibles are not sharp, but rounding, mouch like spoons and they can no more puncture a smooth-skin berry than you or I could bite into a smooth plaster wall. The evidences in favour of the bee need a little demonstration, but they are just as palpable as the fact that the earth revolves around the sun, and not the sun around the earth, as we might be led to believe, and as our ancestors believed because of having only testimony of their eyes.

It is lucky for us that our little friends, the bees, are unable to do damage of the kind mentioned, for there is no doub that if they had the ability to puncture fruit they would often be guilty of it.

Mr. Dadant is a careful observer, and is also an extensive vineyardist. The poor bees are often accused wrongfully, and especially when some people find their grapes suffering from some uncertain cause. The fact that bees cannot bit through a smooth surface like the skin of a grape clears them of any guilt in this matter. It is thus that bees can pull some things to pieces when they can get hold of them with mandibles, but it should always be remembered that they can only press or pinch with them, and not bite at all. The mandibles are not sharp, and so cannot cut anything.

Mr. Doolittle says in the "American Bee Journal." "'If you expect to make a success of the business, you *must have a real love for it.* If you don't think enough of your bees to take and *read* a bee-paper, and read one or more of the good text-books that are published on bees, and then put into practise what you read, the sooner you get out of the business, the better off you will be"—all of which I suppose was intended to be included by the writer above quoted ,in the words. "If the bees are handled rightly." This is just the way I have written and talked for years, and I believe every word of it, for unless such love is at the bottom of the whole thing, bee-keeping cannot become a facinating, health-giving, and enjoyable pursuit, without which there is no success.

Syrup for feeding bees.—Five lbs sugar to two lbs of water.