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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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Editor & Publisher: E. TIPPER, West Maitland, N.S.W. Aus.

MAITLAND, N.S.W.—NOV. 30, 1908.

MR. R. BUEHNE ON BEE-PARALYSIS.

[Readers who had the pleasure of meeting Mr. Buehne during his recent visit to this country for the Franco-British Congress of Beekeepers will be especially interested in the following extract from an interview with him which appeared in a recent number of *Gleanings*.]

"How do the climatic conditions of Tooboorac, Victoria, differ from those in Germany, Mr. Beuhne?"

"Those in Germany are much the same as in the Eastern States of this country. My present locality is similar to that of Southern California. It is similar to California in climate, if not in flora."

"What race or strain of bees do you find gives the best results?"

"The darker strains of Italians."

"Why do you prefer them?"

"Because of their greater immunity from bee-paralysis."

"Do you find the yellow Italians as free from that disease as the darker strains?"

"No, decidedly not."

"Do you find that your strains of Italians resist foul brood better than black bees?

"I do. On one occasion five cases of foul brood occurred in an apiary of 250 colonies, and four out of those five were in colonies of black bees, of which there were only five in the whole apiary."

"Do you find that bee-paralysis is more prevalent in some parts of Australia than others?"

"Yes, that is generally acknowledged by our beekeepers."

"What constitutes the difference in these localities?"

"The dry inland districts are fovourable to the development of paralysis, while in the cooler coast regions it is almost unknown."

"Did you ever attempt to introduce any other strain in your locality to improve your bees?"

"Yes. On many occasions I found that, with new blood, came a pre-disposition to bee paralysis. On one occasion I bred over ninety queens from two specially yellow breeders, and introduced them with the view of improving my own strain. The result was that both breeders, with all their bees, succumbed to paralysis the following spring, and every one of the colonies of their queen progeny was more or less affected, so much so that I requeened the whole of them as fast as I could from queens of my own original strain, keeping them going with brood of the same in the meantime. I thus lost the entire season in keeping up my colonies."

"How much did that loss amount to?"

"At least 500 dollars."

"In a general way, do you find the extra yellow strains as hardy as your ordinary regular leather-coloured stock."

"No. They are much more influenced by changes of temperature, being easily chilled in cold weather."

"Are the yellow strains used very much in localities on the coast?"

"No. The yellow bees are kept principally by beginners."

"What cure, if any, have you for bee-paralysis?"

"The only cure I know of is to re-queen with a different strain. A temporary cure may be effected by feeding honey without any drugs."

"Why do you say without any drugs?"

"I have on several occasions eliminated the disease for the time being by feeding thin honey continuously for several months."

"Why do you feed honey rather than sugar syrup?"

"Because I am of the opinion that the digestive organs being affected by paralysis, sugar which would have to be inverted would tax the digestion more than honey that is already inverted, or partially digested.

"Do you find that some individual colonies are immune to the disease, even when surrounded by other infected colonies?"

"Yes, I do, and it is such that I choose to breed from, with the view of creating a strain of bees immune to paralysis."

"Can you put combs from colonies affected with bee-paralysis into healthy ones without carrying the disease?"

"Yes; in fact, it is a practice with me to put combs purposely from the infected colonies into such colonies as I esteem are immune, for the purpose of testing their assumed immunity."

"Will combs from such affected colonies carry the disease to colonies that are not hardy or immune?"

"I do not think so."

"What does carry disease from colony to colony?"

"Assuming paralysis to be a germ disease, once a locality has been infected, germs would be present everywhere, but would cause an outbreak only among bees possessing a predisposed constitutional weakness."

"If you were starting anew, would you begin with stock from a locality where bee-paralysis was unknown?"

"No. I should prefer stock from an apiary from which it has been bred out by selection, as I have explained."

"Can you recall instances bearing on this point?"

"Yes. Fifty colonies which were sent to me from an apiary quite free from paralysis developed this disease in a most virulent form within a few days after

being placed in my apiary, my own colonies showing no sign of paralysis, even when the new arrivals had become almost extinct."—"Gleanings in Bee-Culture."

GEUE'S SIMPLEX UNCAPPER.

Mr. H. A Geue, Heath Vale, Victoria, claims for his uncapper the following: –

The Simplex is true to name. It has no parts liable to get out of order. A touch with the soldering iron will repair the worst damage likely to be done to it. It is handy in size, and weighs only 25lbs. It is, in short, a double-walled vessel of peculiar shape, solidly made of galvanized iron, with copper fired-bottom; works by means of boiling water, the water being in the jacket, formed by the double wall, and the heat being supplied by a Perfection Stove, or, if you like, an oil-drum fire; has a knife-heater, uncapping-box, and receiver for honey and wax; the knife-heater will take a twelve inch knife, if you use one; the uncapping-box will melt ten pounds of wax an hour, while the receiver is of 350 cubic inches capacity, so that wax may be run off in blocks up to ten pounds weight if desired.

The receiver has an outlet, which outlet is the important part of the Uncapper. As you know, honey, slum-gum, and wax are bulk for bulk of different weights; pour the three, in liquid state, into a vessel, and the honey goes to the bottom, the slum-gum floats on the honey, and the wax on the slum-gum. The Simplex outlet works on this fact. Through the double wall of the receiver a vertical passage about 3 inches long by § inch wide is made; over this, on the outside, is fixed a sliding door, with two taps, so placed that when the slide is in the shut position, one tap is below, the other above the passage. In working, the honey, wax and slum-gum run from the uncapping box into the receiver, which is so shaped that an inch deep of honey in the bottom weighs only a few ounces; you raise the slide just enough to keep honey trickling without letting off wax or slum-gum, and so work it all day. This means that the honey need not remain beyond a minute or two in the uncapper, and so need not be darkened or otherwise spoiled by over heating. At the end of the day, or when the receiver is full of wax, you lower the slide, and skim the wax off the top of the slum-gum. You thus get a solid block of clean wax, fit to go to market. The slum-gum remains in the receiver, and may be lifted out in a block when it cools.

Therefore, if you use Geue's Simplex Uncapper, you have, at the day's end, instead of a mess of cappings, a tin of clean honey, a cake of clean wax, and a cake of slum-gum, with a remnant of wax to be taken out in the wax press. Thus we have no waste, and a minimum of trouble.

The price is £3 5s. nett cash, and the sole agent for victoria is H A. Geue, Heath Vale, via Horsham, from whom further particulars may be obtained.

WAX-RENDERING.

The best plan for an ordinary beekeeper, in my opinion, is to have a large square galvanized iron vessel, holding about 25 gallons of water. Midway in the same place a perforated zinc tray. Put the rough wax beneath, and weight the tray (which rests on a ledge) down with a couple of bricks. Fill up three-quarters with water, put a "Primus" stove (large size) underneath and in due course the water will boil, and all the wax rise to the top, leaving none whatever below the middle of the screen. It will be found that a small quantity of refuse material will also rise to the surface, but the cake of fairly clean wax can very easily be rendered finally pure by any of the usual processes of clarifying. This vessel will hold quite a pile of combs. My practice is to ram them down tight with a rammer till I can get no more in, and in this way

boil perhaps sixty or eighty combs of standard size at once. It will, of course, be readily seen that though it may take a good while to heat so great a quantity of water, yet the amount of comb melted at one operation is an immense saving of labour in the end. This plan of wax-rendering is entirely my own devising, and, having found it an entire success, I give it for what it is worth. On page 437 of the Journal for 1907 will be found details of an exact experiment showing the net weight of wax obtained by this method to be 2 1-10 ozs. per standard frame from combs not over two years old and those not less than one year old mixed.—Writer in "British Bee Journal."

Imports and Exports of Honey and Wax. Ireland.

The Department of Agriculture has issued the report of imports and exports at Irish ports for the year ending December 31st, 1906. The imports increased from £53,185,523 in 1904 to £56,365,299 in 1906, and the exports from £49,398,536 in 1904 to £55,598,597 in 1906. The imports of honey amounted to 283 cwts., estimated at the value of £566, as against 237 cwts., value for £326 in 1905. Of this, Belfast imported 120 cwts., Cork, 32 cwts., Dublin, 118 cwts., and other ports 13 cwts. The exports of honey amounted to 416 cwts., of the estimated value of £1,040, as against 296 cwts., value for £1,021 in 1905. Of this, Belfast exported nil, Cork, nil, Dublin, 87 cwts., and other ports 329 cwts. 628 cwts. of beeswax value for £5,024, are reported as having being imported in 1906, Belfast taking nil, Cork, 3 cwts., Dublin 537 cwts, and other ports 88 cwts. The figures for 1905 were 270 cwts, value for £1,215. The exports are set down as nil. Paraffin Wax was imported to the extent of 35,665 cwts., value for £43,541 (all direct from U.S.A.), as against 26,489 cwts., valued at £32,440, in 1905. The exports amounted to 197 cwts., valued at £240, as against 694 cwts., valued at £850, in 1905. Assuming the figures to be correct, Ireland's exports of honey exceeded her imports by 133 cwts., as against 59 cwts. in 1905. The honey coming in cost 4 2-7d per lb., against 2¾d. per lb. in 1905, and the home produce going out brought 5 5-14d. per lb. as against 7¼d. in 1905. We appear to have paid 1s. 5 1-7d. per lb. for our imported beeswax, against the 1905 entry of 9½d. which, at the time, we described as "somewhat astonishing."—"Irish Bee Journal."

Reviews from "British Bee Journal."

The Lore of the Honey-Bee. By Tickner Edwardes. (London: Methuen & Co. Price 6s.)—This is a fascinating book by the author of "The Bee-master of Warrilow." It is a history of bees and their masters from the very earliest times to the present. Beekeeping is undoubtedly the oldest craft under the sun, and the author introduces the subject with one of the oldest and prettiest fables in ancient mythology, which deals with the origin of the honey-bee. We also learn that so far back as the Bronze Age it is certain that wax was used in casting ornaments and weapons. That beekeeping must have been carried on thousands of years before the Great Pyramid was built is evidenced by the bee having been chosen to represent a king in the Egyptian hieroglyphic symbols. It is quite natural that the author should begin with an allusion to Virgil, who was one of the earliest writers on bees, and also an apostle of the Simple Life. He says truly that a beginner in apiculture to-day could not study a better book than the Fourth Book of the Georgics, for Virgil went direct to the heart of the matter. Pliny was a most prolific writer, but he, like nearly all the classic historians, had

no accurate knowledge of the life within the hive, but he made up for this deficiency, as did all others of his time, by drawing upon his imagination.

Among Anglo-Saxons we are informed that bee-hives supplied the whole nation, from the king down to the poorest serf, not only with food, but with drink and light as well, for mead was served at all royal banquets and was in common use in every monastery. Coming to the Middle Ages, the author alludes to Rusden, Butler, and other authors, and shows how they repeated errors of their predecessors. He tells us that the curious custom of "ringing the bees" is of Roman origin, but whether it was introduced by Cæsar's followers or was derived from classic reading is hard to determine. Having studied ancient writers, Mr. Edwardes comes to the conclusion that, "dipping into these time-worn records of the Middle Ages, with their embrowned, scarce ligible type, and their antiquated phraseology, one comes at last to realise how very little the old bee-masters actually understood of the true ways of the honey-bee, or, indeed, of any essential in bee-craft." In the fourth chapter the author introduces us to the romance of the bee hive. The wonderful communal life within the hive is touched upon in all its varying aspects, and the reader is taken to a village in Southern Sussex where live two beekeepers who represent the extremes of bee-manship as still extant in modern times.

The book is written in an unusually charming manner, there is not a dull page in it, and a perusal of the work is sure to fascinate every reader, who will find much useful information in its 280 pages. There are twenty-four full-page plates of fine half-tone illustrations, reproduced from Nature photographs. Not since the appearance of Maeterlinck's "Life of the Bee" have we been so charmed with a book on the subject, and we can thoroughly recommend it to our readers, who we hope will derive equal enjoyment in reading it as we did ourselves during a recent sojourn abroad surrounded by a grandeur of the Swiss mountains.

Honey and Health. By Archibald Hope. (Macclesfield: Archibald Hope and Co. Price 6d.).—This is an interesting booklet of forty-four pages, intended to show the advantages and value of honey as a health food. Mr. Hope says truly: Honey is a medicinal curative agent, with bland, healing, feeding, fattening, nerve-soothing properties of the highest value in disease." We have ourselves known cases in which honey has acted as a curative agent when apparently there was no hope of the patient's recovery. In these pages the author has endeavoured to set down plainly the complaints in which honey may be used to advantage. Honey, he says, is "Nature's form of sugar," the cane sugar of the nectar being inverted into the grape sugar of honey. He tells how the human stomach can only deal with a very small quantity of cane-sugar at one time, which must be converted into grape-sugar before it can be digested, and how a comparatively small portion of cane-sugar impairs the digestive process. The mere fact of including honey in the daily food will be found to have a good effect upon the general health. The use of honey will obviate the necessity for medicine, and the author quotes Sir Frederick Treves, who said that "he looked forward to the time when people would leave off the extraordinary habit of taking medicine when they were sick.

To obtain the best results as a therapeutic agent Mr. Hope recommends honey-tea as invaluable for dispepsia, bronchitis, consumption, and other afflictions How this should be made is fully described. He mentions a case described in *La Réforme Alimentaire* of an infant nine months old, dwindling away with vomiting and diarrhœa, just on the point of death, recovering on being fed on honey-water for eight days on the doctor's advice. We ourselves had a similar

experience some years ago. A man in our employ had a dying child, the case having been given up by the doctor as hopeless. We gave the mother some honey, with instructions to give a small quantity of it diluted with water at frequent intervals. The child has not only recovered, but got so fond of honey that this became its principle article of food, and it grew up to be strong and healthy.

Honey-tea, says Mr. Hope, will help a man to struggle against alcoholism and the drug habit, strengthen the voice of a public speaker, and improve the complexion. We recommend our readers to procure this booklet and study the useful information it contains.

A REVEREND BEEKEEPER.

THE VERY REV. THE PRIOR, ST MARY'S ABBEY, BUCKFASTLEIGH, DEVON.

Our readers are familiar with the name of the Very Rev. F. M. Massé, O.S.B., Prior of St. Mary's Abbey, whose letters in our columns have always had a special interest of their own, and who has been a generous supporter of this "Journal" almost since its inception. He writes:—

"I enclose a photo of our bees, showing one of our little students (who is to be my successor in beekeeping) taking his first practical lesson. He is quite enthusiastic about his little pets, and does not mind the stings, so that I need scarcely encourage him. I feel sure that he will succeed very well."

"I recently made the acquaintance of a young Irish clergyman who became very fond of bees on hearing of the wonders of the hive. He inquired about a book on the subject, and I handed him a copy of the 'Irish Bee Guide,' which I never fail to carry with me as a good companion whenever I am absent from home.

The "Pall Mall Gazette," under the title, "In the Abbott's Bee-Garden," has published a charming article by Tickner Edwardes, in which the author describes his visit to St. Mary's Abbey, and its beautiful garden that slopes down to the edge of Devon's tortuous river. The flowers. the fruits, the "black-robed figures quietly at work," are charmingly described, and "the one preponderant yet inexplicable thing"—the steady, deep note upon the air. "From its foundation to the highest stone of the ancient bell-turret, the whole front of the place was thickly mantled with ivy in full flower, and every yellow tuft of blossom was besieged with bees. There seemed tens of thousands of them, hovering and humming everywhere; and thousands more arriving with every moment out of the blue air, or darting up again fully laden, and away to some invisible bourne over the ruddy roof of orchard trees. There are no old-fashioned hives; they are all of the latest, most scientific pattern, ranged under the shelter of the wall, in two wide terraces of close-shaven turf. 'Everything,' says the Abbot, 'must move with the times, or must inevitably perish. Modernism, rightly understood, is God's fairest, most priceless gift to the Universe. So it must prove even with beekeekeeping, which is one of the oldest known occupations in the world. It is a fine thing, perhaps, to love old, ignorant customs, for their picturesqueness and beauty alone. But don't you think it is a still finer thing to teach poor people how they may win from the common hillside plenty of rich, nourishing food at almost no cost at all? That is what we are doing here."—"Irish Bee Journal."

SUNFLOWERS IN OHIO.

A goodly number of the farmers in this section have small patches of sunflowers in connection with their corn. Probably in all cases it is planted for the benefit of

the poultry, for it is a splendid feed for that purpose. To a great extent it forms a substitute for meat when fed to chickens and turkeys, on account of its high protein content and oily character. The oil soon shows its value in the beautiful sheen of the poultry fed on it. When preparing birds for exhibition I used hemp seed to get a luster; but sunflower seed answers just as well, or perhaps better. It requires rich soil for successful culture; but the chicken-pen will furnish that. In combination with chickens and bees, sunflowers are very valuable, more particularly if alfalfa is also grown for hen feed, which is not often. Some doubt the value of sunflowers for honey; but the nectaries of the flowers are very prominent. I should like to keep bees near a few hundred acres of sunflowers properly cultivated on rich soil. It looks now as if more would be grown in the future.—"Gleanings."

CORRESPONDENCE.

W.A., Beecroft.—This is a very busy time here as the bees are having a good honey harvest and are filling almost every cell with it. Where a few weeks ago there was brood from top to bottom of frames; there is now only a patch here and there, the rest is all full of honey, as also the supers. When the flow began the bees gave up swarming. Some of the honey is so dense it is difficult to extract, and as there is plenty of other work to be done, I can hardly keep pace with the bees in extracting, whilst there is every prospect of the flow continuing. This time last year, they were all starving. Queen-rearing is also very satisfactory, the losses being very few. What a difference suitable conditions make! From reports to hand it appears that it is pretty good in various disticts, though not everywhere; but it is always thus:—changing from one extreme to another, so as to give all a chance. If any district should be short of pollen, they might try a substitute named "Roborat," which is said to be a pure vegetable albumen and as being used by English beekeepers. At 2/6 per lb. it is dirt cheap, obtainable at all chemists. This removes the pollen trouble, and when we can obtain everything else the bees need at the chemist's, beekeeping will be as simple as puff. Inventions are made in all directions. We have now various devices for treating cappings, etc., and it all helps to make beekeeping what it ought to be—the easiest and simplest pursuit. Wishing you and our friends the best of luck.

J.C., Douglas Flat.—The late winter has played sad havoc with the bees around this part The Cyprians, every hive but one in my apiary went under this winter They do not seem hard enough for this part of the country. Paralysis seems to wipe out them wholesale. The season is very late, fully a month, this year.

A.K., Dungog.—Bees came through the winter in the very best of order. There are very poor prospects of a good season this year in this district. Wishing other districts have better luck than we are expecting. It is quite possible for a queen to live for six or seven years, as I see in your last "A.B.B." we have one either 4 or 5 years; but she is not as good this year. I intend to change her now.

H C.P, Blackmans Pt., Port Macquarie.—The bees are doing very well. I only keep a few hives now, as the cows take up most of my time; but I hope to always find a little time for a few hives of bees, if only for the love of them. Wishing you every success in your business.

The editor of the "American Beekeeper," after eight years connection with that journal has ceased his connection with it.

SHORT CALIF. HONEY CROP.

BEE MEN UP AGAINST A HARD PROPOSITION.

BANNER YEAR PRODUCED 600 CARS, BUT THIS YEAR, OUTSIDE OF IMPERIAL VALLEY, OUTPUT WILL NOT BE OVER 25 CARLOADS.

The bee men of Southern California are up against a hard proposition this year on account of the small amount of rain which fell during the past winter. Wild flowers, and particularly the wild sage upon which the bees depend for material, were lacking in all portions of Southern California, from Ventura to San Diego. In the irrigated section, the orange orchards and in the alfalfa farms of the Imperial Valley, there will be a full crop of orange honey running from ten to fifteen cars, while the quantity in Imperial Valley is not known, as honey-dealers are not much interested in this grade, claiming that it is far inferior to sage and orange honey. Reports from Newhall to Ventura and that not one-third of the bees are making a living and one large operator in Ventura states that he will lose 800 out of 2,000 hives.

It appears to be destined that every other year shall be a blank in the honey deal, but this is a year that is unprecedented in the annals of beeology. Never have prospects been poorer for a crop than they are to-day. The banner year produced 600 cars of honey. Last year the production was 225 cars and the average for the past ten years has been over 150. This year, outside of the Imperial Valley, the output for Southern California will not be over 25 cars, according to the estimate of the largest honey dealer in Los Angeles. This looks like high prices, as there was very little carried over from last season, this all being in the hands of one man.

The usual opening prices on California honey are 5 to 6 cents, but it is too early to tell anything about what the figures will be this year. In the past there has been some dealing in futures, but so much money was lost at the game there is very little doing along that line now.—"New York Fruit and Produce News."

Franco-British Congress of Bee-Keepers.

LORD AVEBURY'S ADDRESS.

Amongst other experiments I brought a bee to some honey which I placed on a slip of glass laid on blue paper, and about 3 feet off I placed a similar drop of honey over orange paper. Under such circumstances the bee takes two or three minutes to fill herself, then flies away, stores up the honey, and returns for more. My hives were about 200 yards from the window, and the bees were absent about three minutes, or even less. When working quietly they fly very quick, and the actual journeys to and fro did not take more than a few seconds.

After the bee had returned twice I transposed the papers. She returned to the old spot, and was just going to alight when she observed the change of colour, pulled herself up, and without a moment's hesitation darted off to the blue. No one who saw her at that moment could have had the slightest doubt about her perceiving the difference between the two colours.

But I was anxious to go beyond this, and to attempt to determine whether, as M. Paul Bert supposed, their limits of vision are the same as ours. We all know that if a ray of white light is passed through a prism it is broken up into a beautiful band of colours known as the spectrum. To our eyes this spectrum, like the rainbow, which is in fact, a spectrum—is bounded by red at the one end and violet at the other, the edge being sharply marked at the red end, but less abruptly at the violet. But a ray of light contains, besides the rays visible to our eyes, others which are called, though not with absolute correctness, heat rays and chemical rays. These, so far from falling within the limits of our vision, extend far beyond it, the heat rays at the red end, the chemical or ultra-violet rays at the violet end. I made a number of experiments, which have since been fully verified by others —especially by Forel—which satisfied me that ants and some other animals are sensitive to the ultra-violet rays which lie beyond the range of our vision. This obviously opens up some very interesting problems.

As to the sense of hearing, also, we meet with great difficulties. Forel thinks they cannot hear. Voltaire, in one of his most interesting books, makes Micromegas, the gigantic inhabitant of Sirius, visit our world, and, having done so, concludes that, as his ears did not enable him to hear the voices of men, and consequently no sounds reached him, therefore men did not speak. "Moreover," Voltaire makes him say, "how is it possible that such infinitesimal animals as men should have the organs of voice? And what could they have to say? To speak," he continues, "it is necessary to think, or nearly so. Now to think requires a mind, and to attribute a mind to these little creatures would be absurd."

Very similar opinions, even in almost the same words, have been expressed by men with reference to insects, and it has been one of my principal objects in studying ants and bees to throw, if possible, some little light on this interesting question.

Previous observers have entertained very opposite opinions on this point. I tested my ants with various sounds. When they were moving quietly along, or while they were feeding I tried them with a great variety of sounds—a violin, tuning forks, penny pipe, a dog whistle, and all the most excruciating sounds of my own voice—but they never gave the slightest indication of hearing them.

It has, however, generally been considered that bees were able to hear. In order, if possible, to determine this question, I have made a number of experiments. It has been already shown that

when a bee has been accustomed, even for a few hours, to come to honey placed on blue paper, she associated the blue with the honey, and flew off to blue paper, fully expecting to find honey on it. Accordingly, I thought I might, in the same way, test their power of hearing by seeing whether they would associate honey with sounds.

I took a musical box at the end of September, put some honey on it, placed it on my lawn just outside the windows, brought some bees to it, and set it playing. We kept it continually going, and with honey on it, till October 8. It happened to play the tune, "I Dreamt that I Dwelt in Marble Halls." It is not, I think, a very delightful tune, and I can assure you that by the end of ten days we had become very tired of it. We often wished that we had chosen something else. When I thought that the bees had had ample time to associate the sound of the tune and the presence of the honey—that is, after ten days—I carried the musical box and the honey up to an open window on the first floor looking over the lawn, and set the box playing, but not a bee came. I need hardly say that the music was quite audible on the lawn. I then again put the musical-box and the honey on the lawn, but on a different part, and the bees very soon again began work. After the lapse of an hour I brought the honey and musical-box into the house, and placed them at an open drawing-room window on the ground-floor and less than 15 yards from where they had stood on the lawn. The music was kept going for an hour, but not a bee came.

The following day was again extremely fine. The bees came as usual to the honey. I let them feed till 10 a.m., when I removed the honey as before to the drawing-room. After the lapse of half an hour I set the box playing and waited half an hour, but not a bee came.

I then put the honey and musical-box again out on a chair on the lawn, five yards in front of the drawing-room window. The first bee found the honey in five and a quarter minutes, and soon many came. I left it for three-quarters of an hour, and then brought the honey and the musical box into the house, and put them just inside the window, but out of sight. The box was kept playing for three-quarters of an hour, during the whole of which a few bees kept hovering round the chair: but not a single bee found the honey, or even was attracted by the music into the room. I then took the honey and put it again on the chair outside. In less than five minutes nine bees had settled on it. I then brought it back into the room, and put it, with the bees on it, where it had stood previously. The bees fed, returned to the hive, and came back again to the honey as usual, showing that they had not the slightest objection to enter the house.

I then took the honey and the musical box down to the hives. Immediately (i.e., about a yard) in front of my hives is a low wall, and I put the box and the honey on the far side of the wall, so that they were something less than four yards distant from the hive, but, of course, not directly visible. I then kept the music going for two hours —from 1.30 to 3.30 p.m.—but not a bee came to the honey.

From these experiments we are, I think, justified in concluding either that the bees did not hear the music, or that, though they had been feeding close to the music, eight days was not a long enough period to suggest to them that there could psssibly be any connection between the honey and the musical box.

To decide between these two alternatives, moved the musical box (without setting it to play) and honey to another part of the lawn, about 15 yards from the first, and put an equal quantity of honey

on a similar piece of glass at about the same distance both from the musical-box and from the spot where the box had previously been. In half an hour there were several bees at the honey on the musical-box, and none at the other. After this we had a week of rain. The next fine morning I again put out the musical-box with some honey, and at a distance of about 15 yards a similar quantity of honey on a bit of glass on the grass. In half an hour there were several bees at the honey on the musical-box and none on the other.

The observations indicate, as far as they go, that the bees did connect the presence of the musical-box with that of the honey, and were guided by it, even if it were not playing, so long as they could see it, but that if they could not see it, even though it were playing, it did not assist them.

At first sight, it might seem that these experiments are in direct opposition to the general idea, that a clanging noise is useful in causing bees when swarming to settle soon. The notion is as old as Aristotle, who says: "Bees also appear to have pleasure in noises, so that they say that they collect them into their hives by striking earthen vessels and making noises." He adds, however: "But it is very doubtful whether they hear or not."

I cannot from my own experience decide the point. Admitting, however, that a custom so ancient and so widely spread is unlikely to be entirely without foundation, I would suggest as possible that what the bees hear under these circumstances, are not the sounds which affect us, but the higher upper notes near and beyond our range of hearing. Sir George Darwin and Lord Rayleigh, whom I have consulted on the subject, inform me that the presence of these inaudible overtones is unquestionable. Sir George Darwin says: "The high overtones (generally non-harmonic overtones) are very strong within the limits of audibility, and it is almost certain, though not experimentally verified, that the overtones beyond the limits of audibility are strong also."

It is possible that what bees hear are these overtones, and not the tones which are audible to us. Forel was long disposed to question whether ants and bees could hear, and though recent experiments have shaken him, is not yet convinced.

I have often felt a great longing to know how the world appears to other beings. On this question our knowledge is still extremely defective. Have insects, for instance, the same senses as ours, or finer, or even more? I have shown that the ultra-violet rays which are invisible to us are visible to some ants and crustocea. Moreover, why should we assume that there can only be five senses? Sound is the sensation produced by vibrations of the air striking on the drum of the ear; when they are few the sound is clear; as they increase in number it becomes shriller and shriller; but when they approach 40,000 in a second they cease to be audible.

What is the effect produced on us when rays of light strike on the eye. When the millions of vibrations strike the retina for a second, they produce the sensation of red, and as the number increases the colour passes into orange, then yellow, green, blue and violet. But between 40,000 vibrations in a second and 100 millions we have no organ of sense capable of receiving the impression. Yet between these limits any number of sensations may exist. We have five senses, and sometimes fancy that no others are possible. But it is obvious that we cannot measure the infinite by our own narrow limitations. Moreover, looking at the question from the other side, we find in other animals complex organs of sense, richly supplied with nerves, but the functions of which we are as yet powerless to explain. In fact, there may be fifty

other senses as different from ours as sound is from sight; and even within the boundaries of our own senses there may be endless sounds which we cannot hear, and colours as different as red from green of which we have no conception. These and a thousand other qualities remain for solution. The familiar world which surrounds us, may be a totally different place to other animals: to them it may be full of music which we cannot hear, of colour which we cannot see, of sensations which we cannot conceive. Here is a wide and as yet almost untrodden field of study.

To place stuffed birds and beasts in glass cases, to arrange insects in cabinets, and dried plants in drawers, though most important, is merely the drudgery and preliminary of study. On the other hand, to watch their habits, to understand their relations to one another, to study their instincts and intelligence, to ascertain their adaptations and relation to the forces of Nature, to realise what the world appears to them, is—as it seems to me at least—the true interest of natural history, and may even give us the clue to senses and perceptions of which at present we have no conception.

Passing from the problems of the senses to those of sex, bees offer us some very remarkable problems. Why some children are boys and others girls no one knows. Various suggestions have been thrown out, but none are supported by any satisfactory evidence. Bees present this problem in a different aspect. They make, we know, three forms of cells, those intended for queens, drones and workers respectively, and suitable eggs are laid in each. How is this managed?

As regards the queens and workers, there is no difficulty. The eggs are the same. The difference is a matter of food. Any female larva less than three days old can be fed into a queen if she is supplied with royal food. This is wonderful enough in itself, but it does not raise the problem we are considering for the moment. The case of drones is much more difficult. How can the bees arrange so that male eggs are laid in drone-cells, female eggs in those for queens or workers? The bees belonging to the genus Osmia arrange their cells in a row in a hollow stick or some other similar situation, and it has long been known that in these and similar cases the cells first provisioned, and which are therefore furthest from the entrance, always contain females, while the outer cells always contain males.

There is an obvious advantage in this, because the males come out a fortnight or more before the females, and it is, of course, convenient that those which have to come out first should be in the cells nearest the door. The bee does not, however, lay all the female eggs first and then all the male eggs. By no means. She produces altogether from fifteen to thirty eggs, but seldom arranges them in one row. Generally they are in several series, and in every one the same sequence occurs—females further from and males nearest to the door.

M. Fabre concludes then, and it seems to me he has given very strong reasons for thinking so, that these privileged insects not only know the sex of the young which will emerge from the egg they are about to lay, but at their own will they can control it. Certainly a most curious and interesting result.

Finally, I come to the most difficult, and perhaps most interesting, problem of all. How much intelligence, if any, do bees possess? Darwin once said that the brain of an ant was the most marvellous atom of matter in the world, and that of a bee can be little less so. That is true in any case, but, of course, still more true if bees have any intelligence.

Many of you, if I am not mistaken, would, as I should myself, at once answer this question in the affirmative, and feel surprised that there should be any doubt.

But there is. Descartes was not only a great philosopher, but also a great naturalist, and he came to the couclusion that all the movements and actions of animals were purely automatic—that, in fact, animals were mere machines, or automata, devoid not only of reason, but of any kind of consciousness.

Fabre, than whom I know of no more charming observer of insect life, considers that the action of a bee or wasp in building its nest and providing food for the young is as automatic as the digestion of food. Bethe, Nexkull, and other entomologists have expressed a similar opinion.

I know no biological philosopher more profound than Professor Huxley, and he used laughingly to say that he was not certain that my actions were not all instinctive and automatic, and I could only retort that, without comparing myself with him, still, if I were a mere automaton, the same must be said of him ; which appeared to me a reductio ad absurdam.

Father Wassman, S.J., to whom we owe many interesting researches on ants, especially with reference to other insects, also puts a very low estimate on their intelligence.

Romanes considered that "instinct passes into reason by imperceptible degrees."

Lloyd Morgan also is "not prepared to say that there is a difference in kind between the mind of a man and the mind of a dog." Indeed, he goes further: "I see no reason for believing that mental processes in man differ thus in kind from mental processes in animals."

Forel also takes that view. In social insects, he says, "it is impossible to demonstrate the existence of memory, associations of sensory images, perceptions, attentions, habits, single powers of inference from analogy, the utilisation of individual deliberations or adaptations."

Darwin quoted with approval the saying of Pierre Huber that bees have "a little dose of judgment or reason."

I have always myself been of opinion that, while other animals are immeasurably inferior to us in intelligence, they have some glimmering of reason.

Indeed, it seems difficult to imagine how a community consisting of several thousand individuals and with young in all stages can be housed, fed, ventilated, regulated, and protected, without at any rate "a little dose" of intelligence, if not more.

Moreover, no one can doubt that animals experience emotion—anger, fear, jealousy, and love—and these imply some intelligence.

If, then, I did not know that it was not so, I should have agreed with Henry Drummond, that the possession of a certain amount of intelligence by animals was a fact that nobody could deny. Yet, as we have seen, some good observers do deny it. Henry Drummond, in "The Ascent of Man," says that "a few favourite mammals, some birds, three or four of the more picturesque and clever of the insects—these almost exhaust the list of those whose ways are thoroughly known."

I should rather say that there is no single animal or plant which is thoroughly known to us. Evidently, at any rate, the study of bees opens up many questions of absorbing interest. You, gentlemen, are taking a useful part, not only in providing more bountifully a wholesome, nutritious, and delightful article of food, but in facilitating studies which may lead to discoveries of the most intense interest; for if Tennyson was justified, as I think he was, in his reference to the

Flower in the crannied wall,

the same may surely be said, not indeed, with more truth, but perhaps with more reasonable hope, of these wonderful little creatures which are our study and our delight.

BEEKEEPING IN EAST AFRICA.

We are indebted to Captain Birch for the following photograph and description of the hive used by the Kikuyu natives. Another of our readers in that far-off land, Mr. G. P. Jervaise, of the Uganda Protectionate, has narrated in our columns his experience of taking out a colony of bees from England, and working them in that part of East Africa. His troubles at the beginning were so serious and varied, we wrote recommending him to try whether the native method of keeping hives in trees, might not put a stop to the raids of the "small hard-backed beetle," the lizards, and the ants, which neither "a little boy on watch all day," nor the raising of the hive on a stand, with its legs in basins of water, seemed capable of coping with. Perhaps he will tell us later on whether he has adopted the suggestion and, if so, with what results.

Meanwhile, Captain Birch supplies a picture of the native hive. It is, certainly as old-fashioned as the hills, and is a survival of the log-hive used by the ancients. Curiously enough, one may sometimes see hives of similar construction in out-of-the-track villages of Switzerland and Italy. It may interest admirers of the "standard" frame used in these countries to notice that the Kikuyu, with their 8½-in. inside hive diameter, are close enough to ourselves, especially when, as Mr. Simmons points out, our 9-in. boards profanely upset the British Beekeepers' Association's calculations, by shrinking to 8⅜ins.

Captain Birch writes:—

"Dear Sir,—The enclosed photo may be of interest. It represents the beehive employed by the natives of the Kikuyu Province of the East African Protectorate This Province is situated on the eastern shores of Victoria Nyanza. The hive is constructed from a hollowed tree trunk. Outside length, 2ft. 9½ins.: outside diameter, 11ins.; inside diameter, 8½ins. The wood is particularly hard, and the hive is poker-worked on the outside, presumably to prevent the wood splitting. Both ends are closed by removable wooden discs. One of these has a small orifice for the entry and exit of bees. The interior is quite plain. The hive is suspended in a tree, the end containing the orifice being slightly pointed downward to prevent the entry of rain, etc. The honey is collected by removing the disc from the end which is raised."

In connection with the above, Mrs. Birch, of Brandise, Okehampton, Devon, sends us the following instructive extract from the "Handbook to British East Africa and Uganda," by J. B. Purvis:—

"*Kikuyu.*—We enter Kikuyu, the home of the most turbulent and insolent of natives. The country stretches from Mt Kiama on the north to the Kapite Plain on the south, and from the springs of the River Athi to the edge of the Kikuyu Escarpment, which rises to a height of 9,000 feet. There are vast forests of juniper trees enclosing clearances where the Wakikuyu build their beehive-shaped huts, and cultivate the usual African products of Indian corn, sugar-cane, yams and millet.

"*People.*—These people are a similar tribe, with customs and language akin to the Wakamba, but are of inferior physique, though they ape the dress and manner of the Masai, using insolence to make up for the lack of majesty in their bearing. They raid their weaker brethren for cattle, sheep, and goats, and with loathsome treachery fall upon passing caravans, thus coming far short of the chivalrous Massai, who give you fair and timely warning of their bloodthirsty intentions. In Kikuyu, as in Ulu, the climate is all that can be desired for Europeans, for though the temperature at noon may be up to 100 degs. Fahr., it is tempered by cool breezes, and compensated at night by a fall in the glass to 50 degs. Fahr. Experiments have been made in both districts to cultivate European produce, with satis-

factory results, vegetables attaining the highest perfection, and wheat, barley and oats, though cultivated in a somewhat primitive fashion, have amply rewarded the labour expended upon them."—"Irish Bee Journal."

THE IDEAL BROOD NEST.

By D. M. McDonald, *Banff.*

In a swarming season, such as we have now and again, bees catch the fever so pronouncedly that no system of management seems to check its growth or development. A good few years ago I maintained that our own standard frames formed as perfect a brood nest as it was possible for us to secure. If so (and I still maintain the ideal lies along that line), then we have the best aid to swarm prevention in a careful management of that area in the hive interior. Many good men and true desire a deeper frame, because the idea has been ingrained into their minds that such extra depth will prevent swarming. I don't think so. Queens have their own ideas as to what constitutes the best form for depositing the fruits of their labours. In deep straw skeps it will be rarely found that queens occupy the entire depth. Rarely do they oviposit in the top and lower sections of a deep comb. Their preference is in favour of a spherical brood nest; consequently a space above the brood in deep hives will be found occupied with sealed honey. Now, applying this, which is a rule almost without an exception, to a standard frame hive, we have here an ideal area for brood. Deeper frames are to deep to give immunity from swarming. Moreover, the space is full of sealed stores, and this as effectually blocks the labours of the queen, as if she were debarred from laying by the cells being already occupied by eggs, larvæ, or sealed nimphs. Hence the depth is no deterrent to that stock catching the swarming fever.

Adopting the "standard" size as the approximate spherical ideal of a brood nest, it will be seen that if the larger space is no check, smaller frames will be a direct incentive to generating the swarming impulse. The queen is cabined, cribbed, confined. Above and below her sphere is circumscribed by wood. She resents this interference with her labours, and concludes that a home where she would have more latitude would be preferable. The workers, finding no store room near the brood for either nectar or pollen, set their minds on a trek, and immediately make preparations for the undertaking. A little more depth of frame would allow space for the queen's natural sphere, and also for the worker's stores. This they obtain in the standard frame, but not in the shallow.

Let it be understood once for all that I am not pleading for the standard frame as the essence of perfection. No. I know that at times a queen would occupy a larger space; but I also know that a shallower, in nineteen out of twenty cases, would be too circumscribed an area, and the twentieth queen is not worth retaining. I am simply reasoning that the deep are too deep, the shallow too shallow, and I conclude the golden mean is the best of the three. Last year my only swarm was from a large hive, and I read lately of a case where all the large hives swarmed, placed alongside those with frames the equivalent in depth of our standard size. In another case known to me, as many swarms are obtained from deep as from standard frames, and as a rule they swarm before there is any apparent necessity.

A fellow teacher, fond of experiment, supplies me with the following in regard to deep frames as a deterrent. He made hives with frames 17 inches by 13 inches deep, thinking that thus he would check or eliminate the swarming impulse. Everyone of these swarmed, though the brood chamber was not taken full possession of. Stocks which he never

would expect to swarm in the smaller hives swarmed in these large ones, so he concludes that frames can be too large for security. He, like myself, reasons that a frame so shallow as to cut off the brood nest, must tend to produce swarming. If the frame is so long as to bring about storage at the ends, it brings about a like result. If it is so deep as to afford much storage room above, or much honey or even empty comb below the nest, then it is a certain promoter of swarming. I conclude also with him that swarm control can be at least very largely secured by a frame of certain dimensions. This, in my humble opinion, is so near to our present standard that it not worth while to make any change to secure the more perfect ideal.

In this short article I have not considered how either of the three sizes of frame—the large, the medium, the small—affects the amount of surplus honey; but here again my experience, as it lengthens and broadens, tends ever to the conclusion that in this country the standard stands head and shoulders as the best, and the one which enables the queen most nearly to approximate to an ideal brood nest.—"Irish Bee Journal."

THE LORE OF THE HONEY BEE.

The lore of the honey bee, which has received so great an impetus of late years by means of certain highly literary treatment, is in reality one of the oldest studies in the world. It may confidently be said that thousands of years before the Great Pyramid was built beekeeping must have been an established and traditional occupation of man. Imagination may even conceive that the first hunter was a bee-hunter, and that eolithic man may have had his own clump of hollow trees, where the wild bees congregated, and whence he stole their honey or followed their swarms through the glades of primeval forests. And long before man began to study bee life the bees themselves had set their sound republic in order, established their constitution, and framed their laws. The be bee polity, which Virgil and Pliny understood so well, had been in active existence thousands of years before Carthage or Rome was dreamed of, thousands of years, in all probability, before the first rude mud huts of men drew together in a circle. In fact, the republic of the bees is the oldest constitution in the world, unvarying in its customs from generation to generation.

It is a wonderful story which Mr. Tickner Edwardes has to tell—familiar, of course, to all careful students of natural history, but here re-told with great charm and much delicate literary art. After tracing, first of all, the progress of the study of apiology, with suitable references to the standard books of all ages, Mr. Edwardes give a complete and entrancing account of the constitution of the hive, and of the coronation of the the queen, when, from a neglected cipher, she suddenly emerges into empire, and returns home from her one brief love-adventure, bride and widow in an hour, to give the rest of her life to the service of the community. The hive is, indeed, a very reduction to absurdity of the theory of Socialism. For within its walls every busy life is so entirely sacrificed to the interests of the state that the individual has no existence apart from the fabric which he (or in this case, she) toils so laboriously to support. Whatever is useless to the state is sacrificed at once; even the queen bee herself, after years of faithful service, is crushed to death by her adherents the moment she ceases to lay eggs. The drones are nurtured in luxury, in order that every queen may have her courtiers, when the hour comes for her nuptial flight; but when once the last princess is mated, every drone is driven out of the hive to perish. Well may Mr. Edwardes say Nature is not always admirable; the repression and cruelty of the hive might furnish the facile orator with another "case against Socialism."—"Leader."

CORNISH NOTES.

A Valedictory Line.

I have recently paid a visit to Scotland, and found the climate there very much like winter here as regards atmosphere and rain. It is quite evident that bee-work, which would be quite in order here in September or October would be utterly unsuitable in Scotland. The scenery there is good, and the people most agreeable, good-looking, and healthy; but I do not admire the climate. It is greatly to the credit of the people that their enterprise and industry enable them to live in a rather barren country and with a climate none too favourable to agriculture. There are no better farmers than those of Scotland. I saw abundant evidence of their skill on every hand. The Scotch are certainly a very superior people, well educated and civil, and it is a gross libel to say that "it takes a surgical operation to make a Scotsman see a joke"—they are quite a fun-loving people I admire them very much. The Scotch city system of living in flats is not, however, so agreeable as having an independent house of one's own.

I journeyed to and from Scotland via Falmouth, Dublin, and Greenock by sea, and had a most enjoyable voyage, infinitely preferable to railway travelling—good boats, good berths, and good food. I strongly recommend the sea to all who desire ease and comfort. Sea-sickness, in my opinion, is simply a form of billiousness, and may be avoided by eating only in strict moderation both before and during the voyage, unless, indeed, it blows great guns. I have never yet suffered from sea-sickness. I have had about thirty sea-journeys, some of forty-eight hours' duration. I like the sea; the deck of a ship in dry weather is an exhilarating place.

In concluding these notes, I add a line to say that for the present I am without bees, having sold my apiary holus-bolus; therefore, if the "Brltish Bee Journal" knows me not for a time, the reason will be apparent. I take my leave for a period, and wish prosperity to all my friends in England, Ireland. and Scotland.—W. J. Farmer in "British Bee Journal."

CALOUNDRA, QUEENSLAND.

We have a letter from Caloundra, Queensland, enclosing 10/- subscription for "A.B.B.," in which the writer asks for other information, but neglected to to sign his name. Will the writer please send his name on seeing this so that we may credit the amcunt.

BEE-FLOWERS.

(Mrs.) Mary Spencer in "British Bee Journal.

It may be argued by the Do-nothings and Sit-stills (for there are Sit-stills and Do-nothings in the bee-world as in other worlds) that it is futile to plant in one's garden the seeds or roots of flowers in order to give our bees refreshment. There is, however, another view to take of the situation, and it is this: that our variable climate gives us many a day at all periods of our seasons on which it happens that the bees, even if not confined to their hives, are afraid to venture far afield by reason of coming storms or high winds.

Our bee-gardens are usualy in some sheltered spot, or our hives are placed in the cosiest conrner of the garden, which situation naturally affords a suitable spot for early blooms.

I have visited a "bee-city" where hives are closely congregated, and have seen beneath and around the hives nettles of various heights, chickweed of monopolising proportions, dandelions, nightshade, hen-and-chicken weed—oh! such a medley of useless greenery growing where there might be, and should be, plants of greater beauty and usefulness.

Nature abhors a vacuum, so she finds the wherewithal to furnish even the small vacancies around the hives, leaving us to undo what she has done if we do not approve of her handiwork. With some care, and perhaps a good deal of patience, we can uproot (mind, they must be *uprooted*) the nettles, clear off the chickweed, kill the dandelions by putting a pinch of salt into the cavity made by cutting off the crowns of the plants, and in course of time utilize the vacant ground for vegetation which will at once appeal to the eyes of those who love neatness and order. When planting immediately in the vicinity of the hives one has to remember that in the spring the space in front of each hive must have a fairly flat surface, in order that the hiving board or sheet may be placed there when needed. I find that *Limnanthes Douglassi* meets this case. It grows but a few inches high, and so soon recovers from the pressure of the hiving board that very little real harm comes to it. Indeed, a good watering through the rose of a can will start the plants off blooming again better than ever, to the joy of the bees who revel in the flowers. Crocuses are usually over before hiving begins; they can be grown on the same space as the *Limnanthes*, also snowdrops and aconites, thus making a very pretty carpet all about the hives.

A noted bee-man remarked to me that he always liked to give his bees a good breakfast before they went out to work. This is a charitable idea, and certainly commends itself on the grounds which I have stated; also, as a correspondent remarks in a letter which I received this morning asking for borage plants, "it gives one a better chance to see the bees at work."

With regard to the sunflower, which the Editor tells us "is not even mentioned in the 'Guide Book,'" I have a bit of information to give to the author of that charming and valuable work: there are sunflowers *and* sunflowers. During the past few days I have discovered that although *my* bees will not be tempted to feed on that which *Bombus terrestris* devours with avidity, they are nearly as happy on the perennial sunflower as they are on the borage. The former sunflower is annually raised from seed; the latter, being a perennial, is best procured in a clump. I think the author of the "Guide Book" may venture to assert than some sunflowers can be recommended as bee-flowers.

Since I wrote the letter appearing in the B.B.J. for October 1, I have been inquisitive enough to try to find out the reason for honey-bees not being tempted to sip nectar from the annual sunflower. My inquiry was made to the flower itself: I tasted, my decision was speedily arrived at, and I no longer wonder. The "teardrops" are not honey at all, but a most forbidding and highly-aromatic gum resembling turpentine, but not nearly so nice.

It seems reasonable to suggest that beekeepers should take interest in the flowers which are needful to the well-being of their little slaves. The flowers themselves—and their name is legion—give ample return for the trouble bestowed upon them. I have given the matter a good deal of study, and have procured when and wherever possible some new and "dainty dish" to set before the bees.

Referring once again to the nettles in that particuliar bee-city, may I add that whenever I see a bed of nettles I always think or the proverb "As you make your bed, so you must lie on it," and I hope and trust and pray to the goddess of Fate that such a bed may never be mine This feeling acts as a stimulus to one to *uproot* every nettle growing in one's own domain; but both physically and morally it takes a long while doing.

I have received so many applications for borage plants that I am bewildered, but I hope in time to answer them all. Some applicants have sent stamps for postage, some have not. I am, of course, attending first to those who have been so

thoughtful as to enclose stamps, and—what is not perhaps quite fair—in the case of surplus I am using it for those who have not been so thoughtful; in this way I am making the liberal ones the benefactors of their kind.

Getting Bees out of Extracting Supers.

Elias E. Coveyou gives this plan in the "Beekeepers' Review":

"If the day promises to be sunny and warm, I begin taking off the supers in the morning. As I use plain, flat covers, I can set the supers on top of the brood-chambers, on the covers, piling up the supers 3 or 4 high, placing a cover on the top of each pile. The supers remain there in the sun until it is time to begin extracting in the afternoon. What bees are left in the supers will be glad to fly out at the first opportunity, and I always raise the covers a few minutes before carrying in the supers. I find this plan a great saving of time, as I can begin taking off the supers earlier in the day, continue work later at night, and get along with less help."

Nothing is said about whether any bees are got out of the supers before they are piled up, but the probability is that in some way at least part of them are got rid of before the supers are piled up. The important kink in the affair aside from keeping the honey warm is that when the bees are imprisoned in the pile they become uneasy, and when the cover is removed they are glad to leave of their own accord.—"Am. Bee Journal."

Keeping down Grass in the Apiary.

Where grass is allowed to grow in an apiary, a lawn-mower keeps it down nicely where the ground is level with no obstructions, but it can not do good work close to hives or trees. Where a flock of sheep is available, it will make short work of cutting all grass short, even in the places inaccessible to the lawn-mower. But some have reported serious damage from the sheep knocking over the hives; so it ts well to keep a close watch. If sheep are let in at night, and any misplaced hives righted in the morning, the result will be good. Even horses and cattle are thus used by some for night-pasturing. Where no animals are available, a sickle and a jack-knife may serve.

Some keep down the grass at the entrance by administering common salt. Copperas or blue vitriol may also be used.

A SWARM SWARMING.

On July 25 last one of my hives swarmed, and the swarm was hived on a new stand. The swarm did well for a few weeks, and, knowing the queen to be old, I removed her on August 3, and the same evening introduced an Italian queen got from a dealer advertising them in the "B.B.J.," and all was apparently well till August 23, when it, (the swarm) swarmed. Before returning it I looked in and found one queen-cell which had recently contained a queen, and four others sealed over, which I cut away. This done, I returned the swarm. I may say there were neither eggs nor brood in the combs. The only conclusion I can come to is that the newly-introduced queen was not well received, and they commenced to raise another. But why should the bees swarm when the first queen hatched out? The present queen seems to be an Italian, so the queen that was introduced must have laid some eggs. Your opinion will be greatly appreciated. Name sent for reference.—VIEW SOUTH, WOLSINGHAM, Co. DURHAM.

[In our opinion, the young queen issued with the swarm, just as would have happened if she headed a second swarm, or cast, under normal conditions, and what followed was the natural result to be expected under the circumstances.—EDS.]—"British Bee Journal."

SPACE BELOW FRAMES.

By Samuel Simmons, Heathfield, Sussex.

It is interesting to notice that "D. M. M." is prepared to support a contention which I have put forward for the last 30 years. It is, moreover, somewhat instructive to learn that someone has recently "invented" a lower rim to be used with the "W. B. C." hive in winter. Of late years, too, Dr. Miller, of Marengo, Ill., appears to have realised the importance of adopting the same method.

Probably neither "D. M. M.," Dr. Miller, nor some others, are aware that in 1978 I was awarded a special prize by the "B.B.K. Assn.," at South Kensington, "for a hive on an entirely new and approved principle," which had a permanent shallow case below the stock chamber.

The lower chamber was occupied during the summer, but left quite empty in winter. In 1886, in my pamphlet then published, I explained how most hives should be able to accommodate another chamber under the stock; and thereafter I frequently had occasion to explain the very great benefits to be derived by using a deep empty space under the stock in the cool season.

I quote the following from my 1888 edition of "A Modern Bee Farm," which has been repeated in each later issue:—

"The regulation distance of ⅜in. is certainly allowed between the bottom rail of the frame and the floor of the hive when first made, but this is not enough, as the exposure causes the side walls to shrink fully one fourth of an inch. This makes it quite inconvenient and disagreeable in replacing frames, as well as where hives are tiered up; and, though ⅜in. clear may not work quite well between upper storeys at first, it will soon come right by shrinkage, . . . though it may be considered that the wood has been already well seasoned. Now the ⅜in. space is not sufficient for winter, and where a *lower rim* cannot be added to the hive, a circular hole should be cut in the centre of of the floor-board, about 2ins. in diameter, which will greatly assist ventilation, while providing the inmates with a ready means of disposing of their refuse, dead bees, etc. Failing either of the the foregoing, the frames can be raised by *placing* ¾in. *strips under the projesting ears. Dyesntery* and other ills are brought on by the too common neglect of this matter, dead bees drop to the floor and clog the shallow space under the frames, then getting into a mass ventilation is impeded, and when a fine day does occur the bees have enough to do to find the entrance, while the dead and rubbish remain untouched, only to be added to during the next cold spell. Insufficient ventilation and foul matter now begin to tell upon the constitution of the population, and there is little chance that the stock will ever be of much use unless it has immediate attention, as many of the bees are now unable to fly when warm days do offer them a chance; particularly is this the case where the frames run across the entrance with double walls. With single walls and the frames end on to the entrance the bees are not so liable to be blocked in."

A great fault appears to be that the manufacturers expect to make a board, barely 8¾ins. wide after planing, answer the purpose of a nine-inch board which rarely exists, as nearly all timber is sold according to original width or thickness, *i.e.*, before sawing or planing. This error of construction was overlooked when the 8½in. depth of frame was expected to work in with the reputed 9in board

My hanging chamber hive, introduced in 1888, was the outcome of my non-swarming and wintering plan, allowing the stock chamber to be set up for working in summer with a "super" under; or in winter permitting a space of 1in. to 10ins. under as desired, and securing that dryness, and total freedom from mould, such as is never to be experienced

in those hives that are over-coddled and closed down tightly during the damp, cold season.

It is quite possible that some ten years hence my friends may also see the further advantage of allowing the deep space under the stock in summer; not absolutely necessary as a non-swarming arrangement, but as an important item in that management which shall secure the greatest advantage in all directions.

But wait a moment. After utterly condemning the non-swarming chamber in an earlier No. of the "Record," I fancy our friends of the "British Bee Journal" have already, in a recent reply to a query, stated that the handiest hive for working the super under, and thence to the top, is the "W.B.C."! And yet it was for the very reason that hive chambers, sitting close upon each other, could not be conveniently interchanged in this manner, *for the same purpose*, that in 1886 I promised my readers a suitable hive for my method of so manipulating supers, hence the hanging chamber hive in 1888, providing a space below the stock chamber for either summer or winter, with the least possible inconvenience; while in the former season either the stock or super may be the lower chamber as desired.

[We understand that Mr. Simmons is pleased at any time to forward particulars as to dimensions and construction of the hive in question, so that anyone wishing to do so may give the plan a trial.—Ed.]—"Irish Bee Journal."

Publications Received.

We are indebted to our esteemed friend, Mr. J. F. Meiklejohn, for a copy of the "Glasgow Herald," containing a full report of the visit of His Majesty King Edward VII. to Dunblane on the occasion of the opening of the Queen Victoria School for the sons of soldiers and sailors; a movement which has had for its inception the desire of the late Queen Victoria, and the officers and men of the various Scottish regiments as well as the British navy, who took part in the late Boer and other wars.

We have just received 2 British journals which we read with great interest, the "British Mercury" and the "Glasgow Herald." In both papers the most interesting feature is the indifference of the upper classes towards the lower. It is the same feeling which exists in New South Wales. Money everywhere is the God and the poor man must go to wall In another great paper, always full of good writing, the "New Zealand Farmer," we have often offered to lend it to a really enterprising man, but his time is apparently too much occupied, and we, however ceased to trouble him for a long while.

We acknowledge receipt from U.S. Department of Agriculture, Bureau of Entomology, Bulletin No. 75, Part III. L. O. Howard, Entomologist and Chief of Bureau. Miscellaneous papers on Apiculture. Bee diseases in Massachusetts by Burton N. Gates, Expert in Apiculture. Issued June 30, 1908.

Women Love Extremes.

Judging by her brain and nervous organisation, woman is mentally not inferior to man, but is only dissimilar. Woman, however gifted she be by Nature, has hardly the same strength of impulse to exert her powers to the utmost. If she had, there was no reason why she should not equal man, or even excel him, as is evident from the brilliant way in which women have acquitted themselves at examinations.

This was the line of argument pursued by a Doctor in a lecture. A woman, he says, loves extremes. A man may like or dislike a person or object, a woman loves or hates it. A woman can be generous in her action, but not always in her feelings. Women, as a rule, are good conversationalists They love talking. Men will talk, too, if you give

them a subject, but women can talk for hours upon nothing. Yet her conversation, at least to man, is not uninteresting, and sometimes most charming, for, unlike man, she does not talk of herself but himself. She is quick to enter into his thoughts and feelings, and can readily identify herself with his aims.

Man loves power, woman, loves admiration. A man respects, woman adores. A man has pluck, a woman fortitude. A man has push, a woman patience. Man is greatest in conquest and achievement, woman, in self-sacrifice. Man may take the lead, but it is the woman who guides. Men may oppress women, but it is the woman that influences man. Women dearly love to establish a dominion over any creature that is larger and stronger than themselves, and a study of history will show us how often they have obtained their way where man is concerned. Some men—not always of the weakest sort - seem to take a real pride in submitting to the commands and punishments of the women they love.

Many women acquire culture at the expense of their emotional nature; they starve the heart at the expense of the intellect till they find themselves incapable of love.

Not being happy themselves, how can they make man happy? He wants repose, and they are incapable of giving it —"Calcutta Gardener's Magazine."

THE HONEY-PALM.

In the September number of "The Guide to Nature" there is an excellent account of how large trees are successfully moved in California, and in connection therewith are some excellent engravings to illustrate the text. These show two very buky "wine-palms" being moved by special apparatus. These so-called "wine-palms" are simply our old friend the Chilean "honey-palm" of other days. Its scientific appellation is *Jubeae spectabilis*. The trunks of these palms are thick-set, and some in their circumference resemble hogsheads or large barrels. When cut down, one of these trunks will produce as much as 100 gallons of "honey" or "molasses." I suppose that, if the juice is rightly handled, the product will be termed "honey;" on the other hand, if rather poorly prepared it is "molasses." The blossoms are said to be rich in nectar, which is very likely, as the bloom of all the other sugar-producing palms is valuable for bees. Taken as a whole, the honey-palm is a very valuable tree. Great numbers have been ruthlessly destroyed by the Chileans. Californians ought to prize this palm.—"Gleanings."

CAPPINGS.

Costly Honey.—In the African forests the natives find quantities of honey in hollowed trees. The honey is generally at the summit of the tree, and the men knock down the tree, and smoke the bees out of their lodging with burning grass. The honey is then quickly collected and taken to camp. Mr. A. Henry Savage Landor, in "Across Wildest Africa," gives a story which proves that the honey is not always a blessing to those who secure it. His caravan had halted in the shade of some fine trees, and the men had secured a quantity of honey. We were all gaily enjoying it, I with a plateful before me, and all my men squatting round me, biting off huge chunks from the honeycombs. Suddenly an alarm was raised. The men jumped to their feet and threw the combs away. A significant buzz was fast approaching, and behold! an army of bees had descended upon us and surrounded my camp, stinging the naked men all over. They held their hands upon their faces and stampeded in all directions, each one with a large contingent of bees after him. There was only one in camp who

had not partaken of the honey. As, however, he had a perfect horror for bees, he was the first to dash away when he first heard them. The result was that he who had not touched the honey at all had the greatest number of bees after him. At one time the whole army seemed to have concentrated round him. Piercing were his yells and high the leaps he made in the air. Curiously enough, I, who had still the plate of honey upon my knees, and remained motionless like a statue, did not receive a single sting, although myriads of bees kept buzzing round me in a most alarming manner.—Youth's Companion.

SWITZERLAND.—As to painting hives R. Goldi has not discovered that covering the outside of even the single-walled hives has been detrimental to the welfare of the bees. On the other hand he considers it a good practice but he warns against painting the inside of the hive. —"Am. Beekeeper."

BANISHING THE MOSQUITO.—Professor Boyce Dean, of Liverpool University, who, returning from Egypt, gave some remarkable statistics in connection with the crusade at mosquitoes now being conducted by the School of Tropical Medicine at Ismailia. By filling up the marsh land and irrigating channels and stagnant pools near Ismailia the European residents could now sleep in their houses without mosquito nets, and compared with an average of 2000 cases of malaria per annum, last year there were only 200. There were no deaths from this last year amongst Europeans, and only four amongst the natives, as against 30 in the previous year.—"Calcutta Gardener's Magazine."

The strongest note in "The New Idea" for November is its fiction, in which the editor is evidently striving to maintain a very high atandard. One charming story is from the pen of a daughter of "Hop," the most famous caricaturist in Australia. whilst "A Woman's Quest" is a modern fable with an old moral. Next to the fiction come the fashions, which are particularly useful. Included are free paper patterns of various garments, and a number of pages of designs showing the very latest and best things in the world of dress. Next come the housekeeper's pages, replete with advice and directions on a score of subjects, such as cookery, furnishing, making and mending, and practical advice. Finally, there are the serials and the special articles. Chief among the latter is an account of a visit to a chicken farm, written and illustrated by W. A. Somerset, who has gathered together not only a cluster of fine pictures but a lot of good, useful advice on the rearing of white Leghorns. The doings of some Royalties and other notable people are told in picture and prose, and a fine lot of little Christmas gifts are pictured—with instructions for their making. This Australasian magazine for women continues to be a wonderful sixpenn'orth, and easily leads all the imported women's journals.

ALFALFA IN VIRGINIA.

The Old Dominion is coming forward to take its place among the alfalfa States. One farmer is putting down 1500 acres to it just as fast as he can get the land in the proper condition. He first plants the clean well-manured land to crimson clover and then to cow peas. After that follows a heavy application of lime. Planted on such a bed the alfalfa comes along at a great rate. In the judgment of experts it will yield as heavily as it does in Colorado or Montana. If this is so, and it seems to be absolutely true, it means a tremendous boost for old Virginia. The Wing brothers, of Mechanicsburg, Ohio, strongly urge all would-be growers of alfalfa in the South to apply lime heavily —as much as eight tons of ground lime per acre if financial circumstances permit. I imagine that, in so warm a climate, alfalfa will yield some honey.—*Gleanings.*