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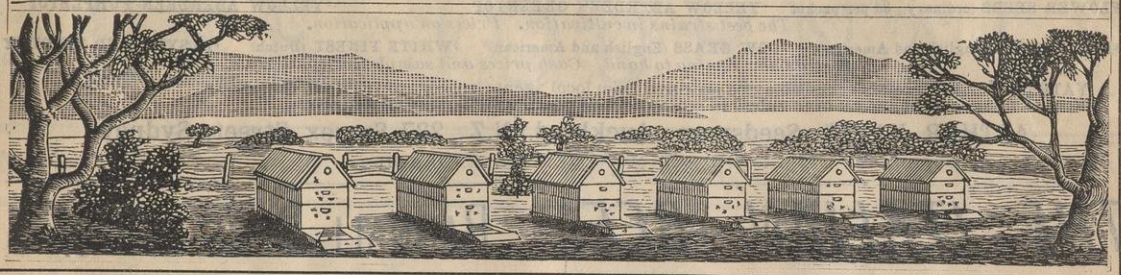

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The Australasian Bee Journal.

PUBLISHED MONTHLY.

I. HOPKINS ... ... Editor.

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Contents.

NOTICE.

We shall deem it a favour if our contributors and correspondents will send in their copy early this month, as we wish to get out the Journal before the Christmas holidays commence.

Editorial.

SEASONABLE OPERATIONS.

DECEMBER.

Since writing last month we have been favoured with much better bee weather, and the bees have pulled up considerably. The most forward colonies commenced swarming early last month, while some in the most favoured localities threw off swarms in October; the majority of swarms, however, did not come off till the middle of November. The season, though a little late, has opened very favourably, and so far gives promise of being rather above the average. Clover is showing up well, and if late frosts keep off, there should be a large yield from this source. Generally speaking a good clover year is a good year all round. Beekeepers will do well to harvest as much honey as they can this season, for we are certain there will be a good demand for all that can be raised. We believe we have reached the lowest prices that we shall see for some years again, and though they may not rise very much for some little time, there will be no difficulty in disposing of all the honey that can be raised. All the honey that has been lying in stock for the past two or three years is now disposed of, and there is a scarcity of good honey in the Auckland market at the present time. The outlook for the honey trade is much better than it has been for the past three or four years.

Where honey and not increase is the principal object swarming should now be kept down. Storage room should be given to the bees as fast as they require it, and in hot weather give plenty of ventilation by pushing the hives forward on the bottom boards till the body is flush with the front edge of the former. In very strong colonies it will be better during the hottest weather to let the body of the hive overlap the alighting board a couple of inches. Nothing will induce to swarming so much as insufficient ventilation. As soon as the brood nest from whatever cause gets above its normal temperature, the bees get uneasy and make preparations for swarming. Colonies raising comb-honey require particular attention owing to there being less freedom for the passage of air in the supers than where there are no sections and narrower frames.

Remove sections as soon as well finished and fill up with empty ones; clean the propolis off those removed, and store them in a dry, well ventilated room for a few days to get seasoned before sending them to market. Do not let the brood chamber get overcrowded with honey or it will either drive the queen into the super or cause swarming. Extract from the supers as often as necessary and also from the side combs in the brood chamber if they contain much honey. Should the queen commence to lay in the super combs put on a third story next the brood chamber and remove any combs the e may be from below free from brood or eggs and put those from the super in which the queen has laid in their place. Some complain of the queen laying in the extracting supers and use queen excluder honey board for the purpose of preventing her entering them, but we have found that by a little judicious management and the use of a third story

which is also an advantage in other ways—that little or no inconvenience arises from her doing so, hence we prefer to be without the queen excluder. Honey after it is extracted from the combs should always be allowed to stand without being disturbed for a few days before it is tinned off, more especially if it has been extracted before being sealed over by the bees. In any case there is sure to be a quantity of very fine particles of wax through the honey that will require to be skimmed off after time has been allowed for them to rise to the surface. Unripened honey is sure to ferment sooner or later if tinned up in that state, so that particular attention should be paid to this matter.

RETURNING SWARMS.

Swarms will sometimes come off when least wanted, and in spite of all we can do to prevent them. In such cases it is better to return them so that the parent hives may not be weakened in the height of the honey flow. We have found the best plan to do this is to hive the swarm in the usual way and place it alongside the parent colony for the time being, shading it from the heat of the sun. Then cut out every queen cell from the parent colony and put the hive containing the swarm on the parent hive as a super towards evening; by the next morning the bees are at work again as though nothing had occurred.

PREVENTING AFTER SWARMS.

It is very bad policy to allow after swarms to come off unless in need of increase; they weaken the parent colony so much that a good part of the season may be lost before it is strong enough again to store surplus honey. A second swarm may generally be expected about nine days after the first issued. Now, if all the queen cells but one be cut out, say, on the fifth day, there will be no second swarm; if cut out earlier the bees may build others over eggs or very young larvæ, but they will not do so when the larvæ are five days old, unless there are no queen cells at all in the hive.

The main crop of buckwheat, mustard, and other honey plant seeds may be sown this month, to provide late autumn forage to come in after the usual kinds are past flowering.

REVIVAL OF THE NEW ZEALAND BEE-KEEPERS' ASSOCIATION.

"LAMH DEARG ERIN" in another column has touched upon two very important matters affecting the welfare of the beekeeping industry, viz., the resuscitation of the New Zealand Beekeepers' Association, and dealing with foul-brood, both of which we feel the greatest interest in. The first principally concerns New Zealand beekeepers, while the latter is unfortunately, owing to the prevalence of the disease, a matter that gives the greatest concern to every progressive beekeeper in the Australasian colonies. We shall here deal with the first question, leaving the other to be discussed in another place.

It is needless to recapitulate the history of the New Zealand Beekeepers' Association and the causes which led to its premature decline, as most of our readers already know the facts. It is enough for us to know that it is practically dead, and the questions are, can it be revived? and if so is there any likelihood of it being kept going to the benefit of its members and the industry generally? To the first we reply yes, most decidedly, provided there is sufficient support forthcoming from the beekeeping fraternity to make it worth while for those who are prepared to devote a good portion of their time to its interests to take the initiative in again putting it in harness. We already have the promise of several practical beekeepers in and around Auckland, not only to give their support in the way of membership fees, but also working support to carry the Association on successfully. This, however, though very important, is not sufficient without the support of beekeepers generally. Before the Association could undertake any matter it must be in funds. The expenses would certainly not be great, but without funds it could do nothing. With a membership fee of say 5s. there should be at least from fifty to seventy-five members to start with. This would give a sum of from £12 10s. to £18 15s.; with anything less than the lowest sum we think it would be useless to make a start. We believe we would have no great difficulty in getting twenty members at any time, in fact we are pretty certain we can count on that number; if then another thirty will roll up we will at once call a meeting to elect a managing committee and secretary.

Some may think we are asking for too many members to start with, and that we might get the number after a start was made, but bearing in mind that the Association would be practically useless without funds, and that if it hung fire for a time its members would become dissatisfied, we believe it would be unwise to attempt to do anything in the matter until we are certain of being strong enough to go straight ahead without fear of breaking down again. As for a good working secretary and committee, available at any time—the want of which was the great weakness of the Association formerly—these are now to be obtained, all of whom are good practical beekeepers, so that we feel convinced that if an effort is made, and the Association again set going, we shall have no cause to complain of its inefficiency so long as the support of those who will be benefited by it is given to it.

FOUL-BROOD IN AUSTRALASIA.

IN almost every district, from one end of the Australasian colonies to the other, that scourge of the beekeeping industry, foul-brood, exists. Eight years ago it was only known to be in a very few widely-separated districts, and clean healthy colonies were then the rule, whereas they are the exception now. The disease has spread to an alarming extent during the past few years, thousands of colonies have perished, and some districts have become so infected with it that it is only with the greatest vigilance and perseverance that beekeeping even on a small scale can be carried on at all in them. Very few apiaries, indeed, can boast of being entirely free from the disease at the present time. It is now a matter of so serious a nature, in fact, that unless some thoroughgoing steps are taken very shortly to stamp out the pest the beekeeping industry in these colonies will soon become a matter of history. Hundreds of people have been compelled to give up keeping bees at

considerable loss to themselves, owing to their inability to conquer the enemy, and many who looked to honey-production as a means of livelihood, or to augment their small means, have been sadly disappointed by their bees dying off. The experiences of Mr. G. Stevenson and "Lamh dearg Erin," so graphically described by them in our last and present issues, are similar to that of hundreds of others, and there are few indeed who would not soon become disheartened and give in under similar circumstances.

We have given the subject our serious attention for many years past, and the position we have held has given us facilities for learning all particulars connected with the spreading and mischief done by the disease. Nearly every mail brings us word from some quarter of the trouble and losses caused by it, and our object now is to forcibly impress upon the minds of all our readers the seriousness of the case, so that some concerted action may be taken to adopt stringent measures to eradicate the disease, if possible, before it is too late. The greatest evils that we have to contend against while fighting the disease are careless, ignorant, and old-fashioned box-hive beekeepers. We may persevere season after season with remedies to rid our apiaries of foul-brood, but it is labour in vain while some of our neighbours leave old boxes and combs rotten with disease about, from which the germs may be carried by every healthy bee that settles upon them, and yet we are helpless in the matter. It is monstrous to think that we should be at the mercy of such people, and high time that we took steps to protect ourselves. There is no other way of getting over the difficulty that we can see than by adopting the American plan of getting an Act passed to compel the destruction by fire of all old boxes and combs and everything that has been in contact with deseased bees, and in cases where there is a probable chance of cure the proper remedies to be applied.

Our views on the matter were laid before the industrial commission appointed by the last Parliament and were published in full in the *Farmer*. Owing to the abrupt termination of the sitting the letter was shelved and we suppose that nothing will come of it. We notice that the South Australian beekeepers are moving in the same direction, and judging by what the Legislature has already done for the beekeeping industry in that colony, we expect to hear of a Foul-brood Act coming into force there very shortly. This is clearly a case for a beekeepers' association to take up, and shows the necessity of some such united body taking action. The representation of a single individual can have but little effect while the voice of a body would receive attention.

Perhaps it might be as well, if the above suggestions meet the views of our readers, to get up a petition in each of the colonies to present to their several Parliaments. The leading beekeepers in the different districts could obtain the signatures of all favourable to the movement, which could be attached together before presentation. We do hope something will be done quickly, and we shall be glad to hear the opinions of our readers.

BRIGHT AND "LEATHER-COLOURED" ITALIANS.

Our fair correspondent, "S. A. B.," has asked us for an opinion on the qualities of light and dark coloured "strains" of Italian bees. Having had considerable experience with both kinds, and paid some attention to their comparative qualities, our opinion, which we cheerfully give, may be of some little value. The first Italian bees we imported came from a celebrated apiary in Southern California, and were some of the brightest yellow bees we have seen. They had been carefully bred from imported mothers that were sent direct from the northern part of Italy. The name of the breeder has escaped our memory, though the particulars were sent us with the queens, but it certainly was not Bianconcini. These bees we found very tractable and bore out very closely all the qualities attributed to Italians by American writers. Our second importation came from the same apiary and were similar to the first; but wishing to introduce some fresh blood we obtained the third lot from another apiary in California belonging to Mr. Cary, an old and leading apiarist (he died some eighteen months ago). These were darker, what has since been called leather-coloured. We soon found that these had to be handled much more carefully than the lighter coloured bees, in fact we had to get our first bee-veil made soon after we got them. Had the three yellow bands not been distinctly visible we should have declared them hybrids, they proved so vicious on the least provocation. Our faith in the gentleness of Italians received a severe shaking at this time, though the pure progeny of our first queens, that is the light strain of bees, were a great contrast in this respect. Having comparatively few colonies at that time, and being anxious to breed from the very best queens only, we kept a strict account of the work done and the amount of honey stored by each. To our surprise we found that the leather-coloured bees were far ahead of the lighter ones, would come out stronger in the spring, and consequently were in better condition at the first commencement of the honey season. On first going to Matamata we bred principally from this strain, but many of our customers having read about very light bees thought that the queens we sent out could not be pure because they had in the first place come from America, and in the next were not so light as they expected to see. It was on this account we first sent to Mr Fullwood for one of his Bianconcini queens and then direct to Italy. Though for working qualities we prefer the leather-coloured strain we have endeavoured to get the very lightest as most suitable for our queen trade. We believe the brightest Italians are obtained from the Swiss Alpine districts, and we have done our best to get these by sending an order to Messrs Neighbour and Sons, London, but unfortunately none of them reached us alive.

To sum up, our experience teaches us that the brightest bees are the gentlest, and the darker or leather-coloured strain is the hardiest and best

honey gatherers. We quite agree with "S. A. B." that we have got quite sufficient of the Bianconcini blood in our colonial apiaries, and that we should endeavour to introduce some fresh.

GRIMSHAW'S APIFUGE.

READERS of late European and American bee journals will have noted that Mr. Grimshaw, a prominent English beekeeper, has recently discovered a liquid or liquids, to which he has given the name of Apifuge, and which, when rubbed on the flesh, will prevent the most vicious bees from stinging. It is now a little over twelve months since Mr. Grimshaw first made the discovery known to the beekeeping world, and in the interval it has been tested by a very large number of British and Continental beekeepers, all of whom pronounce it a great success. M. Bertrand, the editor of the Swiss bee journal, devotes a special article in his July number to 'L'Apifuge Grimshaw.' He there tells how he tested it in manipulating a strong colony of Cyprians in a three-story hive, which he first attempted to operate upon without the Apifuge. He says:—"The bees were not slow in stinging us atrociously on the hands and . . . elsewhere; we were absolutely covered by bees, which introduced themselves at every possible point in our clothing. As they began to get very excited, attacking the assistants and even persons a considerable distance away in the garden, we closed the hive in order to resume the demonstration on other colonies less evilly disposed. The next morning we determined to be quits with our Cyprians by other means, and had recourse to Apifuge, with which we perfumed our hands and veil. Not the least excitement was produced, and we were able to take away 166lbs. of surplus honey without interrupting their working, and without experiencing a single sting." M. Bertrand also speaks of the Apifuge in high terms as a remedy for stings. He says:—"A drop of the liquid applied to the part which has been stung immediately soothes the pain." Scores of similar testimonials as to the value of the discovery have appeared from time to time in the British and Continental bee journals, so that it appears we have at last found a convenient and effective protector for our hands when manipulating vicious bees. There are numbers of people who feel particularly interested in bees, and who would like to keep a hive or two in their gardens for amusement, but for the dread of stings when handling them. The use of Apifuge would remove all risk and allow such individuals to indulge in a very enjoyable and profitable recreation.

The Apifuge is also a good preventive against all insect bites and stings, and will be hailed as an invaluable boon by those who suffer from mosquito bites. Having imported some, we shall give it a good trial when the mosquito season sets in and report. Particulars will be found in our new price list.

VICTORIAN BEEKEEPERS' ASSOCIATION.

AT the sixteenth meeting of the above Association, Mr. Ellery, President, in the chair, among other business a very good suggestion was made, viz., that beekeepers throughout Australia and New Zealand should co-operate towards a combined Australasian exhibit in the coming Centennial Exhibition at Melbourne next year. The main feature in the idea appears to be to secure a special section in the Exhibition for apicultural exhibits, rather than have them scattered through the different courts. If the idea can be carried out with anything like success, the result will prove in the highest degree beneficial to the honey industry in Australasia. One combined display would draw more attention than twice the number of exhibits could if scattered about the Exhibition. The opportunity will be a grand one for the distribution of leaflets on the value of honey and the uses to which it can be put. We would suggest that the various beekeepers' associations combine to get out 50,000 or 100,000 of such leaflets. The probable cost of the larger number would not exceed from £15 to £20, and the good they would do toward creating a demand for honey is incalculable.

QUEENSLAND BEEKEEPERS' ASSOCIATION.

WE learn from the journal of the National Association of Queensland, that the first annual meeting of the Queensland Beekeepers' Association was held on the 20th of August last, at which the following new office-bearers were elected:—President, J. B. L. Isambert, M.L.A; Vice-Presidents, W. Jack, and R. J. Cribb; Committee, Rev. J. Carson, W. F. Lyon, J. Trundle, jun., and J. W. Cary; Treasurer, R. Jarrott; Secretary, E. C. Cusack; Editor, R. J. Cribb. The report states that six very interesting and instructive papers were read during the year and many profitable evenings were spent discussing various topics relative to advanced bee culture, and winds up by stating that the Queensland Beekeepers' Association has had a very enjoyable and successful year, and is ready to commence a new year with a balance in hand, and hopes to have even a better record for the ensuing than it presents for the past year.

SOUTH AUSTRALIAN BEEKEEPERS' ASSOCIATION.

AT the usual monthly meeting held at the Chamber of Manufactures, Adelaide, on December 7th last, Mr. A. E. Bonney in the chair, a very lengthy and exhaustive paper on foul-brood was read by Mr. C. F. Clough. In his opening remarks the author states, that the disease has made such rapid progress in South Australia and obtained so firm a hold in some districts that it seriously threatens to cripple if not to extinquish the beekeeping industry in that colony. Mr. Clough is of the same opinion as ourselves with regard to getting State assistance to meet the difficulty, and says that box hive beekeepers are the greatest offenders in the matter of spreading the disease. Mr. Clough gives in detail all the known methods of dealing with the disease with conmments upon each, showing that he has given the matter his careful consideration.

L'APICOLTORE.

WE have also received several numbers of the official apicultural journal of Italy, which any of our readers acquainted with the Italian language can have for perusal.

THE PROPOSED PAMPHLET.

WE have received from Mr. Mulvany some additional matter for the pamphlet in accordance with the suggestions made by some of our correspondents, and also a number of recipes which makes the draft very complete.

Altogether about 3,500 are bespoken, which still leaves 1,500 to be taken up out of the 5,000. We are very much surprised that so few have responded to a movement that one and all must agree will result in a vast deal of good to the honey trade if carried out. Leaving out three parties, viz., Mr. Mulvany, Bagnall Bros, and ourselves, who each take 1,000, only four bee-keepers have come forward. Mr. Brickell, of Dunedin, must surely have overlooked the matter, as he has not ordered any, for it was he that first suggested getting out such a pamphlet. We hope such an important matter is not going to fall through for the want of sufficient support. Everything is in readiness to go on with the pamphlet, and they will be furnished in small or large lots at cost price. Beekeepers, do study your interests a little; everything is prepared for you. You are asked for nothing more than the bare cost of an article that must do you a great deal of good. After you have read this don't lay the *Journal* down and forget all about it, but write straight away and order some, if only a few dozen.

BEE NOTES FROM NEW SOUTH WALES.

By S. A. B.

OUR season has advanced with such rapid strides, the bees have scarcely given us breathing time. Swarm after swarm issued daily, and in defiance of all bee rules and regulations, leaving uncapped queen cells behind in many cases. The swarming fever has been prevalent all over this district, for on every side I hear of strong swarms being seen and found in the bush. The honey flow has been almost uninterrupted since the early spring. The bees are now gathering honey from the fine-leaved ironbark and the turpentine. The latter did not secrete any honey at all last year. I carefully watched a large tree covered with blossoms which grew near our apiary, and scarcely a bee visited it; but this year they are on it in swarms. Indeed, the bush so resounds with the hum of bees that it requires an experienced ear to distinguish it from the swarming note. A general rain seems to have set in within the last two days, which will, of course, help the ground and bush flowers, so our hopes of an exceptionally good harvest still continue.

I read "Lamh dearg Erin's" article with much interest and amusement. I had heard of the "trowel theory" before, but, like Dr. C. C. Miller, thought it was a joke. For myself, I can see nothing in the shape of the bee's sting to show that it can be used as a trowel. However, I do not profess to be a scientist, so will wait until some of our great entomologists have thrown some light on the question. I must say I think the argument that the preservation of honey is due to the infusion of formic acid by the sting is rather far-fetched. Is it not more likely that the reason honey extracted before it is capped will not keep is because the bees know their businees better than to cap *unripe* honey? for we all know that honey is preserved by the application of heat; and how do the stingless bees of Australia and Mexico manage for the "art preservative"? I fancy, though I am not sure, that the honey made by the little wild bee contains far more formic acid than that of the honey-bee of our apiary. Perhaps some of your readers can give us some information on the subject. If I ever had any doubt that a thorough knowledge of the anatomy of the human system formed an essential part in the education of the young bee, that doubt was set at rest the other day while manipulating a swarm of very cross hybrids, just rendered queenless.

Can you not induce some of your correspondents to give their experience as to the relative merits of the leather-coloured and bright yellow Italians? The former are rapidly gaining ground in America over the latter. This is a question which should receive earnest attention from all beekeepers. In considering the subject lately we noticed that nearly all apiarists of note in the colonies were confining themselves to Bianconcini's strain. This seems to me a pity, if not a great mistake. Granted that the leather-coloured bee is best suited to our wants, are there not other reliable queen breeders in Italy from whom we might procure them, and so introduce fresh blood?

November, 1887.

[Pleased to hear your season is so promising. *Re* the uses to which the bee's sting is put, nothing is definitely known at present concerning this matter, beyond what we are all only too conscious of, that is, its use as a weapon of defence; all the rest is mere speculation, though it is quite likely that it is used for other purposes. As a weapon of defence it is certainly not a perfect one, for its use means death to the bee as a rule. Some naturalists on this account think that the sting is in a transitory state at present; that at one time it was an ovipositor similar to that of the saw-fly, and that it has gradually evolved into a defensive weapon, but far from perfect at present. With regard to there being formic acid in honey, we think there cannot be a doubt, and as the acid is a powerful antiseptic, we must suppose that it is used as a preservative. In another column we have given our views on bright and dark coloured Italians, and should like to hear the opinions of others on this question.—ED.]

OTAGO BEEKEEPERS' ASSOCIATION.

WE notice that this infant association has already commenced a public career by giving an exhibition of transferring, in the Botanical Gardens, Dunedin, at which about 120 persons assembled to witness the operation. Mr. T. G. Brickell, assisted by Messrs. Morris and Brown, members of the association, were the operators. The transference was made from a box to a movable-comb hive and the exhibition was very successful and much enjoyed by the spectators, the majority of whom, no doubt, were wonder-struck to see bees handled in such a manner without attacking the manipulators.

SUGARS, SYRUPS, AND GLUCOSE.

By T. J. MULVANY.

IN the endeavour to introduce the general use of pure honey for household consumption, we have to compete not so much with the long-established and now almost indispensable article of sugar in its raw and refined states, as with a number of artificially prepared syrups, some of very recent invention, and mostly of very inferior quality. As to sugar, although we claim that honey may with advantage be substituted for it on many occasions, I do not suppose that the most enthusiastic advocate of the "natural sweet" ever proposed that it should entirely supersede that very useful article. With the syrups the case is different. Wherever they are used there can be little doubt that it would be a boon to mankind to replace them by honey; and although some of them can now, thanks to the progress of chemical science, be produced in such quantities and so cheaply that it can scarcely be expected they will be driven out of use altogether, still it may be assumed that, when people come to understand the real difference in quality between them and honey, they will not hesitate to give the preference to the latter, even at a considerably higher price. It is at all events very desirable that we should know something about the present state of the sugar and syrup industries, the quantities manufactured, the sources from which obtained, the chemical qualities of the products, and the rates at which they can be put on the market. An article which appeared in *Harper's Monthly Magazine* for June, 1886, written by Mr. R. R. Bowker, gives a good deal of information upon those points, a few extracts from which may not be unacceptable to the readers of the *Australasian Bee Journal*.

Sugar, it appears, was first known to the Chinese, and they date their use of it back to a fabulous antiquity. Its name, varying but slightly in all modern languages, and coming to us from the Latin *saccharum* and the Greek *sakcharon*, is traceable back through the Arabic and Persian all the way to the Sanskrit *çarkara*, which we are told indicates a *gravelly* or crystalline matter. The sugar of the Chinese in ancient times was however obtained, not from the sugar-cane, but from the sorghum plant, although the production of sugar from that plant in America dates only from the middle of the present century. Mr. Bowker informs us that Arabic confections were among the costly luxuries of Greece and Rome—that the Crusaders brought the sugar-cane to Europe, but that it was probably earlier introduced into Spain and Sicily, coming from Arabia by way of Nubia, Egypt, and Northern Africa, by the Moors and Saracens. The Venetian merchants were probably the earliest refiners, and loaf-sugar was first made in Venice in the sixteenth century.

Beetroot has now become nearly as important a source of supply as the sugar-cane for ordinary crystallised sugar. It is also obtained to some extent from the maple tree, the date palm, and from sorghum, but in what a minor degree these latter contribute to the total supply will be seen from the figures given by Mr. Bowker as follows:—

"The world's supply of sugar is probably well towards *eight million tons per year*. Of this British India and China produce, and themselves consume, over a million tons each of sugar-cane, their exports being small, and those of very low grades of sugar. The estimated product of all countries available for export, was in 1884–85, a year of large production, 2,162,000 tons of cane, and no less than 2,557,800 of beet sugar. . . . Cuba produces more than a quarter of the whole export supply of cane sugar, 627,000 tons in 1885; her largest crop was 699,000 tons in 1875, and the same was expected for 1886. Of the beet sugar supply, Germany produced last year (1885), 1,155,000 tons; Austria, 557,000 tons; Russia, 380,000; France, 325,000; Belgium, 90,000; and Holland, 50,000 tons. Our chief contribution to this crop is from a factory at Alvaredo in California, producing about 1,000 tons, but it is believed that this will become an important Pacific coast industry. Beet sugar is largely imported into this country (America) for refining purposes, and we get also some date-palm sugar called commercially 'date jaggery.' Our yield of maple sugar, in which Vermont still leads, was about 25,900 tons last year. Sorghum, although large quantities of syrup are made from the large acreage at the west, has not yet come into the market as an important commercial source of crystallisable sugar, the largest crop having been but 5,000 tons. Our scientific agriculturists, who give good reasons for looking to this as one of the great American crops of the future, have yet to justify their faith by their works."

It appears that sorghum seed was first imported into the United States in 1853. The crop, even in 1879–80, when forty states and territories contributed, was chiefly syrup—only 12,792 pounds of sugar against *20,444,402 gallons* of molasses (syrup). The Western farmers report a yield of 150 gallons of syrup per acre, costing twenty-four dollars per acre to raise (say 8d. per American gallon, of about 10lbs.)! Mr. Bowker remarks upon this, "At fifty cents a gallon this would give a profit of about thirty dollars per acre, but the trouble is that this syrup must come into competition with other syrups selling at scarcely above half that price." Now twenty-five cents per American gallon is something like 1¼d. per lb; and these are the "cheap syrups" offered in competition with, or used to adulterate honey!

With respect to the latest blessing in the shape of the "cheap and nasty," the writer gives us the following information:—

"The manufacture of commercial glucose, or artificial starch sugar, has of late years reached enormous proportions in this country, amounting in value to a third of our sugar-cane crop. Thousands of bushels of corn are converted at these factories (chiefly at Buffalo, New York), in which the essential process is the boiling of the fresh starch of the grain, in vats holding about a ton and a half each, in water with one or two per cent. of sulphuric acid. The starch granules burst, take

up the extra atom of water, and so make 238 pounds of sugar out of 220 pounds of starch. The purification of the sugar from the acid and its crystallisation are processes similar to those already described (for cane and sorghum sugar). This kind of sugar can be marketed at from two to three cents, and is much used by confectioners and brewers, *as food for bees in making artificial honey*, but most of all for the production of table syrups. It is simply a substitute for cane-sugar, less sweet, but very much cheaper. It is probably not unhealthy since the common notion that because acid is used in its formation it must be poisonous has no foundation, and the old objection that it is commonly sold for what it is not no longer holds tone, glucose being now a recognised article of commerce."

The passage which I have put in italics smacks very strongly of the famous "Wiley" scandal, and owes its origin no doubt to the same source, as the writer, in a note at the end of his paper, acknowledges his indebtedness for some of the materials, to "Professor H. W. Wiley, of the Agricultural Department." The defence of the quality of glucose is not a very convincing one. To say that it is *probably not unhealthy* is certainly a mild way of putting it. It may not follow that *it must be poisonous* on account of the quantity of sulphuric acid used in its formation, but the process is not a very appetising one, especially when we know that the glucose can be extracted in this way not only from corn and potatoes but even from old linen or cotton rags or any refuse containing starch of vegetable origin. Those who prefer such stuff to pure honey, even though the latter should cost many times as much, are scarcely to be congratulated on their taste.

As to the *quality* of molasses and syrups Mr. Bowker adds: "Molasses and syrups are by-products, both of the farm and the refinery, in every kind of sugar-making. The molasses of the beet is too unpalatable, however, for food, and can be used only for distillation. Molasses is really a mixture of crystallised and uncrystallised sugar, with some impurities, coloured by caramel or burnt sugar. The name comes by way of *melasse* (the same as *melada*) from the word *mel*, honey, and means honey-like. The sugar-maker's object is to get as much sugar and as little molasses as possible from a given quantity of juice, and with the improvement of processes the world over, less molasses is produced. . . Syrup, as has been seen, is the leavings of refined sugar, that is to say, a superior grade of molasses, *but most of that nowadays sold is a mixture with glucose.*"

Of the quantity of glucose thus forced into consumption (and although it may be "a recognised article of commerce," in its wholesale state it does not at all follow that it may not be extensively retailed "for what it is not"), the following figures will give some idea :—

"The census of 1880 reported seven glucose factories, with 2,255,000 dollars capital, employing 1,193 hands, to whom was paid 605,802 dollars, or 508 dollars each, and from materials valued at 3,044,450 dollars producing a product valued at 4,551,212 dollars, or about a third of our cane-sugar crop." What may the production be now in 1887?

What is the whole quantity of honey produced in the world when compared with the masses of sugars, syrups, and glucose above mentioned? What is the whole quantity now produced in New Zealand compared with the mass of those foreign articles imported and consumed here? Probably not *one per cent.!* and yet, with pure extracted honey selling, as it is, at nearly the same price as ordinary sugar, there can be no reasonable doubt, that at least 20 per cent. of the present quantity of sugar and nearly the whole of the syrups consumed in the country, might, with great advantage to the consumers, be replaced by honey if only the value of the latter were generally known and appreciated.

CONTROLLING A HONEY FIELD.

By R. J. KENDALL.

DOUBTLESS many a beekeeper, or one going into beekeeping, has felt at times a little dismayed in seeing others in his locality "copy him" by going into beekeeping or seeing others already occupying ground he desires. In other words, the fear of overstocking the field has come up before his mental vision. Now I am aware that this question of overstocking is a moot one—one side contending it is almost impossible to overstock; the others, that not only is it possible but that many fields are overstocked. I hold with the latter idea, but at the same time I'm not going to argue the overstocking question but for the purposes of my paper assume that fields can be overstocked. The danger of their ever been so is beside the question. If this danger be remote all the better—if it be impossible better still. In the *Australasian Bee Manual* (which by the way every beekeeper should most assuredly get), Mr. Hopkins touches on overstocking, giving the argument of those who do not believe in it as follows:—"That each day's secretion of honey in the flowers will, if not gathered the same day, dry up and be wasted before evening. This being so, it would take an enormous number of bees to visit all the honey-producing flowers every day, and until this is done there can be no fear of the district being overstocked." The people who argue that way make no allowance for wear and tear on the bee. The professional beekeeper must think of this precisely as a farmer does his horses; and if a bee has to lose time hunting for full flowers, having to visit greater numbers before he can get a load, he will fool away the time of several trips per day, and also the labour. The question of evaporation has also to be considered, and the more the day wears on the less honey got from each flower, and less going into the hive. But, as I said, I will not argue this; for if those who hold the opposite view to me are correct, the knowledge of how to control a field is not useless. Now, by a field I mean a circle about three miles in diameter. I don't think this is at all too big for an apiary of 200 colonies—a number every apiary is liable to have, and should be provided with pasture for. Again let me say I

am writing for the professional beekeeper, who makes honey-raising his business, and to whom it is all-important that his business shall pay—a consummation that may not be arrived at if there are too many beekeepers in his district. Now, by his district I mean his by priority of settlement; or, if not this, then by he being the only professional beekeeper in it. I don't think an amateur or one who keeps a few bees has a right to claim a district at all. Now, the only way to control a district is to disgust your competitors with the business by rendering it unprofitable to him, and the only way this can be done is by lowering the average of his hives, and you can only do this by outnumbering him in bees—as many times as you can. If you have twice as many bees you should have twice as much honey; three times as many, three times as much, and so on; and just as you outnumber him in bees, accordingly should you exceed him in honey, and at the same time *lower his average*, till he gets disgusted, says there is nothing in beekeeping, and quits. Of course much depends on the yield of the field and the number of bees in it. A beekeeper located in a field should aim for an average of 80 lbs. per hive, and unless he gets that, if he is making a business of it, there is some trouble either as to field or gleaners. If my average was to drop below 50, and there were other bees in the locality, I should visit the district thoroughly, find out who were keeping bees and how many they had, the distance, etc., and then, if I found there were combined as many bees in that district as I had, I should either buy them out, move out myself, or double my hives, then treble them, and so on till I got control of the field, when I would drop back—by doubling up—to my usual quantity. But let me be clearly and distinctly understood. These tactics should only be employed when the beekeeper has right clearly on his side, and in self-defence. The man who would deliberately move into a field already fairly occupied and try to oust those in it is about as near being a knave as he can well come. For the welfare of your pocket and the comfort of your conscience never locate in a field already occupied; and it is occupied when it has in it a beekeeper who has already stocked, or intends as soon as possible to stock it to its capacity, and I don't know but I would also say when it is stocked to its capacity by several beekeepers who keep bees to make money from them. If not a question of equity, a question of policy would lead the shrewd beekeeper to go somewhere else if he can. But if on the other hand you are there first, and your neighbours, seeing you making a livelihood by diligently attending to your bees, think they would like to have a finger in your pie, then they are to all intents and purposes stealing your cherries and gleaning your field, and you are warranted in acting on the defensive and keeping their bees from getting as much honey as you can; and you can do this by outnumbering them, not simply in hives but in number of bees—good strong colonies, for weak colonies are a loss. Of course more colonies means more work; but this is one of the things to be done when you are struggling for a livelihood. But let us figure on this thing. Suppose you are in a field with 100 colonies and Smith comes in and plants down 30, you would, if Smith was reasonable, try to show him the folly of what he was doing. He might or might not see it, or he might accuse you of being selfish, and in any case if he did not move out you would have to convince him of his mistake—you know that the more colonies kept in a field the less the yield per colony. Now, say the yield per colony is 50 lbs., you have with your 100 colonies 5,000 lbs. of honey, while Smith with his 30 has 1,500 lbs. But suppose you put in 300 hives, making 330 in all, this reduces the average below 20 lbs. per hive, but at 20 lbs. gives you 6,000 lbs., while Smith gets but 600—or but two-fifths of his former crop, while you have 1,000 lbs. more: and three-fifths taken from the net profits of any business will kill it. You may reply, Smith might increase too. If he did you would have to tire him at the game; but I doubt it, for if he had the sense to see the drift he would have the sense to see his disadvantage, and that it would better pay him to sell out to you, in which case it would be worth your while to meet him and buy at a fair valuation. But the end would be you would be master of the field. You would have had to put a little more capital in and work a little harder. It may be replied that while this looks well enough on paper it would not "pan out" so in practice, to which I reply that it has "panned out" in practice more than once. As to the morality of the matter, that is for every man to be sure he has the equity on his side, and resorts to the above tactics for self-defence only. Of course there are good and bad seasons to be taken into consideration, but the seasons being even, the hive average will decide whether the field is or is not overstocked, and settle that question also, as well as the one of how to control a honey-field when you have located and moved on to it.

NEW ZEALAND BEEKEEPERS' ASSOCIATION.—FOUL BROOD.

Now that the *Bee Journal* is fairly launched it only remains with the beekeepers of New Zealand to give it that hearty support which its spirited editor is justly entitled to. We have had some really good articles on co-operation by competent authorities; let us see whether we cannot take steps to attain that end. It is no use saying what we ought to do; let us be up and doing. I think all intelligent beekeepers should take the editor's hint and resuscitate the New Zealand Beekeepers Association, and that every subscriber to this journal should become a member (note, Mr. Editor, you can put mine down to start with). Let us be more alive to our own interests, don't let this season go by for want of energy, let us show that we have still the old bull-dog pluck, and never acknowledge we are beaten until we are fairly dead, or, I should say, until every bee is in New Zealand. To those intelligent apiarists who, by indefatigable trouble and vigilance, have managed to get their stocks through the last winter in a strong condition, the present season bids fair to be a remunerative one, but to those careless and lazy

ones who have lost their bees through neglect it will serve as a lesson to be more careful in future. To those who have lost their bees and wondered what on earth was wrong with their hives, I say get an *Australasian Bee Manual* and take in the *Bee Journal* regularly ; don't merely glance through its columns, but read, mark, learn, and inwardly digest every article that has been written. Have the *Manual* by you for reference, read and re-read every chapter, then put in practice what you have learnt in theory, and above all, be enthusiastic over your work and you are bound to succeed.

I have heard many a disappointed beekeeper bewailing his hard lot in losing his bees, and his wail generally ends up with "But you know I had not time to attend to them." There, Mr. Editor, is the "GUILT"—on the wrong side of the gingerbread. If a man thinks by putting a swarm in a hive and leaving it to do the best it can for three months, and at the end of that time expects to find it full of honey, without ever examining it, he deserves to lose his bees. To an enthusiast time can always be found, and bees will repay you for all the time and trouble you expend on them. Losses you will have always to a certain extent, for you cannot control the laws of nature ; but by vigilance and care you can control, to a certain extent, the ravages of disease. It is articles like that one of Mr. George Stevenson, in the November number of this journal, that I like to see, practical experiments that have been made by careful investigators, the results of which appearing regularly in your columns do so much for beekeeping in all its branches. I can fully sympathise with Mr. Stevenson in his trouble with foul-brood. It is *the* vital question of the day, and the "best means to be taken for the eradication of foul-brood" should be the first discussion at any beekeepers' association in New Zealand.

Three years ago my bees got it, and often I have been at my wits' end to know what was best to be done. I first tried the salicylic acid and soda borax, and for a time all went fairly well. Next remedy I tried was the phenol, and I must say that did a lot of good, but it takes a lot of time to get through any number of hives. Lastly I have tried this bi-chloride of mercury. Often and often I have felt so disgusted that I have been tempted to let the whole lot slide, but not caring to be licked, stuck to my bees, and dosed and cussed, and dosed again, till friends told me I was a fit subject for the Whau. Now I am glad to say that the foul brood is in a fair way of being kept under, I won't say cured, for it is very prevalent in this district. I am doing my best to persuade my neighbours to keep bees in an intelligent way, or else leave them alone. One consolation is nearly all the "kerosene, gin, and candle boxum" paternity have lost their bees, and I only wish the foul-brood had absorbed the old boxes, combs and all.

I have been trying the bi-chloride of mercury recommended by H. Naveau, only that instead of one grain to the quart, I have put two grains and added one drachm of phenol, and thoroughly sprayed the combs after extracting. I find on returning the combs to the hive that I have not killed any bees, and so far the experimental hive is slowly recovering. I am an advocate for heroic measures. I think that when foul-brood once gets hold of a hive (say six combs out of the ten), the best way is to at once take them out, sacrifice whatever brood is in them, extract what honey there may be, then boil down wax, scald the frames, etc. Remove the balance of the bees to a new hive, take out the remaining combs and disinfect with the atomiser.

Now with regard to wax, I would like an opinion on the following query :—

Wax melts at say 145 deg. to 150 deg. (I am speaking of foul-broody and thoroughly diseased comb). Will that heat destroy the germs ? Some germs are not destructible at that temperature. Does it not follow that unless wax is melted down in *boiling* water there is great risk of spreading foul-brood in the foundation wax of commerce ? The new Solar Wax Extractor is no doubt a useful article, and the wax extracted by its means may be undoubtedly pure as far as it goes, but it stands to reason that if the germs of foul-brood can be reproduced by the queen to the extent of a million in one egg, how much more so can they be in a square foot of wax ? And I maintain in a case of the above that wax before being made up should be treated by some strong germicide. I now spray all my *fdn* comb before putting it in the hive ; it may be unnecessary, but prevention is better than cure. This is a question that is open to a deal of argument, and I hope the fraternity will take it up and thresh it out thoroughly—and don't spare your criticism ; my back is broad, and as the bees are doing well I feel in charity with all men, so rub it in next number.

LAMH DEARG ERIN.

[The above article has such a cheery tone about it that one feels ever so much better after reading it. There are two or three very important matters touched upon by our esteemed contributor, two of which, viz., the resuscitation of the New Zealand Beekeepers' Association and foul-brood, we have dealt with in another place, and we also reprint an editorial from the *British Bee Journal* of September 8th on the destruction of germ life, which shows how difficult it is to destroy some germs. The suggestion to treat all wax with a powerful germicide before making it up into foundation is no doubt a good one, and the next foundation we make we shall try mixing a little phenol with the wax while in a melted state.—ED.]

STRONG STOCKS AND YOUNG QUEENS.

"Queenless colonies, unless supplied with a queen, will inevitably dwindle away."—*Langstroth.*

"The beekeeper will ordinarily derive all his profits from stocks strong and healthy in the spring." *Langstroth.*

THE above axioms cannot be too earnestly impressed upon the amateur beekeeper. The strong colony with a vigorous young queen is worth at any time three weak ones, and unless stocks are strong when the honey glut is on no surplus honey will be available for the expectant apiarian. Weak colonies will have all their time occupied in looking

after themselves, and recouping the wasted energies of the hive to be enabled to gather a harvest for their owners. It is, therefore, the best plan either to unite weak stocks, or to adopt the plan known as doubling, *i.e.*, giving one colony the brood from another, which on hatching will increase the working population, and so enable them to take advantage of any honey glut that may come on.

The stock deprived of its brood should be either given empty combs or full frames of foundation, and be stimulated by gentle feeding, and if the queen be an old one she may be superseded by one that is young and vigorous. Young queens should always be kept on hand and a few nucleus hives should therefore find a place in every apiary. He should pay as much attention to the breeding of queens as we do to the breeding of cattle and every method adopted to prevent in-and-in breeding. Eggs for queen raising should be selected from stocks which have proved most prolific during the preceding season and which are docile under manipulation. Colour and markings should also be taken into consideration. An occasional exchange of queens with beekeepers at a distance will also prove beneficial by the introduction of new blood into the apiary. A queen is at her best in her second season, and unless very prolific should not be kept after that time. Beekeepers who wish to succeed will find that they cannot pay too much attention to this part of the business. Hives that have been kept over three years without swarming will surely dwindle away unless the old queen has been superseded, and I strongly advise apiarians generally, and amateurs especially, to study the chapter on queen raising in the *Australasian Bee Manual*.

O. POOLE.

Occasional Notes.

No. I.—SHAKESPERE ON BEES AND HONEY.

BY T. J. MULVANY.

EVEN the most practical and prosaic of the beekeeping confraternity may be supposed to relax their minds occasionally (say, when the hurry of the honey season is over, and their stock made snug for the winter) from the strictly utilitarian consideration of patent reversible frames or hives, or the burning question, "Can beekeeping be made to pay in these hard times?" and to amuse themselves in some leisure half hour with lighter matter, more or less intimately connected with their favourite pursuit. They may, for instance, indulge a curiosity to know what the great thinkers of former ages, poets or prose writers, have thought and said about bees and honey; what historians have recorded about the known or supposed habits of the insects, and the uses to which honey was put by the people in ancient times, or in the Middle Ages; or what discoveries have been made in this direction by the explorers of our own day, who have, in the interests of geographical and natural science, penetrated into regions formerly unknown, and amongst uncivilized races of men. To gratify such a feeling on my own part, I have been in the habit of noting down any passages bearing upon such matters which I happen to meet with when reading, and I propose to offer extracts from such "Occasional Notes" from time to time, to fill a corner in the *Australasian Bee Journal* when it can be spared, in the hope that they may have some interest for some of the readers of that journal. That the latter may not, however, complain of being led into the perusal under false pretences, I give fair warning that nothing under this heading is calculated directly to solve any of the knotty practical points alluded to above. For the present my object is to notice what the greatest of our poets and dramatists has left scattered through his works bearing in any way upon these matters of interest to the apiarist.

There are few things, indeed, about which we may not gain some knowledge or edification in the perusal of Shakespere's works. Although his genius was unfettered by time or place, and must shine equally in all ages, yet he was such an acute observer, and accurate describer of all his surroundings, that his writings are in the highest degree a true reflex of his own times as regards the prevalent habits of thought and the then state of human knowledge; and as he lived before the period of even the first attempt at modern scientific beekeeping, it is interesting, by reading between the lines of his chance expressions and similes, to see what people knew and thought about bees and honey in England three hundred years ago.

Shakespere himself, like the "son of Sirah," who wrote some 2000 years before him, evidently looked upon honey as "the chiefest of sweets." This may be seen, not only from the frequent occurrence in his writings of such phrases as "my honey love," "honey-sweet husband," "my honey king," and wherever something *superlatively* sweet is intended, but also from remarkable expressions and similes made use of in some of his dialogues, as, for instance, in KING HENRY IV., PART I:—

"*Falstaff*—And is not my hostess of the tavern a most sweet wench?

Prince Henry—As the honey of Hybla, my old lad of the castle."

ACT I., SCENE II.

In the comedy of "AS YOU LIKE IT" the simile used by *Touchstone* is expressive:—

"*Audrey*—Would you not have me honest?

Touchstone—No, truly, unless thou wert ill-favoured, for honesty, coupled with beauty, is to have honey as sauce to sugar."

ACT III., SCENE III.

And in KING HENRY V.:—

"*Grey*—Those that were your father's enemies have steeped their gall in honey; and do serve you with hearts create of duty and of zeal."

ACT II., SCENE II.

The following quotations all apply to "sweetness" or persuasiveness of language:—

"*Paulina*—If I prove honey-mouthed, let my tongue blister."

WINTER'S TALE—ACT II., SCENE II.

"*Norfolk*—The King hath found
Matter against him, that for ever mars
The honey of his language."

KING HENRY VIII.—ACT III., SCENE II.

"*Anne*—Within so small a time my woman's heart
Grossly grew captive to his honey words."

KING RICHARD III.—ACT IV., SCENE II.

"*Cassius*—But for your words, they rob the Hybal bees,
And leave them honeyless—
Antony—Not stingless too.
Brutus—O, yes, and soundless, too;
For you have stolen their buzzing, Antony,
And, very wisely, threat before you sting."

JULIUS CÆSAR—ACT V., SCENE I.

In this latter play also, *Brutus* is made to say:

"Enjoy the honey-heavy dew of slumber."

ACT II., SCENE I.

Here, too, may be mentioned the words applied to Shakespere himself and his writings by his great contemporary Spencer,

"But that same gentle spirit, from whose pen
Large streams of honey and sweet nectar flow."

And another writer, in 1598, says of him also,

"As the soul of Euphorbius was thought to live in Pythagoras, so the sweet witty soul of Ovid lives in mellifluous and honey-tongued Shakespere."

At the same time, however, that Shakespere extols so highly the sweetness of honey, he, like Solomon, also makes use of it to impress the truth that one may indulge too much even in a very good thing. In ROMEO AND JULIET, the *Friar Laurence* says:—

"The sweetest honey
Is loathsome in its own deliciousness,
And in the taste confounds the appetite:
Therefore, love moderately."

ACT II., SCENE VI.

And in TROILUS AND CRESSIDA he makes *Priam* address his son, who is still infatuated about the fair *Helen*, as follows:—

"Paris, you speak
Like one besotted on your sweet delight;
You have the honey still, but these the gall."

ACT II., SCENE II.

(To be continued.)

Correspondence.

FOUL BROOD.

TO THE EDITOR OF THE AUSTRALASIAN BEE JOURNAL.

SIR,—Having read with interest the November number of the *Journal*, in which I notice several articles and letters on the subject of "Foul Brood," thinking it may be of interest to some of your readers, I append the following particulars of my experience with Mr. Cheshire's phenol cure for the disease. Although I have kept bees (from 12 to 40 hives) for the last ten years (the last seven years of the time in movable-frame hives) I had never seen a case of foul-brood until last March, when I found one of my hives was affected with what, from its appearance, I concluded was a mild form of the disease. I at once removed all the combs and uncapped all the cells (both honey and brood) and filled them with phenolated syrup, then replaced them in the hive again. This application checked the disease somewhat for a time, but on examining the hive about the middle of July, I was disgusted to find the hive in as bad a state as before (about half the brood rotten). On making this discovery I filled four frames, which was all the bees could cover, with strong phenolated syrup, about 1 to 400, and placed them in a clean hive, shook the bees on to the frames, placed in a division board, and at once commenced feeding medicated syrup at the rate of half-a-pint a day. This I continued for nine weeks, adding a clean frame of comb as fast as the bees could cover it, and at the end of the time the hive was full of bees and not a cell of diseased brood was to be seen. There was only about a quart of bees in the hive in July last when I transferred them to the clean hive. A peculiar fact in connection with this hive was that I found it contained two laying queens, an old one and a young one; this was in July, when I transferred them, and as there had been no drones about for three or four months the young queen must have been at least four months old.

I may here mention what was told me by two experienced apiarists—Messrs. Shadwell and Robinson (they have since returned to England). Some three years ago they were called to examine two hives in Auckland, which they found were rotten with foul-brood in its worst type. They at once applied the phenol cure on Mr. Cheshire's own plan, and by the end of twenty-five days they had the satisfaction of seeing the disease quite stamped out and hundreds of young, healthy bees were hatching out; this was in the season 1884-5, I think.

Perhaps some of our beekeeping friends who are so unfortunate as to have foul-brood among their bees will try Mr. McLain's method as described in your last issue and report their success through the columns of the *Journal*.—I am, etc.,

G. A. G.

[We can scarcely think it possible that a bad case of foul-brood could be cured in twenty-five days; allowing twenty-one days for the young bees to come to maturity the cells in which the eggs were laid must have been clean by the fourth day from the first application of the remedy. We believe there must be some mistake. We should like to have a report from anyone trying the McLain remedy.—ED.]

Extracts from Foreign Journals, etc.

FOUL BROOD.

IN our correspondence columns we publish two letters of considerable interest on this *vexata quæstio*. Mr Ward's experiment, through a course of years, would seem to prove that the disease depends entirely upon the queen, and is in accordance with Mr Simmins' views.

On the other hand, the "Man of Kent," in agreement with the compiler of *Useful Hints*, when experimenting on diseased stocks, finds that healthy queens introduced to such stocks soon become diseased themselves. It is the old, old story, *Quot homines tot sententiæ*. Whether our views on any particular subject are formed from practical experiments, or whether the latter are undertaken in order to prove the former correct, quite unconsciously to ourselves, no doubt, there is a decided bias one way or the other. "Man of Kent" has solved the problem to his own satisfaction, almost with an *à fortiori*, to the effect that there is no truth in the "germ theory." Now what is the germ theory of disease? If asked briefly to define it, we should say that it is "the theory which supposes the cause of epidemic and contagious maladies to be due to the agency of specific small germs, different germs giving rise to different diseases."

We certainly hesitate to pronounce the lifelong researches of such men as Professors Cohn, Kock, Pasteur, Tyndall, and many others, as utterly worthless, and the theory deduced therefrom as unworthy of credit. Assuredly the microscope is a great power amongst us in this nineteenth century; and when we consider that the blood of patients suffering from scarlet fever and containing bacteria being injected into the veins of rabbits, a feverish disease, which proves fatal, is immediately set up, we more than hesitate to proclaim our disbelief in the germ theory. This is one only of numerous instances, still more convincing, which might be adduced in proof of this germ theory. The experiments of Drs. Ferrier and Sanderson show that bacteria do not nominally exist in the fluids and tissues of the body, but that their presence in the animal fluids may be traced to external surface contamination. How can it well be

doubted, then, that if a healthy queen be introduced into a diseased hive, she must, almost of necessity, contract the disease arising from bacilli? Dr. Beale tells us that extreme dryness will not destroy bacteria, and that they will withstand a temperature far below freezing point, and, indeed, that they are not destroyed by a degree of heat which is fatal to *every other living organism*. Professor Tyndall has shown that, in one experiment, heating for a quarter of an hour at 230° Fahr. was insufficient to destroy them, while in another five minutes exposure of an atmosphere containing them to the incandescence of the voltaic current failed to kill them.

Now of bacteria the bacillus is the *most* tenacious of life. If, therefore, as microscopists seem to agree, bacillus is the cause of foul brood, we can no longer wonder at the difficulty of eradicating it. And since the germs, or spores, exist in the densely-packed pollen, in the cells, in the exuviæ, in wax, in propolis, and in what not, how shall a diseased hive be disinfected? Dzierzon recommends two years' exposure to the atmosphere!

Now, so far as our knowledge at present extends, *i.e.*, according to our present light, stamping out by reducing to ashes every contaminated hive, comb, or other article, and destruction of the diseased bees, would seem to be the only safe plan of dealing with this dire pest, which is already decimating our apiaries, and bids fair, if strenuous means are not adopted, to stamp out English apiculture itself at no very distant date. Has Mr Cheshire no word of comfort for us? Why is he silent so long? In our opinion the fell disease will never be conquered by change of queens, phenol, salicylic acid, nor by any other known remedy. Our advice would therefore be "Stamp it out, as the *Rinderpest* of apiculture."*

We recommend the perusal of an article on this subject entitled, "The Creatures we Breathe," by Dr. Percy Frankland, published in the August number of the *Nineteenth Century*.—*British Bee Journal.*

* Should, however, our advice as above given be not carried out to the letter, and the hive be spared from the general destruction, let it be disinfected with a solution of carbolic acid, mixed in the proportion of three ounces of acid (Calvert's No. 5) to a quart of water. First mix the acid with an equal quantity of glycerine, and add the water hot, continually stirring same.

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