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THE
ITALIAN ALP-BEE,

OR THE

GOLD MINE OF HUSBANDRY:

SHORT AND PRACTICAL INSTRUCTIONS TO BREED GENUINE
PROLIFIC ITALIAN QUEENS;

TO MULTIPLY THEM BY HUNDREDS IN A FEW MONTHS
AND HOW TO CHANGE GERMAN HIVES INTO ITALIAN.

BY

H. C. HERMANN,

TAMINS, CANTON GRAUBUNDEN, SWITZERLAND.

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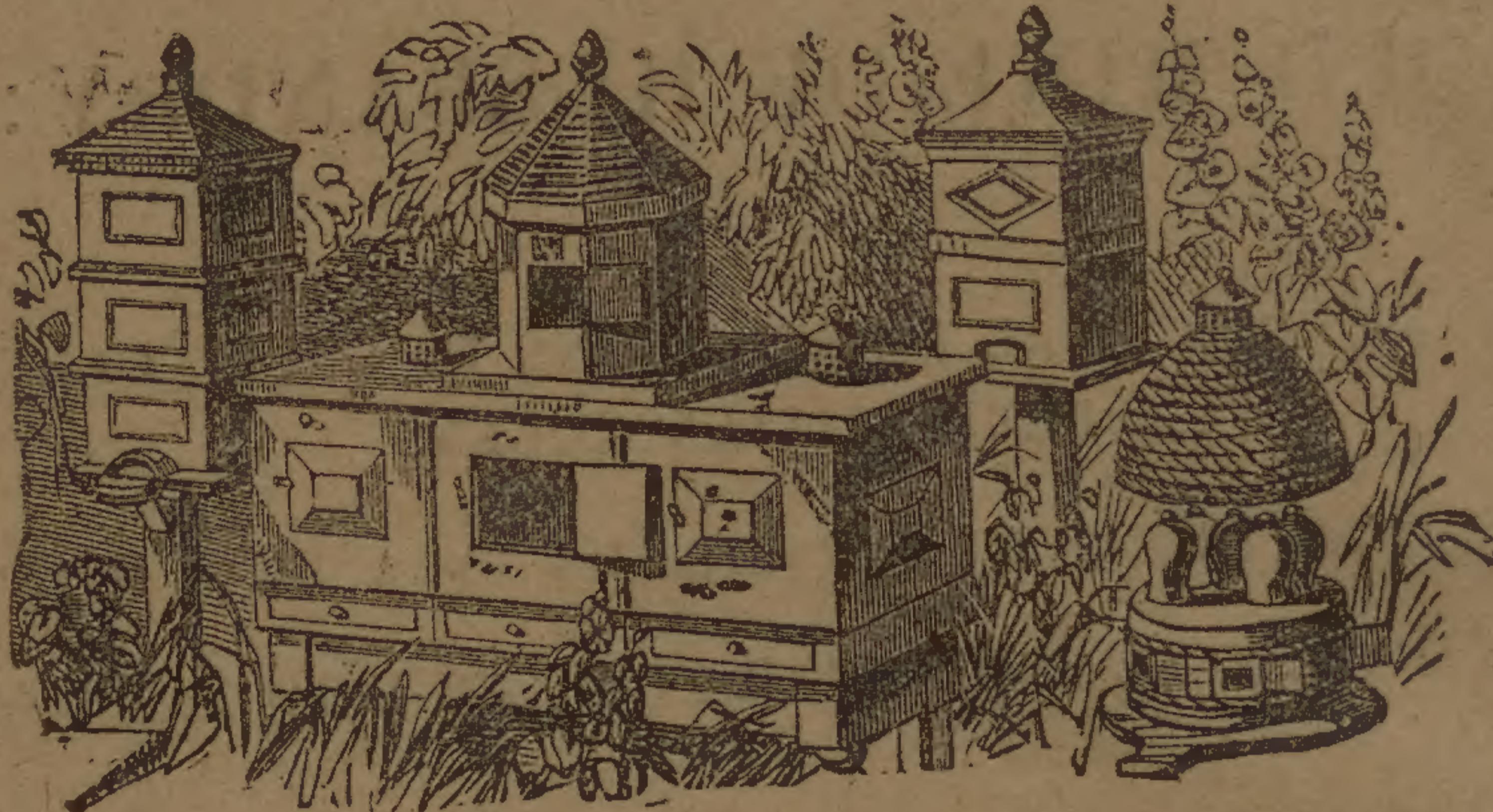
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(Continued on page 3 of Wrapper.)

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IN sending this little Treatise to the Press it has been thought desirable to present it to the Public as a *literal* translation from the pen of M. HERMANN, rather than a more highly finished production in the English language.

We take the present opportunity of mentioning, that the first introduction of the Ligurian Bee into England was through our agency. A letter to us from M. Hermann, dated 5th July, 1859, (an extract from which appeared in the "Cottage Gardener" of that month) has given rise to the interesting discussion in that periodical.

G. N. & SONS.

PREFACE.



Harry Soane. 1882.

As that kind of bee inhabits, at present, but a small strip of country, they are very rare, and a bee-cultivator who is in possession of such a hive can turn it into a real gold mine. The interest in the *Yellow Alp-bee* is on the increase, for it has not the less value

the more diffuse come. I do not a short, easy, and ybody to obtain a *Alp-bee*. For him, s at all, this work er into the higher suitable works on

e knack by which a single Italian talian queens, and

mass a fortune. on account of the an bee; they pro- heir marked good of bees; and are ce in possession of that he will give

for science generally, because by breeding such bees one obtains an insight into their manners of life, and many things are made clear and brought to light of which it has not been possible to obtain a knowledge before. Only by breeding bees of this kind one can become a *bee cultivator* in the full sense of the word.

To assist the breeder to change his own black or common bees into Italian bees in the shortest and safest way, and to keep the race pure, for the purpose of a lucrative income, is the object of this little work, and I shall be glad if the contents prove a source of profit to very many friends of the bee.

THE AUTHOR.

NATURAL HISTORY OF THE ITALIAN YELLOW ALP-BEE. *(Apis helvetica.)*

WHEN the Lord created the world he placed the plants in their proper situations, and creatures to those plants, which were to serve as their food.

But man has in course of time transplanted plants and animals, so, that often the original country can no more be recognised. In the valleys and plains man could first commence his devastations, but the heights, and not easy accessible mountains resisted human cultivation longer; and it is there where we find nature in her original majesty. Often plants and animals will cease to thrive in a country, because they are no more in their place assigned to them by the Creator.

It is different in the steep mountains, where nature is not accessible to cultivation; there we find everywhere the same plants in a certain region, as, larches, pines, Alpine-roses, gentian; also animals, as, chamois, wild goats, white hares, who do not thrive well in the plains. Here then, in the mountains, must we look for the origin of animals. For, at the time of the great deluge, all animals in the plains were, certainly, the first to perish, and those in the mountains were, in all probability, left for posterity.

The yellow Italian Alp-bee is a mountain insect; it is found between two mountain chains to the right and left of Lombardy and Rhatian Alps, and comprises the whole territory of Tessir, Veltlin, and South-Graubunden. It thrives up to the height of

4,500 feet above the level of the sea, and appears to prefer the northern clime to the warmer, for in the south of Italy it is not found.

From the mountain those bees later emigrated into the plains, but they do not thrive so well there.

Some learned men have called them ligurian bees, but that name has neither historical nor geographical claim, and not one bee-cultivator of the whole district of the Italian Alp-bee knows what kind of insects ligurian bees are. The Alps are their native country, therefore they are called *Yellow Alp-bee*,* or tame house bees, in antithesis to the black European bees, whom we might call common forest bees, and who, on the slightest touch, fly like lightning into your face.

As all good and noble things in the world are more scarce than common ones, so there are more common black bees than of the noble yellow race, which latter inhabit only a very small piece of country, while the black ones are at home everywhere in Europe, and even in America.

The Italian yellow bee differs from the common black bee in its longer, slender form, and light chrome yellow colour, with light brimstone coloured wings, and two orange-red girths, each one-sixth of an inch wide. Working bees as well as drones have this mark. The drones are further distinguished by the girths being scolloped, like the spotted water-serpent, and obtain an astonishing size ; almost half as corpulent again as the black drones. The queen has the same marks as the working bees, but much more conspicuous and lighter ; she is much larger than the black queen, and easy to be singled out of the swarm, on account of her remarkable bodily size and light colour.

These bees are almost transparent when the sun shines on them. This race has nothing in common with the black bees ; this can

* It is not at all an indifferent matter by what name anything is called. Many bee-cultivators in German-Switzerland deceived by the name of "Ligurian bees," and in expectation to receive a foreign race, have purchased such bees at high prices from Germany; that they will not do again, as the natural name, "Alp-bee" will immediately show where that bee is at home : that is in Switzerland.

be instantly seen by their ways and manner of building. The cells of the Italian bees are considerably deeper and broader than those of the black bees. Fifteen cells of the Italians are as broad as sixteen cells of the black kind. It must be very interesting to measure them geometrically.

They are extremely tender, amiable little creatures, and a bee-protector is not necessary with them, as, unprovoked, they never sting, least of all their own master. It is a specific Swiss bee ; the Alps are their home, and there they thrive beautifully ; the higher the better. The exhalation of an Italian bee-hive is pungent, and easy to be distinguished from a German hive.

The Italian bees have decidedly the preference. If a piece of honey is anywhere about, the Italians are sure to be the first to find it out. Long before the black bees fly out, the Italians come, and are industrious until late in autumn, when the black bees have long since ceased to work. Everywhere they scent the honey first, and are therefore the first to discover a weak neighbouring hive and to rob them of their stores.

It is seldom known that an Italian hive will harbour German bees, for the Italians resist an attack much more courageously, and know how to keep their house clear. On the other hand, after a few weeks, Italian bees will be observed to march in and out of German hives, just as if they were quite at home ; such is the case if there is only one Italian hive on the stand. The cause is easily explained. The Italians belong to the long-fingered craft, and creep into other hives, probably to look after the stores ; then they begin to like the place, and they stop, joining the black people.

In Germany the commencement has been made some years since to keep those bees, but they were only obtained in a bastard condition ; many stories go the round about our dear creatures, and virtues and vices are attributed to them which they do not possess.

Some insist that they are larger, others, that they are smaller, and others again, that they are as large as the common black bees. Some say that they do not agree with other bees on the same stand ; and some are of the obstinate opinion that the Italian bee is not pure, and has a small portion of German blood, and that it is only

by their (the German bee-masters) pains, and careful crossing with their black bee, that a pure race can be produced.

It is often comical how some even make a distinction of degrees of preference, of more or less purity of race. Once a friend of bees wrote to me :—“ An Italian queen that we call fine and pure has on the abdomen only a very, **VERY** little point, &c.”

These good people bother themselves about half or whole, and three quarters or full blood, and many other subtilties, without arriving at the idea that there is no medium between pure and impure.

What is not a pure Italian is not Italian at all. If she is Italian she can only produce Italians ; but a bastard never ; just as a bastard can never produce an Italian. That which is not genuine, is, and remains, spurious.

Once, by the pairing of the Italian bee, brought out of course, there is no other guide but that of the yellow colouring.

“ All that have not on the after part a black point and a yellow abdomen, we kill at once as being spurious,” is an expression of another bee-cultivator.

Such an incarnate, North-German, Stock-Italian could not be convinced that there, where the home of the Italian bee is, by far the greater number of queens are dark, almost chesnut-brown, and, for all that, there is no difference in the colour of the working bees, whether they be produced by a light or a dark-coloured queen. All Italian Alp-bees have the same distinctive mark, that is, the two orange-red girths, no matter whether dark or light, and a dark queen will just as well produce light ones, as a light one produces dark queens, and the colour has therefore not the least influence on the race, but solely the marks of distinction.

The Marquis of Spinola has called this bee the *Apis ligustica*, but on the same ground the Bavarians may call their bee *Apis bavaria*, or the Berlinians theirs, the *Apis borussia*, &c. The circumstance that these yellow bees are only to be found in the most perfect condition on the borders of Graubunden, in the Veltlin and Tessin, and that, the farther one goes from the Alps, the less handsome they are found ; as for example in Nice ; until they are entirely

lost in lower Italy in the black species. This circumstance speaks for itself, that the yellow Alp-bees have been, through the glaciers,* unsurmountably separated from the black bees on this side of the Alps, and could preserve their race in original purity, while they might and could mix more, by latter gradual spreading, in lower Italy, Venice, Genoa and Nice with other kinds. We must therefore look for the original in Switzerland, and can call them with as much right *Apis helvetica* as the Genoese calls them *Apis ligustica*.

If the latter name were correct, they must have spread from Genoa, the former ligurian shore, into Upper Italy, and by gradual removal from their Genoese home, they could not gain in beauty of race, but must have degenerated in proportion the farther they went from their native country, &c. But this is not so. Their seat is the extreme north of Italy; that is, the Italian Switzerland, there they have preserved their purity.

The proofs of an argument must not be fetched from the moon.

* The assertions of many German bee-cultivators that the Italian bee has German blood, as not even the Alps, like a Chinese wall, would prevent them from mixing with German bees, may sound very well and comprehensible *on paper*, but the matter would be quite changed if such a biographer would take the trouble to make, on the spot, inquiries which would present a scientific basis. The last German place from the Julier-pass is called Stalla, between which place and Poschiavo (a distance of fifty miles) there are *no bees*. In May, and sometimes to the end of the month, the road leads from Stalla by the Julier-pass (nine miles), often through snow, then Oberengadien is passed (where not a single bee exists), and then through the Bernina-pass which demands a march, in the snow, of about fifteen miles, and passes are the *lowest points for passage*.

Now, I should like to see that swarm of bees that could take its wedding-flight from Stalla to Poschiavo over two mountains covered with snow (for the snow does not melt in June, and even in July and August the temperature is so low that every bee would perish) for the purpose of mating with the nearest borderers in Poschiavo. The same may be said of the entire chain of passes, on the Bernhardin, Gotthard, Splugen, Lukmanier, nowhere for thirty miles round is a bee to be found, for they cannot exist where, through the neighbourhood of the glaciers, the air is so cooled down. There is an end to the insect-world, and we may be sure that it has not entered into the mind of an Italian to import a hive from German-Switzerland, by which German blood may have been brought into Italy.

A nationality is never found on the borders, but in the centre of a country.

Only a short time ago it was asserted in the *Bee Gazette* of Eichstedt, that their cell construction is not larger than that of the black bee ; but that is another erroneous assertion which only proves that the author of such a natural history either never handled a pure Italian bee ; or, like a great many more ink-wasters, hatched something in the study which is nowhere to be found in nature.

It does not require the use of spectacles to find a difference.

The cubic contents of an Italian bee-cell is larger by thirty per cent, and the width is one-fifteenth more than that of the German cell. If, therefore, Italian bees are bred through several generations in German cells, the bees must ultimately degenerate and become smaller.

Now as it has pleased some naturalists to name them *Apis ligustica*, I cannot conceive why we should not rebaptise them, as soon as we have arrived at the conviction that our researches have been more in accordance with nature. Therefore courage, and in future.

YELLOW ALP-BEE, or, if necessary, that it should be latin, *Apis helvetica*, or *helvetica* (we are not good latin scholars).

§ 1.

NATURE OF BEES.

A healthy hive contains in summer three kinds of bees :—

1. The queen or mother-bee.
2. The drones or males.
3. The working-bees, or imperfect females.

§ 2.

THE QUEEN.

In a hive there is in general only one queen who lays during the time of her highest prolificness in summer daily from 1000 to 3000 eggs, and these in the best order ; one egg in a cell. More than

one queen the bees do not suffer. Should there be more, they fly away as swarms, or are killed by the bees.

The queen lays male and female eggs. The male-eggs she lays in the drone cells, and the female-eggs in the small cells of the working-bees. The queen requires, reckoning from the egg to her creeping out ten to seventeen days, according to the weather.

§ 3.

THE WORKING-BEES.

The working-bees originate out of the female-eggs. There are in a hive from 6000 to 70,000. They require from the egg to maturity eighteen to twenty-one days, they then remain in the hive for ten or fourteen days before they fly out.

The bees are able to bring up a queen out of every working-bee's eggs, and also from the grub if it is not above three days old. In that case they elongate and increase the width of the cell in the shape of an acorn, and give more feeding-mucilage than they are in the habit of giving to the working-bee.

To insure success in the cultivation it requires dexterity, and study of the nature of bees. The queen requires from the egg ten to seventeen days to her full development, when she will fly out about from one to three days, after her creeping out of the egg, to be impregnated, and then after the lapse of six or ten days more, she commences to lay eggs. Then she will not fly out again unless with a swarm. The bees always prepare several queen-cells at one time, which, however, do not mature at the same moment. The queen is only once impregnated during the whole course of her life which lasts from about three to five years.

§ 4.

THE DRONES.

These are males. There are about 2,000 in a hive, and then only in summer, for, as soon as the swarming and honey-carrying-time is over, they are turned out as useless eaters. They serve only to

impregnate the queen. The drones require from the egg to maturity, twenty-one to twenty-four days.

§ 5.

THE WORKING-BEES.

The working-bees mate probably with the drones, and are, therefore, capable of laying eggs, but which produce only drones ; and, generally, a hive in which the working-bees commence laying eggs, is going to destruction. It can soon be observed, as they lay often two, three, to twenty eggs, without order, in one cell. In such a hive there is no longer a queen, and it is best to separate it at once or to unite it with a healthy hive, for such demoralised people generally kill a newly added queen. Those, who dispute the mating of the working-bees with the drones are in error. Only place young bees without a queen in a place distant from any drones, and no eggs are ever discovered ; but, as soon as they are brought in the neighbourhood of drones, and they have no queens, they lay drone-egg.

§ 6.

BREEDING OF THE QUEEN.

For that purpose choose the largest hive, for it is an old saying, that “a large cow will produce a large calf.”—From so fine a hive you certainly have fine young ones.

As it is known that out of every working-bee-egg the bees can breed a queen, and that they often prepare as many as from six to thirty at the same time, advantage must be taken of that fact.

But do not begin with the breeding of queens until the bees are sufficiently strong, and have commenced the breeding of drones. This must be particularly attended to if you want to breed afterwards pure Italians, for to insure their mating only with Italian drones they must first exist, and that in strong numbers.

§ 7.

HOW TO BREED ITALIAN QUEENS WHEN IN POSSESSION
OF ONE OR TWO WHOLE ITALIAN HIVES.

When you have one or two Italian hives, you must endeavour to put them into hives with moveable parts, if they are not already in one. Then care must be taken, that by continual feeding with good honey, and filling up of the hive with sufficient combs, they increase their strength and prepare a good many drones. The trouble is much less if the Italian bees are on a stand by themselves, about 500 or 1000 yards from the others, the farther the better.

It will be well to be cautious, to leave *one* hive undivided and untouched that they continue to breed many drones, for the divided hive will not produce any more drones in the same year, therefore one hive must be kept strong and untouched, so that you do not run short in drone-breeding.

When there are sufficient drones or drone-brood on hand, take from a hive the Italian queen with the third part of her people and building, and fill up the missing two-thirds with empty and full combs. This queen is now taken to a distant stand where the common or black bee is kept, and placed in the stead of a populous hive during the absence of the most part of the bees. The black bees will at first be surprised and refuse to enter, as these two species hate each other. Should they entirely refuse to enter, then remove during the flight, the whole of the black hives standing on the same front; the returning bees will then be frightened, and not knowing where to go to, will, in the end, willingly, and without disturbance, enter to the Italian mother, who by those means will soon get strong again; and in about five or seven days, will have laid sufficient eggs to part them again; and so you can continue as long as you wish to Italianise. In that manner, if the queen is forthwith strengthened by German bees, no disturbance takes place in the breeding of drones, you have only to put in a few drone-cells. But that the Italian mother does not receive black drones as well, place before the fly-hole a drone-stopper to keep those customers out.

Let us now return to the Italian stand, where we have taken the mother from with a third of the people.

Meanwhile they have made preparations to begin queen-cells, and mostly more than one, perhaps from ten to twenty. On the eleventh, the latest on the seventeenth day, they creep out, and, not to expose them to the danger of the surplus ones being killed by the bees, they must be looked after on the eighth or ninth day, and all queen-cells but one or two must be cut out. The cut out cells are put with a honey-comb and a few handfulls of bees into a little box about four or six inches square. These boxes must have wires on two, or better, on all four sides, so that the bees get used to the smell of each other, and thus become reconciled.

In such a box the Italian queen-cell is put in to a hive of black bees, which the day previous has been deprived of the queen, and if possible in the centre or the heart of the nest. The black bees cannot now enter into the box, but become acquainted, through the wire, with the smell of the Italian bees, and by the time the queen, who will be well taken care of by the two handfulls of bees put with her, is matured, the black bees will have taken a liking to her.

About three or five days after the adding of the queen-cell, you must look whether the black bees have not formed queen cells of their own specie, if so, they must be cut out. Then, the following day, the fly-hole in the little box which has been kept shut is slowly opened, and the black bees will gradually enter into the box and pay their homage to the new queen.

To prevent the mating of the queen with a black drone, a wire must be attached before the fly-hole of the hive, large enough for the queen and bees to fly out (for the queen only mates in the open air) but too small for drones, which are in the black hive; then the stand must be placed where the Italian mother-hive is, until the queen is impregnated.

In the same manner all queen-cells are treated (all but one or two, which are left in the hive for the purpose of forming a separate colony) until all black hives are Italianised. Should, however, a hive be impregnated where it is supposed any black drones exist, it

must be put on the stand of the black bees, so as to have only pure Italian drones on the Italian breeding stand.

In three weeks, with only little practice, about fifty hives can be Italianised. When done, and all the bees are provided with queens of Italian origin, then the work is much easier, as meanwhile, the young mothers lay Italian drone-eggs, and the black drones die, or, the Italian drones obtain such preponderance, that a genuine impregnation is in most cases certain.

For breeding, always choose the finest mother, if possible, of yellow colour, having previously convinced yourself that she has been impregnated genuinely, that is, by an Italian drone, and that she breeds, as a proof, handsome yellow working bees.

§ 8.

BREEDING OF DRONES.

To increase the Italian drones as fast as possible, deprive the Italian mother of a hive of her drone-cells, and place instead, empty cells for further filling them with drone-brood, which she will do forthwith. The Italian drone-brood hang into the black hives for hatching, taking and destroying, as much as possible, their own black-broods.

Food must not be spared with brood-hives, as that will induce them to continue breeding.

So prepared, commences now the proper culture of queens.

For that purpose small queen-breeding-boxes are required, for it is troublesome to single out a queen in a large and populous hive, and otherwise not advantageous to disturb a strong hive by ill-treatment.

The ground-rules for the certain pure-keeping of the Italian race, consist always of this: to destroy the black drones, and to increase the Italian ones.

Therefore, it is better to take care that the Italian bees are placed on a stand where no black drones are allowed. And if now, German people are brought to strengthen the Italian colony, then let them pass in review first and kill the black drones.

The work can be made much easier by letting the bees run into any weak hive, and only through a narrow slit, when only working-bees can pass through, but is too narrow for drones, so that the drones can all be kept back. The next day the bees can be taken out of the hive again and used.

Not only is the object gained to put away the drones, but the bees are also discouraged, so that they can be joined with others without difficulty. Should they have run into a hive deprived of the queen, or only provided with queen-cells, they will be heartily glad that a queen is given them and will not leave her. The bees generally become anxious and tame if the drones and drone-brood are taken away. Endeavouring now, on the one hand, to permit no black drones on the Italian stand, which is kept for the improvement of the races, and to destroy them with their drone-brood and cells, care must be taken, on the other hand, that the Italian bees breed the largest possible quantity of drones. Some assert that the Italian queens lay more drone-eggs than the Germans, but that is not right; they lay them in the same proportion as the black bees; but it can be forwarded by the placing of drone-breeding-combs in the breeding-nest; for the queen to fill them, it is above all things, necessary that the hive be populous and the weather favourable.

As soon as a drone-breeding-comb is filled, it should, without delay, be placed in a hive deprived of the queen, because those hives in their queenless state, seize the opportunity to bring up drones as if they were aware that they would be necessary for the impregnation of their future queen.

Such a hive seldom destroys drone-brood; while hives with queens, as a general rule, on the approach of bad weather, tear out the drone-brood and turn the drones away.

But as soon as the queen, intended for the drone-breeding hive, is again impregnated, the drones would be in danger of being turned out again, for in particular, fresh impregnated queens do away with the drones very quickly, therefore the impregnated queen must be taken from the drone-hive; in that way drone hives may be kept until late in the autumn. The queens intended for drone production,

particularly in bad weather, must be stimulated with food, so that they do not relax in laying eggs.

§ 9.

THE QUEEN-BREEDING-HIVE.

This is a small box with moveable parts, more or less large does not matter. The principle thing is, that they are made of equal width, that every comb of each hive fits into any other hive.

About twelve inches long and six inches broad and high (that is square) might be about the right size. Lengthwise, on the top of the inner sides, fix two pieces of wood, each about three-eights of an inch broad. These are the supporters of the combs, on which the combs or chips rest, to be able to take out easily, and to replace each comb separately. Better still, if small frames instead of chips are used. The top opens upwards, and to make it fit tight, nail or paste soft cloth or paper round the edges. In the top make a hole about two inches in diameter, which serves as a feeding hole; for such little people want frequent feeding, else they will often entirely go away.

§ 10.

SUPPLYING OF THE QUEEN-BREEDING-HIVES.

No. 1. That mother which has been picked out as breeding bee must be taken with part of her people and some brood-combs, honey-combs, and empty ones, until the little box is quite full, and is then placed on the stand where the Italian bees and drones are kept. After a few days, the queen is taken with a few combs of brood and their bees, and is put into a breeding-box.

No. 2. This also should well supplied with honey, empty combs, and a few ripe breeding-combs. After a few days, when the queen has established herself well and has filled the cells with brood, she is to be again taken out with a few combs and some people, and form a new colony.

No. 3. And so on, until you have enough. But never neglect to feed these little people well,* particularly the one which contains the queen.

Meanwhile the breeding-box, No. 1, deprived of its queen, has prepared queen-cells, which on the tenth day are cut out, except one or two, and form likewise new colonies.† It must be observed that the bees which adhere to the combs or the brood, and which guard the cells, are taken out with them. The strengthening of such colonies is done best by hanging in of ripe brood near their development, or by young bees which always set on the combs, and who attend to the real brood business.

The same is done with the queen-cells of No. 2, and so on. Care must be exercised to be well supplied with all the different stages, from the egg to the queen, so that there are always ready ripe and half-ripe cells, impregnated and unimpregnated queens in all stages.

If now, a queen has crept out, you must wait until she is impregnated, and has well supplied the box with brood, then take away the queen, and put in from another hive a ripe queen-cell; where the queen-cell has been taken from, a few brood-combs must be inserted, so that no interruption takes place. If a queen, taken away, can always be replaced by a ripe queen-cell, fifteen queens may be produced from one breeding-box during one summer. Care must be taken that there is always young brood in a queen-breeding-box, so that in case a queen or queen-cell should meet with an accident, the bees have a substitute, and no interruption can occur.

The brood is necessary to the bees and makes them industrious. Therefore, never take a queen from her people until she has well supplied them with eggs and brood.

* Else it is to be expected that some fine day they will take their departure, when generally every one of them will leave, for such little colonies cannot keep themselves unless it be in the high honey season.

† You must endeavour to insert the queen-cells in the middle of a comb, where the most of the bees gather; it is done best by cutting a diamond-shaped piece out of the comb, and then, loosely inserting the queen-cell cut to a similar shape. If it were inserted in the lower edge, the bees could not cover it on the approach of cold weather, and the cell would become cold and the bee perish.

Frequent inspection is very necessary, for sometimes everything may be thought to be quite in order, and yet a hive has, instead of a queen, *only working* bees, who, through a longer deprivation of their queen have, themselves commenced to lay eggs but out of which only drones are produced, to the great disappointment of the cultivator. This disorder can soon be observed, for the bees lay *many* eggs and without order in *one* cell, while the queen lays *only one*, never more than two in one cell.

Such a hive, where the bees have commenced laying eggs, may also be known by blowing into it, when the bees will hum quite hollow, while in a hive with a queen, the humming is quite lively and cheerful.

If not too far gone, the hive may be brought round by inserting a comb of healthy brood with the adhering young bees ; but if it has gone too far, it must be united with a healthy hive, else all trouble is lost. Introduced queens are killed by such demoralised people.

§ 11.

RESERVING OF QUEEN-CELLS.

Often it will happen that there are more queen-cells than can be used at the moment, for they must not be let lying about long, else they will become cold ; and generally the brood must be protected from cold.

Such queen-cells are placed singly into very small boxes, if only of the size of two walnuts, and these boxes are put in any hive on a spot where a proper degree of warmth is developed, say, just above the little rods which is regarded by many bee-cultivators as the honey-room in the moveable box. There they can remain until wanted. That a small wire-grating is placed before the little box is understood, so that if a queen should creep out unexpectedly before required, the bees can feed her.

If the queen-cells should have sustained any little injury it must be patched again directly with a little wax. The best way is to warm a knife a little and to touch the cell slightly with it, the wax-

cover is then sufficiently softened to repair the damage. Larger injuries cannot be remedied, and one cannot be too careful in cutting them out not to damage any of them.

§ 12.

QUEEN-BREEDING WITH BROOD-COMBS.

A brood-comb may be taken from the mother-hive,* but always *with the bees adhering thereto*, and can be put in a breeding-box provided with honey and empty combs. This is placed in the room of a populous hive, to people it, and after the lapse of ten days the queen-cells are full and covered ; they are cut out as stated before.†

§ 13.

ADDING OF QUEENS.

The adding of the queen to hives of other races is done like the adding of queen-cells. First, the hive is deprived of the queen, then the queen is put into the box with a little honey and two handfuls of her own bees, and the box is then placed in the desired hive. After four days it must be seen whether the black bees have commenced queen-cells. If they have not the little fly-hole is opened when the bees will unite and accept the queen. But if queen-cells are formed, it is a proof that the bees are not yet inclined to accept the new queen. All queen-cells must now be cut out, and wait a few days to make them feel quite forsaken, then the Italian may be let in and will then be friendly received.

* This is particular to be advised when there is only one Italian queen which must be preserved to breed drones.

† Sometimes the bees put their queen-cells together so close, and in groups, or opposite to each other, that often it is not possible to cut the cells for use without damaging them. These must be left, and watch must be kept for the eleven days, and, as soon as young queen creeps out, she must be taken away, all, but the last yellow one which is left in the hive. If a piece of about an inch square is cut off, crossways, from below the edge of a young brood-comb full of grub-eggs, so that the liquid of the brood runs out, it generally causes the bees to fix their queen-cells on that spot in the best order.

If queens or queen-cells were introduced without regard, they would all be bitten off, as the Italian and black bees are two different races who hate each other.

It should always be looked to that the queen is first impregnated before taken from her own people to be given to another, because, unimpregnated queens are more exposed to the danger of being killed than already impregnated ones, when the bees are assured of her having descendants.

§ 14.

PARTICULAR RULES.

To cause a sufficient supply of Italian drones care must be taken that the hives with Italian mothers are always well provided with drone-combs, which will cause the queen, when they are placed in the middle of the breeding-layers, to put in more drone-brood ; the more so by continual feeding with liquid honey. The continuous feeding, with proper strength of people is the most effective way for the production of drones. By insertion of ripe breeding-combs near upon running out a hive can be most effectively and quickly strengthened.

Further, it must be remarked that, as the Italian bees build *larger cells* than the black bees, it is well to give the Italians opportunity to begin building anew. It is to be supposed that those who have decided to introduce a strange race of bees, Italians, must have some knowledge of bee-cultivation, and must also possess bees of their own native race ; for one who has no idea at all of the higher branches of bee-cultivation, for him to introduce a strange race would be money thrown away ; such an one would do better to try his experiments on common bees until he is well practised.

Those who do not particularly care to change all their hives into pure Italians can add the Italian queen-cells in a box to the black bees, and can abandon the queen creeping out to her destiny, as to which drone she will mate with. Although not many Italians are by those means gained in the first years, there will be plenty of bastards, and for the second year a very good foundation for Italianizing, because the stock is already Italian, and the Italian element

preponderates. Care must be taken to mark the *original mother* well, and only to obtain posterity *through her*.

§ 15.

THE AUTUMN CULTURE

For queens it is only so far applicable, as the period must be waited for when the black drones are killed, and care has been taken to reserve only Italian drones, which is done by depriving some Italian hives of their queens, and also of their queen-cells, so that they cannot breed any more queens. These bees will not kill their drones. By abundant feeding bees can be induced, even in the late autumn, to breed drones and to suffer them. When the drones are driven out of a hive they must be put, with some honey, into a box supplied with a wire-grating, and placed in a hive deprived of its queen. After a few days they are let loose and will then soon get used to the queenless bees. They may also be put into the top of a hive with a queen, but then, they must be kept shut in until wanted for use.

§ 16.

IN THE EARLY SPRING

Queens of a pure race may be bred with advantage, because the Italians breed drones two or three weeks earlier than the black bees, so that the Italian mothers can mate when there are no German drones whatever. However, the finest queens are only obtained by waiting the natural time when the inclination for breeding exists; from about a fortnight before to a fortnight after swarming time.

§ 17.

BOXES WITHOUT MOVEABLE PARTS.

Those who are not in possession of boxes with movable parts, but yet wish to Italianise their native bees, have much more trouble,

and must leave it to chance whether the queen, bred from Italian brood, will mate with black or Italian drones. It is difficult and not everybody's business to take the finished queen-cells from such hives ; but a clever bee-cultivator will know how to help himself even then.

In such a case all the people in the Italian hive must be driven out, and the hive put in the place of one, or better, two strong native hives, during the time of their strongest flight, and the empty hive will be populated by German people, who immediately begin to make queen-cells.*

The two native hives are then taken away and placed on another stand, or, if there is only one, on the bottom shelf of the bee-house. It is always better to take away all hives with black drones, so that there are only Italian drones flying. The loss of people will do them the less damage, as they would without that have had to give out a swarm.

In order that the forced or artificial swarm from the Italian mother-hive may soon be in full strength, it is necessary to put the swarm into a hive already filled with combs, which must be well fed to excite them to breed.

The separated Italian hive is opened after seven days, when the queen-cells are nearly ripe, and divided into as many parts as there are undamaged queen-cells ; it is always better to give two cells to each part, so that if one should get hurt, the bees have another one ready.

Each of such parts is taken with the bees adhering to them and put with some empty honey-combs into an empty hive. Supposing there were ten such parts with queen-cells, then there would be ten colonies. But these alone would give neither profit nor amusement, and would be altogether too weak to prosper ; they must therefore undergo a forced operation by being placed in the room of

* Here, too, a wire-grating may be fixed before the fly-hole, large enough to permit free entrance to the bees, but too narrow for drones ; this will keep the hive pure. Of course, as soon the queen makes her mating-flight, the hive is carried, in the evening, after sunset, to the place where the pure Italians are until the mating is over.

a populous hive, that is, in the place of ten native hives during their best flight, keeping a wire before the whole to keep out the drones, but admitting the bees.

As at the beginning, the bees of the black race will be rather shy, caution must be had to clear the entire front of the bees of the native race, by putting them either higher or lower; by these means they will lose about as many people as would make a swarm which they would have had to give up all the same, and the ten new Italian hives will all profit by it, get strong, populous, and will thrive. For as soon as the bees, returning from the field, find no hive of their kind in the same front, they will at last become tame and enter quietly with the Italians. But if the bees coming from the field find only one hive of black bees in the same front, they will invariably go in the hive of their race left standing.

It is hardly necessary to mention that ~~the~~^{the} drone-wire must be sufficiently large to allow the queen to pass.

On the third or fourth day before the young queen creeps out, all new hives are brought where the mother-hive, or the drones are kept for mating; or all the hives with black drones may be shut up by a wire until the mating is over.

To make sure that the queen on her mating-excursions will find drones immediately, there are ways to stimulate the bees, that they will lead the drones out early in the morning; it is done by feeding the hive very early with thinned honey, which will cause the drones to undertake an early pleasure-trip on that day.

If there be an opportunity to add to a new hive formed from eggs of queen-cells an Italian ripe drone-brood comb it is well to do so, for by so doing the purity of race is much insured. As said before, the great knack is, to be prepared with the proper number of drones.

Many bee-cultivators make a great blunder in that respect, in cutting out the drone-cells, thinking that they are unnecessary eaters, but not considering that, *the fewer* drones there are on a stand *the greater* the danger of losing queens. For, natural enough, the queen flies out to mate and to find a drone, if she finds one immediately, she can return home directly and the hive is saved. But if the drones

are scarce, and the queen cannot soon find a lover, she will delay her wedding-journey, or even go home again without having gained her object ; and is, therefore, obliged to repeat her journeys. The oftener she flies out, and the longer she must remain out, the more the danger that she may be destroyed during her wedding-tour. This is well to be considered. Queens which I placed to mate on a distant stand, with but few drones were always impregnated from eight to ten days later than on the principal stand, where the drones flew in abundance.

§ 18.

TRANSPORT OF QUEENS.

If many queens are produced, they are principally bred for presents to other lovers of bees, or for sale to extend the race, and by the art to raise queens early it is in your power quickly to multiply a favourite race of bees. We will now give a few hints how queens can be sent to distances.

For that purpose, take a box four inches square, in the lid of which make three or four incisions or cuts, to admit air to the bees. A piece of covered old honey is loosely wrapt up in blotting-paper and nailed firmly to the bottom of the box. That the nail may not pass through the honey and the honey gets loose and smother the bees, it is well to put a piece of pasteboard or leather, of about two-inch square under the head of the nail, as a lining. Then put the queen with a handful of her own people (500 or 1000) in the box and nail it down ; then wrap a loose piece of linen round the box, so that the bees have sufficient air, but that the light is somewhat interrupted, to keep them quiet on the journey. The blotting-paper must be wrapt round the honey in such a manner that the honey shows at one end that the bees can gradually eat it up. If, neither blotting-paper be used, nor the honey nailed down, there would be risk that the honey rolled about during the journey and smothered the bees, or run out of the comb and drown the bees in it. The blotting-paper takes up any honey run out, so that the bees can only gradually eat it up.

It must be well understood that a queen is not sent before she is impregnated, that is, until she has laid eggs. These boxes will stand a journey of ten days.

§ 19.

REMARKS ON UNITING BEES.

Another caution must be observed on uniting of two bee-colonies.

Bees are naturally avaricious and therefore permit every bee, even a stranger, laden with honey to enter. This is a hint, and advantage must be taken of this their passion.

Before two colonies are joined together, take care that the bees which are to be added are quite satiated with honey. It does not matter if both parties have been previously well fed, for then they are not so capable of beginning to fight.

Bees, well filled with honey are everywhere welcome, and when the bees have discharged their burdens in the cells they fraternise and forget all quarrels.

Honey is therefore a very good means of union. But to sprinkle the bees only with honey, or honey-water, produces just the contrary effect ; they become irritated and impassioned and kill each other. If, therefore, you desire success, give them honey to their heart's content. If a hive is to be driven out, stop up loosely the principal hole, blow a little smoke into it, then turn it over and knock it gently for about ten minutes ; the object will thus be gained, because the bees, anticipating the danger, will make haste to provide themselves with food for the journey. A bee can suck in double her weight in provision.

A very sure way to strengthen Italian queens with German people is, that the Italian queen with her company, and a few combs are put into a box, and, gradually, brood nearly running out is introduced : not all at once, but every one or two combs, so that the brood running out is strong enough to cover the brood in store. By so doing the queen will have an increase of people who will adhere to her, not having known another queen yet. This way of strength-

ening is the safest, only too many combs must not be put in at one time, because then, the queen with her weak people could not produce sufficient warmth for the entire hatching of the brood.

There is another way to be recommended. The Italian queen with her people are put in the box, intended for the purpose, with a sufficient number of combs, empty and full of honey. Then bees without a queen, or which have been deprived of the queen one, or a few days previous, and have been confined *without the least brood* or combs are let into the Italians through a small hole, so that *only one* at a time can go in and must, so to say, *beg* her admittance.

Hives where the queen has been taken from, but which have young brood or queen-cells, are not to be called deprived of their queen, they have even the best hopes to bring up, in a short time, several queens ; for that reason they kill any new introduced queen.

§ 20.

THE FEEDING

Is always done best from above with a bottle, the mouth of which is tied over with loose linen, so that the bees can always suck in the honey without attracting robbers.

§ 21.

THE ORIGINAL MOTHER BEE

Must be particularly carefully preserved to have always, in case of any cross-breeding, *one queen* of undoubted purity. To make quite sure the queen can be marked by clipping one of the wings ; she can then be easily recognised.

It is more certain to procure every year or two an *original Italian hive*, from their native place, with which to freshen up the race. Those who have opportunities to sell Italian bees, which is almost everywhere the case, will find it more than enough to their advantage, as this little extra expense places them in position to breed pure queens with the greatest certainty, and they will be

enabled to serve their customers always with genuine Italian Alp-bees, and consequently increase their sale.

A queen of the Italian species lives generally from three to four years, often to five years. Therefore, with some care, what has been missed the first year, may, at any rate, be made good the second year, if one knows how to save and preserve the mother or breeding-queen.



APPENDIX.

GENUINE ITALIAN ALP-BEES.



I have appointed my friends, Messrs. GEO. NEIGHBOUR and SONS, of 127, Holborn, and 149, Regent Street, London, my sole agents for England, and they will take orders, I undertaking to execute the same, at the following charges—the cost of carriage to be paid by the purchaser.

A YOUNG, YELLOW, IMPREGNATED QUEEN,

FROM MARCH 15 TO APRIL 30,

With 500 Bees, for 20 shillings; with 1000 Bees, for 22 shillings;
with 5000 Bees, for 35 shillings:

FROM MAY 1 TO JUNE 31,

With 500 Bees, for 15 shillings; with 1000 Bees, for 17 shillings;
with 5000 Bees, for 30 shillings:

FROM JULY 1 TO AUGUST 31,

With 500 Bees, for 10 shillings; with 1000 Bees, for 12 shillings;
with 5000 Bees, for 25 shillings:

FROM SEPTEMBER 1 TO NOVEMBER 30,

With 500 Bees, for 8 shillings; with 1000 Bees, for 10 shillings;
with 5000 Bees, for 20 shillings.

Queens less fine, young as well as old, cost 2 francs each less.

PURE GERMAN QUEENS,

TILL THE END OF JUNE,

With 500 Bees, for 6 shillings ; with 1000 Bees, for 8 shillings ;
with 5000 Bees, for 15 shillings :

FROM JULY 1 TO NOVEMBER 30,

With 500 Bees, for 3 shillings ; with 1000 Bees, for 4 shillings ;
with 5000 Bees, for 6 shillings.



ITALIAN DRONES,

TILL JULY 30,

2 shillings per 100 :

FROM AUGUST 1 TO OCTOBER 30,

3 shillings per 100.



UNIMPREGNATED YOUNG ITALIAN QUEENS,

6 shillings each.



ITALIAN QUEEN CELLS,

3 shillings each.

A PROPORTIONATE DISCOUNT ON LARGE ORDERS.

The Bees are only provided with sufficient honey for the journey. Should a queen die on the journey, I send another for half the price. As proof, the dead queen must be sent to me in a letter.

TAMINS, CANTON GRAUBUNDEN,

H. C. HERMANN,

Bee Cultivator.



THE RICINUS SILKWORM.



This worm is particularly recommended, as it will feed readily on linden leaves (*Dipsacus*) and *Ricinus* thistles, and therefore augurs a great future, as the difficulty of growing mulberry trees in our northern clime was the chief hindrance. By the introduction of this worm all is remedied, and the agriculturist anticipates a brilliant future; he will soon be able to dress in silk instead of tick.

The silk of this worm is not as fine, but quite as good, and more productive than that of the genuine silkworm.

I sell these insects :—

Eggs, 12 shillings per dozen.

Chrysalis, 2 shillings each.

Moths, 5 shillings each. And,

Printed Instructions, 1 shilling.

6. AN IMPROVED COTTAGE HIVE.

Precisely the same in construction as the No. 5 described above, but without windows or thermometer. Price, complete, £1. 8s.

7. THE LADIES' OBSERVATORY HIVE

Is of stout glass and admits of one bellglass for deprivation, with a cover of straw for the whole, is admirably adapted for witnessing the labour and progress of its industrious inmates, and is an interesting addition to the conservatory or greenhouse in which it may easily be placed. Price, complete, £2. 5s.

8. THE COTTAGER'S HIVE

Is intended for the use of cottagers, and consists of three common straw Hives with floorboard; it is recommended to those Apiarians who are desirous of setting their poorer neighbours in the way of keeping bees, on the improved system without destruction. Price, 10s. 6d.

9 & 10. BEE FEEDERS.

No. 9, is intended to fit a drawer under wood Hives. Price, 5s. No. 10, is for Hives either of wood or straw, and is used on the top of the stock Hive. Zinc, price, 4s. In earthenware, 4s. 6d.

11 & 12. FUMIGATORS.

Used with the prepared Fungus, for uniting weak stocks, &c. Price, 2s. and 2s. 6d.

13. HONEYCUTTERS,

For easily cutting out the comb. Price, 5s. per pair.

14. TAYLOR'S IMPROVED COTTAGE HIVE,

As described page 163, *Bee Keeper's Manual*. Price, £1. 1s. With Stand, £1. 10s.

15. FOUNTAIN BEE FEEDERS.

Price, 6s.

17. SINGLE BAR HIVE.

The Stock Hive is furnished with seven moveable bars, and admits of super Hives or glasses. *Vide page 61, "Bee Keeper's Manual."* Price £2. 12s. Stand, 8s.

18. EIGHT BAR STRAW HIVE.

Similar in its arrangements to No. 3, with an outer cover of straw. Price, complete with Stand, &c., £2. 12s. The Stock Hive may be obtained separate. Price, with floor board, 15s.

19. HUBER'S BOOK OR LEAF HIVE.

Price, £2. 5s.

20. NEIGHBOUR'S PATENT UNICOMB OBSERVATORY HIVE

Is a great novelty, being constructed with glass sides, admitting of one comb only. The queen bee and the hidden mysteries of the hive are continually exposed to the full light of day; it is furnished with double glass to keep up an uniform degree of heat. Price, in polished oak, £3. 3s.

Calls
Is fitted with bars.
Marked

GEORGE NEIGHBOUR & SON'S CATALOGUE.

22. GOLDING'S GRECIAN HIVE,

Is fitted with bars. Price, complete with three glasses, adapting board, &c., £1. 6s.

23. TAYLOR'S DIVIDING HIVE,

Is fitted with eight moveable bars, and takes apart in the centre, for the purpose of forming artificial swarms. Two Hives form the set complete. Price, £2. 10s.

24. COVER OF ZINC FOR BEE HIVES.

Price, 7s. 6d. to 10s.

Ornamental covers corresponding in style with the variety of Beehives herein described may also be obtained. Bee Houses, Covers in all sizes, &c., made to order.

25. FLAT TOP BELL GLASSES,

With ventilating tube, 12 in. wide and 6 in. deep, 7s. 6d.; 10 in. wide and 6 in. deep, 4s. 6d. Payne's Glass, 3s. 6d.

BELL GLASSES.

26. To contain 10 lbs., 10 in. high, 7 in. wide. Price 5s. 0d.

27. " 6 " 7 " 5½ " 2s. 6d.

28. " 3 " 5 " 4 " 1s. 6d.

29. A new shape without knob, may be placed on the table inverted, with lid 5 in. by 6 in. Price, 4s. 6d.

30. SHALLOW GLASSES

Being so much preferable for the Bees storing honey, G. N. and Son have introduced this season a new shape, made of two sizes without knobs, 9½ in. wide and 4 in. deep, 4s. 6d.; 13 in. wide and 4½ in. deep. Price, 5s. 6d.

31. BEE DRESS OR PROTECTOR,

To prevent being stung when operating on the Bees. Price, 5s., by post 6s.

32. THE CYLINDRICAL SHALLOW WOOD HIVE

Is varnished, and will be found more durable than straw; glasses or small hives worked on top. This Hive is only adapted for a bee house, or where the protection is equivalent to one; similar in principle to No. 18. Price of hive and floor board, 15s.; if fitted with bars, 16s. 6d.

Common Straw Hives	2	6
Small ditto super ditto	2	6
Small Wooden Super Hives with window	3	6
Floorboardseach 2s. 6d. and	3	0
It is strongly recommended that all beehives be placed under cover, to protect them from the sun and rain, and that their entrance be in a south-eastern aspect.		
" Treatise on the Humane Management of Honey Bees," by T. Nutt	10	0
" Bee Keeper's Manual," by H. Taylor	4	0
" The Bee Keeper's Guide," by I. H. Payne	4	0
Prepared Fungus in Packets (may be sent by Post for 2d extra).....	1	0
Thermometers for Nutt's Hives (Collateral Boxes).....	10	0
Ditto ditto (Middle Box)	5	0
Ditto for Cottage Hives	4	0
Zinc Slides, Ventilators, &c., in sets, for Nutt's Hives	10	0

