home with the home in the city. Do we find in the latter that close relationship which distinguish the former? That idolatory love which the inmates manifest for each other? We do—but rarely. In the city the father is away from home in the day time, in order to attend to his business. In the evening he either attends the club or finds recreation in other some pastime. He only comes home to take his meals, and even then he has no time to be social. The effect of this constant absence must be apparent. It creates a feeling of estrangement towards his family, and this effect will be widened as years roll on. Then, is the mother all that the word implies? Can she watch with tender care over the welfare and prosperity of her children; can she give to the home that feeling of peace and tranquility which we all so much admire; and above all, can she give to the household that love—a mother’s love—which alone is conducive to perfect happiness? We answer, “No!” Society makes too heavy demands on her time. Her thoughts are led from the quietude of home to the broad fields of fashion. Besides, finding no willing assistant in the father, she too, like he, finds more pleasure and comfort in the wide, bustling world than in the quiet recesses of home. The effect of the indifference will manifest itself in the children, they too will take pleasure—not at home—but away from it. We see then that the farmer’s home, above all, will produce the most tender and loving affection. There is another agent that makes home pleasant, and that is literature. To-day there is to be found in every farmer’s home a library. The price of books has been materially reduced so that they are now within the reach of every person. Books cannot fail to have a charming influence on home. The inmates are drawn closer together and look upon home with more reverence than if there is no literature.

Home of our childhood! how affection clings, And hovers round thee with her seraph wings. Dearer thy hills, though eld in autumn brown, Than the fairest summits which the cedars crown! Sweeter the fragrance of thy summer breeze Than all Arabia breathes along the seas! The stranger’s gale wafts homeward the exile’s sigh.

For the heart’s temple is its own blue sky! O happiest they, whose early love unchanged, Hopes undissolved, and friendship unestranged, Tired of their wanderings, still can deign to see Love, hopes and friendship, centering all in thee!
von Berlepsch, the great German scientific bee-keeper, made several different experiments to ascertain the number of eggs laid by a queen in a given time. In the first she laid 1,504 in 24 hours. In the second an average of 1,913 daily for twenty days; in the third 2,400 for twenty days, and in one instance 3,021 in 24 hours, and six in one minute. She has nothing to do with governing the colony and her sole function is the laying of eggs, thus, mother bee, would be a more appropriate name than queen. When she becomes old or barren, she either dies or is killed by the bees and a young one raised by the workers, takes her place.

The same egg that will produce a queen, may, under different conditions, produce a worker. If a queen is to be produced, the egg, or larva, not more than five days old, is placed in a cell the base of which is as large as three worker cells, she is fed abundantly on a rich food called royal jelly, and the cell when completed is about as large as, and looks very much like a common peanut. On the sixteenth day from the laying of the egg she cuts the capping of her cell until she can push it open with her head and emerges, a virgin queen. If her wings should now be clipped so she could not fly out of the hive all of the eggs which she would lay would hatch only drones. But if her wings are perfect and the weather suitable she will make her wedding tour on about the fifth day, and in five days more she will begin to lay, and lays drone or worker eggs at her option. Her natural life is from one to four years.

If the bees desired, however, to produce a worker from the same eggs it would remain in a common cell and be fed very sparingly on a food nearly, if not quite the same as that fed the queen, which is prepared from honey and pollen in the bee's stomach, and on the twenty-first day it would emerge a worker or undeveloped female, with entirely different instincts from the queen.

These wonderfully different results from no other causes than slightly changed conditions during the growth of the bee from the egg to the imago, are an object lesson to us that will not pass unheeded by the intelligent observer.

The workers perform all the labor of the hive, build the comb, nurse the young, gather the honey and pollen, carry the water, clean, guard and defend the hive, etc.

The drones are the male bees, they have no honey tongue and no sting. They are great lusty fellows and consume large quantities of honey, and as soon as the honey season is over—in all colonies containing a fertile queen—they are driven out by the workers and left to starve, sometimes upon the very door-sill of their own hives.

If we look closely we will find some of the bees with little scales of wax between the rings on the abdomen. From these scales the comb is built and when complete it is one of the most wonderful creations in nature. Its walls are so constructed that they exactly fulfill the condition of holding the greatest amount of honey with the least possible consumption of material in their construction. Apropos of this I will give you a somewhat abridged version of a very interesting article found in volume two of A. B. Journal.

"Many years ago, Maraldi, being struck with the fact that the lozenge-shaped plates (forming the bottom of the cell) always had the same angles, took the trouble to measure them, and found that in each lozenge the large angles measured 109 degrees 28 minutes and the smaller 70 degrees 32 minutes, the two together making 180 degrees—the equivalent of two right angles. Some time afterward, Reamner, thinking that this remarkable uniformity of angle might have some connection with the wonderful economy of space which is observed in the bee comb, hit upon a very ingenious plan.

Without giving his reasons therefore, he asked Koenig, the mathematician, to make the following calculation: Given a hexagonal vessel terminated by three lozenge-shaped plates, what are the angles which would give the greatest amount of space with the least amount of material? Koenig made his calculations and found that the angles were 106 degrees 26 minutes and 70 minutes 34 seconds, almost precisely agreeing with the measurements of Miraldi. Reamner, on receiving the answer, concluded that he had very nearly solved the difficult mathematical problem. The difference between the measurement and the calculation being so small, (only 1 30 of one degree) as to be practically negative in the actual construction of a small object as the bee cell.
Mathematicians were naturally delighted with the result of the investigation, for it showed how beautifully practical science could be aided by theoretical knowledge.

For a long time these statements remained uncontroverted. Anyone with the proper instruments could measure the angles for himself, and the calculations of a mathematician like Koenig would hardly be questioned. However, Macaulain, the well known Scotch mathematician, was not satisfied. So he tried the whole question himself and found Maraldi's measurement correct, viz. 109° 28' and 70° 32'. He then set to work at the problem which was worked out by Koenig, and found that the true theoretical angles were 109° 28' and 70° 32', precisely corresponding with the actual measurement of the bee cell.

Another question now arose, How did the discrepancy occur?

On investigation it was found that no blame attached to Koenig, but that the error lay in the book of Logarithms which he used. Thus a mistake in the mathematical work was accidentally discovered by measuring the angles of a bee cell, a mistake sufficiently great to have caused the loss of a ship, whose captain happened to use a copy of the same Logarithmic tables for calculating his longitude.

In the light of the above facts, how true are Darwin's words, "He must be a dull man indeed who can examine the exquisite structure of comb, so beautifully adapted to its end, without enthusiastic admiration."

Though we have given you but a glimpse of the wonders of a bee hive, our time admonishes us that we must leave this subject and give you a few hints on the practical management of bees.

It will be understood that these hints are designed, primarily for the recruit or beginner, and not for the old veteran who already counts his colonies by the score or by the hundred.

Right here let me give you a word of caution. Langstroth says, "There never will be a royal road to profitable beekeeping. Like all other branches of rural economy it demands care and experience, and those who are conscious of a strong disposition to procrastinate and neglect, will do well to let bees alone, unless they hope by the study of their systematic industry to reform evil habits which are well nigh incurable." This was written many years ago when honey was worth from 20 to 30 cents a pound. It was true then, and is doubly true now.

The first step is to get possession of a colony of bees, and in order to insure success it is essential that you get a good colony and at the right time of the year. To make sure of this, any fine day about the first of May go to some successful apiarist who keeps bees upon the modern principle, no matter if it is an all day's journey to reach him, but in this locality you surely have a choice of them within a few miles of you, put him upon his honor and tell him you want a good strong colony of Italian bees, with a queen not over one year old in a two story movable frame hive.

You had better pay eight or ten dollars for such a colony than buy one at auction from an old fogey bee-keeper, in February or March for two or three dollars, unless you are especially lucky at drawing prizes in a lottery. Take them home and place them upon a stand about four inches high with entrance toward the south, and an alighting board reaching from the entrance to the ground. If you got them within two or three miles of home, just before you release them, give them a few puffs of smoke at the entrance and place a board about a foot wide and two feet long in a slanting position leaning against the front of the hive. This is to cause them to mark their new location, and thus prevent them from returning to their old home with their first load of stores.

Keep them confined to the lower story and warmly covered above, with chaff or its equivalent until they swarm. If they do not swarm during fruit bloom, feed a half pint of sugar syrup at the entrance every fine evening until they do swarm. Hive the new swarm as expeditiously as possible in a new, clean hive, kept in the shade, containing nine wired frames of foundation and one comb from the old colony containing unsealed brood, which comb must be replaced by a wired frame of foundation. You can wire the frames yourself by punching six holes equal distance from and exactly opposite each other in the top and bottom bar and weaving through these holes, No. 30 tinned wire. Be sure to draw the wire tight, and if the top or bottom bar springs, hold them apart by
a little strip of wood or folded tin. Have the foundation cut a trifle larger every than the frame, lay it upon a smooth, wet board, a trifle smaller than the frame, about \( \frac{3}{8} \) in. thick, having previously warmed both the board and the foundations to about 90° Farenheit. Place the wired frame upon the board with the wires resting upon the foundation and the frame resting upon the table (or better still upon a larger board, to which the thin board should be securely nailed). Draw a common button hook with a notch filed in the back along each wire so as to imbed it into the septum or base of the cells, and press the edge of the foundation fast to the frame on all sides with your fingers. If the temperature is just right you can do this quite rapidly. Be sure and have this done in advance of swarming so that your frames will be already when the swarm arrives.

As soon as the bees are all or nearly all in the new hive, place it where it is to stand permanently. If there are a few bees flying no matter, they will find their mates or return to the old hive.

Give ventilation more or less according to the weather. If very warm, shade in addition. You need have no fears of their taking French leave the next day, as in all my experience covering scores of swarms, I never had a swarm leave a frame of unsealed brood. In about five days destroy all but one of the queen cells in the old hive, this will prevent any more swarms. In about three weeks, if all is well, the young queen in the old hive will be laying, and by this time, if not before, you must fill the upper story with wired frames of foundation. The upper story of the new hive should be filled when the lower story is about two-thirds filled with honey and brood.

As soon as you find the bees beginning to seal any of the combs in the upper story you may begin to extract, and the oftener you extract the more honey you will get, but you must be careful if it is thin to keep it in open vessels in a warm, dry room until it is evaporated. I would advise you, however, to leave three or four of the first sealed combs in the upper story of each hive for wintering. If the season is fair and the locality not overstocked you will have secured at least 100 and perhaps 200 pounds of honey by the end of baswood bloom, and the honey season will be substan-tially over unless you have a buckwheat harvest, which in my locality is very rare.

And now we come to the wintering problem, the rock upon which so many are shipwrecked. To make a reasonable certainty of successful wintering requires close attention to details and considerable labor. About the middle of September confine your bees to the lower story and the first of October remove all combs containing pollen. If there be any containing brood and pollen leave them until the brood hatches and then remove them. Place the four combs (which were reserved in the upper story) below and confine the bees to six combs by a division board on each side. Fill the space between the boards and sides of the hive with chaff or cut straw. Place upon top of the frames a "Hill device" or a substitute made by nailing five pieces of lath 14 inches long to two strips of inch board 8 inches long, 1 inch wide in the middle and tapering to a point at the ends, in such a manner as to form a clustering place on top of the frames, thus insuring that at all times the bees will be within easy reach of their stores. Cover this with burlap or an old grain bag and fill the upper story with chaff. If they are in a chaff hive this is all the protection necessary, but if in a single-walled hive by the last of October they should be covered by a box four inches larger each way than the hive and closely packed with an additional four inches of chaff, taking pains to have a clear, unobstructed opening from the outside to the entrance. Stand a board slanting over the entrance, against the hive, and except to be sure that this entrance is at all times unobstructed by dead bees or ice, you need give them no further care or attention until they begin to bring pollen in the ensuing spring from the willow or soft maple. Then remove the "Hill device" and cover the frames tightly with a piece of enamel cloth, being sure to keep them warm over the brood nest, leaving all the chaff packing until at least the middle of May. As the bees increase in numbers you may gradually add the combs which you took away from them the autumn before, breaking the cappings of the honey as you do so, and the cycle of the year will be completed.

If you have spent a fair share of your leisure time during the winter as you should have done, in studying one or more of the various text books upon
the subject, you will be abundantly able
to take care of them for the future without
any further advice from me.

Now one word more and I have done. It is thought by some that too many are already keeping bees and that there is an over production of honey, hence the low prices. A glance at the figures will show us the fallacy of this bugbear of over-production. Wisconsin ranks above the average of her sister states in the production of honey and the last census shows us that in 1884 (which was a good season for honey) she produced 1,432,766 pounds, an amount which, if equally divided between every man, woman and child in the state would give to each the munificent allowance of not quite one pound.

This is over-production with a vengeance. The trouble is not over-production but under-consumption. The majority of people look upon honey as a rare luxury to be used upon fete days or carefully stored away for sickness, while its place is occupied on the every day table by the vile, death dealing glucose syrups. Producers must show consumers that this is a great mistake. Honey is now so cheap that at least the children should be allowed to have all they want. If this were done there would not be honey enough to go round.

Solomon, the wise man, said, “My son, eat thou honey because it is good.” And Isaiah prophesied of Immannel, “Butter and honey shall he eat, that he may know to refuse the evil and choose the good.”

Does the Bible anywhere say, “Glu-
cose syrup and oleomargarine shall he eat, that he may know to refuse the evil and choose the good.”

Nature in her laboratory has given us the butter globule in milk and the golden drop of honey in the beautiful flowers, and all the ingenuity of man cannot duplicate them, and until they are both found upon every table in the land every day in the year there can be no such thing as over-production of butter and honey. Ere that time arrives, if the bee-keepers and dairymen of our state will but utilize the resources which nature has placed at their com-
mand, Wisconsin, with her babbling brooks and verdant pastures, her forests of Linden and broad fields of clover, her balmy winds and refreshing dews, will become, like the promised land of old, “A land flowing with milk and honey.”

Has the Silo Proved Its Claims?
[By John Gould, of Ohio.]

The remarkable change that has been made in sentiment respecting ensilage within two years is no greater than the character of the ensilage itself; and they together, present the chief inno-
vations upon old and established farm methods, the mere departure from any one custom known in modern years. It has been in reality a battle of the kids in agriculture, with the most sturdy, bearded veterans, a struggle with those “who do as their fathers did,” and a later generation who propose to do that which is most profitable and allow the fathers and their ways to sleep in peace.

The struggle has been persistent. Ensilage has been fought on the out-
side by not only farmers but men who never owned a farm, by men of science and men of scientific schools, and even by professional agricultural editors; and yet, step by step, and in the face of the most determined opposition, this new food—or rather food preserved in a new way—has made its fight and has at every turn showed improvement in every respect, and has made its way in public favor until it has now gained a firm foot hold, and holds the fort with a gain of 100 per cent. in number of silos over 1885, and is now a recognized factor in the production of milk in the best private and commercial dairies of the Middle States and Europe.

Could ensilage have been divorced at the start from some of its over zealous friends, I think the opposition would have been less detrimental; but like new converts they made most extrava-
gent claims and met as a result many reverses. It can now be seen that there were good grounds for the opposition. But now, with the experience of seven years, and the proverbial Yan-
kee spirit of improvement rife, the man who would now object to ensilage because it was not first-class feed in 1881-2, could with as much justice condemn twine and wire binders because in 1878 they failed to do satisfactory work.

The ensilage of 1882 was washy stuff, pungent with acid odors. But in some way cattle threw up upon it; it was cer-
tainly better than hay, costs compared with results. As the struggle went on, the wide awake Yankee saw chances to improve the crop, to lessen the cost of the silo, to cheapen the cost of the labor element, and last, to so store it