ther has so far advanced as to afford them bread Then they may be removed to an empty hive, as directed in the rule. Now the drawer contains no bread, and should remain in the old stock until bees can provide themselves with a sufficient quantity of that article to feed their young bees with; for bread is not collected early enough and in sufficient quantities to feed their young as much as nature requires. If the bees fail in filling the drawer, one should be used that is filled by another swarm. Thus the aged and infirm stock is changed into the full vigor of youth by their own free act, without any compulsion of their owner.

If bees are transferred from the old box hive, or from any other to the Vermont Hive, except as described in the foregoing remarks, it should be done immediately before, or forthwith after the second swarm has left the hive. Then both old and young should be colonized together. If the operation is performed before first swarming, their owner will be sure to lose one swarm in the wanton destruction of eggs, larva and chrysalises, and if it is done after the first swarm leaves, before a Queen is heard, he will get the bees without a Queen, because the old Queen leaves the hive with the first swarm, and another is not usually hatched sooner than seven, eight, or nine days after first swarming and if transferring is delayed until the swarming season is through; the bees will not make a sufficient quantity of comb to cluster in; nor honey enough to sustain them through the following winter.

I would not be understood to approve of transferring from the old box until the combs are so old as to produce dwarfs

To be Continued.

EXPERIMENTS IN THE MANUFACTURE OF CORN STALK SUGAR, BY MARCUS ADAMS, ESQ., OGDEN, MONROE CO.

Our readers have been already informed, that a premium of $100 was awarded by the State Agricultural Society to Marcus Adams, of this county, for experiments in the manufacture of sugar from corn stalks. This subject is of so much general interest, that we copy from the recent vol. of Transactions, with slight abridgement, Mr. Adams full report of his experiments, with the important suggestions and inferences deduced therefrom:—

Raising the Corn.—One acre of ground was selected of a sandy loam, cultivated last year to ruta-baga; this was manured with thirty loads of the best stable manure, well mixed in the soil by ploughing and harrowing Corn planted the 13th of May, with eight-rowed northern corn; the rows three feet apart one way, and hills eighteen inches the other, with from six to eight kernals in a hill. Corn came up fine and was plastered the 31st May; hoed the first time the 9th and 10th of June, the second time 24th June. Cultivator run through it three times. The corn began to tassel the 18th of July, and was in full tassel the first of August.

Up to this time the crop had looked uncommonly well, but from the 1st of August a severe drought commenced, and continued until the crop was very materially injured. Some spots where the corn had grown more luxuriantly, withered and dried up; other parts of the field suffered less, so that on the whole there was some more than half of a good crop, or what there would have been if the season had continued favorable.

Cutting, Grinding and Boiling.—Cut the first stalks, and made the first experiment at grinding and boiling, the 25th of August. The stalks at this time were quite green, but the produce was quite satisfactory, and appeared quite favorable for crystalizing. The juice was very abundant, of a greenish color, very rich, thick and heavy, yet retaining all the flavor of the corn stalk, until after cleansing and boiling.

August 30th, made the second batch. This was boiled in a shallow sheet-iron pan, clarified and strained according to the directions given in Mr. Ellsworth's report. From this batch was taken the specimen of sugar exhibited to the Committee at the State Fair in Rochester.

Other experiments were made the 4th and 7th of September.

The object of these successive experiments was mainly to determine at what time the saccharine matter was sufficiently matured to make crystallized sugar.

On the 11th September the stalks appeared in the right stage, and cutting, grinding and boiling were commenced, and continued with little intermission until the whole was completed. The method pursued in this operation, was to keep a sufficient number of hands in the field to strip the leaves or blades, and cut off the tops as fast as the stocks were wanted for use, this labour was generally performed by boys. The cornfield being at a little distance from the mill, the horse used for grinding was put before a light wagon, driven to the field, the stalks were then cut and placed upon the wagon, (taking care to keep them straight and in order,) driven to the mill and ground without delay. A load of this kind in a light wagon, with lumber box, will make a batch of from fifteen to twenty gallons; this would be ground in about thirty minutes. Lime water was mixed with the juice while it was running from the mill The juice is then strained through a flannel cloth into a pan, and heated, rather moderately, to the boiling point, when the scum is removed with a skimmer, then boiled rapidly for a few minutes. The syrup is then removed from the fire, and again passed through the flannel strainer, when the boiling is finished as rapidly as possible.

This process from the cutting of the stalk to taking the sugar from the fire, could not possibly be performed in less than two hours, and if the batch was larger, would often exceed three. Five batches were made in one day, from which one hundred pounds of sugar were produced.

The Boiler—The boiler or pan, I made of a sheet of Russian Iron, turned up at the sides and ends, lapped and rivetted at the corners, would hold about twenty-five gallons, five and a half inches deep, but from fifteen to twenty gallons is as much as would boil to advantage. This pan is placed upon an arch of brick, so that the fire comes in contact with only the bottom.

Mill.—To construct this was a matter of much more difficulty. Some drawings and descriptions are given by Mr. Ellsworth, but little more could be known from them than that there must be three rollers, so placed and put in motion that the stalks in passing between them should receive two crushings.

To plan and construct a mill with the proper dimensions and with the trength required, so that the work of crushing the stalks should be performed with certainty and despatch, was no easy task. I flatter myself that I have in this been tolerably successful. The rollers and iron work, patterns, &c., for my mill, were made by A. J. Langworthy, of Rochester, at a cost of sixty-five dollars. The whole weight of iron is about nine hundred pounds.

About one half of the mill is in the horse-power. The iron rollers being placed horizontal, it was necessary to have a horse-power wheel and gearing in order to give them motion. If the more simple, and it would seem at first view, less expensive forms, given in Mr. Ellsworth's report had been adopted, placing the rollers perpendicular, the horse passing around them, the rollers must have been of large diameter in order to take through the length of a corn stalk at one revolution of the horse. These large rollers, when made of iron, would have been very expensive, and probably not work as fast as the small ones I use, giving them a quicker motion by gearing. In my mill the circumference of the rollers has such a proportion to their motion that their velocity is equal to about one sixth the velocity of the horse; or, in other words, a corn-stalk six feet long, will pass through between the rollers in the same time that the horse will walk thirty-six feet. The grinding is a beautiful operation, the amount of juice contained in the stalk is surprising to every one. The stalks in passing through the mill are crushed very fine, and the juice entirely separated from them by the pressure of the rollers.

Clarifying.—This has been to me a difficult and to some extent an unsuccessful operation. All the various methods recommended by different persons who have made some experiments on cornstalk sugar, and all that, my own experience in clarifying maple sugar could suggest, failed of producing fully the desired effect. In all the failures which have been experienced to produce crystalized sugar, the cause should be sought here. Unless the juice of cornstalks can be clarified, it is vain to expect a pure article of crystalized sugar. All the obstacles to the complete success of this enterprize are met at this point; but that they will be completely overcome, there cannot be the least doubt. Lime water applied to the juice as soon as it comes from the mill, one gill to fifteen gallons, was thought to produce the best effect. But experiments were made with various other things, such as milk, eggs, charcoal, &c.; these were used separately but nothing appeared to raise the scum as well and render the juice as clear and well flavored as the lime water. One experiment was made by filtering the juice through sand and charcoal, this rendered it very transparent and improved the taste, but there are very many objections to this process—the length of time required for the operation is a sufficient one.

Straining.—This operation is performed both before and after clarifying. The strainer used was a square yard of good new flannel, of fine texture; so great is the amount of mucilage, or very minute particles of the cornstalk contained in the juice, that the strainer has to be rinsed in water once or twice in straining a batch. The second time straining is rendered more difficult by the juice being hot, as the hands have to be used in forcing it through the cloth. As knowledge and experience is gained on the subject of clarifying, the straining will be dispensed with, except to pass the juice through a coarse strainer to remove some of the larger impurities. Some method will be discovered by which all this foreign matter will be removed in the operation of skimming.

Boiling.—This operation requires care and close attention, particularly when about ready to skim, and when the juice is concentrated to about the point desired. The more rapidly this operation is performed, the more perfect will be the crystalization. But, however necessary it may be, it is scarcely possible, with any apparatus that I have any knowledge of, to perform the whole labour of cutting, grinding, straining, skimming, and boiling, in the short space of one hour, as recommended by Professor Mapes, of New York. If this is ever done, it must be in very small quantities, or some very improved method must be adopted.

In boiling as soon as the scum begins to rise, the fire must be regulated with care, that time may be had for removing the scum before it shall be boiled in. If the operation of boiling and skimming be well performed, about one gallon of thick heavy scum will be obtained from a batch of fifteen gallons. The syrup, when it becomes thick and nearly done, has a very beautiful appearance, in every respect equalling the best of maple syrup. To boil to the crystalizing point, (which is a very uncertain one,) requires considerable care and discrimination. The same tests that are used for maple syrup are equally applicable to cornstalk, as for instance, when it will flake off, breaking short, from a dipper or stick—or string out between the thumb and finger, from half an inch to an inch in length, is per-