



1888

65th Anniversary

1953

MAPLE SUGAR MAKERS' GUIDE



THE LEADER EVAPORATOR CO., INC.
Burlington, Vermont

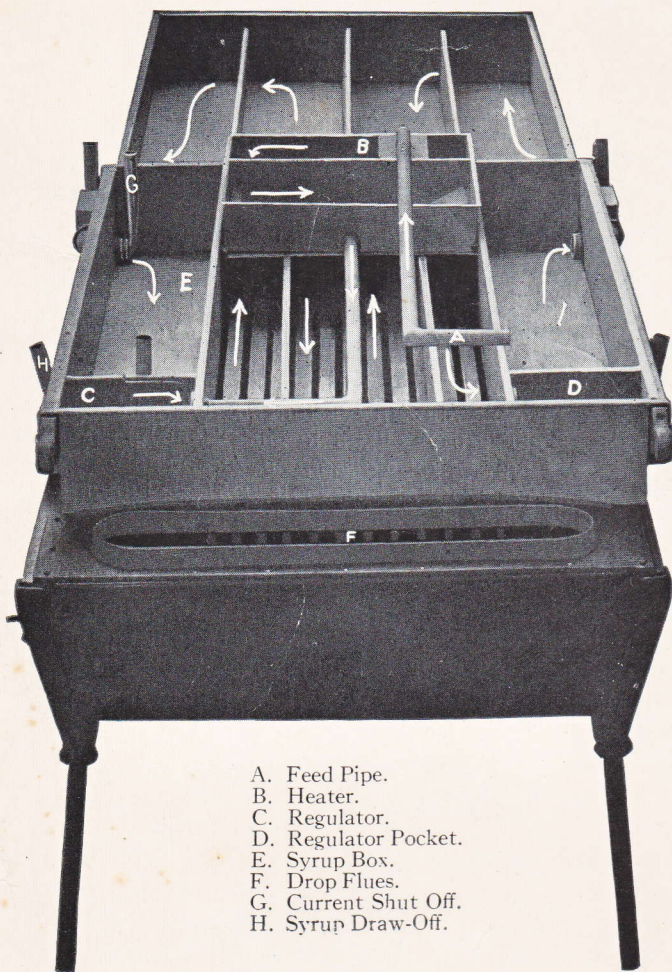
THE ORIGINAL LEADER REGULAR EVAPORATOR

On the market since 1888.

This evaporator was the real Leader in the industry, for about forty years—giving over to the Leader Special around 1930.

It is occasionally preferred even today, as it has certain advantages not found in the Special or any other evaporator.

The Leader Regular combines fast boiling with the privilege of finishing the syrup on either side at the back end near the stack, where the heat is less intense, and where it is possible to maintain a little more uniform density and a slightly better quality product both from the standpoint of color and flavor. Syrup may be drawn from the front pan if desired.



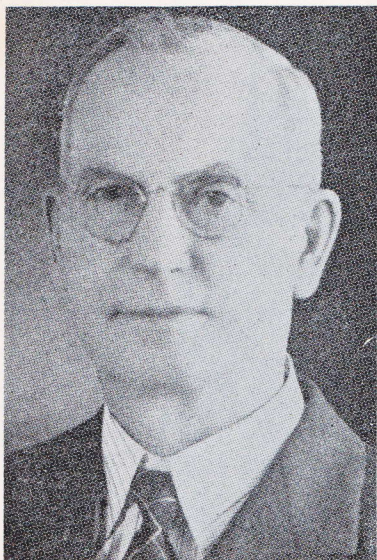
- A. Feed Pipe.
- B. Heater.
- C. Regulator.
- D. Regulator Pocket.
- E. Syrup Box.
- F. Drop Flues.
- G. Current Shut Off.
- H. Syrup Draw-Off.

Operation

Starting at the Feed Pipe A, the circulation of the sap may be traced by following the arrows through the heater pan and out to the regulator C which controls the depth of the sap in the evaporator. There it enters the flues and passes around into the front pan and then back to the syrup compartment E, where it is drawn off at H, when at the proper density; thus making a complete circuit of the pan.

When the pan is reversed, the syrup compartment on the opposite side is used, thus eliminating the malate of lime which collects on the bottom of the pan where the syrup is made.

STILL WORTHY OF THE NAME LEADER



65 years ago, in Enosburg Falls, Vermont, William E. Burt started the Leader Evaporator Company. Mr. Burt, who is now 93 years of age, can easily lay claim to the longest service of anyone to the maple sugar industry.

It was he who introduced the **Leader Evaporator**—the first drop flue type pan ever to be made. It was the **Leader** then and still is as evidenced by the fact that nearly every other evaporator on the market today is closely patterned after it. The design has changed little over the years in spite of constant search for improvements to increase capacity or efficiency.

Other Introductions

The **Monitor** gathering tank, round bottom storage tank, revolving top filter tank and bucket washer, as well as the modern galvanized sap bucket and cover that has proved so reliable and long lasting were all

first introduced by Mr. Burt and his Company.

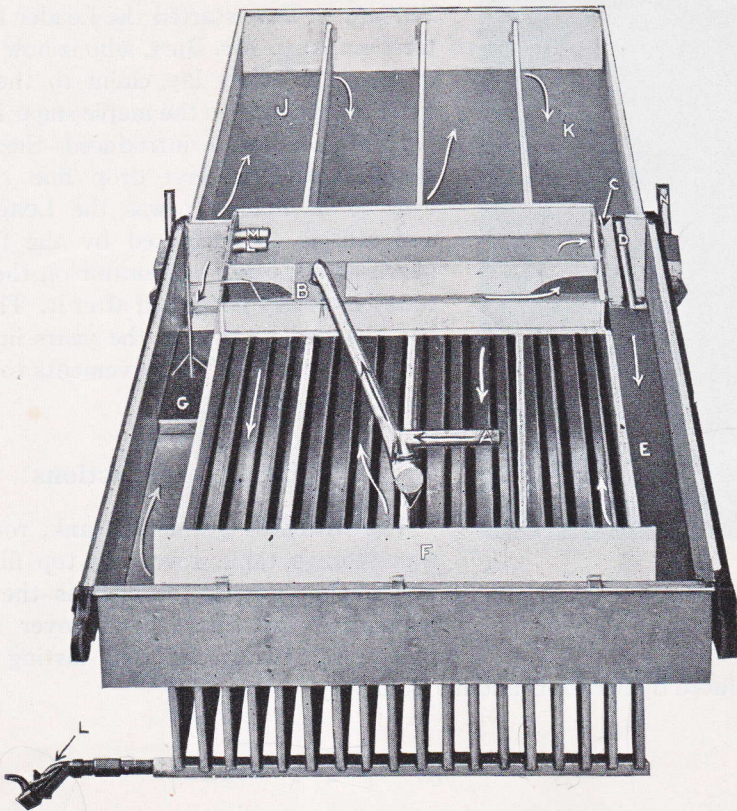
All Practical Equipment

Before offering any of the equipment to the sugarmaker, care has always been taken to make sure it was practical from all standpoints—convenience in use, cost and lasting qualities. The last point being of paramount importance.

Always on the Lookout for Improvements

It has always been the aim of the Company to make any improvements in design or construction that will make the equipment more suitable and durable. The best materials available are purchased and a high standard of workmanship is maintained by keeping our men employed steadily, so there are very few changes in personnel. The making of sugar equipment is to a great extent hand work requiring considerable skill. It is the aim of **The Leader Company** today to carry a full line of maple sugar making equipment and supplies at all times. Since 1909 the business has been at its present location, 100-102 Battery Street, Burlington, Vermont.

THE LEADER SPECIAL EVAPORATOR



Our Most Popular Style

This evaporator is by far the most popular evaporator today. It was first introduced in 1905—long before some of the other make machines we are occasionally accused of copying. Not until 1930 did its use begin to exceed that of the Regular style Leader. Today Sugar Makers buy about fifty Specials to one Regular.

Construction

All Leader flue evaporators consist of the flue pan and the flat front pan which sets over the firebox. The flues are $7\frac{1}{2}$ inches deep and have $1\frac{1}{4}$ inch fire space and $\frac{5}{8}$ inch sap space. This spacing has proven to be the most efficient as no heat is lost and the flues contain enough sap so there is no danger of burning off the ends of the flues as so often happens with other make pans which have less sap space. It takes a sheet of tin 36 inches wide to make two flues.

Leader pans are well braced with circulating partitions. These partitions add nothing to the boiling capacity but do make a far more durable pan and keep

fresh sap from mixing with that which has boiled for several minutes, thus tending to make a better product. They mean additional material and labor costs and believe us, would not be put in unless it was felt they were needed. The two outside partitions have further benefits and uses which will be explained later on.

Care is taken to see that all evaporators have the proper amount of flat surface to handle the syrup. When sap gets about so sweet, it cannot be handled in anything but a flat pan without danger of scorching and impairing the quality of the syrup.

Why the Preheater Pan

All Leader flue evaporators have a shallow pan called the heater pan setting across the top of the partitions at the front end of the flue pan. The cold sap from the storage tank enters into this pan and is heated to the boiling point before it enters the flues. This is done by the escaping steam and of course results in some condensation as our competitors will readily point out and any High School boy or girl, who has taken General Science readily knows. They also know that a steam boiler is far more efficient if hot water is pumped into it rather than cold and that much more steam is produced.

The fact that all of the heating surface in a **Leader** is producing steam rather than using the equivalent of 15% of the flue pan's heating surface just to heat the cold sap to the boiling point means that the pan is producing 15% more steam than other pans which take cold sap directly into the flues. Since some of this steam condenses and falls back into the pan, part of the increased steam production is lost—but only a small part, so there actually is a substantial gain.

One of the greatest benefits of the heater pan is the reserve supply of two or three pails of hot sap that is always available to dip into with the scoop should the syrup get too heavy or too thick or the boiling depth gets too shallow for any reason. Hot sap will not warp a pan but cold sap will even though it is not actually scorching. Many, many front pans are saved in this way and this means your dollars as well.

OPERATION

It is in the heater pan that the cold sap first enters through the feed pipe A—from any direction. It makes no difference which side the storage tank is on. The regulator B is in the heater pan and the float G down in the evaporator itself and on the opposite side from where the sap enters the pan at C. Thus the float is not where the sap enters the pan and is not affected by the incoming sap. Rather it is in between the front pan and the flue pan, in which position a far more uniform depth of sap in the pan is maintained, all tending to make the evaporator much easier to operate.

The heater pan has rings at the top of each side, so that as fast as the sap enters the pan it spills out through the open holes on the opposite side. The pan is always full, up to the holes.

Compartment E is especially partitioned off to permit the float to operate in the evaporator itself, and in the actual flow of sap. By putting in this partition, it is possible to raise the back end of the evaporator and thus protect the front pan. The flues, being lower than the rest of the pan, will naturally draw sap from the front pan if they are not full. When a pan is permitted to foam, about two thirds of the sap is thrown out of the flues, so when the fire goes down, they start filling up again. With the partition and the pan raised higher at the back end, the

sap cannot leave the front pan entirely. We do not advise letting the flue pan foam, but many prefer to let it, so we offer them this protection, which only the **Leader** has. In addition, this narrow compartment permits the foam to break down in the pan, rather than to roll over onto the floor where it does nothing to help fill the syrup can.

Leaving the Heater pan at C, the sap spills down into the evaporator in Compartment E. Entering the flues, the sap is already boiling—not cold, thanks to the heater. Here it is kept traveling by the circulating partitions to prevent boiling over and over. Following the arrows, trace the flow of sap through the flue pan and note that the sap touches the float for the first time as it is leaving the flue pan and entering the front pan. At least 75% of the evaporation has now taken place and the “sweet” begins to take on the light amber color of syrup. This increases as it travels through the compartments of the front pan. There are four compartments in all sizes except the five and six foot widths. These have six compartments due to the extra width. Again two additional sheets of tin are required and more labor, but it makes a better Pan for you.

The Syrup Compartment is shut off from the rest of the front pan by a slide gate. While it is not absolutely tight, when closed, it offers far better circulation when open. We used to use plugs but discarded them years ago as our customers were unduly burning up their front pans. Since it is far easier to draw off syrup from the point where it boils the best and first reaches standard density, the **Leader Special** draws syrup at the back end of the front pan at either side. Thus the operator can see directly in front of him, the streams of sap entering the pan and the syrup leaving after making a complete circuit of the Evaporator.

REVERSIBLE FEATURE

By simply moving the plugs L and M in the Heater Pan and the plug D to the opposite side, the flow of sap is completely reversed in the evaporator thus sending sap from the flue pan across the compartment previously used for syrup. This removes the malate of lime, sometimes called nitre or sugar sand, from the bottom of the pan and prevents scorching. The lime collects when the saturation point is reached and is taken back into the sap when it is below the saturation point.

Thus there is no need for changing pans, soaking or scraping off the lime. Whenever the operator gets the feel of lime on the bottom of the pan by means of the scoop, he simply reverses the flow without letting up on the firing, and by transferring the sweet to the opposite side, goes right on boiling. There are no pipes or plugs to reverse down in the boiling sap where one can get seriously burned.

Advantages of the Leader Special

Very little danger of burning the flue pan since there is no syrup made in it.

Syrup and firing doors close together to save travel and permit closer watch over both by operator.

Faster boiling resulting in saving of labor and fuel costs.

Quicker and easier to reverse circulation of sap.

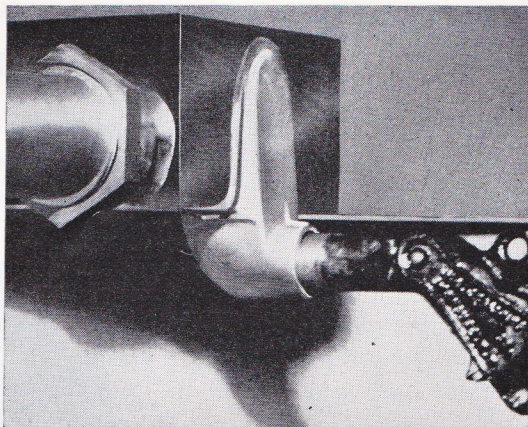
Better float control.

Gives better results under poor draft conditions, or when poor wood has to be used, than the Regular.

Has the most heating surface of any evaporator made.

Syrup Drawoffs

This style of brass drawoff is now used on all evaporators. Syrup runs out the bottom of the box rather than up on the side as shown in some of our older cuts. We now use a one-inch brass bib instead of the perfection gate that is shown in the cut on all sizes. A quarter turn of the lever opens and closes the barrel faucet without strain on the soldered seams of the box. The barrel may be lifted out completely to clean at any time and by leaving the nut and spring off the bottom it will turn very freely. Perfection gate as shown above may be had if desired.



The large opening permits syrup to run out much faster so there is less danger of its becoming too heavy in the pan.

Note the rugged 2" ground brass union connecting the box to the flue pan. This bent end is well braced on the flue pan by bosses and in handling a heavy pan it is not nearly as apt to become damaged as a flexible tube, for instance.

FRONT PAN CIRCULATION IN SPECIAL STYLE

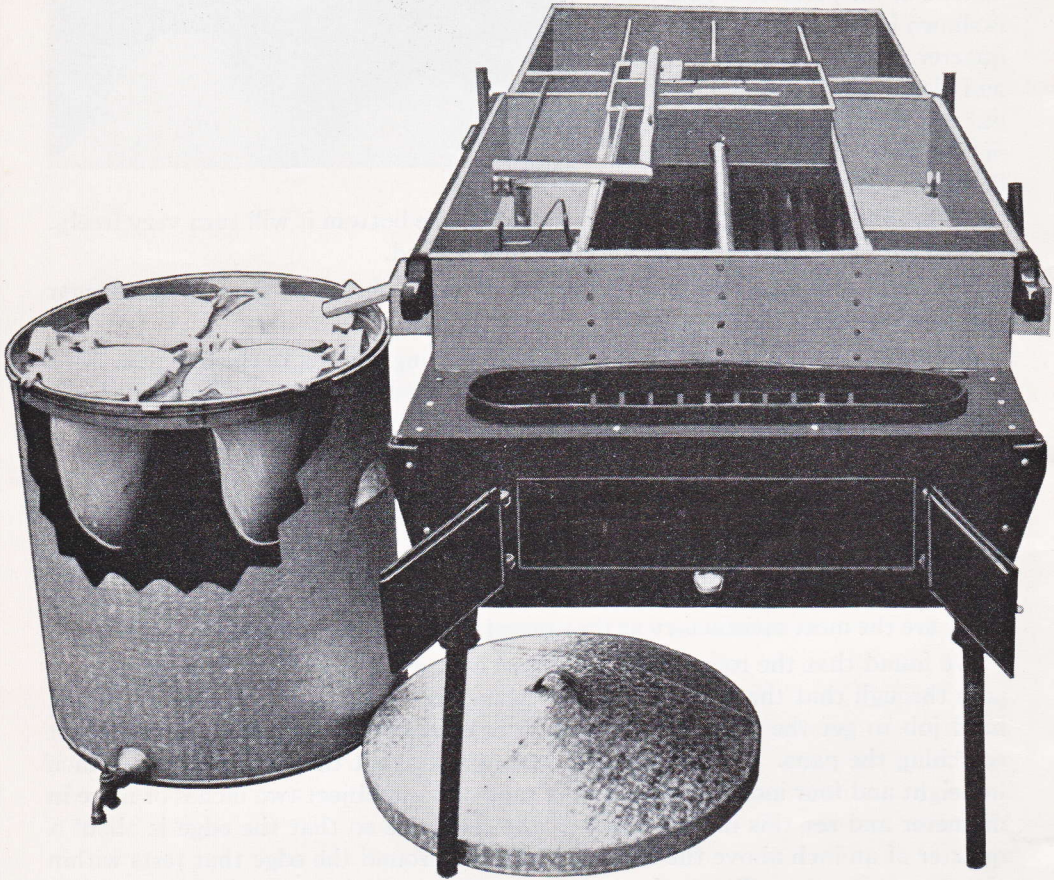
It is necessary sometimes to shut off the side compartment where syrup is to be drawn from the rest of the pan. We have used two methods but find that the slides are the most satisfactory as they permit much better circulation.

We found that the round plug permitted only a fraction of the foaming sap to pass through that the slide does. Thus when one started drawing syrup it was a hard job to get the circulation started quick enough or fast enough to prevent scorching the pans. If you will draw a rectangle about three-quarters of an inch in height and four inches long and then take a round object two inches or more in diameter and set this in the center of the rectangle so that the edge is about a quarter of an inch above the bottom and trace around the edge that rests within the rectangle, you will see what we mean. The semi-circle thus produced is the space you have for circulation when the plug is used while the whole rectangle is what you have with the slides. The slide is not absolutely tight like the plug would be but it answers the purpose much better.

Many operators take them both out after they get under way as the only time they are really needed is the first thing in the morning. Boil whichever way you like best but the slide will give you better results, we believe.

THE REVOLVING TOP FILTER TANK

In use with a Regular style Leader Evaporator.
Equally as convenient with the
Leader Special



DOORS IN REAR OF ARCH FOR CONVENIENCE IN BRUSHING
SOOT FROM FLUES

Do it every morning. Saves fuel and boiling time.

A few questions you might like to ask about

The Leader Evaporator

and their answers.

Question. Where is the **Leader Evaporator** made?

Answer. It is made in Burlington, the Queen City of Vermont.

Ques. How long has this machine been on the market?

Ans. Since 1888—65 years.

Ques. How does the modern Leader differ from the original one?

Ans. None whatever in principle. The original Leader was made in one pan where we now have two for ease in handling. We have also steadily improved the construction and added little improvements that make the modern **Leader** the easiest evaporator to run on the market.

Ques. What material do you use in your Evaporator?

Ans. The best imported English tin.

Ques. Why use English tin instead of American?

Ans. American rolling mills do not make sheets large enough.

Ques. Nearly every Evaporator Company claims to use English tin. Is there any difference in it?

Ans. Most certainly. There are several grades of English tin. The quality is determined by the coating of tin over the iron. The heavier the coating of tin the longer the iron underneath will resist corrosion as it cannot corrode until the tin is gone or wears off.

Our year's supply of tin is ordered at one time, rolled with an especially heavy coating of tin to our specifications. It is far better than the usual commercial tin stocked by jobbers for the general trade.

Ques. Do you ever make your pans of galvanized iron? I have been told that it was just as good and somewhat cheaper.

Ans. Only when the customer insists, but we do not recommend galvanized iron for evaporators. It will not last anywhere near as long, cannot be cleaned with acids or lyes,

and will not hold solder nearly as well. Furthermore the use of galvanized iron in evaporators has been requested discontinued by various State and Government officials connected with the elimination of dangerous impurities such as lead.

Ques. How long will a tin pan last?

Ans. That all depends on how well you take care of it. It is a common occurrence to find a Leader in use for over 25 years. There are many instances where they have lasted longer.

Ques. I notice your flues set down in the fire. I would think they would give out quickly.

Ans. Yes, they do set down in the fire which is where they should be. They will be the very last thing to give out because there is always sap in them and would be the last place to burn. The ends are double seamed and solder sweat in leaving them nearly $\frac{1}{4}$ inch thick at the ends. No cheap lap joints in our evaporator. Double seams insure durability.

Ques. Why is a drop flue any better than a raised one, for instance?

Ans. A drop flue allows the fire to take a direct course following the draft from the grates to the stack. The fire hits the full height and length of every flue. This is not true of a raised flue as the draft is continually pulling the flames away from the pan.

A drop flue may be brushed out every morning without taking the pan off the arch and thus save a lot of time and wood.

Ques. I notice the flues on some evaporators are VV shape and that yours are the same width at the bottom as at the top. Has either style any advantage over the other?

Ans. We believe that our type of flue is better because the heat is more evenly distributed to the sap. It also permits sediment to travel to the back end of the flue and settle into the flue pipe where it can be drawn off. The flues can be thoroughly brushed as the brush will fit between them and do a good job of removing the soot. The other type of flue is a little cheaper to make inasmuch as it is not double seamed on the end. However, we are

not interested in cheapening the **Leader**, especially when durability must be sacrificed.

Ques. I notice that some pans do not have flue pipes whereby sap can be drawn from each flue. Does the **Leader** have this pipe?

Ans. The **Leader** has had a flue draw-off for a long time. It is absolutely essential. It allows the sediment to be drawn out of the flues each morning instead of boiling over and coloring the sap, also makes it much easier to clean up the evaporator.

Ques. Your machine looks as though it might boil fast, but how about the quality of the product? Quality is what I am looking for as it commands the best price.

Ans. We guarantee to make as good or better quality syrup from the same sap in less time, and with less fuel than any evaporator made. We refer you to customers who have used all kinds. The faster and sooner your sap is evaporated the better syrup you will make. The man operating the outfit has as much or more to do with making Fancy Syrup as the Evaporator.

Ques. I have seen blaze shoot 8 feet above the stack on some rigs. This looks to me like wasting fuel. Is it necessary?

Ans. Certainly not. It is impossible to make any blaze enter the stack at the bottom on a **Leader** if the outfit is properly set up, to say nothing of making it go out at the top or even getting the stack red hot. One user reports that he tied a string around his stack 8 feet above the arch and at the end of three years it had not burned off.

Ques. You claim to use less fuel than any other evaporator. I have seen others very similar to yours in appearance. Why shouldn't they be as economical as the **Leader**?

Ans. No other evaporator has as many flues or as much heating surface as the **Leader Special**. We have only $1\frac{1}{4}$ inches fire space in between our flues. Other makes have from $1\frac{1}{2}$ to 2 inches which allows more heat to escape. In addition the **Leader** has the Heater pan which adds considerably to the boiling capacity of the pan.

Ques. I notice you have a great deal to say about the value of your small pan over the flues which you call the Heater. I have been told by others that this pan did not amount to much as it caused a lot of condensation. What am I to believe?

Ans. Actual tests show that our evaporator will boil about 10% more when the Heater is used. We have had several calls from former **Leader** users for Heaters to put on other machines which they were persuaded to buy. That is rather conclusive but we suggest you try our evaporator as we have perfected it, then if you want to get along without the Heater or any other part, send them back and we will give you credit or refund their cost. We do not put them on for style or to make the Evaporator more expensive but because we consider them essential.

Ques. Can I get new front pans that will fit without sending in my old one?

Ans. Yes you can. With the exception of the 6 ft. width, our pans are connected on a jig so that all pans in the same width are interchangeable. All you have to do is order the width and length pan that you require. It should connect to your flue pan without any trouble.

Ques. Do you give any guarantee on your evaporator?

Ans. Yes, we guarantee the **Leader** Evaporator to do good and proper work when set up and operated per our printed instructions when good dry wood is used. If you are unable to get good results, we are very glad to assist you in every way possible. When we can, we send an experienced man to help you.

Ques. Can I put a **Leader** pan on the arch I now have? It is not a **Leader** arch but it seems as tho it could be used.

Ans. You certainly can. In most cases, very good results can be obtained. Occasionally it is necessary to make a longer taper for your stack or increase the size or length of the stack but for the most part only a few minor changes are required. Until recent years, we put more evaporators on other make arches than we did on our own.

The Leader Evaporator Company
Burlington, Vt.
Gentlemen:

I am using a **Leader 5 X 13 Special** Evaporator and I like it. This outfit is my second **Leader** Evaporator during my 40 years of syrup making. I have found it to be the fastest boiling evaporator I have ever operated.

I would recommend a **LEADER** to all syrup producers.

Sincerely yours
MARSHALL PENNOCK

Lacona, New York
May 20, 1953

HOW LARGE AN EVAPORATOR SHALL I BUY?

In determining the size, one should take the following factors into consideration: (1) are the trees consistently good runners? (2) size of the trees—are they growing so that more buckets will be set within a few years? and are there young trees coming along which will take more buckets? (3) how much time can conveniently be devoted to boiling each day? (4) is it hard to get hired help? would a larger evaporator eliminate one hired man to advantage? (5) an evaporator too large makes a poorer quality syrup because a larger percentage of the sap stays in the evaporator until the next boiling; (6) more often the case, an evaporator too small allows enough sap to waste to quickly pay for a larger outfit while the sugar maker works even harder with less returns.

Below we have a table which we believe is about right for the average sugar place. We have figured on a nine-hour boiling day. Occasionally you will get a big run which will make our table look silly and again you could take care of the sap with a much smaller size than we have recommended. All we can do is get in between the two extremes to give you something to go by. Then consider your own conditions and allow for them when choosing.

Regular Style Leader Evaporator				The Leader Special Evaporator			
Size	No. of and length of flues	Sq. Ft. of Heating Surface	Capacity 9 Hr. Boiling (number of buckets)	Size	No. of and length of flues	Sq. Ft. of Heating Surface	Capacity 9 Hr. Boiling (number of buckets)
36 x 8	10—4 ft.	76	250- 350	30 x 8	12—4 ft.	78	150- 250
36 x 10	10—5 ft.	95	450- 500	36 x 8	15—4 ft.	102	300- 450
36 x 12	10—6 ft.	113	600- 700	36 x 10	15—5 ft.	127	450- 600
40 x 8	12—4 ft.	90	350- 500	36 x 12	15—6 ft.	152	600- 700
40 x 10	12—5 ft.	112	500- 600	40 x 8	18—4 ft.	120	450- 600
40 x 12	12—6 ft.	134	600- 800	40 x 10	18—5 ft.	149	600- 700
40 x 12	12—7 ft.	152	800- 900	40 x 12	18—6 ft.	179	700- 900
40 x 14	12—7 ft.	156	800- 900	40 x 12	18—7 ft.	204	900-1000
48 x 10	16—5 ft.	147	600- 800	40 x 14	18—7 ft.	208	900-1000
48 x 12	16—6 ft.	175	800-1000	48 x 10	20—5 ft.	183	700- 900
48 x 13	16—7 ft.	196	1000-1200	48 x 12	20—6 ft.	211	1000-1200
48 x 14	16—7 ft.	182	1000-1200	48 x 13	20—7 ft.	241	1200-1400
48 x 14	16—8 ft.	225	1200-1300	48 x 14	20—7 ft.	245	1200-1400
48 x 16	14—8 ft.	209	1200-1300	48 x 14	20—8 ft.	271	1400-1600
60 x 12	22—6 ft.	232	1200-1400	48 x 16	20—8 ft.	279	1400-1600
60 x 13	22—7 ft.	266	1300-1800	60 x 12	26—6 ft.	272	1200-1600
60 x 14	22—7 ft.	271	1300-1800	60 x 13	26—7 ft.	311	1600-2000
60 x 14	22—8 ft.	297	1800-2000	60 x 14	26—8 ft.	349	2000-2500
60 x 16	20—8 ft.	287	1800-2000	60 x 16	26—8 ft.	359	2000-2500
72 x 14	26—7 ft.	318	2000-2500	60 x 16	26—9 ft.	393	2500-2700
72 x 16	26—8 ft.	364	2500-3000	72 x 14	34—7 ft.	391	2500-3000
				72 x 16	34—8 ft.	447	2500-3500
				72 x 16	34—9 ft.	490	3000-4000

It is expressly understood that the above table is only an estimate and implies no guarantee whatever.

If you are unable to decide what size to buy or need a special size to fit your sugar house, let us know. We can help you.

A great many people buy too small an outfit. Remember, it is expensive to change. If possible buy for at least 10 years in the future.

Under average conditions, it takes about 50 sq. ft. of heating surface to boil 32 gallons of sap per hour, so if you know how many barrels of sap per hour you want to boil, you can multiply this by 50 and find the nearest number in the heating surface column. You will then know the size to buy.

PLANNING FOR THE SUGAR HOUSE

This information is for those who do not have a sugar house or are planning on building a new one. There are many factors to be considered and we list them in what we consider the order of their importance and then proceed to go into details on each point.

1. Elevation for dumping gathering tank.
2. Dry location for foundation with good drainage.
3. Central location for saving time gathering.
4. Syrup sales advantage.
5. Available water supply.

1. In considering a dumping elevation, it is far more practical and economical to dump the sap from the gathering tank into the storage tank by means of a gravity flow. In rare cases this is not possible and a pump has to be used. In a few instances the gathering tank itself can be eliminated and a pipe line or two with convenient dumping buckets or tubs may be installed so that neither team nor tractor is necessary. It is only occasionally that an orchard is so situated that this can be done practically. Usually the trees are either too scattered or the terrain prevents all the sap to be gathered on a gravity line.

There are many sugar orchards where a pipe line can be used with a small dumping tank to eliminate a lot of travel and often cut as much as a third to a half of the gathering time. Thus if other considerations seem to point to a more desirable location perhaps well below the center of the orchard or even below, a pipe line or two will work into the plan very nicely.

The usual procedure is to gather sap either with a team of horses or a tractor and more often than not all the sap is drawn to an elevation very close to a sugar house where a three inch round conductor pipe conveys it to the storage tank. This elevation has to be approximately eight feet above the floor of the sugar house to the bottom of the tank so the sled itself or whatever is used may be part of this elevation. A little more leeway should be given if the distance is more than 25 feet from the storage tank.

In some cases where the sugar house is below the orchard, a small dumping tank is used at convenient spots along up the slope and the sap is piped down from there. A $\frac{3}{4}$ " galvanized iron pipe is generally used in such cases.

2. With the matter of elevation taken care of, we next take up the next most important consideration. If one wants a trouble free arch foundation, a good place for the building must be found where there is good drainage so that frost will not disturb any of the foundation and surface water will not be a nuisance. The ideal spot is over a ledge with a natural slope away from at least three sides of the building. A little grading will provide the slope very easily and if the ledge is not available, a natural grade or improvised grade will take care of the water so that a foundation put under the frost level will be very satisfactory. It is very important to keep the surface water from running into or around the foundation.

There is nothing more annoying than to have to level up an arch three or four times a day and some times it's even disastrous as burned pans often result.

From the standpoint of the welfare of the building and equipment, a dry spot is very essential and if it is not closely surrounded by trees both will last much longer as it will be much drier during the summer time.

3. If all the sap goes into the gathering tank and no pipe lines are used, it is desirable to have the sugar house situated as near as possible to the center of the orchard unless it should be on a fairly steep side hill in which case, it would be better to locate a little below center as sap can be drawn down grade much easier than up. This is more of a consideration for horses of course than for the tractor.

4. If you do not have a ready market for all the syrup you produce, and you happen to be close to a well traveled road, a sugar house close to the road or within a short distance of one, will attract a lot of visitors when you are boiling. A small sample of your product will do a better job selling than the best salesman you could hire. We know of many producers who sell every gallon they make practically as fast as they make it. After the customer sees the work that goes into a gallon of syrup he does not hesitate as much to pay a reasonable price for it either.

5. Running water in the sugar house or an available supply close by is very nice as it comes in handy all the time in washing filters, strainers and equipment. You will greatly appreciate a sugaring off outfit to have a continual supply of hot water as well as a sink or set tub. Making syrup is a sticky job under the best conditions and a little hot water helps out a lot.

Since no two sugar orchards present the same problems it is impossible to make a recommendation to cover them all. We make suggestions that you can consider and adapt to your own particular conditions.

Size and Type of Sugar House

By all means make it large enough so you have ample room. Usually the sugar house is used to store buckets, covers, tanks and even the sap sled during the rest of the year. Many times one has to plan on a larger evaporator at some time in the future as his orchard grows or he develops it.

The storage tank should not be in the boiling room as the sap will not stay as cool. The majority make a lean-to on the end or side of the building on the outside with a roof over the tank. Others prefer to make the building about six feet longer and partition off the tank compartment and have a window at each end for ventilation. We favor this somewhat as the space under the tank can be used for storage purposes to good advantage and the tank has more permanent protection and does not have to be moved. It is an easy matter to let the floor on which the tank sits extend out a little beyond the partition for one to stand on and equally as easy to have a hinged door that will open up or down to permit washing the tank. We see so many tanks left out with only a roof over them that snow blows into and rusts them that we think the little expense of the larger building is justified. A large tank might require more than two windows for good air circulation

or even a long hinged door that could be let down on the outside if need be to keep the sap cooler.

The evaporator should be directly in the center and we would recommend at least six feet space on the sides and front of the arch and three feet at least in back as a minimum space requirement.

An additional two feet space on the sides will make it a little cooler for the operator on warm days and provide space for a sugaring off arch, set tub or sink. This would be particularly essential where there were a lot of buckets to store.

For a 4 x 12 evaporator for instance, a building 20 x 28 would give ample room for the evaporator, storage tank and a sugaring off arch and other conveniences. In making your plans, remember to add on an extra foot for the arch measurements as every arch is just about a foot longer than the pan.

The wood shed can be either on the side or end of the sugar house but is usually on the end so that it does not interfere with putting in windows for plenty of light. Many sugar makers install either an overhead or ground track with a carrier or car to roll the wood up close to the arch front for convenient firing. The cost isn't very much and you will appreciate it particularly if you are a big producer and have to get up a lot of wood which cannot all be piled within reach.

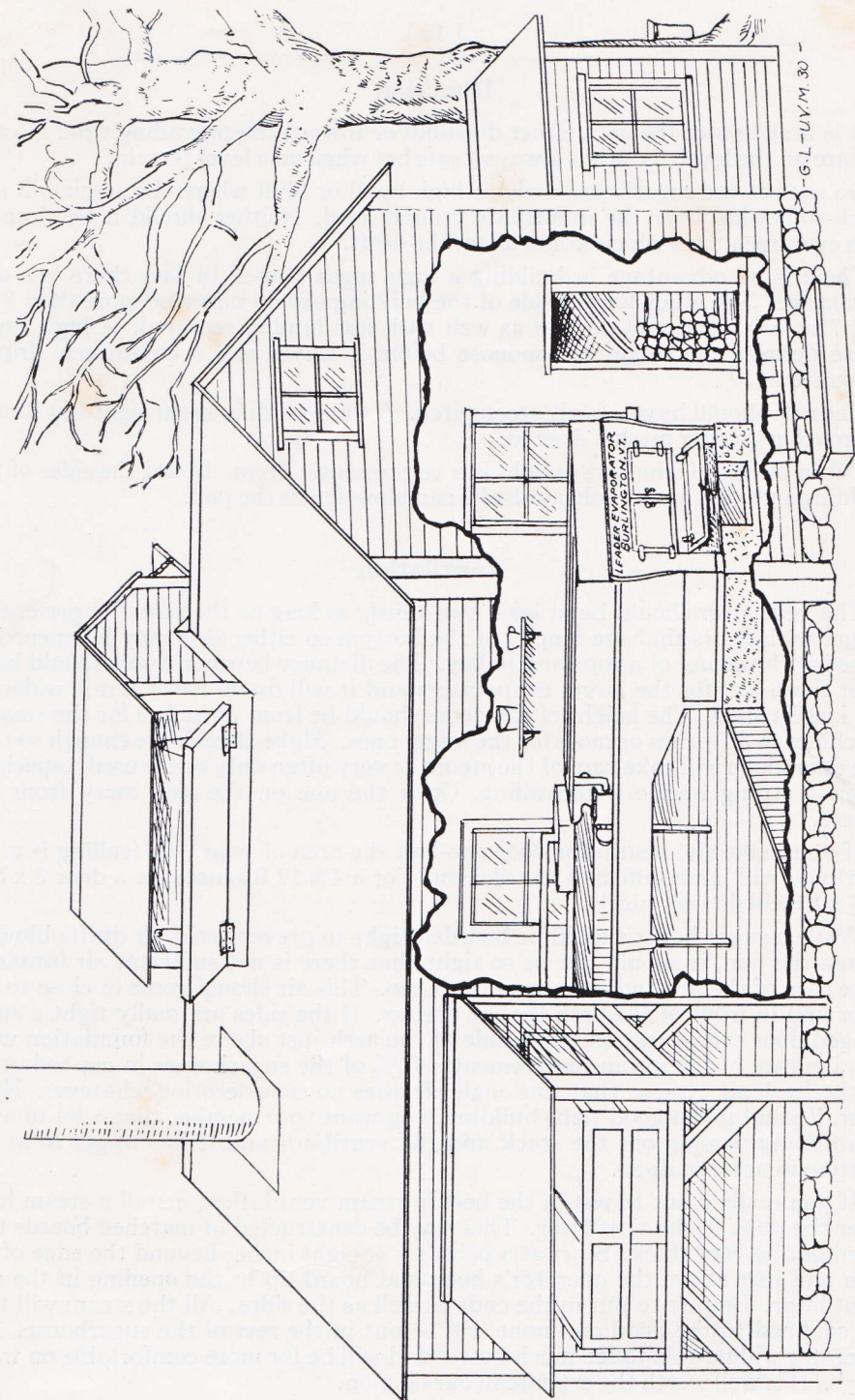
The shed can be as simple or as elaborate as you want to make it. A good roof is of course essential but the sides and end do not want to be too tight. Good air circulation is necessary to dry wood properly. Many do not have anything for sides at all while others board up one side and the end leaving one side open. This keeps the snow from blowing in to any extent and if you are in a windy place has a tendency to prevent the wind from lifting off the roof.

The size of the shed will all depend on the amount of wood required. This in turn depends somewhat on the quality of the wood and of course on the number of buckets set and the amount of sap you get. On the average, you should plan on a solid cord of wood (128 cubic feet) for each 25 gallons of syrup you normally make. Some years when the sap is sweet, it won't take that much and others it will. In some cases, it is safe to plan on a cord of wood for every 100 buckets for the average season but in many sections the production is much higher than the average so this is not a particularly good rule to follow unless you happen to have average production which in late years has run about a gallon of syrup to every four or five buckets. It is always best to have more than you think you will need as there is nothing more provoking than to have to go out and cut wood while your buckets are running over unless it is trying to boil with the green wood that you cut.

CONSTRUCTION OF SUGAR HOUSE

Foundation

The ideal foundation is a cement wall and floor with the firing level and ash pit at least 12" lower than the rest of the floor on which the arch sets. The floor should slope toward one end or the other to a drain so it can be washed down with water occasionally. The front end is usually on the down hill side and the logical spot for the drain would be out of the firing pit.



-G.L.-UY/M 30-

Direction

It is best to face the arch either downhill or toward the prevailing wind in case you are on the level. South is always a safe bet when on a level terrain.

Do not set the sugarhouse under a high knoll or bluff where the stack will not reach somewhat over the immediate ground level. Neither should it be close to high evergreen trees which would affect the draft.

There is no advantage in building a high sugar house. In fact there is a disadvantage. The studs for the side of the building should never be more than 8 ft. and 7 or 6 ft. ones will do just as well with less lumber required. A high sugar house permits the steam to condense before it leaves and a continuous drip is encountered.

The roof should have a fairly steep pitch. A third pitch is about right but it may approach a quarter pitch if desired.

Put in plenty of windows as light is a very essential item. Board the sides of the building tight so that no cold air drafts can blow across the pan.

Ventilation

The ventilator should be at least two-thirds as long as the pan and preferably longer with doors that are hinged at the bottom so either side may be opened or closed with the use of a rope and pulley. The distance between doors should be at least three feet for the larger evaporators and it will do no harm if it is wider on the largest sizes. The height of the doors should be from 24 inches for the smaller machines to 36 inches or more for the larger ones. Make them large enough so that one door alone will take care of the steam as very often only one is used, especially when a strong breeze is prevailing. Open the one on the side away from the breeze.

If you make the ventilator door one-half the area of your pan (calling it a flat pan) you will have sufficient ventilation. For a 4 x 12 for instance a door 3 x 8 or $2\frac{1}{2} \times 10$ will do very nicely.

While a sugar house should be boarded tight to prevent cold air drafts blowing across the pan, it should not be so tight that there is not sufficient air intake to take care of the fire and the steam draft too. This air should come in close to the floor and in front of the arch for the firebox. If the sides are really tight a small hinged door can be put on either side of the arch just above the foundation walls to take care of the steam requirements; 90% of the sugarhouses in use today are of the fresh air type so that this angle requires no consideration whatever. However, if you build a good tight building, you want to remember that a lot of air is continually passing out the stack and the ventilator and it has to get in at the bottom in order to do so.

If you really want to put in the best in steam ventilation, install a steam hood over the pans to the ventilator. This may be constructed of matched boards that need not be very thick. Start at a point six or eight inches beyond the edge of the pan and just above the operator's head and board up to the opening in the roof ventilator. Be sure to put in the ends as well as the sides. All the steam will then be confined to the hood and none will be out in the rest of the sugarhouse. The operator will be able to see much better and will be far more comfortable on warm days. It is well worth the expense in our opinion.

THE LEADER ARCH

Is well designed to carry the heat and flames to the entire heating surface of the evaporator. A minimum of bricking is required and there are no sides in either the arch or the ashpit that slope in so that brick will not stay in place.

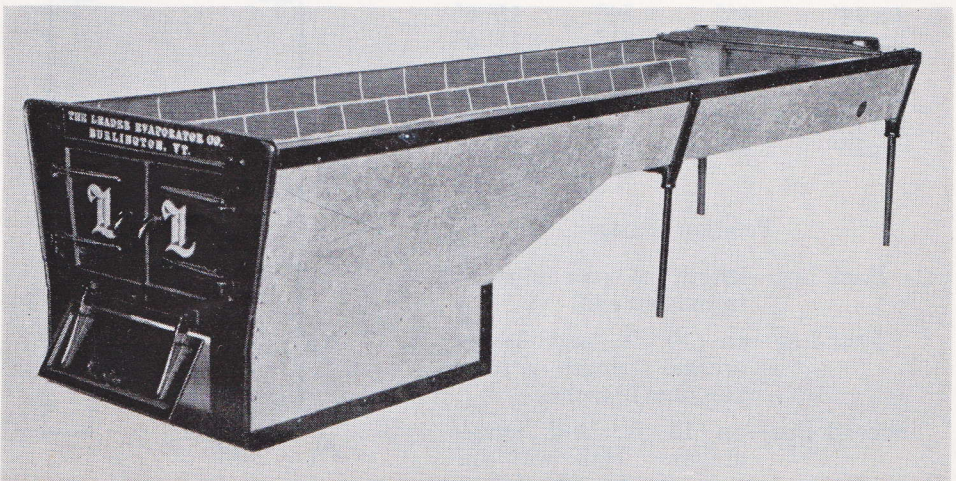
The castings are of high quality and designed to last. We have records of a set of castings being used three times to build an arch with. This means from forty to fifty years' service.

Wood grates are furnished unless otherwise specified. Coal grates are available but we do not recommend the use of coal as it will greatly shorten the life of the pans. Whenever coal is used, we withdraw all guarantees on the evaporator and arch. With the exception of the 24 – 30 and 72-inch width arches, the grates go crossways. This means a shorter grate that will last longer and better draft on the whole.

The top rails or angles are $2 \times 2 \times 3/16$. Ample legs are used to support the arch and keep it level and are riveted to the top rail so they continue to keep it level even after the sheet steel on the sides becomes weak.

All sheet iron used on the arches with the exception of the smallest sizes (sugaring off arches) is 18 gauge galvanized material. This is well riveted to the frame and supported underneath by plenty of angle iron cross pieces.

The stack is made of heavy galvanized steel and consists of a long taper and the proper diameter and length of round stack to afford good draft under ordinary conditions. Some draft locations may not require all the stack we furnish but we recommend putting it all up and controlling the draft with the draft damper in the ash pit. There are days when it will all be required.



FOUNDATION FOR ARCH

Foundation Measurements

For those who wish to put in the foundation for the arch before it is delivered, we give all the necessary figures to go by. The inside firebox measurements should be followed rather closely. We have allowed space for the brick to lay flatways. If you wish to lay them edgeways, the space can be larger so that E-F can be as much as 4" more and D-E 2" longer. B-C can be as much wider as you desire. A solid cement floor is very preferable. In this event, leave only the ash pit and space in front of it lower. The entire width of the sugarhouse in front of the arch may be left on a level with the firing pit and ashpit or simply the space in front of the arch, whichever the individual prefers.

Arch Width	Ash Pit	
	E-F	B-C
30"	18"	34"
36"	22"	38"
40"	26"	42"
48"	33"	49"
60"	44"	60"
72"	56"	72"

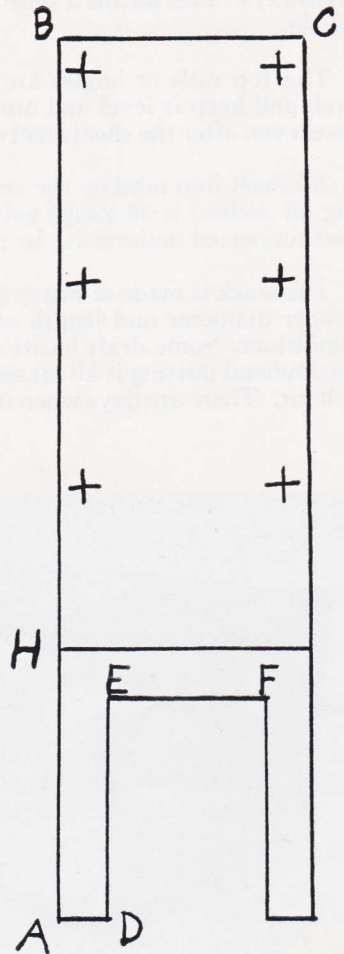
Arch Length	D-E	A-H	A-B
8'	27"	35"	9' 6"
10'	32"	40"	11' 6"
12'	41"	49"	13' 6"
4 x 13'	46"	54"	14' 6"
5 x 13'	49"	57"	14' 6"
4 x 14'	46"	54"	15' 6"
5 x 14'	49"	57"	15' 6"
6 x 14'	46"	54"	15' 6"
4 x 16'	46"	54"	17' 6"
5 x 16'	49"	57"	17' 6"
6 x 16'	46"	54"	17' 6"

Position of Legs

Back Leg—length of pan plus 9" from front end.

First Leg—on 10 ft. and longer arches. Length of front pan plus 10 inches.

Second Leg—on 13 ft. and longer arches. Half way between first and back legs.



SETTING AND BRICKING THE ARCH

Set the arch perfectly level cross ways. We advise that the back end of the arch be from a quarter to a half inch higher than the front end depending on the length of the arch. This is to protect the front pan. Many operators like to let the flue pan foam which means that there is just about a third of the sap in it that there would be if it were not foaming. When the fire happens to die down a little the foam will drop down and the pan will start to fill up drawing sap back from the front pan as well as from the regular intake. With the back end of pan higher, the front pan is protected with the Leader as the sap cannot get into the flues from the front pan except by running to the very back end past the outside partitions. The front pan requires more coverage for protection than does the flue pan. Such an arrangement adds to the boiling capacity somewhat as not as much sap has to be carried in the pan for that one reason and the quality is somewhat improved at the same time.

Be sure there are no humps or sags in the arch rail on which the pan sets. These should be taken out before any bricking or leveling is done. Side bows can usually be taken care of by spreading the center legs out at the bottom.

We recommend that all arches be lined with asbestos paper before being bricked. It is very cheap to buy and easy to put on—just like wall paper on the wall. Two dollars spent here will insure an extra ten years' life of the arch if you take care of it otherways.

With the arch leveled as you want it, start bricking the ash pit section first. The brick may be placed flat or edgeways. If you have plenty of brick, it is just as quick to put them in flatways and they will stay better. It will be well to taper off the last row to the grate rail to insure full draft.

For mortar, any of the regular brands of mortar mix such as Brickment are suitable. Usually about three parts of sifted sand and one part of the mortar mix work out about right. Fireclay may be used if you prefer. It is not quite as easy to handle the fire clay as it sticks to the trowel but when it is used and then a slow fire is started so the clay and brick are baked together a very satisfactory job is obtained.

If the brick are dry, place them in water before using otherwise they will draw all the moisture out of the mortar and it will not last anywhere near as long.

After bricking the ash pit, the grates are laid in place. With the exception of the 24, 30 and 72-inch width arches whose grates go lengthways, all the arches are made for the grates to go in crossways. If you happen to be in a bad draft location, it will be well to lay the grates with some clearance between them to give more air space. There should be a little space anyway. An eighth of an inch will take care of the expansion very easily but for extra draft, a quarter of an inch may be necessary. Be sure to allow at least a quarter of an inch expansion room on each end of the grate especially on the longer ones. Otherwise when they are hot they will either push the sides of the arch out or warp.

The sides and incline of the arch must be bricked. Lay the brick edge ways and break joints. On some sizes the brick will come out even at the top but as the various width arches have different height fireboxes, not all of them will, so a

brick has to be split for the last course. On the back half of all arches, a brick laid flat on the bottom and either one up endways or two edgeways will work out perfectly. The bottom of the back half need not be bricked if you are short of brick as sand will do just as well. The bottom should be filled up to within a quarter of an inch of the flues. The flue straps should set in sand to be away from the fire but the flues are better off if they do not set in the sand or ashes particularly on a wet season when water might come down the stack and soak the ashes forming a lye that would be very harmful to the tin. Be especially careful at the back end for the last three feet. If you brick the bottom, remember to leave a channel for the flue pipe to lay in. About a half inch of sand will be required over the brick unless they are thicker than two inches. The flues are $7\frac{1}{2}$ inches deep so level up to about $7\frac{3}{4}$ inches below the top of the arch and it will be about right.

It is best to brick up an arch in the Fall before cold weather sets in but should it be necessary to do the work later on, pick out a mild period to do it. The mortar should not freeze until it is dried out. Do not use salt or chloride to prevent freezing as both will have a harmful effect on the metal.

It may be necessary to do the bricking just before starting boiling for the first time. If so, a slow fire can be started immediately after the work is done to hurry up the drying process and after an hour or so a full fire can be laid. We do not recommend this as the mortar will not last as long but it can be done in an emergency.

Approximate Number of Bricks Required for Leader Arches

Size	Whole Arch	Whole Arch Less Rear Half Bottom	Size	Whole Arch	Whole Arch Less Rear Half Bottom
30 x 8	150	100	48 x 12	325	215
36 x 8	195	135	48 x 13	350	235
36 x 10	240	170	48 x 14	370	250
36 x 12	275	195	60 x 12	365	250
40 x 8	200	145	60 x 13	400	260
40 x 10	255	175	60 x 14	435	270
40 x 12	310	220	60 x 16	515	290
40 x 14	345	245	72 x 14	600	360
48 x 10	285	185	72 x 16	660	380

Chelsea, Vt.
April 20, 1950

The Leader Evaporator Co.
Burlington, Vt.

Dear Mr. Lynde:

Since adding the six feet to our smoke pipe on our 5 X 13 rig, we have been able to boil 6 or $6\frac{1}{2}$ barrels of sap per hour. But with the men gathering while I was boiling it was hard to tell just how much.

But this is what I want to tell you. We ran out of wood and Monday afternoon after the men stopped gathering so I could measure what the rig was doing, *I boiled in 6 barrels of sap in 45 minutes with green wood!*

Yours truly

FRANKLIN D. BURBANK

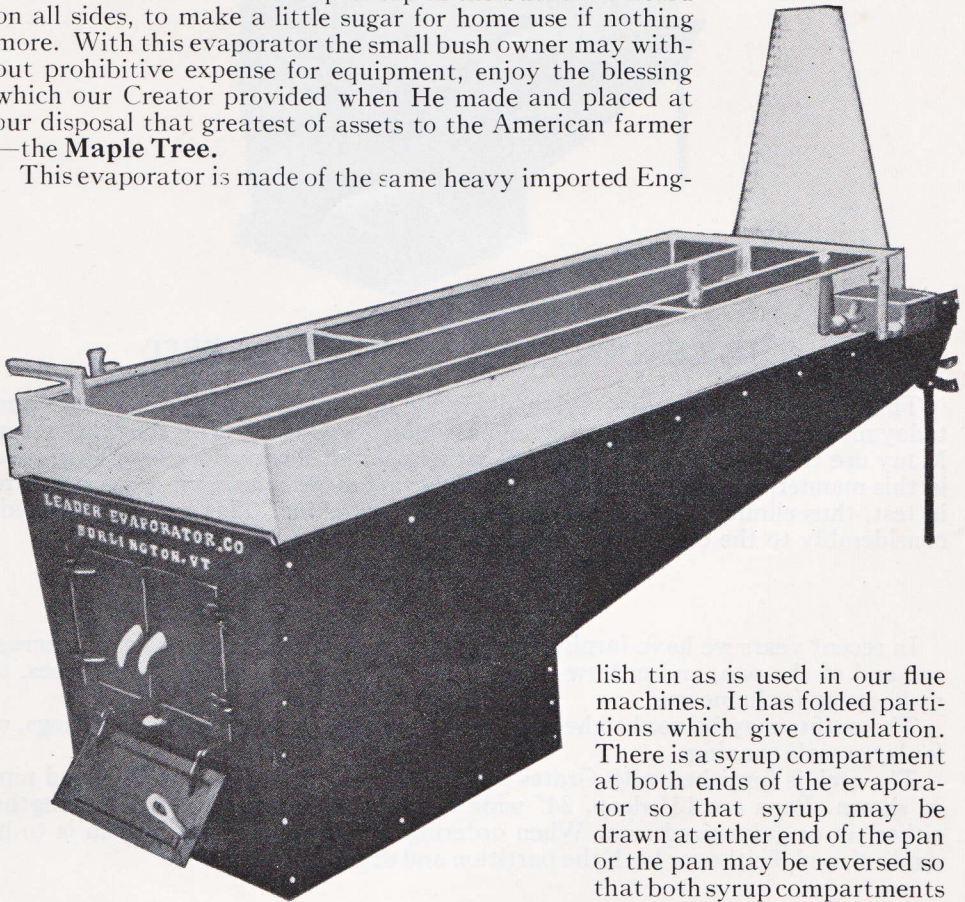
Note: Mr. Burbank has since bought another Leader Special for another sugar orchard—the sure indication of a satisfied user.

OUR FLAT BOTTOM EVAPORATOR

Is especially designed to meet the requirements of those who have but few trees, and can set from 50 to 150 buckets but do not feel that it would be practical to purchase one of our fast boiling **Leaders**.

Nearly everyone gets the fever when Spring arrives, and the musical sound of the drip of sap in the buckets is heard on all sides, to make a little sugar for home use if nothing more. With this evaporator the small bush owner may without prohibitive expense for equipment, enjoy the blessing which our Creator provided when He made and placed at our disposal that greatest of assets to the American farmer—the **Maple Tree**.

This evaporator is made of the same heavy imported Eng-

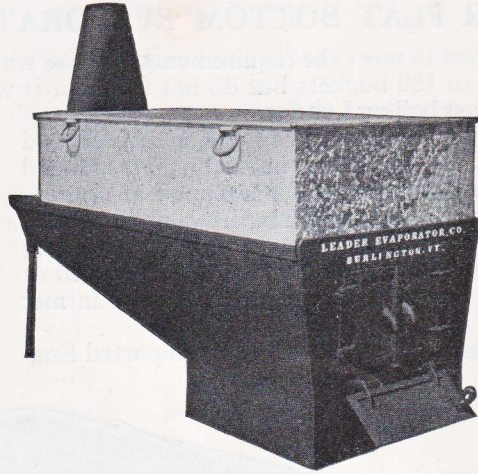


lish tin as is used in our flue machines. It has folded partitions which give circulation. There is a syrup compartment at both ends of the evaporator so that syrup may be drawn at either end of the pan or the pan may be reversed so that both syrup compartments can be used to eliminate nitre.

To free the pan from nitre all that is necessary is to change the pan end for end or set the regulator in the opposite end of the pan. By doing this every day, you will greatly lessen the danger of burning your pan and scorching your syrup.

These evaporators come complete with arch, grates and stack. The pan is fitted with regulator, scoop, skimmer, etc., all ready for business. They can be installed in any convenient building.

Made in two sizes, 30 x 6 and 30 x 8. The 30 x 6 arch is made in the design shown above. We usually make the 30 x 8 in the flue type style shown on page 15 so conversion to a flue evaporator may be made at any time without changing arches.



THE LEADER SUGARING-OFF OUTFIT

This outfit has many uses. Originally made for making maple sugar, it is used today more for standardizing syrup and as a quick way to clean up the evaporator. Many use them to finish off the syrup rather than in the evaporator. When used in this manner, the syrup is drawn from the evaporator before it is quite standard in test, thus eliminating most of the danger of scorching. This method also adds considerably to the capacity of the evaporator.

For Boiling Sap

In recent years we have furnished many of these outfits with a partition across one end of the pan, and a draw-off for use in boiling sap from 25 to 50 trees, to make syrup for home use.

The outfits may be used to heat water for butchering, cooking feed for hogs, or for large scale canning.

The arch is furnished with Grates and one Taper joint of pipe to 7" round pipe as shown. Pans are 13" deep, 24" wide and available in 3, 4 and 5 ft. lengths, either tin or galvanized iron. When ordering, specify size, material pan is to be made of, and if either or both the partition and draw-off is desired.

The Leader Evaporator Company
Burlington, Vt.
Gentlemen:

Cincinnati, New York
May 19, 1953

This spring I purchased from your dealer, H. W. Cook Farm Service, De Ruyter, New York, a LEADER Special Evaporator 4 x 12 and I believe it is the nicest outfit anyone could ask for.

I have used other makes, but after using LEADER, I can truthfully say LEADER can't be beat.

Sincerely yours
IVAN PEAK



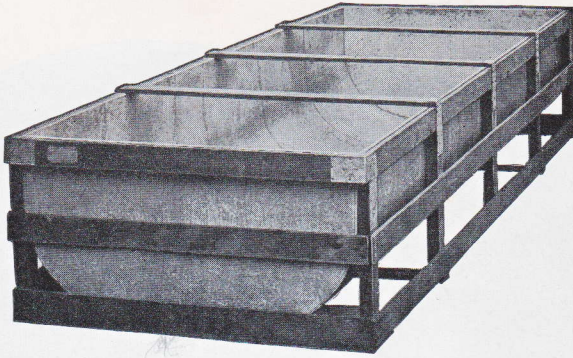
THE MONITOR GATHERING TANK

In keeping with the rest of the **Leader** line embodies the very latest and best principles of the ideal gathering tank. It is low down, easy to pour sap into and will not tip over. It is oblong in shape with curved ends, together with large drum in center to prevent sloshing, thereby eliminating strain on the tank, as well as distributing the load more evenly on the sled, which makes it much easier for the team to handle. "You don't know what a difference it makes," says one of our customers, "with my team whether the sap is on the sled or three feet in the air, in the way they handle the load."

Conical strainer on inside keeps dirt and ice out and lets sap in. Large outlet, metal pipe with Brass casting which is securely riveted and soldered. Will empty in two minutes. Outlet turns down either way. Handy for drawing water as well as sap. Made of heavy, galvanized iron, double seamed and soldered inside and out, making them very strong and durable.

The Monitor Tank is Made in the Following Sizes and Dimensions

No. 1	30 pails or 4	bbls.	30 $\frac{1}{2}$ x 58 $\frac{1}{2}$ inches x 24 inches high
No. 2	40 pails or 5	bbls.	33 $\frac{1}{2}$ x 70 $\frac{1}{2}$ inches x 24 inches high
No. 3	50 pails or 6	bbls.	33 $\frac{1}{2}$ x 70 $\frac{1}{2}$ inches x 28 inches high
No. 4	60 pails or 7 $\frac{1}{2}$	bbls.	41 $\frac{1}{2}$ x 69 $\frac{1}{2}$ inches x 28 inches high



THE LEADER STORAGE TANK

This tank is round bottom for ease in cleaning and especially for durability. There can be no expanding of the sides to crack the solder as is so often the case with a tank having straight sides. All corners and cross braces are heavily metal bound where needed. Drawoff is from the bottom, near one end and flush with the inside so every drop of sap may be drained from the tank. There are no corners to catch dirt or slime. It is very easy to install and keep clean. A solid platform giving good support under each leg and the entire length down the center is required. The tank must not sag in the middle—a broken seam will result if it does to any extent.

An elbow, two nipples and a brass gate valve are furnished with every tank. $\frac{3}{4}$ -inch on the 16-bbl. and smaller sizes—1-inch on all the larger ones.

Capacity and Outside Dimensions of Round Bottom Storage Tanks

6 bbls.	42 in. Wide	23 in. Deep	62 in. Long
10 bbls.	42 in. Wide	23 in. Deep	108 in. Long
12 bbls.	53 in. Wide	27 in. Deep	92 in. Long
16 bbls.	53 in. Wide	27 in. Deep	120 in. Long
20 bbls.	53 in. Wide	33 in. Deep	120 in. Long
25 bbls.	53 in. Wide	33 in. Deep	144 in. Long
30 bbls.	60 in. Wide	36 in. Deep	144 in. Long
35 bbls.	60 in. Wide	36 in. Deep	162 in. Long

Elevation Required for Leader Pans

It is desirable to have the storage tank high enough so it can drain into the evaporator without disconnecting the feed pipe. However, up to six inches less than the figures given here may be used and still allow the tank to drain by disconnecting the feed pipe on the funnel and letting it rest on the edge of the pan. The following figures apply to the various width pans:

30" width	42" from the floor level of the arch
36" width	44" from the floor level of the arch
40 and 48"	46" from the floor level of the arch
60 and 72"	49" from the floor level of the arch

THE LEADER GALVANIZED SAP BUCKET



There is no question regarding the best material for sap buckets. Galvanized iron buckets offer the most advantages. Our buckets are galvanized after they are made, by a dipping process which leaves far more zinc on the bucket than is found on ordinary galvanized iron. This method does away with soldering and in addition seals the seam on the outside of the bucket as well as the inside. The wired rim is also heavily coated and there are no raw edges where the metal is cut that is not coated over as well. You will find no cracked or peeling coating as a result of machine operations in the production of the bucket such as are often found on buckets made up of galvanized sheets.

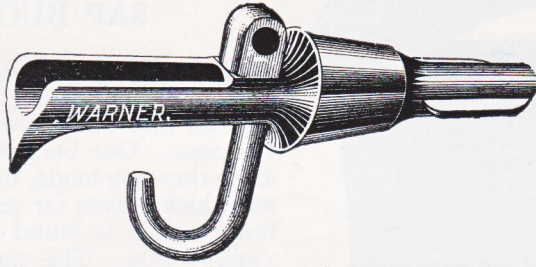
Advantages

1. Easy to wash with a Leader Bucket Washer.
2. The teeth of squirrels, hedgehogs and mice have no effect on the Galvanized Bucket.
3. Do not become brittle or deteriorate with age if properly washed immediately after sugaring.
4. Offers the lowest production cost at the tree, from the standpoint of the customer. Proof: We know from experience that a good galvanized bucket will last from 40 to 50 years if properly cared for. On the basis of the average crop production over the past 10 years, it takes about five buckets to produce one gallon of syrup. Thus over a period of 40 years, one bucket would produce about 8 gallons of syrup at an average cost of about 12c per gallon based on the present cost of a galvanized bucket and cover. Compare this with the average cost of containers costing around 70c, some of which do not even last one year. If they average to last five years, the cost per gallon of syrup will be 70c—10 years—35c. Either figure is more than the industry can afford. We feel that the galvanized bucket is still the most practical and durable container at the tree.

THE LEADER VENTILATING BUCKET COVER

The covers are made of galvanized iron and are heavy enough to stay on the bucket under all conditions. They ventilate the bucket perfectly, at the same time keeping out all snow, rain, sticks and bark. Will fit any metal bucket with any spout. Will store in small space. Will pay for themselves in one year. You cannot afford to be without them. With syrup at \$5.00 per gallon, sap is worth 3c per quart. Less than one-half bucket full pays for a cover. We have three regular sizes: a small size for buckets 10" in diameter, the regular size for 11" diameter, and a large size for buckets which are around 12".

THE WARNER SAP SPOUT



The Warner spout has been the favorite of the sugarmaker for half a century. It offers features not found on any other spout altho it is closely imitated like the majority of our equipment.

The object of the Warner spout is to obtain the greatest amount of sap from a hole which is not too large to heal up after sugaring. A 7/16 hole seems to be the most practical from all standpoints. A further object is not to break or mash the inner bark next to the wood. This inner tissue next to the wood is the medium through which the tree is nourished and becomes wood as the tree grows. This section is called sap wood sometimes and is the narrow strip shown in the cut with the diagonal lines. If the hole is cut cleanly with a sharp bit or drill and the edges are not mashed or bruised, the earliest and most sap comes from this so called sap wood. You will note that the tapered part of the spout does not reach this far into the hole thus there is no mashing of the sides of the hole where the sap comes from to block off the flow of sap in any way and since the tissue is not injured it will heal up much more quickly after sugaring. The tapering section of the spout simply dams up the tap hole so there are no leaks. The spout should not and does not require being driven hard enough to split the bark. It is the side flanges which are slightly larger than the hole that hold the spout in place.

It will not become loose by freezing and thawing temperatures or by the weight of the sap in the bucket which is often swinging somewhat in the wind.

With the objective reached of getting all the sap that is available from the hole, the next consideration is to keep it coming as long as possible. Of course this is up to the weatherman to a great extent but through careful design the air is kept away from the tap hole as much as possible. The hole in the spout is rather small so that capillary action fills this hole with sap before any will drip away from it. Thus, whenever sap is running at all, or even after it has stopped running and until the sap in the spout has evaporated, the hole is sealed airtight and thus kept from healing. Thus from the time you tap, if you wait as you should until sap will start, until well into the season, there will be very little time but what the hole will be sealed with sap, either liquid or frozen, day and night. Just check this feature with the spouts you may now be using or with any of the spouts on the market.

The real advantage of the sealed hole will come in the latter part of the season when it will really show up. If you will go through a sugar orchard where different kinds of spouts are used you will see what it really means. You will find the Warner spout still dripping away—perhaps slowly—while some of the others will be dried up completely. There will be from two to four quarts of sap in the buckets under the Warner while there is little or none under the spout that has let the air get inside the tap hole continuously from the day the hole was made. Thus the Warner actually gets enough more sap to pay for itself not once but

several times during a normal sugar season. With sap worth $2\frac{1}{2}$ to 3c per quart at present prices, one day's extra run alone at the end of the season does the trick. Let us assume conservatively that the Warner gets six quarts of sap more per year than some other spout that might be cheaper to buy and thus be very popular as a result, this could be figured conservatively at 15c worth of syrup per spout, \$15.00 for 100 or \$150.00 for 1,000 buckets set. Sounds rather fantastic doesn't it, but it is sound logic and actually works out that way. Ask the man who has tried both and see if he does not back up this statement.

Water Shed

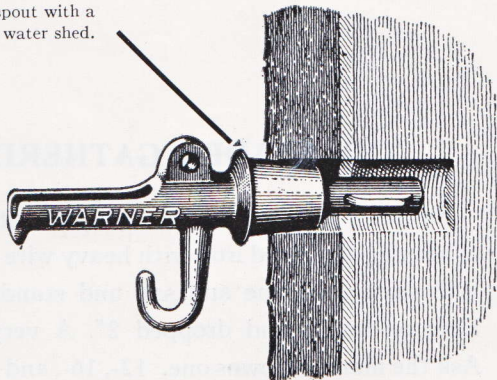
The Warner spout is the only spout with a drip cap or bead to prevent water which comes down the side of a tree during a storm from running along the spout into the bucket. This rim forces the water to drop outside of the bucket on both types of spout. You have noticed a lot of colored rain water in buckets that were well covered before now and wondered how it got in there. Very likely this is the explanation. There is no need to boil in rain water if the Warner spout is used—that is, if a good cover is used.

There are many kinds of spouts on the market that can be purchased at a lower price but the best is by far the cheapest in the long run. Most sugar makers know that all the spouts they have used have given them trouble in some manner. Some leak unless great care is taken in rossing the bark. Others pull out of the tree in heavy winds or when the bucket is filled with sap. Many of the cast iron ones break off in the tree. A great many jam or close up when driven just a little too hard and have to be discarded.

The Warner is easy to drive and pull. It is made of malleable iron and not very apt to break if handled at all considerably. If carefully washed and dried immediately after sugaring, it will last a lifetime but should they become rusted through neglect to remove the sour sap or being put away without proper drying, they may be recoated at any time at a nominal cost.

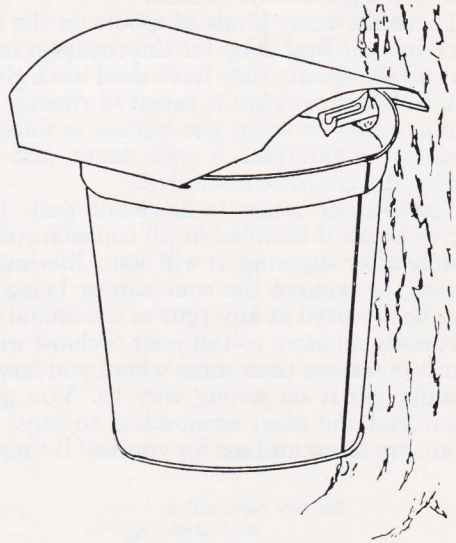
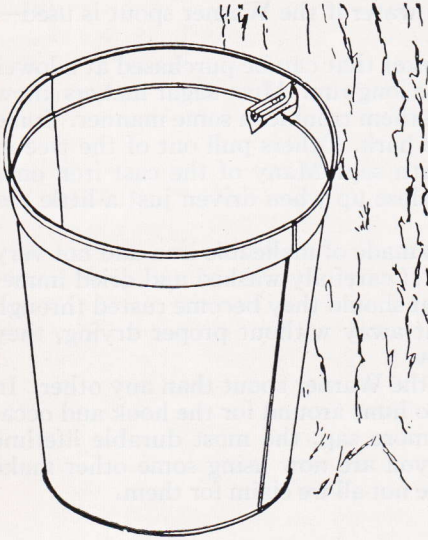
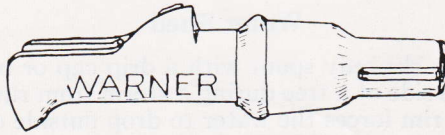
It costs no more to tap your orchard with the Warner spout than any other. In fact it costs less than some where you have to hunt around for the hook and occasionally get it on wrong way to. You get more sap, the most durable lifetime spout and the most economical to buy. If you are now using some other make spout, try a few and see for yourself if they are not all we claim for them.

The only spout with a
water shed.



THE WARNER HOOKLESS SPOUT

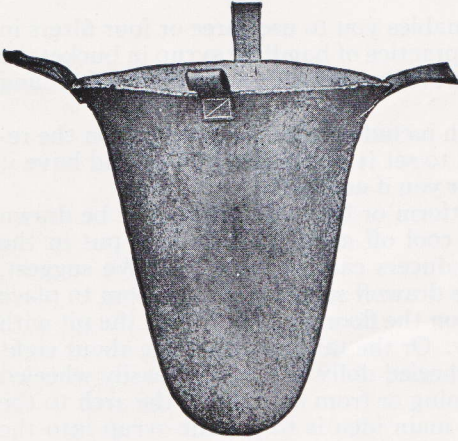
This spout is becoming more and more popular as it offers the opportunity of emptying the bucket without removing from the spout. A little more care has to be exercised in tapping to keep out of hollows or depressions in the tree which would prevent the bucket from turning. The bucket can be removed to empty and put back on fully as easy as on the hook style.



THE LEADER GATHERING PAIL

Please note the style of this pail: easy to pour into. Made of heavy galvanized iron with heavy wire in top and bottom. Will save you time and sap and stand rough treatment. Ears on inside and dropped 2". A very convenient pail. Ask the man who owns one. 12-, 16-, and 20- quart size.

SYRUP FILTERS



The sugar maker who takes pride in his product and wishes to produce a clear product, one that will show no sediment in the bottom of the container and make his customer come looking for more, will use nothing but a felt filter. They are a "must" if syrup is to be packed in glass and should be for tins.

We carry only the seamless filter which will last longer and is easier to turn and wash. These will positively remove all sediment and nitre if you do not paddle or spoon the sides in an effort to get more syrup through. Do not stir the syrup through the filter or it will be cloudy.

If properly cared for, a filter may be used two or three seasons so you should plan on having enough on hand to take care of your syrup without becoming plugged up. Have two anyway and after that one for every 200 buckets at least.

Do not try to filter syrup unless it is boiling hot as you will have poor results if you do. Use in connection with our Revolving top filter tank shown on page 6 or in the top of a milk can.

Wash thoroughly before using the first time. A little milk added to the water will help remove the "wooley taste" that will otherwise affect the first syrup that goes through them. Be careful not to use two or three filters for the first time all at once and can the syrup as fast it as goes through them unless you take special pains to wash them first. If you wait until a considerable quantity of syrup has run through, it will not be noticeable.

Be sure to wet and wring out a filter before attempting to run syrup through it. You will get nowhere trying to put syrup through a dry filter. A clothes wringer works best. It does not injure the filter and it gets out more of the water.

To wash, turn inside out and let warm water run through the opposite way the syrup did. This will push the nitre all out. Sometimes it is necessary to hold the top of the filter together tightly and squeeze or twist the filter to force the water through. When clean, turn back and rinse. Then wring it out and it is ready to use again—two minutes should do the job if you didn't try to use it too long. Run syrup right out of the evaporator into the filter boiling hot. Do not attempt to fill the filter a second time. Have three or four that can be used one right after the other so the first one has time to drain out before it is needed again. Wash it before you start to fill it again. Otherwise you will soon end up with all your filters half full of syrup that has cooled down to where it will not go through.

Caution! Do not pack filters away in moth balls. Wash and thoroughly dry then seal in paper bag.

FILTER YOUR SYRUP THE EASY WAY

With a revolving top filter tank which enables you to use three or four filters in rotation without the dangerous and messy practice of handling syrup in buckets or pails. Draw directly into the filter from the evaporator with a minimum of cooling which means far more efficient filtering.

The tank is approximately 28 inches high including the highest point on the revolving top so there is usually ample room to set it under the drawoff and have it turn. We can easily make a shorter tank for you if necessary.

Some prefer to set the tank up on a platform or bench so syrup may be drawn out easier. This way allows the syrup to cool off a little before it is put in the filters but may be the only way some producers can use the tank. We suggest, however, that a small pit be dug under the drawoff so there will be room to place a can under it for filling. One can then set on the floor with his feet in the pit with the can and do the work quite comfortably. Or the tank can be made about eight inches shorter and set on a three or four wheeled dolly so it can be easily wheeled to the edge of the firing pit for ease in canning or from one side of the arch to the other as you reverse the evaporator. The main idea is to get the syrup into the filters boiling hot and not after it has cooled off anywhere from 25 to 50 degrees.

Advantages

Heat from the filtered syrup keeps that in the filter hot since it cannot escape out of the tank with the revolving top holding the steam and heat in. This nearly doubles the filtering capacity of the filter before it has to be washed.

Any one of the filters may be removed without disturbing the others for washing and replaced with a clean one.

The tank offers an opportunity to standardize up to 35 gallons of syrup at one time before canning so that uniform test and grade is obtained. This is important especially now that grading laws are in effect which requires the grade on every container in some states. Remember that the density is just as much a part of the grade as the color and your syrup must be standard density in order to pass any grade. The fact that you have 11 lbs. of syrup in a can does not necessarily mean that the syrup is up to test and that you are not subject to the fine in case an inspector finds your syrup tests only 35 or less. One who cans as fast as he makes the syrup and does not standardize, will find a wide variance in his test. With one of the Leader revolving top filter tanks you have one of the most convenient filtering outfits on the market and one in which you can properly standardize your product.

De Ruyter, New York
May 19, 1953

The Leader Evaporator Company
Burlington, Vt.

Gentlemen:

I am using a LEADER Special Evaporator 5' X 14'. It is a great rig!

I believe LEADER is one of the fastest boiling evaporators made. My greatest production is Fancy Syrup and I would recommend LEADER to all syrup producers who wish to produce the better grades of syrup.

Sincerely yours
CLAIR DORWARD

TAYLOR SYRUP HYDROMETERS AND THERMOMETER

7268 A Vt. Baume Scale Syrup Hydrometers: These are very easy to read and far more accurate than one which is not graduated in the half-points. There is a full $\frac{1}{4}$ inch between full points and $\frac{1}{8}$ inch for half-points as compared to $\frac{1}{16}$ " for each full point on some other designs. It is just as easy to test to $\frac{1}{4}$ point with the 7268 A Vt. hydrometer as it is to a full point on the other.



Remember that accurate readings with a hydrometer can be taken only when the syrup is at 60 degrees or 211, the points at which the hydrometers are set. However, by the use of temperature adjustments correct tests can be made at any temperature. The variance is approximately $\frac{1}{4}$ point for each 10 degrees since there are approximately 151 degrees between the boiling point test and the cold test at 60, and there are four points difference on the hydrometer. Thus, if you wished to check the density of the syrup in your filter tank, you would take the temperature first and figure out what it should test to be right. For instance, if it had cooled to around 170 degrees it should test 33 instead of 32. Should it be a cold morning and it was down to say 40 instead of 60 it should test $36\frac{1}{2}$.

The time to check is while the syrup is still hot so that, thick or thin syrup may be added to standardize.

There should be one or more syrup hydrometers in every sugar house. They break easily but are inexpensive.

7269 Taylor Brix Scale 0—10 Sap Hydrometers: The Brix scale as you probably know, indicates the percentages of sugar in the liquid. Thus they are used like a hydrometer and the reading will enable you to determine the amount of syrup you will get from the sap. They are useful in culling out unprofitable trees, as you would an unprofitable cow, and to determine the amount of syrup ahead of time that one will get out of a tank of sap.

If you wish to determine the number of gallons of syrup that can be boiled from a tank of sap, follow the maple rule of eighty-six. Simply divide eighty-six by the sugar content of your sap and you have the number of gallons of sap it will take to make a gallon of syrup. Thus, if you have 2% sap, it will take 43 gallons of it to boil down to a gallon of syrup, while 3 percent sap will require only 29.

Hydrometer Dippers: These are just as essential as the hydrometer, since the hydrometer has to have a certain depth to float in. Thus for the hot test, or to check up syrup in a drum that is only part full, they are an absolute necessity.

Taylor Adjustable Scale Thermometers—No. 5955: With the use of an adjustable scale, this thermometer is set in boiling water so that the proper readings are taken at any altitude or under any atmospheric conditions. Simply put the thermometer in boiling water or fresh sap and adjust the scale so that the line marked "Water Boils" is even with the top of the mercury column. You then have all the other readings accurately set. Check your thermometer two or three times a day as every change in atmospheric pressure will make a slight change in the boiling point.

Remember to keep the bulb clean by using vinegar or other mild acid on a small brush or feather. Nitre will accumulate otherwise to slow down the reading.

HYDROTHERM

This instrument is a combination of hydrometer and thermometer which will test syrup accurately at any temperature between the boiling point and 60 degrees. When syrup is at the correct density, it will float with the top of the red thermometer column on a level with the surface of the syrup. If the syrup is too heavy, the red column will appear above the surface of the syrup and if it is too light and requires more boiling, the thermometer column will not show.

The instrument has a scale marked off the same as the hydrometer but there are no figures since it is used at various temperatures and would not be the same at any two points. Each line on the scale indicates a half point as on the Baume scale.

Use with a hydrometer cup and allow about 30 seconds for the thermometer column to adjust itself. The hydrotherm is especially useful in standardizing syrup in the filter tank just before packing. Instructions for its use and care come with every instrument.

DECORATED SUGAR TINS



To further improve the attractiveness and sales appeal of maple products, we offer the decorated sugar tin in pound, two pound and five pound sizes.

This container can be used anywhere. It is very suitable for soft sugar and makes an exceptionally attractive gift package when filled with maple candies made in the rubber molds. There are unlimited possibilities along this line.

Colored paper cups in various sizes may be purchased of the Browns River Maple Products Co.—Jericho, Vt. as well as other specialties.

We suggest sealing the tin with cellophane paper to retain moisture in the package.

The body of the tins are dark green. On the cover, the maple leaf in autumn colors and the sugaring scene is attractively designed. They have a great appeal as a button box or keepsake.

All the tins are five inches in diameter.

GLASS BOTTLES AND JUGS

We carry a small supply of the most suitable jugs and bottles that are available. Usually a very attractive half pint flat style jug and a good looking pint and quart bottle in which syrup is well displayed will be found in stock. All are furnished with screw caps.

RUBBER STAMPS AND STAMPING SUPPLIES

With the advent of the decorated cans and state grading laws, rubber stamps have become a necessary part of the sugarmaker's equipment. We carry all the necessary grade stamps, special opaque ink for the purpose, (regular stamp pad ink not suitable) stamp pads, and stamp cleaning fluid. Name stamps take about 10 days to make up.

SYRUP CANS

After working hard to produce high quality maple syrup, see that it is packed as advantageously as possible to obtain top prices.

If you depend on a grocery store or roadside stand, to move your product, you will be at a big disadvantage unless you use a decorated container which has an appeal to prospective customers. Often the retailer has more than one producer's syrup in stock, so be sure your product is favorably presented at the start. Once it is purchased and found

pleasing in quality, your name will be sought out on the can, the next time syrup is needed. The first thing you know, you will have a retail trade for your product, wherein lies the real profit in sugarmaking.



PLAIN CANS

These are carried in stock at all times, in the pint, quart, half-gallon and gallon sizes.

DECORATED CANS

The Vermont Can is stocked at all times in the half-pint, pint, quart, half-gallon and gallon sizes.

The All State Cans will be stocked in all but the half-pint size.

Our dealers in the various states will have stocks of cans especially designed for their own state. Contact the following:

Maine, Richard C. Eaton, East Corinth
New York, H. W. Cook Farm Service, De Ruyter
Ohio, Wyman W. Manes, East Orwell

Can Specifications

Material—Prime Coke Tin

Content —235 Cubic Inches per gallon, correct for hot-pack, filling the can.
Also correct for cold-pack by pressing in sides of cans, and filling full, eliminating all air in either case and allowing for expansion.

Cap Size

Gallons, half-gallons and quarts will have $1\frac{3}{4}$ inch Screw caps. Smaller sizes will have $1\frac{1}{4}$ inch caps.

All cans are furnished with inner seals—Gallons and Half-Gallons furnished with strap handles.

SHIPPING CARTONS

The corrugated fibre board carton is the most convenient and cheapest container for maple products. It is also the most attractive especially since we have decorated them with the green maple leaf.

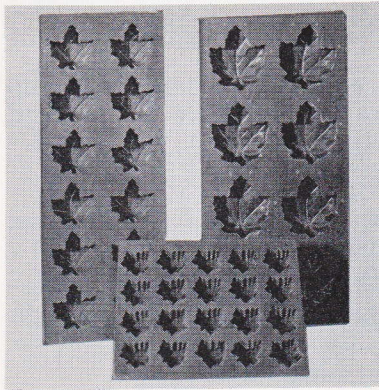
Our cartons are made of tough 200-lb. test board for the most part. One or two of the very small sizes are 175-lb. and the largest are made from 275-lb. All have ample strength to ship anywhere and are accepted by postal, express and freight authorities as well as the trucking companies. The cartons have a mailing panel for addressing and have the fourth class mail requirements also printed on them for your convenience. More than twenty sizes carried in stock.

We suggest you keep a few cartons of every size on hand at all times so you can fill your syrup orders promptly and efficiently.

GUMMED TAPE

We carry 500-ft. rolls of heavy gummed tape in 2-, 2½- and 3-inch widths. We recommend the 2½-inch width as an all around size.

RUBBER MOLDS



These have taken the place of the tin molds for the most part. They are very easy to use and there are hundreds of attractive designs to choose from. Write for catalog. Several popular designs like the maple leaf, little man, heart and demonstration molds are carried in stock.

If you are a small producer of maple syrup and would like more income from what you do produce, you can double it by marketing it in fancy cakes. These may be sold in cellophane bags, specially made boxes or in the decorated sugar tins which we carry. Sells very well at roadside stands or candy count-

ers if kept fresh. Ideal gifts for business firms to make at Christmas time or other occasions. The city cousin will also appreciate them.

We are distributors of the well known Voorhees molds which will last for many years if properly cared for.

PAINTS FOR SUGAR EQUIPMENT

For buckets, gathering and storage tanks, use aluminum at first when the galvanized coating first wears off and rust first appears. It will bond to the metal as well as any paint and makes a good base for any other paint. Be sure the metal is thoroughly clean before painting.

If the material is badly rusted or has become pitted, follow the aluminum paint with a coat of Kauri Bakelite Enamel whose heavy enamel body will prevent moisture penetrating through to cause further rusting and will seal many pits that are close to becoming pinholes. While this paint will temporarily seal many cracked soldered seams, it is advisable to have them repaired before painting.

Both paints carried in quarts and gallons. Lead free.

PROPER CARE OF SUGAR EQUIPMENT

When you selected **Leader** equipment, you chose the best that could be obtained. The service you receive from this equipment now depends a great deal on how you take care of it. We want to see you get the maximum service from our utensils and offer the following suggestions for their proper care:

Iron Arches

In setting the arch up, be sure to raise it off the ground so that the moisture cannot follow up the sides through the summer. An arch set on the ground will last only half as long as one raised up where it is always dry. Be sure there is plenty of depth to your ash pit—18 inches at least below the grates. Do not close the ash pit door up tight with a good bed of coals under the grates unless you want to buy a new set as this shuts off the air and allows an intense heat which will allow the grates to sag.

Send to us for a gallon of arch paint and paint your arch just as soon as you are through sugaring if it has started to rust.

Keep the arch bricked up and renew the mortar whenever it becomes loose.

By all means take the stack down—at least below the roof. Water and ashes in the back end of the arch is a poor combination.

Evaporator

As soon as you have boiled in the last sap, immediately wash and dry the pans while there is still a little heat in the arch—be careful there isn't too much. Do not attempt to remove the golden brown coating on the pan. It is a protection against rust. Until the pan is completely covered on the inside with this coating, it is advisable to go over the surface with a light vegetable or mineral oil. Apply on outside also. The first two or three years are the most important. After that, the inside of the pan will be fairly well protected and only the outside will require it.

Raise the flue pan out of the arch on cross pieces leaving the drain pipe slightly lower. *Do Not* turn bottom side up. No water should ever be allowed to come in contact with the soot on the bottom of the pan. It forms a lye that soon ruins the pan.

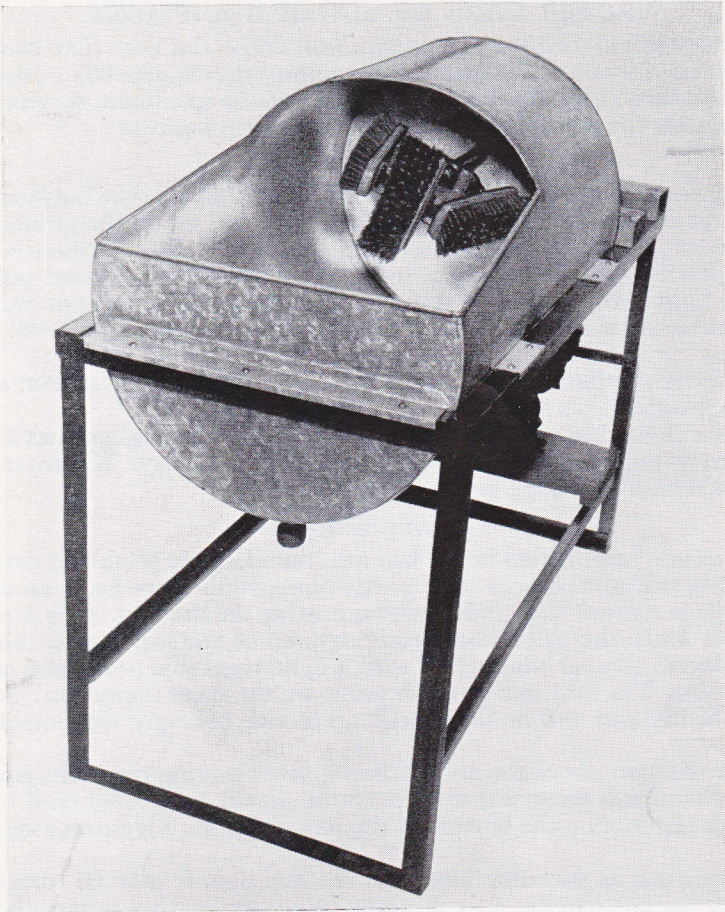
If the front pan is the same length as the flue pan, it may be turned bottom side up over the flue pan but only if it is to be covered with a watertight covering such as metal roofing. Make the pans mouse and squirrel proof by plugging all openings through which they might enter.

If your sugar house happens to be close to a brook and closely surrounded by trees which tend to create a continual dampness, it would be desirable to remove the pans to a drier location when not in use.

Tanks, Buckets, Covers, Spouts, etc.

Practically all of these items are galvanized iron and should receive the same care. Thoroughly wash and dry *immediately* after boiling in the last sap and store in a dry place. Remember that sour sap will eat the zinc on galvanized iron and should therefore be removed as soon as possible. If you wash equipment right away, the sap does not have a chance to sour and stick on and it is much easier to clean.

The difference between a handsome profit and no profit at all in Sugaring can very often be traced to poorly cared for equipment which has to be replaced often. While we appreciate and welcome this replacement business, we would rather see our equipment cared for and have you put more money in your pocket.



LEADER SAP BUCKET WASHER

Most sugar makers dread washing buckets as it is a tedious job by hand and comes right when most of them want to start work on the land. Consequently the buckets get left until later on when it is even harder to wash them and quite often the sour sap has damaged the bucket by corrosion.

It is simple in construction and design and we have held the cost to a minimum so it is within the reach of anyone.

Now with a Leader bucket washer, you can easily wash your buckets in a day (if you don't set more than 2500), do a good job and you have your sugar equipment all stored away to be forgotten until another season.

Mid-season Washing

With a machine that will wash buckets fast and efficiently, every sugar maker will find that it will pay big dividends to wash his buckets after a mid-season warm

spell which causes buckets to "sour" or collect a slimy alkaline film which means No. 2 or No. 3 syrup from then on. Poor sap is not the fault of the tree but of the equipment with which it is handled. Sometimes it will pay to scald the spouts and freshen up the tap hole by reaming.

Construction

Simple in design—a rotating head on which three scrub brushes are fitted and held against the sides and bottom of the bucket by a stiff spring as you push the bucket up over the head. This spring adjusts the side brushes to fit the flare of the bucket as some buckets are straighter than others. It also takes up the wear of the brushes and maintains a steady pressure of the brushes against the side of the bucket. All three brushes get into the bottom outside crease and really clean it out—something you cannot do by hand.

There are several adjustments that can be made to change the flare of the brushes and increase or relieve the tension of the spring. Practically every size bucket can be washed except very small bottom ones. If there is need for a special head to be made to fit your particular buckets, it can easily be done.

The brushes are easily replaced by removing four wood screws and new brushes are always available all fitted and drilled for perfect balancing. One set of brushes usually washes around two or three thousand buckets, depending on condition of buckets.

Operation

Fill tank with hot water—as hot as is comfortable—just below the point where the brushes will hit it as they revolve. Grip bucket firmly in both hands and scoop up two or three quarts of water and push on to the head right up to the end brush. Hold for a few seconds (five is usually enough) and then rinse in a tub close by and stack away to dry. The greatest amount of time is required to handle the buckets rather than wash them. Teams of three or four men can be kept busy and up to 400 buckets an hour or more have been washed on the average.

One user suggested putting on a pair of cotton gloves on which pads have been sewed on the palms and allowing the bucket to turn on the head and slip through the hands as the hands are slid up and down the bucket to wash the outside. Not a bad idea.

Power for Washers

Since most sugar makers already have either an electric motor or small gasoline engine on the farm for other purposes, the washers are usually sold without power.

Where electricity is available, the electric motor is of course the most satisfactory. While a $\frac{1}{4}$ HP motor will do the job usually, a little larger one will do it easier. Many sugar houses do not have electricity and small gas engines are used satisfactorily. Even tractors are used—in which event, we place the pulley on the outside of the frame at no extra cost.

If the customer cannot locate a good power unit, we can furnish either an electric motor or gas engine. Quite often good used gas engines are available.

Standard equipment includes a 12" V pulley and 68" V belt. Use either a 2 or $2\frac{1}{2}$ inch pulley on motors running 1750 RPM. Faster motors require a counter shaft to reduce the speed of the brushes to about 400 RPM or less for best results. To keep the cost down, a cap is used on the drain pipe but a valve may be had at additional cost. The one on the storage tank could be used. Sugar makers with large orchards should order an extra set of brushes with their machine.

HOW TO MAKE MAPLE SYRUP

Methods of making maple syrup have changed a great deal since the first maple syrup was produced by the Indians more than three hundred years ago. They gashed into the trunk of the tree with crude axes and caught the sap in earthen bowls.

It was evaporated in hollowed out rocks by dropping hot stones into it. We can imagine about what color it was when they got through with it!

Today we tap trees with a 7/16 bit or drill used in a hand drill or else with a power tapping machine. The hole is a small one and heals up very quickly after sugaring with no serious injury to the tree. The sap is handled by modern methods and quickly evaporated so that a clear amber colored syrup is obtained.

The first step is to be ready with clean modern sap spouts, buckets, covers and all the other necessary equipment.

Tapping the Tree

Whether you use a bit brace, breast drill or power tapping machine, care has to be taken in tapping. Tap only trees that have reached a diameter of ten or twelve inches—one bucket only until the tree is twenty inches in diameter. From there to twenty-four inches, two buckets may be hung and from there to thirty inches three buckets. Larger open growth trees with a good crown may take four or five buckets without injury to the tree. We recommend only one spout to a bucket.

The earliest sap will come from the South or East side of the tree but the other sides will usually catch up at the end of the season so it makes little difference in a normal season. The season may not turn out to be normal so a slight advantage lays on the warmer side of the tree if you get tapped early enough. When two buckets are set on a tree, both sides should be used. The most sap will come over a good sized root. The flow of sap is first up from the roots and then as the sap pressure increases it is just as apt to be downward from the branches. In fact it won't be very sweet until it has been up and absorbed some of the sugar that was deposited in the branches the Summer before.

Be careful not to tap within three inches of an old scar and never above or below one. If the season is early when you tap, we would advise showing a preference to the warm side of the tree especially if there is a lot of snow. If the season is late, we believe the side away from the sun will run the most sap and it will keep cooler.

On old trees which have a coarse scraggly bark it is often advisable to trim off the rough bark so it will not interfere with the spout. Be careful not to injure the inner bark. A hatchet works fine to do this and to drive spouts.

You will of course want to use a Warner spout in order to get all the sap you can throughout the season. It will not only keep the tap hole fresher so the sap is much better at the last end of the season but will run more sap than most other spouts. Use only a 7/16 bit and be sure it is sharp so a clean hole is bored.

Use galvanized buckets as the sap will be cooler in them. If you have old tin orterne plate buckets, be sure they are kept painted with aluminum paint or some

special sap bucket paint. Rusty buckets won't help the quality of your syrup. Terne plate buckets will contaminate the syrup with lead.

Be sure to put covers on your buckets. A ventilating type like the Leader will keep the cap the coolest. Without covers, you will throw away a third of your sap in some seasons or else burn up a lot of wood boiling in rainwater.

Use a metal gathering and storage tank. Galvanized iron material is best. Be sure neither one gets rusty. The Leader gathering pails with the extended rims will save a lot of sap during the season and speed up the gathering operation a great deal.

The Monitor gathering tank is low down so it is very easy to pour into and has a conical strainer that catches the sap so it will not splash back at you. It is one of the most durable metal tanks you can find. The corners are round so the sap does not pound at the ends like it does in a square end one.

Use a round bottom tank to store the sap in. It is much easier to clean and will drain out completely. This means that the tank will remain clean and sweet much longer. Use a strainer of outing flannel cloth or Canton flannel with the fuzzy side up to strain the sap through as it goes into the storage tank. This is very important as it keeps a lot of dirt and bugs from getting into the evaporator. Wash this filter with scalding water every day to eliminate bacteria and keep the sap better. Be sure the storage tank is in a cool spot outside the boiling room.

Commence gathering as soon as there are two or three quarts in a bucket. Keep the sap picked up even if there isn't more than a quart in the bucket. If you let it set around it will color and pick up bacteria and spoil the next run.

Many make the mistake of waiting until the buckets are almost full before starting to gather. Very often before they get around, many of the buckets will be running over. What goes on the ground will never fill the syrup can.

Likewise start boiling as soon as you have a sufficient quantity to keep going. A few hours' delay can very easily mean the loss of one grade in the syrup. Be sure your evaporator is the proper size for the number of buckets you set. It shouldn't be too large, but it wants to be large enough to handle the sap without letting it set around for any length of time.

Run the evaporator shallow to make the lightest syrup. Be sure it is standard test before drawing out of the pan. Use a hydrometer and dipper. Allow about $\frac{1}{4}$ of a point for further evaporation as the syrup is filtered and it is cooling off. Sometimes a half point leeway can be figured on so you can draw at $31\frac{1}{2}$ instead of 32. Where the steam can rise off the hot syrup freely in the filter tank, there is more evaporation than when it is covered. Run the syrup out of the evaporator directly into the filter for best results. As soon as a fairly large quantity of syrup has been run off, standardize it if the test proves it is either too thin or too thick and can it up while it is still hot. This is done with the use of either a hydrotherm or a thermometer and a hydrometer. The hydrotherm is the easiest but it is no trick to figure what the hydrometer reading should be at any given temperature. See instructions under Hydrometer—or in the next article.

HOW TO PROPERLY PACK MAPLE SYRUP

Before packing maple syrup and offering it for sale, the sugar maker should carefully consider the following points:

1. The requirements of Federal and State laws.
2. The importance of a hot pack.
3. The size and choice of containers.
4. The best ways to pack maple syrup.

The Requirements of Federal and State Laws

You will abide by all Federal and State laws if you follow these requirements:

1. The name and address of the producer or packer must appear on the label or container.
2. State that the product is "Pure Maple Syrup or Sugar."
3. Give the grade of the product—Fancy, Grade A, etc.
4. Give both the volume and net weight. Federal requirements call for the volume when shipped interstate.
5. For Vermont, each container must have a seal approved by the Commissioner of Agriculture and each producer or packer must register to obtain a permanent maple number to be stamped on the seal.
6. Most important of all—be sure that you have at least a full gallon of 231 cubic inches at 60 degrees temperature and that an exact gallon weighs 11 pounds. Smaller amounts should correspond accordingly. Have your syrup test at least 36 Baume at 60 degrees and give full measure and you will have no trouble. Just 11 pounds of 37 or 38 test syrup will no more pass than will just 11 pounds of 34 test syrup. In the first instance, the required volume won't be there and in the second, the required density isn't there.

Importance of Hot Pack

Maple syrup, like any liquid exposed to the air, soon picks up bacteria. If cold syrup is put in a can, it will contain bacteria which will start to multiply in warm weather and certain other conditions. This causes fermentation even tho the syrup is plenty heavy to start with and is especially true when syrup is moved or shipped in warm weather.

At 160 degrees, syrup contains no bacteria and will sterilize the container so there will be none in that either. If the container is filled, leaving no air space, there will be no bacteria inside after it is sealed so there will be no danger of syrup spoiling even tho it is shipped or moved in hot weather.

The sugar maker cannot afford to take chances of losing the syrup or his customer. Pack hot and play safe. The flavor is retained much better in addition.

Size and Choice of Containers

The size of the container is very important whether you pack hot or cold. The same container can be used for either method if it is the right size to begin with. If it is too large, you are either improperly packing the syrup or giving some away.

At 180 degrees temperature, a gallon of syrup requires 235 cubic inches of space. This is about as hot as syrup would ever be after going through a filter. Thus any can with a larger capacity is unsuitable for maple syrup.

There are many products sold in tin cans such as cleaning fluids and other volatile products that require a 6% headspace or at least 245 cubic inches per

gallon due to their volatility. Many times can manufacturers with automatic equipment whose dies cannot be changed to alter the size of the can, offer these large oversize cans to the maple syrup trade without informing them of the capacity. It results in either a very poor pack or giving away 10 cubic inches of syrup which, at \$5.00 per gallon is worth about 21c or practically the price of the can. If they were given to you, you could hardly afford to use them.

When packing syrup ahead of your orders, try to anticipate the size containers your customers will want. A great many producers like to pack in gallon cans only because it is quicker and cheaper but later find that their customers want it in smaller sizes such as quarts. They either lose the sale or else repack the syrup with the loss of the original can, considerable time and some syrup.

The housewife usually has room for a two quart can in her refrigerator but never a gallon can. She prefers to pay a little more and not have to bother with heating and recanning which she is seldom equipped to do.

Recommend the purchase of quarts and half gallons. Being much more convenient to handle, your customer will use far more syrup and won't hesitate to open a can when the urge for it occurs. If they know they have got to heat and recan to prevent spoiling, they will put it off with the result that you will sell much less syrup. Nowadays it is the buyer that has to be pleased—not the producer.

Methods of Packing Syrup

For the lightest color and best flavored syrup, can directly from the filter tank before the temperature falls below 160 degrees. Be sure the density is correct. The hydrotherm offers the easiest check. While syrup is hot, either thin or heavy syrup can be added from the evaporator to standardize to the proper density. Syrup will not mix when cold. This method offers the easiest possible way of handling the syrup and maintains the best quality.

It is sometimes desirable to blend the syrup from two or three days run to bring part of it up to a higher grade and have a more uniform color. Fancy and Grade B can often be blended into a good Grade A that is worth more than the two grades separately. Reheating slightly detracts from the color and the flavor but to no appreciable extent. Many feel that it is better to sell only Grade A syrup which can usually be furnished every year rather than send Fancy one year, Grade A the next and perhaps even Grade B on another year.

Many people do not appreciate the delicate flavor of Fancy syrup and prefer a darker and stronger flavored syrup. Usually they are willing to pay just as much for it. By carefully considering the desires of your customers, you can determine for yourself the procedure that will bring you the most for your syrup.

If for any reason, you still want to pack your syrup cold, squeeze in the side of the can to reduce the volume to approximately 231 cubic inches and to permit expansion of the syrup in a warm room or Summer temperature. Sterilize the can with hot water first and fill to the top of the nozzle with the sides pressed in and put on the cap before releasing the sides. If possible draw the syrup from the bottom of a filter tank without stirring it. Any bacteria will usually be on the top of the syrup.

Packing in Glass

When packing in glass be sure the syrup does not test much over 36. Syrup will crystallize in glass when it won't in tin due to the light. It is particularly necessary to pack hot—the sides of glass containers cannot be squeezed in!

FUTURE OF THE MAPLE INDUSTRY

The future of any industry depends on those who comprise it. Any business enterprise can be well managed or it can be poorly managed and fail. The maple industry is comprised of several thousand sugarmakers who produce and market their product. Some are good managers and through care and up to date methods produce a better quality syrup which they are able to market at a higher price than some operators whose methods are slack and who do not have the inclination or the time to establish their own market.

The sugarmaker who produces a quality product and has any initiative at all, will find an opportunity to market his product at a good price. The other fellow might better sell his product to the bulk buyer as he will only succeed in driving the market down with his poor quality syrup.

Sugar makers should have their own organizations for promoting their welfare both in establishing the price for their product and marketing it. These organizations should be headed by the best men in the industry.

Sugar orchards have got to be preserved and there is no better way than to call in your Extension Forester or the State Forester who works closely with him and have him explain the latest practices in Sugar Bush Management. You may be an old sugarmaker and wonder what in the world they can tell you about sugaring. You might be surprised.

There are hundreds of farms on which the maple crop is the determining factor on whether a decent living is obtained or not. Therefore the maple orchard must be preserved for the future as well as today. Someone left one for you to benefit from. You should do the same for the next fellow.

We have a good demand for syrup, if we get out of our own front yard. We have been getting a good price for it and will continue to if we do not start foolish price cutting practices or get careless in protecting our quality. The future of the maple industry can be very bright if you make it that way.

IN CONCLUSION

We have never intended to misrepresent our goods nor have we ever tolerated an agent to do so if we knew about it. The fact that we are now celebrating our 65th anniversary is proof of this as no individual or firm can long continue business on other than honest dealings with its customers.

We try to deal fairly with every customer. Our interest does not stop when we receive his order and the goods are delivered. If his evaporator is not working as it should, we want to be notified immediately so we can send a man in sugaring time to see what the trouble is, if any. We cannot do anything about it after sugaring as we must see the evaporator in actual operation to see what is wrong. Very often it is a simple little thing like firing the arch wrong that causes the trouble.

If there are any questions or problems relative to the making of Maple Syrup or Sugar which you think our 65 years' experience might answer for you, please send them along. We are always glad to help in any way possible.

Let us help you in selecting your equipment. Often times we have used equipment which can be used advantageously and at a substantial saving. We have experienced men whom we will be glad to send to call on you. Possibly you can utilize your present arch rather than throw it away. Maybe a special size evaporator would meet your requirements more fully.

Study our equipment carefully and pick out what you need.

LEADER DEALERS AND REPRESENTATIVES

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Ralph O. Wells, Irasburg
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New York

H. W. Cook Farm Service, De Ruyter

Leader equipment is carried in stock in all the popular sizes for the best possible service to sugar makers in Central New York. It is always best to place your orders well ahead to insure getting just what you want and to help the Cook Company in keeping a balanced stock.

The Cook Farm Service have designed and carry a decorated syrup can and carton especially for New York producers. They handle bulk syrup and do everything possible to assist in the production and marketing of maple syrup. They operate over a large area and their service includes every possible farm requirement. Write for their price list or drop in and see their stock and talk over your requirements with experienced men.

Other Representatives

W. E. Davison, Mooers Forks
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Andrew B. Zehr, Croghan

Ohio

Wyman W. Manes, Greene Township, Trumbull County
P. O. East Orwell, Ohio, R.D. 2

Mr. Manes serves the entire state of Ohio. The orders he receives are combined into carload shipments to save the customer shipping costs. A small stock is carried at sugaring time but sugar makers should anticipate their requirements as far ahead as possible and place their orders before the first of the year.

Mr. Manes carries a decorated syrup can especially designed for Ohio producers and carries a good supply of cartons and other supplies. Being a prominent sugar maker himself, you can rely on his judgment and advice in selecting your own equipment.

Other States

Massachusetts—Elmer Stacy, Shattuckville
Maine—Richard C. Eaton, East Corinth. Contact him for the Maine can.
Michigan—C. A. Willis, Bellevue

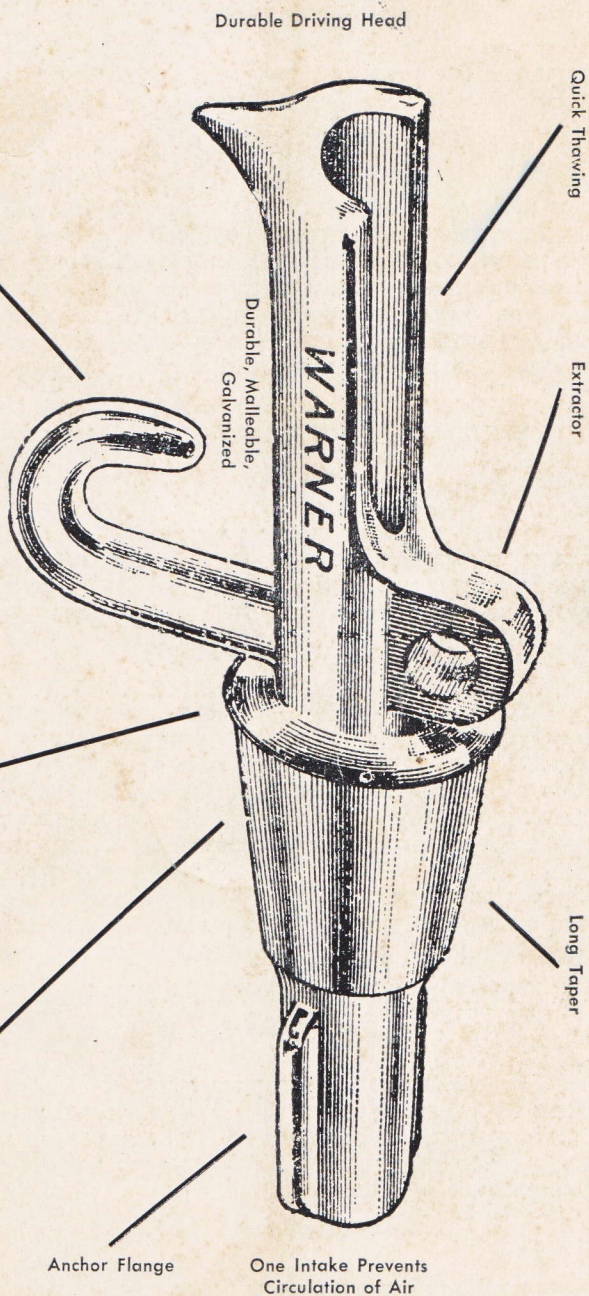
Other representatives or dealers may be appointed from time to time. If you do not find one listed reasonably close to you, write to us direct and we will arrange to take care of you.

This catalog is presented to you by the following authorized dealer or representative. A price list will be gladly furnished.

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