

National Maple Syrup • DIGEST •

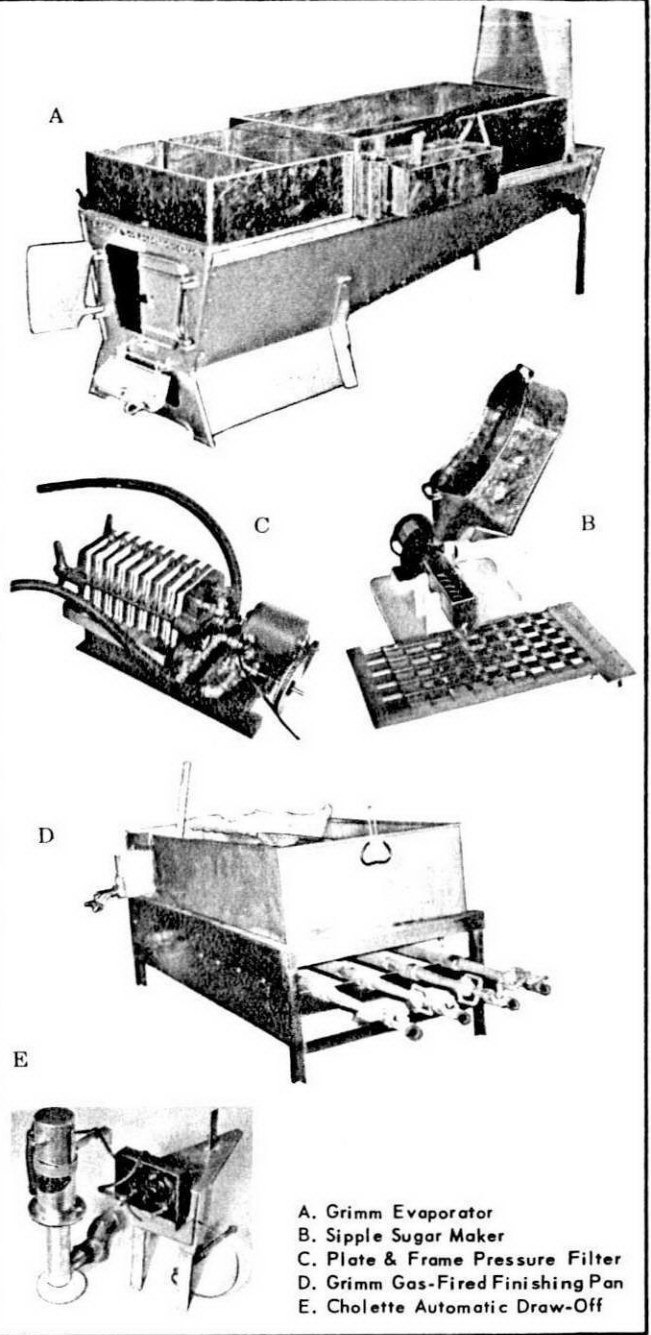


Vol. 6, No. 3

OCTOBER, 1967

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The following issues of the
Digest have been printed to date:

Vol. 1, No. 1, 2, 3, 4

Vol. 2, No. 1, 2, 3

Vol. 3, No. 1, 2, 3, 4

Vol. 4, No. 1, 2, 3, 4

Vol. 5, No. 1, 2, 3, 4

We still have a supply of most
of them but they are getting scarce,
and they are expensive to mail. If
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COVER PICTURE

The cover picture was taken 10
years ago of the sugar house and
horses owned by Harland Bartlett,
Newburg, Maine.

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PETROLEUM SERVICE

Editorial

THE "GOOD OLD DAYS" -- ?

Every once in a while I hear someone make a remark using the term "The good old days". I guess I must not be overly endowed with "smarts" because, for the life of me, I can't figure out what they mean.

Years ago, a common factory job meant 12 hours a day for 6 days a week. Three or four week vacations were something you dreamed about. A real estate ad today that says, "six rooms with bath, all modern conveniences, etc." used to say "six rooms with path, sink with drain in kitchen, well located close to back door."

Sure, I agree life is getting pretty complicated now with increased taxes, insurance, time payments, and all that stuff. They're passing laws so fast you can't even get up in the morning without breaking one or two of them. Every once in a while I get to thinking how nice and peaceful it must have been back 50 years ago when roads weren't piled three deep with automobiles. In fact, there was hardly any roads to say nothing of super highways. No speed limits, no plane crashes, nothing to make life complicated. Of course, now days we don't have to build stone walls, or pitch hay clear up to the peak of the barn, and the dog doesn't have to churn the butter, so I rightly don't know if I can say what age is the best.

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What brought all this to mind is the article, "Maple Sugar Making, 1858" which we have printed in this issue. I haven't been in the maple business long enough to remember the really old days, but I've heard my father tell about them. Dad, who was born in 1887 in Obernburg, N.Y., which is a wide place in the road near Roscoe, Sullivan County, celebrated his 80th birthday last March 4th by helping us young fellows make maple syrup, and has worked every day since, tells about how he used to make syrup back on the old farm. They had tin buckets and metal spiles then because it was after the turn of the century, but they still used a flat pan with wood sides. A long outcropping of rock formed one side of the arch, the other side was laid up with field stone, of which there was a great abundance, and a stack propped up on one end or the other depending on which way the wind happened to blow that day.

They had no sugar house, and found that a barn door stood up along one side of the arch stopped the wind from blowing across the pan and made the sap boil faster. One day the door, which was made of pine, dropped down into the pan and stewed there a while. This didn't seem to hurt the door a bit, nor did it improve the flavor of the syrup.

One year they had about 300 buckets out, and made all the syrup into hard sugar, about 5 or 10 lbs. per cake or whatever a bread tin would hold. It was all colors, ranging from dark brown to black, and at the end of the season, dad took the sugar to the store in town to sell or trade. He made what the family thought was a pretty good deal at

the time. He swapped the whole crop of sugar for a walking plow and the price tag on the plow was \$9.00.

In boiling sap, the standard operating procedure was to poke the arch full of wood and then go gather sap or do the milking or some other chores, hoping the sap didn't boil down too much before you got back. One day it did. To save the pan, Dad flopped it over on a flat rock and when the syrup, which was quite a bit past the hard sugar stage, hit the cold rock it set up very nicely. For about a week after that, all the kids around came over and broke off pieces of it to eat. And, by golly, if you've never had burnt sugar on a rock, you just haven't lived!!

As for myself, outside of making a little for our own use, I didn't get into the syrup business until 1945. That year, we bought a little 3 x 8 evaporator and put out 300 buckets. I guess it must have been a pretty good year because I thought the season would never end. We'd get up in the morning about 6:00, do our chores, gather the sap (I think it ran all night, every night) go someplace and try to scrape up enough wood to last 'till tomorrow (Mom ran the evaporator while Dad and I were doing something else), do the noon chores (we had a poultry farm) cut more wood in the afternoon, gather the sap (it ran all day, every day, too). Then we'd draw straws to see who boiled the first shift at night and who took the second which gave each of us about 4 hours sleep, if we were lucky, and the next day we started all over again.

Now, for the life of me, I just can't figure out how that was a better system than we've got now.

PONDER ON THIS THOUGHT

I see you at the meetings but you never say hello,
You're busy all the time with members you already know.

I sit among the members, still I am a lonely guy.
Other new members sit there with me while you quickly pass me by.

But, gosh, you guys have asked us in and you talked of fellowship.
You could just step across the room, but you've never made the trip.

Why can't you nod and say 'hello', or stop and shake my hand.
Then go and join your friends. Now, that I would understand.

I'll be at your next meeting, too, on that you can depend.
So, won't you introduce yourself? I want to be a friend!

An open letter

from Leader Evaporator

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LEADER and KING

LEADER EVAPORATOR CO., INC., was pleased to be a part of the 1967 Vermont Maplerama. The enclosed pictures show part of the group that attended the tour of LEADER EVAPORATOR. Producers from several states were present which always makes for interesting discussions.

We wish to thank the guests for the many compliments expressed on behalf of our efforts to help make the tour a success.

Very Truly Yours

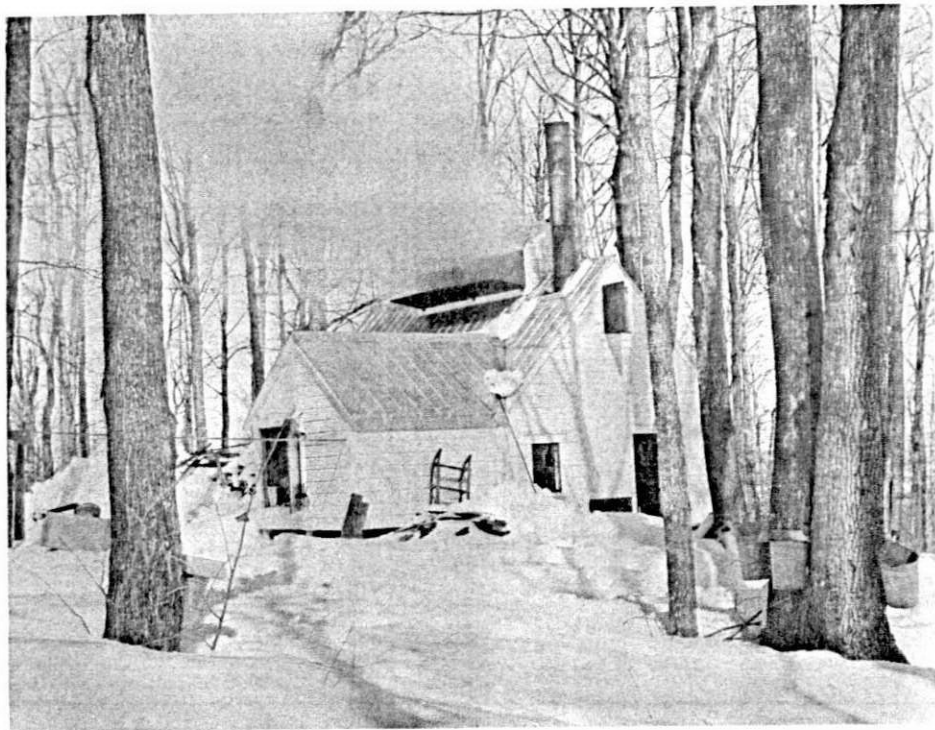
LEADER EVAPORATOR CO., INC.

R.A. Bordeau
R.A. Bordeau
Sales Manager



Maine Maple Production

By Lewis P. Bissell, Extension Forester, University of Maine



Modern sugar house of Warren Voter, Farmington, Maine

Total annual production of maple syrup on Maine farms is approximately 15,000 gallons, which is but a fraction of Vermont's production of about 500,000 gallons. At an average price of \$6.00 per gallon, this makes a Maine industry total of

\$90,000. Although this is a small part of Maine's farm income of more than \$200,000,000, it is a profitable business for many of our farmers. Maple sugar season comes just when little other work is possible on the farm. It is also a crop without a

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surplus and with a fair price.

Most Maine producers are in Penobscot, Somerset, Franklin and Oxford Counties with scattered sugar makers in all other counties. Central Maine has a climate and soil suited well for the natural growth of sugar maple trees and for the alternating cold nights and warm days which make a good sugar season. Most sugar orchards have been made by weeding out undesirable trees and thinning the sugar maples in a natural stand of maples.

Most Maine maple syrup is sold locally, although several producers ship by mail to other states. Texas and California have both proved profitable markets because of the number of Easterners now living there. Maple syrup is an item which cannot be made in those sections of the country.

An important part of marketing maple syrup is grading. All syrups sold inter-state commerce must weigh eleven pounds net to the gallon - lighter than this they are liable to ferment and heavier they tend to crystallize. The fancy and Grade A syrups must be clear and have no other flavors than maple. They are usually sold together as one grade which must not be darker in color than a medium amber. Grade B is somewhat darker and stronger and Grade C is the lowest grade, usually put into blended syrups and tobacco.

In addition to maple syrup produced by Maine farmers, 40 to 50 thousand gallons of syrup are produced annually by 150 Canadian families who come across the border under bond during the maple season to tap maple trees on lands owned by two paper companies in Northern Somerset County. This syrup is shipped back to Canada and in recent years has been sold by the producers' cooperative to maple syrup dealers and blenders in Vermont.

Maine maple syrup producers have an Association to promote the production and sale of maple syrup. This Association, in cooperation with the Maine Department of Agriculture, sponsored a lithographed Maine maple syrup can in 1953. Only Grade A and better syrup may be sold in this can, for each can bears the Blue, White, and Red Label of Quality of the Maine Department of Agriculture.



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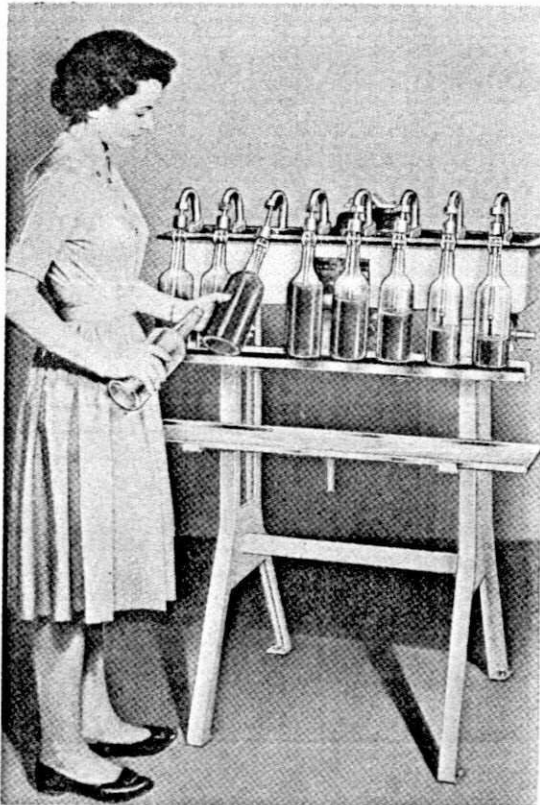
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A Taphole Marking Device

Barton M. Blum, Associate Silviculturist
 Northeastern Forest Experiment Station
 Forest Service, U.S. Department of Agriculture
 Burlington, Vermont

Shortly after a taphole is bored in a maple tree, the wood both above and below the taphole becomes stained and discolored. If new tapholes are drilled into this wood, sap yields will be much smaller than normal. Before normal yields can again be achieved from this area, a new layer of tissue - as thick as a taphole is deep - must grow over the discolored wood.

Keeping track of old tapholes

can be particularly vexing. Whenever discolored wood is encountered in the drill shavings, the taphole must be relocated and redrilled - a troublesome and tiring process. The problem is most acute, of course, in slow-growing, mature sugarbushes with a long history of tapping, or in bushes with small diameter trees that have been heavily tapped.

When this problem was brought to the attention of researchers of the U.S. Forest Service in Burlington, Vermont, a simple device was developed to mark old tapholes. The marker consists of a short strand of weather-resistant material 1/4 inch anchored in a wooden dowel (figure 1).

1/4 The markers being tested at Burlington are made of both copper wire and nylon monofilament, although almost any durable material will suffice.

The dowel is slightly shorter than the taphole is deep and slightly narrower than the taphole is wide.

For 2 1/2-inch tapholes 7/16 inches in diameter, for instance, the dowel should be about 2 inches long and 3/8 inches in diameter. The strand of material is inserted in a small hole drilled in the face of the dowel and wedged in place with a small splinter of wood (figure 1). Toothpicks or split matchsticks make good wedges, and a drop of glue in the hole will make the strand secure. The strand of material should extend from the dowel about 2 1/2 to 3 inches.

In use the marker is placed in the taphole with the end of the dowel about flush with the cambial tissue or inside edge of the bark (figure 2), and with the strand of material projecting from the hole. As the taphole heals and the tree grows, the projecting strand remains visible to mark the taphole location. Thus, the marker permits drilling adjacent to old tapholes without fear of hitting

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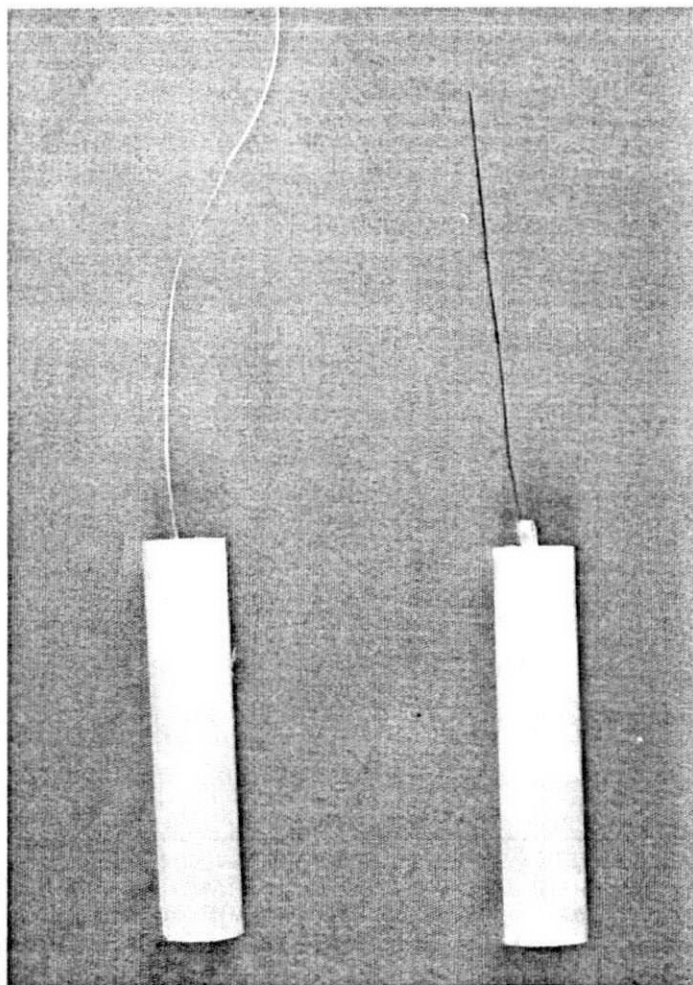


Figure 1. - Taphole markers utilizing nylon monofilament (left) and copper wire (right) as marker material. The marker on the right shows the wooden wedge used to hold the marker material in place.

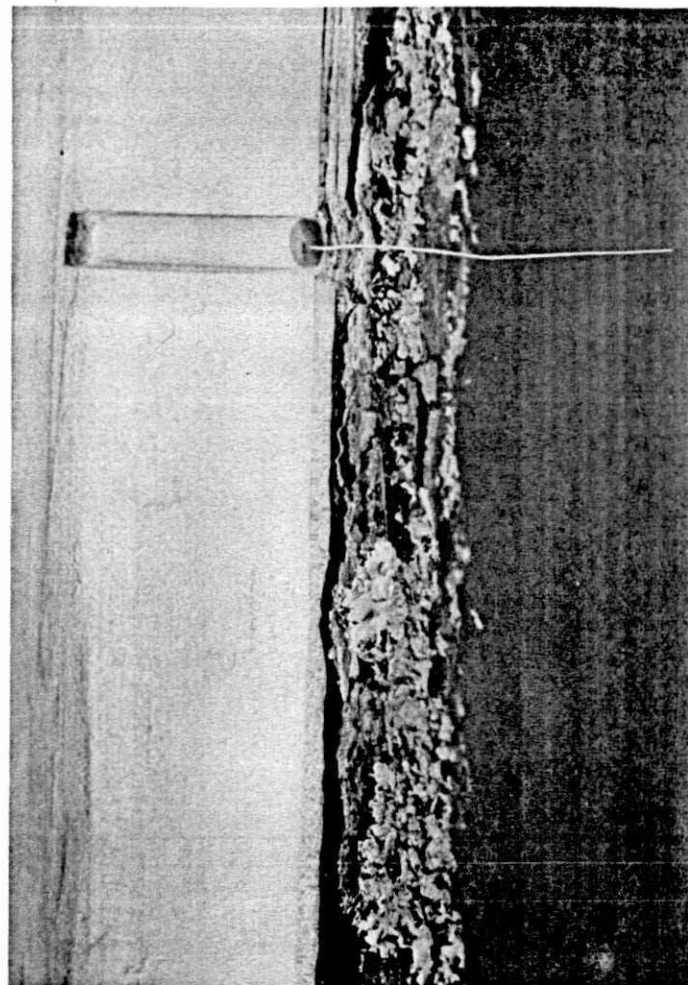
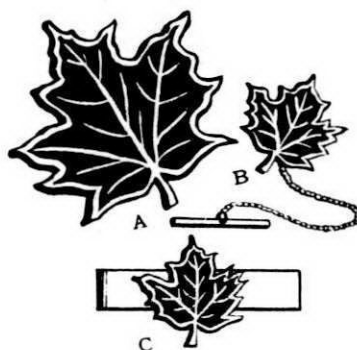


Figure 2. - Radial section of a log through a taphole, showing marker in place.

discolored wood; it also prevents inadvertently tapping the discolored wood above and below old tapholes. By the time the marker is completely covered with new wood, a taphole can be drilled in the same location without fear of reduced sap yield.

Markers using both nylon monofilament and copper wire as strand material are being evaluated on a long-term basis. Preliminary results indicate that they work well as markers, and that they have no noticeable effect on taphole healing. Although not everyone will feel that keeping track of old tapholes is enough of a problem to make the marker worthwhile, those that do should find it suitable to their needs.



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Maple Sugar Making in 1858

In this issue, the Maple Syrup Digest would like to pay tribute to the **AMERICAN AGRICULTURIST** on its 125th anniversary. To do this, we are reprinting some articles on maple syrup production which appeared in the January and February issues of *American Agriculturist* in the year 1858. The Digest is indebted to Linwood Lesure, Ashfield, Mass., Director and Past President of the National Maple Syrup Council, for sending us copies of these two issues which he found recently.

Although the following articles are antiquated now, they show that even "way back then" farmers were anxious to learn of new equipment and labor saving methods. The *American Agriculturist* has served as a means of communication for 125 continuous years, and to the publishers and editors we extend our most sincere congratulations.

From the January, 1858, *American Agriculturist*

EXPERIENCE IN MAPLE SUGAR MAKING

To the editor of the *American Agriculturist*:

As the season is approaching to commence operations in the "Sugar Camp" I will offer a few suggestions and plans gleaned from my observations and experience. It would seem that the process of making Maple Sugar is so simple that anyone possessed of the least "gumption" could not fail to make good, if not superior article, but such is not the fact, as the great amount of black and almost worthless stuff annually made abundantly proves.

1st. In tapping I use a 1/2 or 5/8 inch auger bit; and to "freshed" with, I use a follower, made something like an

old-fashioned "Pod auger" to make the hole about an eighth of an inch larger, and the same deeper, thus renewing or freshening the surface of the original hole.

The spout is made of sheet iron or tin, two inches wide and six to seven long, formed into a quarter circle, one end sharpened with a file or grindstone, and driven into the bark only, about 1/2 inch below the auger hole. Drive with a wooden mallet to prevent battering the spout. This is by far the best and cheapest spout that I have ever seen.

2nd. For buckets, I recommend those made of tin plate, to hold about three gallons, made a very little tapering, so that in the case of freezing the ice will slip out on the slightest thaw. Punch a hole in the bucket sufficient to receive the nail that is to be driven in the tree to hang it on, and it makes -

par excellence - the best bucket for the purpose extant.

3rd. Boiling is done in sheet iron or copper pans, (not kettles) made as follows: Take a sheet of Russia iron, put a quarter or three-eighths inch iron rod in each end by tapping, or bending the iron around it. Let these rods be 16 or 18 inches longer than the width of the sheets. Have the ends of the rods flattened and a small hole punched, and bend them in such a manner that they be nailed to the boards, forming the sides of the pan, to serve as handles to lift with. When this is done, bend the sheets up at each end, nailing them to the sides which are boards about 1 1/2 inches thick, to form a box 6 or 8 inches high, and they are ready for use. Then brick walls, or an arch as it is commonly called are built to accommodate as many of the pans as are needed, with two iron cross bars under the bottom of each pan to prevent their sagging, and straining the nailing too much. Set the pans level in mortar, and you have a boiling apparatus that will evaporate an amount of sap that will astonish those who have always boiled in kettles, and do the work much better than it can possibly be done in kettles, as there is no danger of burning or boiling over - - this being prevented by the wooden sides. With three such pans, and good dry wood, one gallon of sap per minute can be evaporated.

With the above apparatus, and proper care in keeping everything connected with the camp clean, sugar can be made much superior to the best cane sugar

that I have ever seen. The cost of buckets, with spouts, will be from 40 cents to 50 cents each. The pans, holding 35 gallons, will cost from \$2.50 to \$4.00 each.

R.H. Howard
Darke County, Ohio, Dec. 15, 1857

REMARKS:

The above apparatus is a very perfect one, and may be adopted in detail in many camps. The only objection will be the expense of the buckets which will preclude their use in a majority of cases. We thank Mr. Howard for his early suggestions, and as maple sugar making will begin in the month of February, we solicit the experiences of sugar makers as soon as may be - - in time for our next issue. Please help us to a page or so of good practical information on this topic. There are many interesting points, such as the best form and wood for troughs, buckets, side of tree to be tapped, height from the ground, size, form and depth of hole, carrying sap, boiling, clarifying, crystalizing, etc., etc. - - Ed. A.A.

From the February, 1858, American Agriculturist

To the editor of the American Agriculturist:

In response to your solicitation for practical information relative to the making of sugar from the maple I offer my mite. It is well known that Maple Sugar is one of the staple productions of the Western portion of the "Southern Tier" of New York. The first premium awarded at the late State Fair, was given for an article made in Allegany County. In offering a statement of the process and implements used, I give those adopted and used by those that are engaged somewhat extensively in sugar making, and who make a very superior article.

In tapping, a 5/8 or 3/4 auger bit is used, making the hole 1 1/2 or 2 inches deep. The spout is made of hard wood, four or five inches long, a hole bored with a small bit through its length, and turned in a lathe, one end to fit the hole made by the bit in the tree, and the other with a head, over which the wire loop attached to one edge of the bucket, is slipped and held. The end of the spout is made quite tapering, or "stunt" as it is sometimes termed, so as to fill the hole perfectly tight at its entrance in the bark of the tree. This allows all the sap to pass through the spout, and prevents its escape otherwise. To "freshen" another hole is bored and another

spout inserted near the first, so that the same bucket receives the sap from both.

The buckets are usually made of pine, hooped with ash or iron, and sometimes the outside is painted. On one side at the upper edge of the bucket, a wire loop is inserted, just large enough to pass over the end of the spout after it is firmly driven into the tree, by which the bucket is hung. This dispenses with the sheet iron or tin spout, the gouge, and the nail. Many furnish covers to each bucket, which are made from blocks of pine, sawed of the proper length, from which thin pieces are riven with a shingle frow. On one side or edge of these thin pieces a notch is cut, through which, when properly placed on the bucket, the sap drops from the spout. This cover excludes all rain and snow, leaves and bark. When the "Sugar Camp" is inclosed, (and all should be), and all kinds of stock excluded, the bucket should be hung near the ground, but otherwise, they may be hung out of the reach of sheep and swine, and reasonably from cattle.

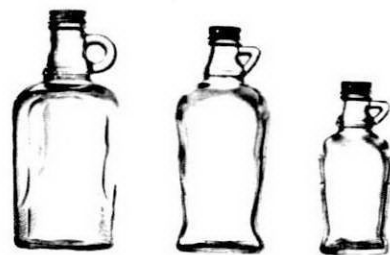
The boiling is done in sheet iron pans, made by the tinner, usually of two or three sheets joined by rivets, the sides and ends turned up five inches, a heavy wire around the upper edge in the manner of a dripping pan. Iron loops are rivetted on at proper distances to serve as handles. Three of these pans placed on a well constructed arch, the two back pans placed each its high higher than the one immediately before it, small faucets placed in the two rear pans so that the back one may be discharged into the one next forward it, and that into the front one is found to be a great convenience.

A large store tub, placed so that it will stand its whole high above the upper or back pan, should be provided with a good cover, a good faucet and spout reaching from the tub to the pan. By the faucet and spout the sap may flow from the store tub to the upper pan, and from that to the second, and so to the third or front pan. The supply may be regulated by the faucets in each, so that the flow to all will be regular and sufficient. For gathering, a sled should be provided with a moderate sized tub firmly fastened upon it, which tub should have the upper head placed four or five inches below the upper end. Two 2-inch holes should be bored through this head. The discharge is through an inch-and-a-fourth hole in the bottom of the gathering tub, by a spout reaching to the top of the store tub. The discharge from the gathering tub is closed by a long "plug" which passes through one of the 2-inch holes in the upper head into the 1/4 hole in the bottom. The spout from the gathering tub should be well made, with the

end receiving the discharge tightly covered, and a hole through the cover large enough to receive the discharge and not waste. This spout is placed on the sled runner and easily and firmly secured.

When the season is somewhat advanced, the weather warm, and the buds begin to grow, it is often difficult to make sugar. This difficulty is obviated by putting a spoonful of quick lime in each bucket. The sap again becomes sweet, and the syrup granulates freely and is quite as white and pleasant as ever. In "sugaring off" the syrup is carefully strained into a medium sized cauldron kettle and carefully reduced until it becomes sugar, some adding milk or other substances to "cleanse" and others rejecting it entirely. Indeed, when covers are used on the buckets, the gathering and store tubs, the pans well placed on a well constructed arch under cover, and the whole process conducted with the utmost neatness and order, the "cleansing process" is quite unnecessary.

The cost of bucket and spouts is \$12 1/2 to \$15 per hundred, according to materials and workmanship; pans, \$3 to \$5 each, according to size, and quality of materials. Iron bound pine buckets are preferable to tin, and cost much less. The pans made entirely of iron, in the manner described, are far better than those with wood sides, less liable



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to leak, easier kept clean, sweeter, and more easy to handle. The cost for the same size and quality of iron is not materially more.

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"Fair handed Spring unbosoms every grace."

S. Scudder
Randolph, Cattaraugus Co., N.Y.
Jan. 2, 1858

FURTHER ON MAPLE SUGAR MAKING

To the Editor of the American Agriculturist:

My experience leads me to differ somewhat from your correspondent in the January Agriculturist. By using spouts made of pine, with a hole burned through, or sumach with the pith removed, and properly tapered at one end to fit the hole, I save the labor of re-tapping or "freshening," for if the sun and air are well excluded from the interior surface it will not dry up or coat over; while tin or iron quarter circles, as recommended by Mr. H., leave the hole open and fully exposed to sun and air. The spout need not be more than three inches long if the buckets are hung up, except in case of using one bucket for two or more spouts, when longer ones will be useful. Pail handles, such as are ordinarily used on tin pails form excellent and very cheap spouts where they can be procured, and they might be turned to order to fit any required bit.

I prefer turned buckets of pine, or still better of cedar, the size of common water pails, fitted with a sheet iron "ear" upon the outside, to hold it to the tree upon whatever is driven into it, for which I recommend a piece of 1/8 or 3-16 inch wire sharpened at one end. Properly ground, a wire can be driven into a tree without causing the too frequent "bleeding" which often follows where nails are used, and there is no head to catch the ear. This bleeding is not only an eye-sore, but is very injurious to the tree, and lessens the quantity of sap secured. These buckets can be procured, painted and cared ready for use, at any pail factory, at a cost of from 15 to 18 cents each, and are superior to tin, in that they will

stand much more rough usage and banging about, will last longer, and cost only one third as much.

Pans for boiling should be made of Russia iron bent up six inches all round, and stiffened with a 3/8 inch wire round the top; and wire handles can be affixed to suit. Such pans will not leak, whereas it is nearly impossible to nail or screw the iron bottom to wood sides and have it keep tight - trial has proved this. They cost but a trifle more than those with wooden sides, and it is always cheapest to get a good, reliable article, even at a double price, to say nothing of the vexation and loss of a continual sizzle when boiling. The wooden sides do not prevent boiling over; it is the absence of heat upon the sides, and an iron sided pan is safer if possible than one with wooden sides. In addition to this pan arrangement, it will be found highly advantageous to set kettles in the arch between the pans and the chimney, to use the heat which would be otherwise wasted in heating the sap preparatory to putting it into the pans. One who never used this arrangement will be astonished at the amount of time, wood and trouble saved by it; and kettles are not objectionable when the liquid is not allowed to stand in them. I advise setting the kettles higher than the pans, and having a metal faucet or cock inserted in them, and leading over into the pans, to save dipping the hot sap.

Great care should be taken to have the pans set exactly level; and in everything remember that "better not done than half done." The supporting bars used by Mr. H., are not necessary where a genuine, whole pan is used.

In tapping I choose the north or west side of the tree, for this side will run when the south side will not, and will not cease running so soon in the season and will give more sap; of this latter I am confident. The trees should be tapped about four feet from the ground, with a 1/2 to 3/4 inch bit, and two to three inches deep according to the size of the tree. Four feet high will be found a very convenient height (though the roots and limbs will yield liberally), for then in gathering, the bucket need not be removed from the wire, but merely tipped up and the contents collected very easily and rapidly. Also, if the buckets are set on the ground they catch many leaves blown by the wind, which is avoided by tapping high; and notice the fact that white sugar or syrup CANNOT be made from sap in which dead leaves have soaked - there is scarcely anything more deleterious.

Let "boxing" never be practiced. It is a barbarous and suicidal method, and the man who would do it ought to

be yoked up with him who kills bees for their honey, and placed on the dunce's seat along side the old woman who killed the goose to get at the fountain of golden eggs.

If your "bush" is small and compact, the sap can be collected in pails with a "yoke", but if large or scattered, and upon inclined ground, you will save much hard labor by making long spouts or troughs, and lay them in a line, with a tub or barrel at the head, into which you can turn your collection and let it run gradually through a faucet and along the small troughs to the reservoir, while you are gathering more. In my orchard I used three lines of troughs whose aggregate length was about a quarter of a mile, and the amount of back-aches they saved is incalculable. These long troughs can be cheaply got by having a long log sawn into stuff two inches square, and then with a carpenter's plough, a groove one inch wide, and 1/4 deep is easily made; widen the groove at the upper end, and lay them in a line as described, and having once used them you will not soon part with them.

When the sap is boiled to "syrup" set it away in tall wooden or glazed earthen jars to "settle;" let it remain two or three days, according to the thickness, perfectly still and undisturbed; then turn it slowly off, leaving the dregs to be mixed with hot sap and again settled till the sweetness is extracted. The clean syrup is then put in a pan, and to every pailful of syrup add a half teacupful of new milk, (a farrow cow's milk will not answer,) stir it well together while cold, and when still, build a slow fire; as it grows hot, a black cloud of scum will rise through the entire mass, which must be removed the moment it boils.

If for cakes or grained sugar, it is done when strings of it cooled on hard snow, or in cold water, will snap off like glass, then remove it from the fire and stir it incessantly till it begins to "grain" when the quicker it is in the plates, the better.

If for "grained" sugar keep on stirring till it is dry when it will look like fine coffee, or brown sugar, according to the care taken.

For "drained" sugar, take it from the fire, when it will "flake" off largely and freely in dropping from a tin skimmer, and get it away in tubs or glazed pots, for use. The purest of this will settle or crystalize, leaving the rest in thinnish molasses, containing nearly all the impurities. In a few months you will find the sides of the tubs coated with these crystals of sugar all shaped like an oblong house with one side of the roof longer than the other, hard as

glass, and of exquisite and almost immaculate purity. These crystals when melted over and re-manufactured, possess a flavor peculiar to themselves, and quite distinct from ordinary maple sugar. Cakes made from these crystals are almost transparent, and are a rare curiosity, well worthy the young people's efforts to make them.

A pint of old cider in a hogshead of sap will prevent it from graining; and sap so doctored can never be got beyond molasses. Also if syrup is allowed to "sour" and become "ropy" it will never cake or grain but can be made into candy, preserving the true maple flavor.

Excellent vinegar can be made from sap by boiling down one half, and putting it in a clean barrel with gauze or fine wire netting over the bunghole to keep flies and insects out. It will soon ferment and turn to vinegar preferable for some uses to the best cider vinegar. Having written too much already, I will only repeat the injunction that everything must be kept in perfect cleanliness if a nice and salable article is desired.

W.G. Wright
Hornellsville, Steuben Co., N.Y.
Jan. 1858

HOW TO CLARIFY MAPLE SUGAR

To the Editor of the American Agriculturist:

In the first place, the buckets should be made of good white pine or some other good clean material, and at the commencement of every sugar season, they should be carefully brushed out, to remove any dust or cobwebs that may have collected, then immersed in boiling water, washed thoroughly with a cloth, and rinsed with cold water. Storage and boiling apparatus should go through a similar operation.

The sap should be strained through woolen cloth and evaporated in sheet iron pans set in such a manner that the fire can only reach the bottom of the pan, and the chimney carried up outside the building so that no smoke or ashes can fall into the sap while boiling. The evaporation must be as soon after gathering as possible. The syrup must be passed through a woolen strainer when as thick as can be made to run through when cold. "Sugar off" in a pan made for the purpose. I use one made of the best Russia iron, three feet long, a little over two feet wide, and nine inches deep. A little sweet cream may be dropped in occasionally to keep it from boiling over.

When dry enough to retain its form well when taken from the moulds, (which

may be known by stirring a little in a saucer till cold), pour it into an iron or brass kettle and stir till it begins to thicken considerably, and pour it in oblong moulds made of tin, and holding, say five pounds each.

When cold, take out of moulds and lay the glazed surface downward, which will prevent draining until you are ready for this operation. As the weather grows warm, or when ready, place the cakes of sugar on their edges in some convenient vessel to catch and retain the molasses, and if you do not have as nice sugar as can be made by any ordinary process, then I am no judge of the article.

I have tried clarifying with various substances, skimmed milk, saleratus and whites of eggs beaten together, etc., and I am satisfied, that where proper care is taken to keep everything sweet and clean, the sugar is clearer, pleasanter and every way better without any such additions.

Nearly all the impurities contained in common maple sugar, are either foreign matters which get in after the sap runs from the tree, or are caused by burning.

I ought, perhaps, to state that the buckets should be taken in immediately at the close of the sugar season, and go through a thorough washing and scalding process again, to remove every particle of sourness, and every other vessel used in the manufacture, should be cleansed immediately and laid away very carefully.

Now Mr. Agriculturist, perhaps some of your readers may think there is too much trouble in all this. Well, if they prefer to boil down a solution of ashes, smoke, snow, flies, and sour sap, and then partly remove the foreign matter by the use of some clarifier, all I have to say is, their taste differs from mine . . . inclosed is a small specimen of the sugar I manufactured by the above process last Spring. (The sample is as white and fine as the usual "Stuart's refined" sold in the market. Ed.)

Wm. F. Bassett
Ashfield, Franklin Co., Mass.
Jan. 4th, 1858

The equipment and methods described in these letters are not necessarily approved by the editor of this publication. However, it was interesting and certainly should be to those of you who made sugar back "in the good old days".

Ed.

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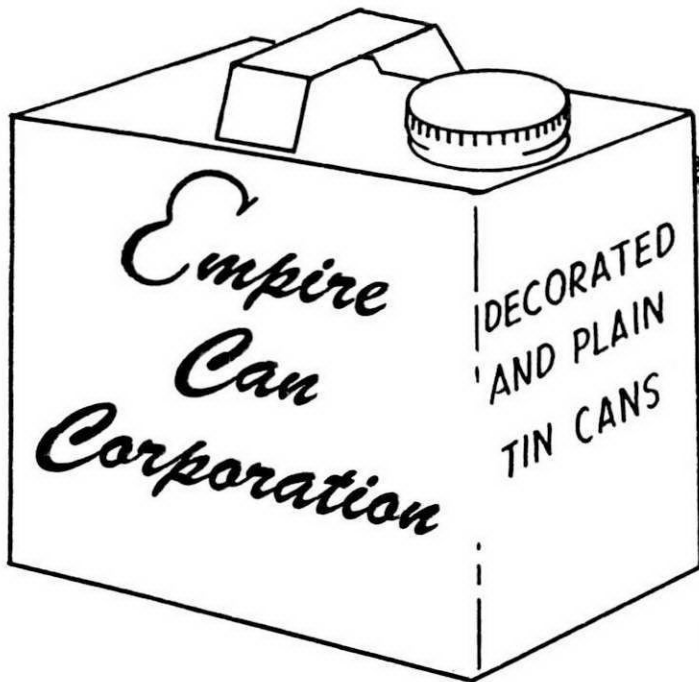
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Morgan Arboretum — MAPLE RESULTS IN 1966

by J. D. MacArthur

MACDONALD FARM JOURNAL — FEBRUARY 1967

One of those rare, but welcome, bumper crops of maple syrup was produced in 1966. High yields were reported from all around the maple country. Some people were even worried about over-production and falling prices. The Morgan Arboretum maple operation was no exception with a total production of 512 gallons of syrup or 1.67 pounds of sugar per taphole. As usual much work was done on experiments and tests with methods of sap collection. We hope this report on results may prove useful to others.

Experience, in 1965 particularly, led to the decision to start tapping in the Morgan Arboretum by February 15. Too many early March runs of sap have been missed in the past. In 1966 earlier tapping gave us an extra 100 gallons of top quality syrup during the first week of March. From now on we will not risk missing that early run. It can turn bad years into average ones and boost an average year to good. There is nothing to lose and, in some years, a real bonus may be gained.

Taphole Sanitization

All 1966 tapholes were treated with paraformaldehyde pellets because a 1965 experiment had shown that sanitization greatly increased sap yields. When pellets are used early tapping is possible without risking early "drying up" of tapholes. Several experiments in the U.S. have shown that tapholes bored and pelleted in February produced clear sap until April 15; two months later. Pellets also reduce the contamination of sap by micro-organisms and syrup quality is better. Early tapping, later "drying up", and better syrup are all advantages that can be obtained at low cost through taphole sanitization.

Vacuum Pumping (Experiment A)

For several years vacuum pumping of sap has been under study. In a 1965 test on a 450-tap system, with 18-inch drops and vacuum pumping, sap yield per taphole was more than double that from buckets and spouts in other groves. It was therefore suspected that the use of drops, for the first time, had given the marked increase in yield. But this was not certain. Since

drops cost about 15 cents each, this called for careful checking.

So in 1966, the same 450-tap grove was split into two 225-tap set-ups; one with 18-inch drops on each tap and the other not.

Each tree had either one or two drop taps and one or two non-drop taps, depending upon its size. Two pumps were installed, one on each system, and run by the same motor.

Yield records showed that the drop system produced 6.6 gallons of sap per taphole versus 2.7 gallons for the non-drop system during the season. Yield of 6.6 gallons from drops with vacuum pumping was the highest in our 1966 operations. It appears that drops are clearly worth the extra cost. However, the test will be repeated in 1967 to check for seasonal differences that may be important.

Tubing versus Buckets (Experiment B)

In 1966 we obtained a definite answer to the old question about sap yields from tubing and buckets. Doubts have bothered many people who felt that tubing was not as good as the old way. Small scale tests here in the past have indicated that tubing was slightly better so an experiment was made to clear up this point once and for all.

In all 240 trees were used. Each tree had two taps (both pelleted), one having a spout and bucket and the other a tubing-connected 18-inch drop. Sap yields from 24 ten-tree groups were kept separate for tubing and buckets

The average tubing yield was 6.3 gallons per taphole versus 5.0 gallons with buckets and spouts (26 per cent better). The bucket yield was slightly less than the 5.5 gallons per tap recorded for the regular operation of

1850 taps hung with buckets.

Properly hung tubing can therefore be expected to yield better than buckets in volume alone. Moreover, tubing collection is more sanitary, there is less risk of loss by runing over, and later in the season, sap is less exposed to heating than where it remains in buckets awaiting collection.

Early and Late Taps

Some further evidence that taphole sanitization is effective was obtained. On April 2 a fresh tap was bored in each of ten trees that already carried two buckets hung in early March on pelleted tapholes. From April 2 to 18 yields from the unpelleted fresh taps averaged 3.8 gallons against 3.2 for the old taps. In the first week the fresh tap yield was 24 per cent greater than the old but, in the second week yields were practically the same. When the same test was made in 1965, on the same trees but without pellets, the yield from new taps was nine times that from old ones (Table 2).

Power Tapping

After another season of testing the battery-powered electric tree tapper it is still in favour. Some good features are:

- 1) Easy carrying.
- 2) Ease of tapping up to seven feet above ground.
- 3) Ease of starting and stopping.
- 4) No motor tuning problem.
- 5) Slow drill speed eliminates risk of heat damage to taphole.

Overnight battery charging permits a day of tapping. A charger is essential and may mean an additional expense but both charger and drill can be useful on jobs other than tree tapping.

Squirrel Damage

Squirrel damage to plastic tubing suddenly became a major nuisance in 1964 and again in 1965. Plans to study this expensive problem in 1966 were washed out by a mysterious absence of any damage. Should this problem crop up again Dr. Roger Bider, wildlife biologist on the College staff, will be prepared for it. Information on squirrel behaviour is needed if we are to foresee

and prevent, or reduce, damage. The necessary studies are likely to require much time and effort.

Surplus Syrup — Storage and Sale

More syrup was produced in 1966 than could be sold immediately in the spring. Our solution has been to store the surplus in the Department of Horticulture cold rooms and to offer syrup for sale along with Christmas trees in December 1966. At this time of year many people are looking for an unusual and inexpensive Christmas gift. A pint or quart of maple syrup is a good solution. Others may have used their first supply and need more to carry them over to the fresh crop.

Our 1966 experience has shown that there is a demand around Christmas time. Fifteen per cent of our 1966 production was sold in December 1966. Sales are worthwhile. When syrup is sold along with Christmas trees the overhead is low and this market could probably be developed.

Educational Sugar House

Through the assistance of several firms in the maple business a fully equipped educational sugar house was operated in the Morgan Arboretum in 1966. Groups of children, usually school classes, learned how maple sap is collected and syrup made. The sessions ended with each child enjoying what is variously called sugar on snow, taffy, *la tîre*, depending upon local custom.

A section of sugar bush near the educational sugar house was used as a museum (Figure 5). Old-fashioned wooden buckets and spouts, different kinds of metal buckets and spouts, and the latest types of plastic equipment for sap collection were hung to show the history of sap collection. After the outdoor demonstration the groups then saw how maple sap is converted to syrup by evaporation (Figure 6). Explanation was combined with demonstration with a tasting session (Figure 7) to complete the story. Interest in this project was strong from the start and heavy traffic is expected in the education sugar house and bush in 1967.

In 1967

Past work will be followed up in 1967. Early tapping with pellets is now standard practice in Morgan Arboretum. The drop and non-drop with vacuum pumping test will be rerun; different lengths of drops will be compared; if possible squirrel damage will be studied, and the educational project will be enlarged. We hope to have some more useful results to report by next year and join you in hopes for good sap weather in our Centennial Year.

TABLE 1 — Average taphole gallons of sap from different installations

Method	No. of taps	Average yield taphole gallons
Regular operation Spouts and Buckets	1850	5.5*
Experiment A		
1) Tubing, 18-inch drops, vacuum	225	6.6**
2) Tubing, no drops, vacuum	225	2.7
Experiment B		
1) Tubing, 18-inch drops, gravity	240	6.3**
2) Spouts and buckets	240	5.0*

* Yields from spouts and buckets in both regular operations and the experiment were similar.

** Yields from gravity flow and vacuum pumped tubing, both with 18-inch drops, were similar.

TABLE 2 Average taphole gallons of sap from fresh taps and old taps

Year	Fresh	Old (pelleted)	Old (pelleted)
1965	3.5	0.4	—
1966	3.8	—	3.2

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Canadian Maple Research and Demonstrations

Taken from
The Annual Report of the
Department of Woodland Management
MacDonald College
and
The Morgan Arboretum Association



Sugar maple plantation, Huntingdon County

Maple syrup production at the Morgan Arboretum was excellent in 1967; a year that was below average in many places according to reports. The 1967 season was in many ways different from those of 1966 and 1965. The early March run did not occur and there was only one period - March 6 to March 12 - where sap flow was strong. However, 472 gallons of syrup were produced. This was not much less than the record production of 512 gallons in 1966. Production data for the past ten years permit comparison of years.

Once again early tapping using paraformaldehyde pellets in all tapholes was practiced. While there was no advantage in catching an early run of sap in 1967 early tapping gave ample time to have all in readiness when sapflow began about March 24th. The amount of syrup produced is evidence that early tapping is quite possible without danger of "drying up" when pellets are used. In fact, in 1967 sap was still being collected up to April 20 whereas in 1966 the season ended by

April 12.

Yields of sap per taphole from two systems of tubing installation; 1) 18-inch drop and 2) non-drop, both with vacuum pumping; were compared in the North Grove. This was a repeat of a 1966 test of the same two systems. In 1967, the drop system again gave the higher yield; 8.1 taphole gallons versus 6.7 from the non-drop system. The results help to confirm the belief that drops permit significantly greater yields. Whether the extra sap is worth the cost of using drops is, however, still debatable.

In the regular test groves an experiment to compare gravity flow yields from 18-inch, 12-inch, and 6-inch drops was conducted. Three comparisons; 1) 18-inch versus 12-inch, 2) 18-inch versus 6-inch, and 3) 12-inch versus 6-inch; were made. Four test groves, 240 trees, and 480 taps were involved in the experiment. Analysis of the yields show that the drop length had no effect on the yield per taphole. While there was great variation be-

tween the 10-tree experimental units, and between test groves, there was no evidence that 6-inch drops were not as effective as either 12 or 18-inch.

Drop length test

Drop	Gallons per taphole
18-inch	5.3
12-inch	5.2
6-inch	5.3

A practical implication of the usual 18-inch drops by 6-inch ones to save a foot of tubing per tap if possible.

The squirrels returned to plague the plastic tubing in the North Grove in 1967 and damage was heavy early in the season. With the advent of milder weather their attacks ceased abruptly. This year squirrel activity was watched closely and damage recorded and mapped.

Activity in the maple management project has been less than planned but the initial step of mapping and describing 1,000 potential producers in a stand of young maple has been completed. This project will now move forward more rapidly as a result of a research grant of \$3,600 received from the Canada Department of Agriculture.

Sugar parties in 1967 were not favoured by the weather. On April 5th a special party was held for the Commissioners General of Expo. Although the day was cool and overcast and the footing wet and muddy the guests apparently enjoyed this unusual activity sponsored by the Canadian International Paper Company. It was nice to see some old friends out for this event, among them Vernon Johnson, Honourary

Production data — 1958 - 1967

Year	No. of Taps	Gal. of Syrup	Pds. of sugar tap ¹
1958	3,251	432	1.22
1959	2,692	278½	0.93
1960	2,488	427½	1.58
1961	2,605	281	0.99
1962	2,626 (150 P/L)	309	1.08
1963	2,871 (480 P/L)	374	1.19
1964	2,793 (911 P/L)	353½	1.14
1965	2,850 (932 P/L)	250½	0.81
1966	2,818 (728 P/L)	512	1.67
1967	3,230 (930 P/L)	472	1.34
10 year average to 1967		369.0	

1. Gallons of syrup times 9.2 divided by number of taps.

President of the Association. Verne came down from his Harrington Mountain retreat for the occasion and to sample our sugar on snow. It is hoped that he will come again soon.

Both the McGill Graduate Society and the Morgan Arboretum Association parties were postponed a day on account of rain but attendance was still surprisingly high. The Macdonald College Faculty Club had the good fortune to pick a perfect day. The educational activities centred on the demonstration sugar house went into high gear in 1967. The completion of a second year in

this venture of educating school children and other youth groups on the importance of the maple industry to Quebec farmers was most successful.

During the 1967 sugaring season the C.B.C. International Service filmed a television programme on the maple sugar industry for presentation to audiences outside Canada. The successful completion of this project was assisted by Bob Watson who co-operated in fitting his work schedule to the needs of the film crew.

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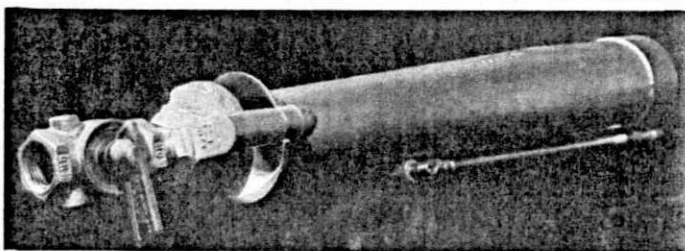
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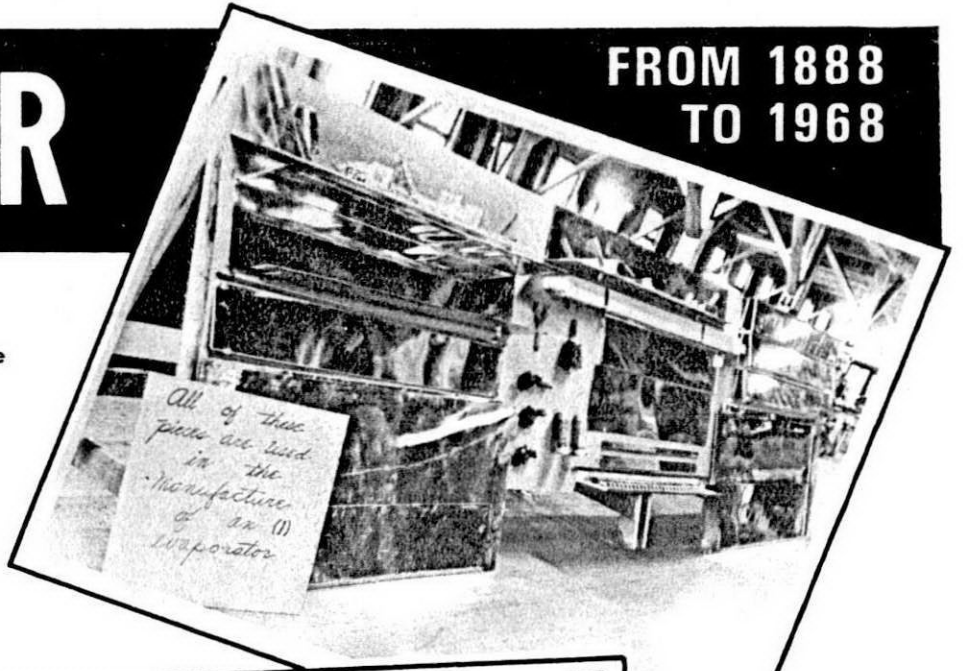
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North Collins, New York 14111

LEADER

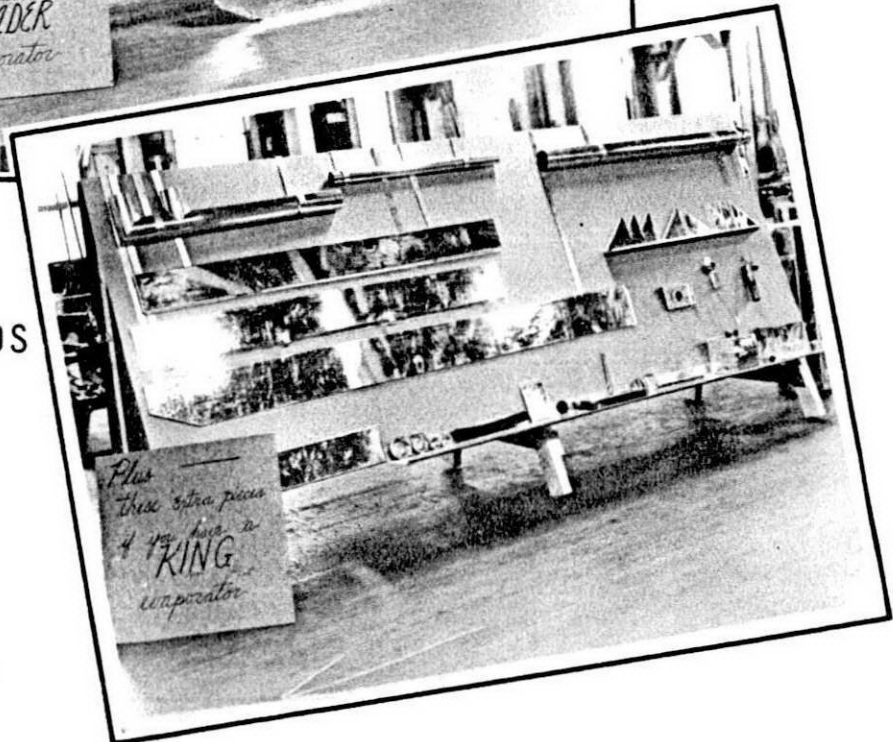
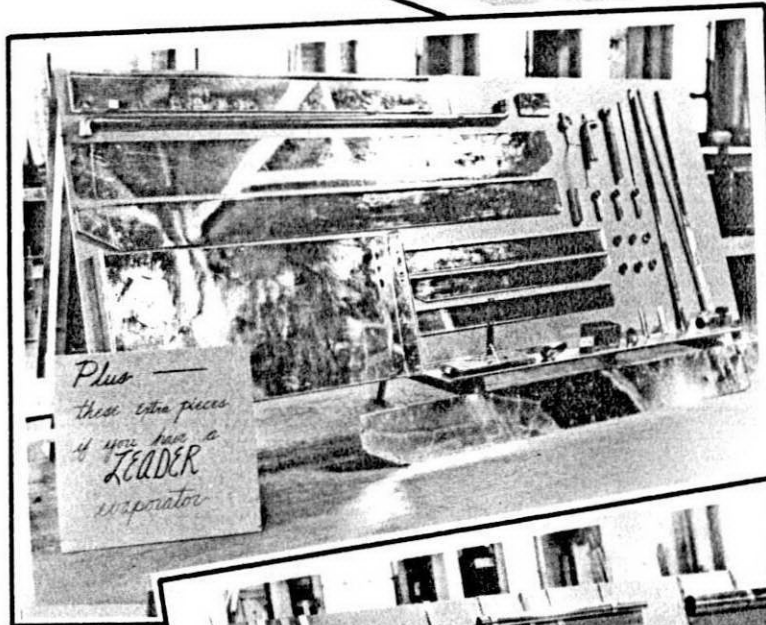
FROM 1888
TO 1968

These photographs illustrate the number of pieces involved in the manufacture of our modern Maple Sap Evaporator.



As in all of our merchandise – Leader and King Evaporators are manufactured from the finest quality material available.

This is to assure the maple producer of top value for the investment.



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FOR ALL YOUR
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EVAPORATOR
CO., INC.**

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Are You Short Of Help ?

Have to Haul Sap a Long Way?
Got a Rough, Steep Sugar Bush?
Want to make Better syrup Cheaper

LAMB *Naturalflow* Tubing System Will Help Solve Your Problems !!!

There's nothing mysterious about tubing.
No magic -- no hocus-pocus.
Just good, common sense.

Tubing will bring the sap down the hill where you can
get to it. -- Just haul it away.
It will produce cleaner sap -- make better syrup.
Eliminates gathering -- the big labor cost.
Economical to buy and install.

We've got round tubing for warm areas.
Fast thawing ribbed tubing for colder places.
Three different types of spiles.
A sap collector that vents main lines better.
Snow shoes and Snow travelers to install it with.
And everything else you need.

If we think of anything new that will help, we'll make it.

R. M. LAMB

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method book is now available in
English. Free to those who want
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