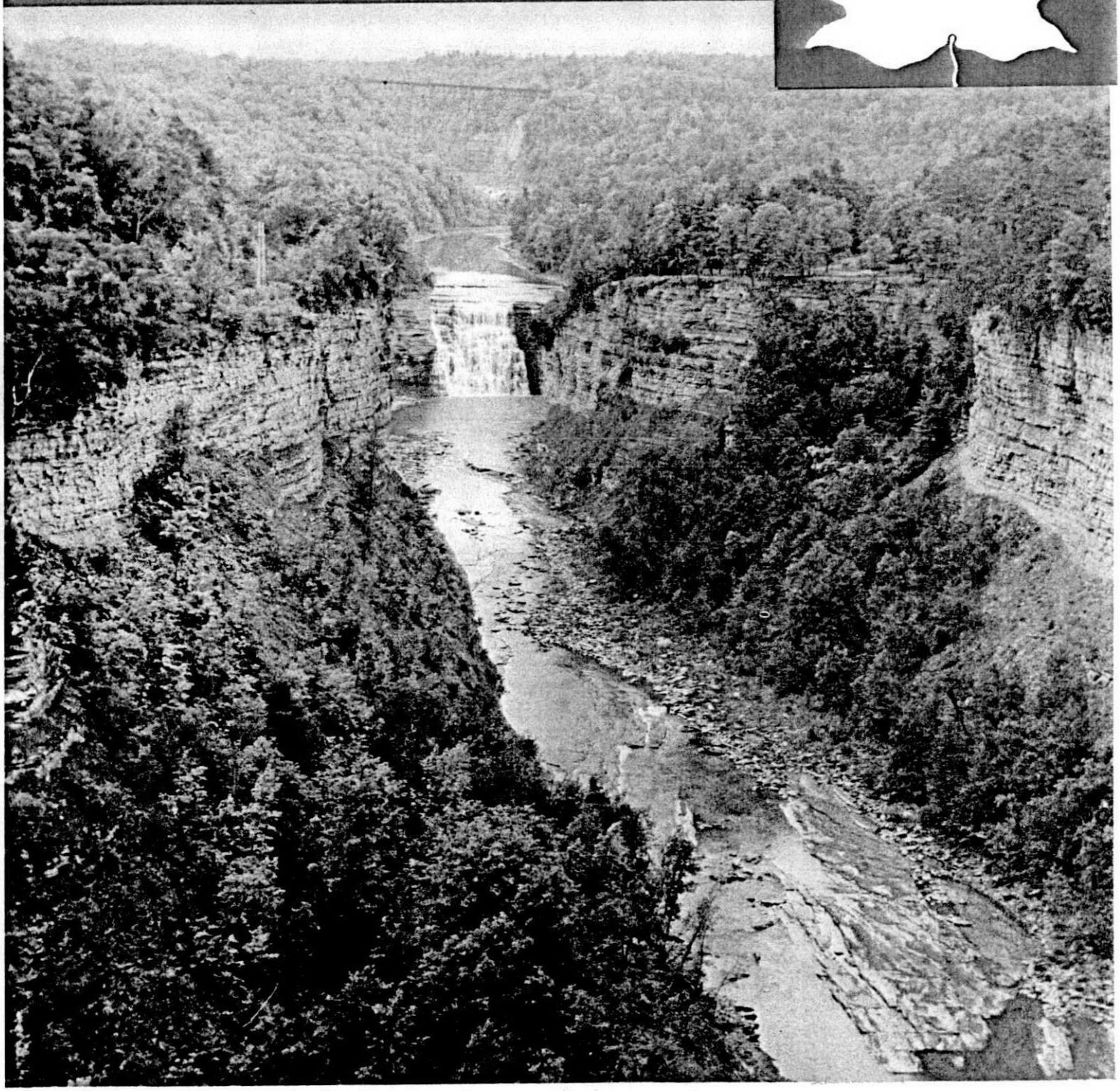
# National Maple Syrup
# • DIGEST •

CLEANING EVAPORATORS

TAPPING TREES



Vol. 4, No. 3 BAINBRIDGE, NEW YORK OCTOBER, 1965

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# LIN'S LOGIC

There is something about these crisp Fall days that make me feel as tho I could start almost anything. To me October is not a month when Summer is dying but rather the start of a new season. No mistakes have been made as yet and the many frustrations have not developed.

Certainly it is so with maple. We are now planning for the coming year. I think it is fitting that the annual meeting of the National Maple Council should be held in October.

This will be my last greeting to you as president of the Council. I have enjoyed its challenge, have enjoyed working with you and for you. The time has gone very quickly. I am sure our new president will strengthen the Council as have all presidents from its start.

I would like to address a last word to state leaders. Make the Council a part of your programs if you want it to work. It will truly be as strong as you want it to be. Make sure it is given a place at your meetings wherever its prestige is envolved. Work for the Council and the Council will work for you - so good-bye, good luck and may the sap be sweet.

LIN LESURE

# ANNOUNCEMENTS

### NATIONAL MAPLE MEETINGS

About the time you receive this issue of the DIGEST two important meetings will be in progress.

The sixth annual meeting to the National Maple Syrup Council will be held on October 18, 1965 and the Sixth Tri-ennial Maple Conference will be held on October 19 and 20, 1965. Both meetings will be at the Maple Division of the Philadelphia Laboratory.

We regret that many of our readers will not receive this issue until after these meetings are over (see Postal Service below). However, we will print reports of the meetings in future issues.

### POSTAL "SERVICE"

Anyone who uses the term "service" in connection with the Post Office Department must be using it rather loosely. In plain, every day language, we think it stinks. For example:

We received a letter from a man in Minnesota written on Jan. 26,1965 in which he states: "We received the January (1965) issue of the DIGEST yesterday (Jan. 25). Checking our records revealed that this issue was mailed from the Bainbridge post office on Dec. 27, 1964, almost a month earlier and it left this post-office the same day since this post-office must be cleared of all outgoing mail before night !!"

What happened to it? Somewhere along the line some employee was probably on vacation or sick leave which postal employees seem to have an abundance of, or else they just don't give a damn!

If your DIGEST is delivered late, please don't blame us: we mail every issue on time. Maybe you better write a letter or two. But don't write to the Post Office Department -it won't do a bit of good. You might better write to your local Representative and Senators. Our representative is investigating this situation locally right now, and a lot of letters all over the country will probably do some good.

### SAND FREE SYRUP PANS

Last year a maple producer in New England tried a finishing pan that had the bottom coated with "Tef-lon" - like some of the new cooking utensils. And you know what? No sand would stick to it!!

As soon as we receive more information on this we'll publish it.

### COVER PICTURE

This month's cover picture is one of the views at Letchworth State Park in Wyoming County, New York. This is New York's "Grand Canyon" and it just happened to be located right in the middle of this year's maple tour.

### MAPLE SIRUP PRODUCERS MANUAL

A completely new Maple Sirup Producers Manual, written by Dr. C. O. Willits is now ready for distribution. This publication is the most complete handbook on maple sirup production ever written. It contains 112 pages of the latest developments in the maple industry. If you want a copy, and we don't see how you can get along without it, send 70 cents to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, and ask for Agricultural Handbook No. 134, Maple Sirup Producers Manual by C. O. Willits.

For an example of the contents, see CLEANING EVAPORATORS in this issue.

# Editorial

Just in case you haven't heard the good news, we are very happy to report that **The Maple Division of the U.S.D.A. Laboratory in Philadelphia is still in business!**

The Honorable Samuel S. Stratton 35th District, New York, was one of many Congressmen who fought for **full** re-instatement of this laboratory. His letter to the DIGEST, May 12, 1965, contained the following paragraph:

**"The department (U.S.D.A.) has agreed to continue the research on maple products and, while I would have preferred retaining the present level of activity, I do think our efforts were worthwhile in keeping this important work going. In addition, by retaining appropriations of over $70,000 annually, we have kept the door open for expanding research in the future years."**

I was very pleased to receive this letter especially after I read a press release dated March 30, 1965 from the office of Senator George D. Aiken of Vermont, which contained the following:

**"With the Administration Planning to eliminate maple research studies at the Agricultural Research Service laboratories, Philadelphia, Senator Aiken said today that he has offered a plan to cut the staff in half and at the same time more than double the amount of time spent on maple syrup marketing research."**

The release goes on to say that currently the Philadelphia project is devoting the bulk of their time on microbiology of maple products and studies of the chemical properties of maple sap and syrup. The report recommends that the total effort be reduced by half with all their time being spent on processing and new products and that all efforts in other fields be discontinued. It is assumed that this means a discontinuence of the bacteriological and chemical analysis work.

I must be pretty stupid because this sure doesn't make sense to me. Have you ever stopped to think of why you are making a better quality syrup today than ever before? You just can't make a silk purse out of a sows ear and I doubt very much if it's possible to make good quality syrup out of sap that has been damaged by excessive growths of yeast and bacteria regardless of what processing technique is employed. If Senator Aiken wants more time spent on processing the place to start is at the root of the evil. To head off in any other direction would be the same mistake as the do-it-yourself mechanic adjusting his carburetor when he has ignition trouble.

Now, here comes the payoff. The following article appeared in the June 16, 1965 issue of AGRIVIEW, the bi-weekly publication of the Vermont Department of Agriculture:

## MAPLE CHEMISTRY RESEARCH

**"The announcement that the USDA has granted $48,000 to the University of Vermont for maple research is particularly good news at this time. Since the new research is said to involve chemical studies, it is hoped that this will include problems relating to the analysis of the syrup itself. Not since 1936 has the University resumed the maple chemistry project carried on by the late Prof. Charles Jones. During this long absence of such research, sugarmakers were faced with complex problems of replacing unavailable labor with complicated equipment. Further, they were required to pack more and more of this syrup in retail containers in which the syrup would not spoil and the quality would be uniformly controlled.**

**So as an emergency measure, seven years ago the Division of Markets of the Department of Agriculture (Montpelier) established a combination maple laboratory and field research program. Many of the fine improvements in technique and equipment resulting from the Division's research are to be found in the "Maple Quality Control Chart." It is fortunate that the new maple chemistry project is beginning at the same time that the Division's maple laboratory is being closed due to budget problems."**

**By H.V. Shute, Director**
**Division of Markets**

Now isn't that something! First, Senator Aiken proposes a 50% cut in appropriations to the Philadelphia Laboratory because work on microbiology and chemical properties of maple sap and syrup are unnecessary. Ten weeks later, Shute announces that the University of Vermont is granted $48,000 by the USDA for research involving chemical studies, the very thing that Senator Aiken proposed eliminating! If Mr. Shute is correct this certainly makes a very confusing situation. First, Senator Aiken says stop it, then Mr. Shute says let's start it up again. It looks like a case of lets shut off the funds one place and then deliver them to another to do the same work. This disjointed approach, while it may be standard governmental procedure, is not only wasteful of money but also manpower and, most important, experience.

Mr. Shute, in his zealous effort to exploit Vermont, quite often finds it convenient to ignore the fact that there is a Maple Laboratory located at 600 East Mermaid Lane, Philadelphia, Pennsylvania that works for all maple producing states, has been working for many years on the same problems he stated in his article and has solved most of them along with a good many others, and if the results haven't reached the maple producers it is the fault of the Division of Markets or the Extension service, both of which are supposed to be educational agencies.

Personally, I don't care where the work is done as long as it **is done**, but I like to put my money on a proven winner and certainly the Federal Laboratory has a very productive record. Further, we have a right to assume that the Federal Laboratory will treat all our problems equally. Can we expect the same from a State Laboratory?

# PRODUCTION LESSON

PROF.
PROFIT
CONDUCTING


These pellets won't do everything, they won't even cure anything. They won't clean your Buckets, or your Tubing, or your Storage Tanks. They're not supposed to. They make sap run longer by controlling taphole bacteria. You can tap earlier and not miss the first run. Sap keeps running until the leaves come out. Small product, small price, big return. Get some; if your dealer hasn't any, write us.

**FOR A COMPLETE PRODUCTION COURSE INVESTIGATE ALL THE OTHER LAMB GATHERING AIDS – TAPPERS, TUBING SYSTEMS, ETC.**

## A. C. LAMB & SONS

LIVERPOOL N. Y.

# Influence of Tapping Techniques on Maple Sap Yields[1]

By PUTNAM W. ROBBINS, Forestry Department

MANY FACTORS are suspected to have pronounced influence on the rates of flow, yields and quality of maple sap. Among these are: 1. the aspect, or compass orientation of the taphole; 2. taphole position in respect to major roots, and height above ground; 3. the diameter and depth of the taphole; 4. the design of the spout; and 5. the relationship of weather to sap flow.

Reliable literature analyzing these factors is lacking, so the following studies were undertaken to determine their roles. To eliminate possible biased conditions of previous tapping, the Baker woodland containing untapped sugar maple trees was selected for the study. This woodland, located on the Michigan State University campus, is typical of sugar bushes of Southern Michigan. In addition, its proximity to the Michigan Section, U. S. Weather Bureau facilitated the incorporation of essential daily meteorological observations with maple sap yield data.

## EXPERIMENTAL METHODS

### Tree selection

One hundred and twenty-four sugar maples *(Acer saccharum)* having a diameter of 10 inches or more at breast height were selected and numbered. Each of these selected trees was classified according to its diameter at breast height, crown volume and vigor. These classifications and all subsequent data were recorded on I.B.M. cards. From these 124 trees those that were to receive similar treatments were grouped at random with an equal number of tapholes in each class for each treatment. This study was conducted during the sap flow period of three consecutive seasons to minimize differential yield values.

### Taphole and tapping

Holes were drilled with a hand brace using 7/16-inch tapping bits, except for the portion of the study covering diameters of different sizes. The holes were drilled at least 24 hours in advance of the first sap flow, based on the maple sap weather forecasts given by the Weather Bureau and the author.

The sap flowed from the taphole to metal buckets or plastic bags through a variety of commercially accepted sap spouts described below. Each day of flow the sap was weighed to the nearest tenth of a pound. Degrees Brix of the maple sap from each tree was measured using a hand refractometer. Finally, the sap was boiled to standard density sirup in a steam jacketed kettle, and judged for flavor and color.

The data obtained for each of the three seasons was analyzed using standard analysis of variance with a two-way classification. The data for the three years were combined to provide a final analysis of a three classification scheme with each year corresponding to a replication.

### Compass aspect of taphole

The effect of aspect (compass direction) on the location of the taphole and the volume and quality of sap produced was determined by recording the yields of sap from 168 holes, with 42 holes each on the north, east, south and west. The same trees were tapped for three successive seasons. But the new holes were bored four inches to the left of the preceding year's hole to eliminate any effect resulting from dead wood surrounding the old hole.

No significant difference between quadrants as related to maple sap yield or quality was observed (Fig. 1, Table 1). Robbins reported that any significance in sap yields by compass position would be unlikely.

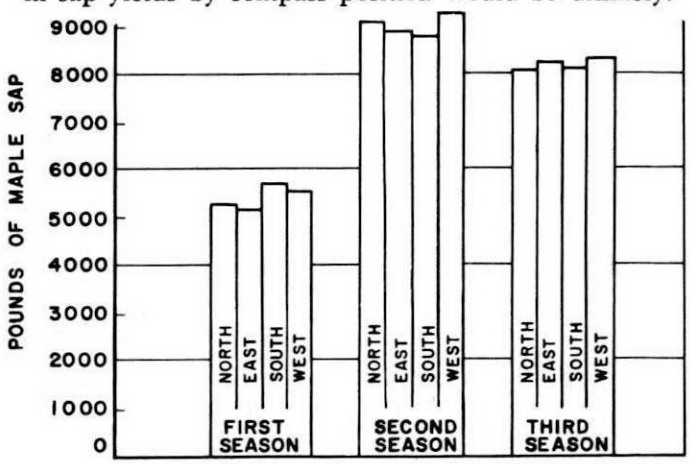



**Fig. 1. Aspect and maple sap yields in pounds by position**

**Table 1. Effect of aspect of taphole on yield and quality**

| | Aspect Or Compass Position | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | North | | East | | South | | West | |
| Season | Lbs. of Sap | Quality | Lbs. of Sap | Quality | Lbs. of Sap | Quality | Lbs. of Sap | Quality |
| 1 | 5245 | Good | 5168 | Good | 5844 | Good | 5566 | Good |
| 2 | 8169 | Good | 8336 | Good | 8191 | Good | 8312 | Good |
| 3 | 9104 | Good | 9053 | Good | 8938 | Good | 9388 | Good |

Basis: 42 tapholes each season in each of the four positions.
Conclusion: No significant differences in the yield of maple sap by aspect were demonstrated.

### Taphole location

To determine the optimum location of the taphole in relation to major roots and the height of the hole above ground, 12 trees in the 20-inch diameter class were tapped. Each tree had three tapholes located over a major root at heights of one two and three feet. The holes were offset from one another to min-

imize flow interference. Sap yields were compared to controls from 16 additional trees tapped at two and three feet, but not over a major root.

Sap yields showed a significant relationship to height of tapping during the first two seasons, but not during the third. The two and three foot height holes produced the greatest quantity of sap, while the one foot height produced the smallest volume of sap. This may be attributed to the one foot height holes being occasionally covered by snow and ice, while the two and three foot height holes were free of ice and flowing.

Analysis of the data showed there was no justification of locating tapholes above a major root, when comparing yields or quality of maple sap.

### Spout design

Sirup producers and equipment suppliers often claim that a particular type spout is superior to others. To determine the difference in yield of sap, if any, due to the design of spout, four commonly used sap spouts were tested over a period of three seasons. The types were: "Grimm," "LHoir," "Soule" and "Warner." Each was inserted in a minimum of three tapholes in each of four aspects: north, east, south and west making a total of 48 holes in the test.

The yield data, when analyzed for the individual seasons and for the three seasons combined, showed no significant difference due to any particular design of sap spout.

### Taphole depth

To determine if tapping deeper than the normal 1 to 1½-inches will produce greater volumes of sap, 16 trees were tapped with 2-inch, 16 with 4-inch and 16 with 6-inch holes. Analysis of the sap yields vs. depth of the taphole showed that the 4-inch depth was significantly greater than the 2-inch and 6-inch depth (Table 2). Morrow reported that tapping depth influenced sap flow less than the number of tapholes per tree.

**Table 2. Analysis of variance sap yield vs. depth of taphole**

| Source | Degrees Freedom | Mean Square | "F" Value |
|---|---|---|---|
| Total | 143 | — | — |
| Year | 2 | 196,962 | 26.6* |
| Depth | 2 | 70,256 | 9.6 |
| D x Y | 4 | 2,308 | 0.3 |
| Position | 3 | 5,582 | 0.8 |
| P x Y | 6 | 5,309 | 0.7 |
| D x P | 6 | 2,609 | 0.4 |
| D x Y x P | 12 | 7,861 | 1.1 |
| Error | 108 | 7,392 | — |

*Significant at the 5 percent level.

[1] A report of work under contract No. A-1s-33459, United States Department of Agriculture and authorized by the Research and Marketing Act of 1946. The contract is supervised by the Eastern Utilization Research and Development Division of the Agricultural Research Service.

### Taphole diameter

To determine the effect of the size of the taphole on the volume and quality of sap produced, trees were tapped with 7/16, 11/16 and 15/16-inch holes, with 12 trees assigned for each diameter. No significant differences were demonstrated in the sap yields or quality from the different diameters tested.

### Ecological conditions vs. maple sap flow

Maple sap production was compared to the maximum and minimum temperatures during each 24 hour period and the results are illustrated in Fig. 2. It is for the first season, but typical of the remaining two seasons. The production peaks, as shown in Fig. 2, occurred when cold periods well below 30° F. were followed by daytime temperatures well above 40° F. The graph also shows that a heavy run of sap may be

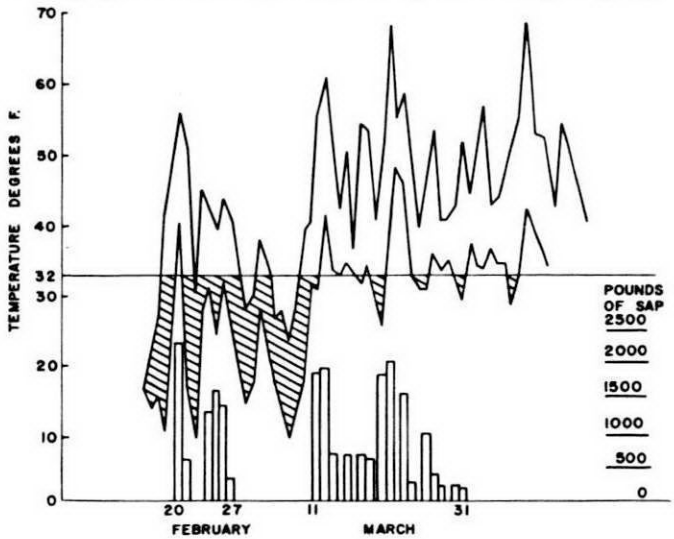



**Fig. 2. Temperature Effect On Maple Sap Flow and Yield**

secured early in the season, and that a large, early sap run does not exclude the possibility of large runs later in the season.

In this case the second and third largest flows of sap occurred 20 and 29 days respectively after the heavy run on February 20th. The second season sap started flowing on February 15. Thirty-three days later the largest flow of the season was recorded. The next season good flows were secured in February and early March, however, the largest flow of the season came 41 days after the trees were first tapped. This does not prescribe the sap flow period, but does confirm common knowledge that good maple sap flows are assured when freezing nights are followed by daytime temperatures of 40° F. or higher.

Other ecological factors such as wind velocity, barometric pressures, the growing season, total precipitation and total snowfall were studied over the three seasons. However, no apparent correlation between these ecological factors and the yield of maple sap were demonstrated.

# Women's Page

Mrs. James H. Robertson,
East Greenwich, N. Y.

### *MAPLED PORK CHOPS*

Lightly brown six (6) pork chops, cut 1" thick. Place in flat baking dish. Mix together ¼ cup chopped onion, 1 tablespoon each vinegar, Worcestershire sauce, 1½ teaspoons salt, ½ teaspoon chili powder, 1/8 teaspoon pepper, ¼ cup each pure Maple Syrup, water; pour over pork chops. Cover. Bake 45 minutes at 400° F, basting occasionally. Un cover, bake 15 minutes more. Place chops on platter. Thicken sauce with flour; pour over meat. Serves 4 to 6.

### *MAPLE NUT PIE*

Fills one 9 inch crust.
Heat: ½ cup milk
1 cup Maple Syrup
2 slightly beaten egg yolks
Cook until thickened; remove from heat.
Add: 1 tablespoon gelatin, softened in 2 tablespoons cold water
Stir in ½ teaspoon maple flavoring
Chill until mixture begins to thicken.
Fold in 2 stiffly beaten egg whites
½ cup cream, whipped
3/4 cup chopped pecans
Pour into baked pie shell. Chill.

### *MAPLE SYRUP COATED POPCORN*

¼ cup salad oil
½ cup pop corn
½ cup Maple Syrup
½ cup sugar
½ teaspoon salt

Heat the oil in a 4 quart kettle over medium heat for 3 minutes. Add popcorn. Cover, leaving small air space at edge of cover. Shake frequently over medium heat until popping stops. Meanwhile mix together Maple Syrup, sugar and salt. Add to popped corn in kettle and stir constantly over medium heat 3 to 5 minutes or until corn is evenly and completely coated with mixture. Remove from heat and spread out onto cookie sheets to cool.

### *MAPLE SYRUP MUFFINS*

Sift together into mixing bowl:
2 cups sifted flour
¼ cup sugar
3 teaspoons baking powder
½ teaspoon salt. Then add:
¼ cup soft shortening
1 egg
½ cup Maple Syrup
½ cup milk

Mix together with blending fork or pastry blender. Then stir just until ingredients are blended. Fill greased muffin cups 2/3 full. Bake until golden brown. Serve hot with butter and Maple Syrup. Bake at 400°, 20 to 25 minutes. Makes 12 medium-sized muffins.

*BAKED BEANS*

1 quart of cooked beans (use 1lb. pkg.)
1 cup Maple Syrup
½ cup chili sauce or tomato catsup
1 teaspoon salt
Pepperto taste
¼ lb. bacon, ham or salt pork
Add the syrup, chili sauce, salt and pepper to the beans. Put mixture in a greased baking dish, place the salt pork, ham or bacon in the center and cover the beans with water. Bake the mixture slowly at 300° for 6 to 8 hours.

*KOOL-AID INSTANT SOFT DRINK MIX*

(Use ½ to 1 cup Maple Syrup in place of 1 cup sugar.)
Empty Kool-Aid into a large pitcher. Add ½ to 1 cup Maple Syrup (according to your taste)
Stir in 2 quarts COLD water
Makes 2 quarts.

*MAPLE NUT PUDDING*

1 quart milk
¼ cup brown sugar
¼ cup Maple Syrup
¼ teaspoon salt
3 tablespoons cornstarch
3 egg yolks
3 egg whites
½ teaspoon vanilla
1/3 cup walnut meats, cut fine

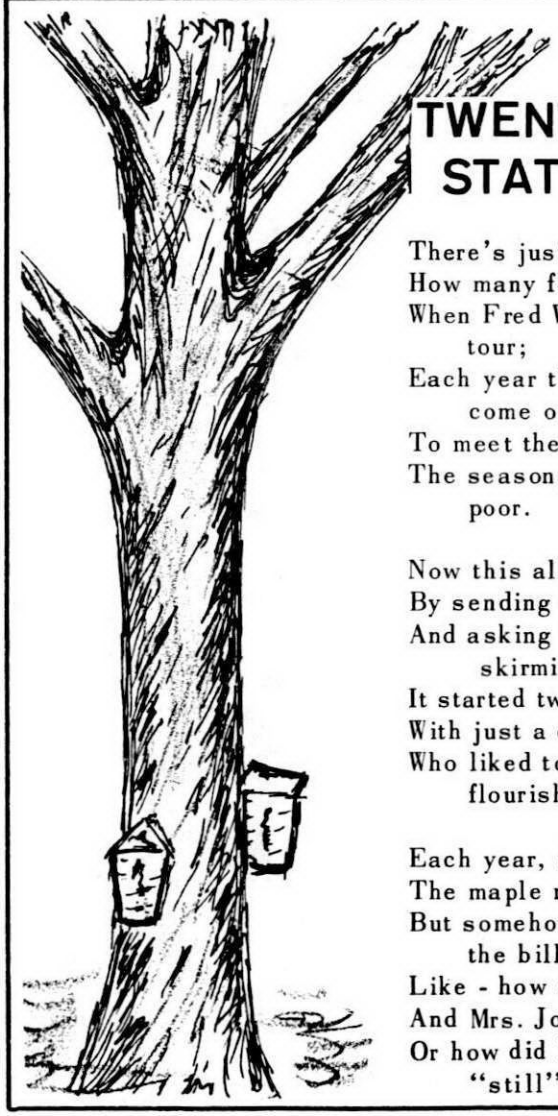
Heat the milk in a double boiler. Mix the salt, sugar and Maple Syrup with cornstarch until smooth; add the mixture to the scalded milk, stirring constantly until thick. Cook for 10 minutes. Beat the yolks. Pour some of the hot pudding on the yolks, stirring well, then return it to the double boiler and cook for 2 minutes. Add the nuts. Beat the egg whites until stiff and fold them into the pudding. Add vanilla. Serve the pudding cold garnished with whipped cream.

*Pumpkin Pie with Maple Topping*

3 eggs, slightly beaten
1½ cups pumpkin
¾ cup maple sugar
½ tsp. salt
1 tsp. cinnamon
1-2/3 cups top milk or light cream
One 9 inch unbaked pastry shell
Mix ingredients and pour into pastry shell. Bake in hot oven (425°) 15 min. Reduce to 350° for 45 min.

Maple topping:
1 tbsp. melted butter
2 tbsp. maple sugar
¼ cup chopped pecans
Five minutes before pie is done, sprinkle with topping & bake until lightly browned.

Mrs. Francis Smith
R. D. #1
Penn Run, Pa.



## TWENTY YEARS IN A STATE INSTITUTION

There's just no way to calculate
How many folks will congregate
When Fred Winch schedules a maple tour;
Each year there's more and more come out
To meet their friends and talk about
The season, whether it was good or poor.

Now this all didn't come to pass
By sending letters out first class
And asking folks to come and join the skirmish;
It started twenty years ago
With just a dozen folks or so
Who liked to see the maple business flourish.

Each year, down at the County seat
The maple meetings can't be beat
But somehow they don't seem to fill the bill;
Like - how does John Doe filter sludge
And Mrs. Jones make maple fudge
Or how did Henry Smith set up his "still".

When Fred says something to you guys
That you can't see with your two eyes
You prob'ly think he's stretching things a mite;
But then you talk to Herman Glick
And find he's using this same trick,
You realize then that maybe Fred is right.

So you take right off with your best
And travel North or East or West,
To see what else some other Joe has done;
You'll maybe wear your tires thin
But when the cash starts rolling in,
You'll find the profit's worth more than the fun.

Well, anyway, to sum things up
These Maple Tours take the cup,
And folks are coming from a dozen states;
So if the sheriff can't control
The cars as down the road they roll,
Well, maybe we'll just have to "up the rates."

And, there's one more thing that I know
When Josh Cope passed on years ago
And someone had to take charge "in a pinch";
To take the reins and make things go
Come hail or lightning or deep snow,
Is certainly a tribute to FRED WINCH.

# CLEANING EVAPORATORS

**Reprint from "Maple Sirup Producers Manual" by Dr. C. O. Willits. Agriculture Handbook No. 134.**

When maple sap is concentrated to sirup in a flue-type open-pan evaporator, the organic salts become supersaturated; that is, they are concentrated to a point where they can no longer be held in solution. They are then deposited on the sides and bottom of the evaporator as a precipitate or scale. This scale forms an impervious layer that builds up with continued use of the evaporator. The scale reduces heat-transfer efficienficiency and thus wastes fuel and holds up sirup in the evaporator unduly.

The scale is of two types. One type is a protein-like material that forms in the flue or sap pans. The other, called sugar-sand scale, forms in the sirup or finishing pan. It is a calcium and magnesium salt deposit similar to milkstone and boiler scale.

Sugar-sand scale is the more troublesome of the two types. It is especially troublesome if it is allowed to build up to an appreciable thickness. Also, sugar sand contains entrapped caramelized sugar, which contributes to the production of dark-colored sirup.

Removing sugar-sand scale is not easy, and doing it by physical means (scraping, scrubbing with steel brushes, or chiseling) is almost impossible. Removal becomes more difficult as the layer of scale becomes thicker. Clean the evaporators often enough to prevent buildup of sugar sand. Teflon-coated pans are easier to clean. Also, keep the underside of the flues clean.

### Methods Used in the Past

Some methods used in the past to prevent formation of scale and to remove thin layers include -

(1) Reversing the flow of sap through the evaporator, according to the manufacturer's directions; this retards the formation of scale.

(2) Running soft spring water through the evaporator for a long period; this tends to dissolve small amounts of scale.

(3) Pouring skim milk into the pan and letting it remain until it sours; the lactic acid of the sour milk has some solvent action on the scale.

### Chemical Cleaners

Equipment manufacturers have used muriatic acid to remove heavy incrustations of sugar-sand scale from evaporators returned to them by maple-sirup producers. This acid is highly corrosive and must be used with great care to avoid damaging the pans by dissolving the thin tinplate coating. Also, unless a person is experienced in the use of muriatic acid, there is danger that he will get the acid on other materials or on his skin.

Laboratory and field tests have shown that sulfamic acid, one of the chemicals developed for cleaning milk-processing equipment and marine boilers, can be used to remove sugar sand from most maple sirup equipment. Sulfamic acid (the half amide of sulfuric acid) is an odorless, white, crystalline solid and is highly soluble in water. It must not be confused with sulfuric acid. Sulfamic-acid crystals can be handled easily, with little risk of spilling and little danger from volatile fumes. As a solid, sulfamic acid is reasonably harmless to the skin and clothing. However, a solution of the acid can irritate the skin. If either the dry acid or its solution comes into contact with the skin, it should be washed off immediately with large quantities of water. Also, it should be removed from clothing and equipment by rinsing repeatedly with large quantities of water. Bulk supplies should be stored in a tight container in a dry place.

Despite its strong acid characteristics, sulfamic acid has only a slight corrosive action on most metals except zinc plating, especially if contact is for a short period. For example, on tin (the metal coating of most evaporators), hydrochloric acid is almost 25 times more corrosive than sulfamic acid and sulfuric acid is approximately 80 times more corrosive.

Gluconic acid, another chemical cleaner, is recommended for cleaning galvanized-iron equipment because it has much less corrosive action on the zinc coating. However, use of gluconic acid need not be limited to cleaning galvanized equipment; it is effective on most metals, even though it has a slower cleaning action than sulfamic acid. It is usually sold as a 50 percent water solution.

Both sulfamic acid and gluconic acid can be obtained from suppliers of maple sirup equipment.

Use these amounts of acid:

*Sulfamic Acid.*-For a thin scale, use ¼ pound (½ cup) per gallon of water. (This is a 3% solution.) For a heavy deposit, use ½ pound (1 cup) per gallon of water. (This is a 6% solution.)

*Gluconic Acid.*-For all deposits, use 1 gallon of 50% stock solution (obtained from your supplier) for each 4 gallons of water. (This is a 10-percent solution.)

To avoid damaging the tinned surface of the evaporator, do not use a stronger solution than recommended; and do not leave the solution in the evaporator longer than is required to soften the scale.

### Cleaning Procedure

Use the same methods to clean the flue (sap) pans and the sirup (finishing) pan.

You will need a good supply of piped water, so that you can use a hose to rinse the pans. If water is not available at the evaporator house, take the evaporator pans to a source of piped water.

You should wear rubberized gloves to protect your hands from the acid solution.

The best maintenance practice is to remove the sugar-sand scale between each run. The following procedure should keep the evaporator clean and bright: With a cloth, swab the pans with the acid-cleaning solution; allow it to remain a few minutes; then thoroughly rinse the pans with water, to be sure the acid is completely removed.

If a layer of scale has accumulated

on the evaporator, use the following procedure:

(1) Remove all loose scale and dirt from the pan with a broom or brush. Then rinse the pan with a good stream of water from a hose.

(2) Plug the outlets of the pan. If the outlets have threaded fittings, use metal screw plugs; otherwise, use wood, cork, or rubber stoppers.

(3) Fill the pan with water to the level to be descaled. Measure the water as you put it in the pan, and make a record of the number of gallons for future use. Also, make a record of the estimated volume of the pan.

(4) Add the correct amount of acid to the water in the pan. Stir to help dissolve the acid.

(5) Warm the solution in the pan to a temperature of 140° to 160° F. This hastens the rate at which it softens or dissolves the scale. After the warm solution has been in the pan for a short time (usually 15 to 20 minutes is enough), brush the sides and bottom of the evaporator with a fiber brush to speed up removal of the deposited sand.

(6) When the evaporator is clean, drain the acid from the pan. Turn the pan on its side and flush it out with a stream of water. Repeat the water rinse five or six times, and allow the pan to drain between each flushing. Thorough rinsing is necessary to insure complete removal of the acid and its salts from the pan.

To remove a thin layer of scale with sulfamic acid requires from 30 to 35 minutes; to remove a thick layer requires from 60 to 90 minutes. With gluconic acid, about twice as much time is required. The acid solution can be stored and reused a number of times. Do not store it in iron or galvanized containers; glass or earthenware containers are best.

To economize on the amount of acid, use a smaller quantity of solution and tilt the pan first in one position and then in another until all the scale-covered surfaces have been soaked.

Sulfamic acid and its salts are toxic to growing plants. For this reason, it is an effective weed-killer But care should be taken not to discard the used acid solution where desirable plants may be damaged or killed.

### End-of-Season Cleaning

A much-used procedure for cleaning evaporator pans at the end of the season is to fill them with sap and let them stand several weeks. The sap will ferment and the acids formed will loosen the scale. If the sap becomes ropy and jellylike, it will be difficult to remove. However, if it is allowed to stand longer it will again become liquid and can be removed easily. As with the other cleaners, the pans must be rinsed after the fermented sap treatment and dried before they are stored. Fermented sap will not remove heavy scale deposits.

Whether to clean the evaporator at the end of the sap season is debatable. Some producers store the evaporator pans with the deposit, assuming that this serves as a protective coating and keeps the evaporator surfaces from corroding. The preferable method is to clean the equipment so that it is ready for use the next spring. In either case, the evaporator pans should be dried and stored in an inverted position.

# NEW YORK MAPLE TOUR

On August 2nd., 1965, 140 some odd cars converged at one farm in Wyoming County carrying approximately 300 people from all over New York State, Eastern Canada, Vermont Massachusetts and Pennsylvania. The good people of Wyoming County had organized to escort about 190 visitors, and, when more than 300 people arrived, the hosts and their helpers were completely overwhelmed. After some slight confusion the hosts recovered from the shock and ran a Maple Tour that would rate 2nd. to none.

**Dr. Willits Speaks to the Group.**
**L to R: Xura Smith, Dr. Willits, Fred Winch and Maxon Neal**

It all began at **Merle Farms,** Wyoming County's largest Central Evaporator plant. Mr. & Mrs. Arthur Merle, Jr. and Sons, Attica, New York have been in the Maple Business since 1940. A new sugar kitchen was built in 1963, the new Evaporator Plant has been in use one season. The Merles produced 1130 gallons of syrup in 1965 from 5,650 taps of which 2,900 were purchased from 3 different sap producers. 1600 of their own taps are on tubing, 800 run directly to the plant.

The Merles now have 2 oil fired evaporators, a 5' x 14' and a 5' x 10', both have permanent chimneys. The new plant was built large enough to accomodate 3 more evaporators if needed and all sap storage is under ultra violet light in 4 - 1500 tanks. The sugar kitchen, which is adjacent to the house, is where the confection making takes place under the able direction of Mrs. Merle.

After the shortest hop in Maple Tour History we arrived at **Embt's Maple Processing Plant** in Varysburg. The Embts do not manufacture maple syrup from sap but buy approximately 25,000 gallons per season from around 200 maple producers in Western New York. Seventy-five percent of this is sold as table grade syrup under the Embt label. Millard Embt has been operating at the same location since 1933. He is known here as the grand old man of Maple Production for he can tell many stories about the history of Maple Production and the ins and outs of this Maple business.

The long caravan of cars then moved east through Warsaw and north into the Oatka Valley. Mr. & Mrs. Duane Perry, Wyoming, New York, operate a small family-owned maple business. We saw their roadside sugar house which was not constructed to accomodate 300 visitors within a 30 minute period. There was much interest in Mrs. Perry's mechanized bucket washer made from a washing machine. The Perrys use buckets on 200 roadside taps. "We use buckets for advertising purposes", explained Duane, "when the travelers on Route 19 see our buckets they know it's time to stop and buy maple products".

Most of the 1,000 taps the Perrys produced from in 1965 are on plastic. Only 10% of these taps are owned by


**Arthur Merle's Sugar House "Before the Crowd Arrived."**

the Perrys, 70% are on rented trees and 20% purchased from sap producers. Duane plans to experiment with sugar bush fertilization this fall.

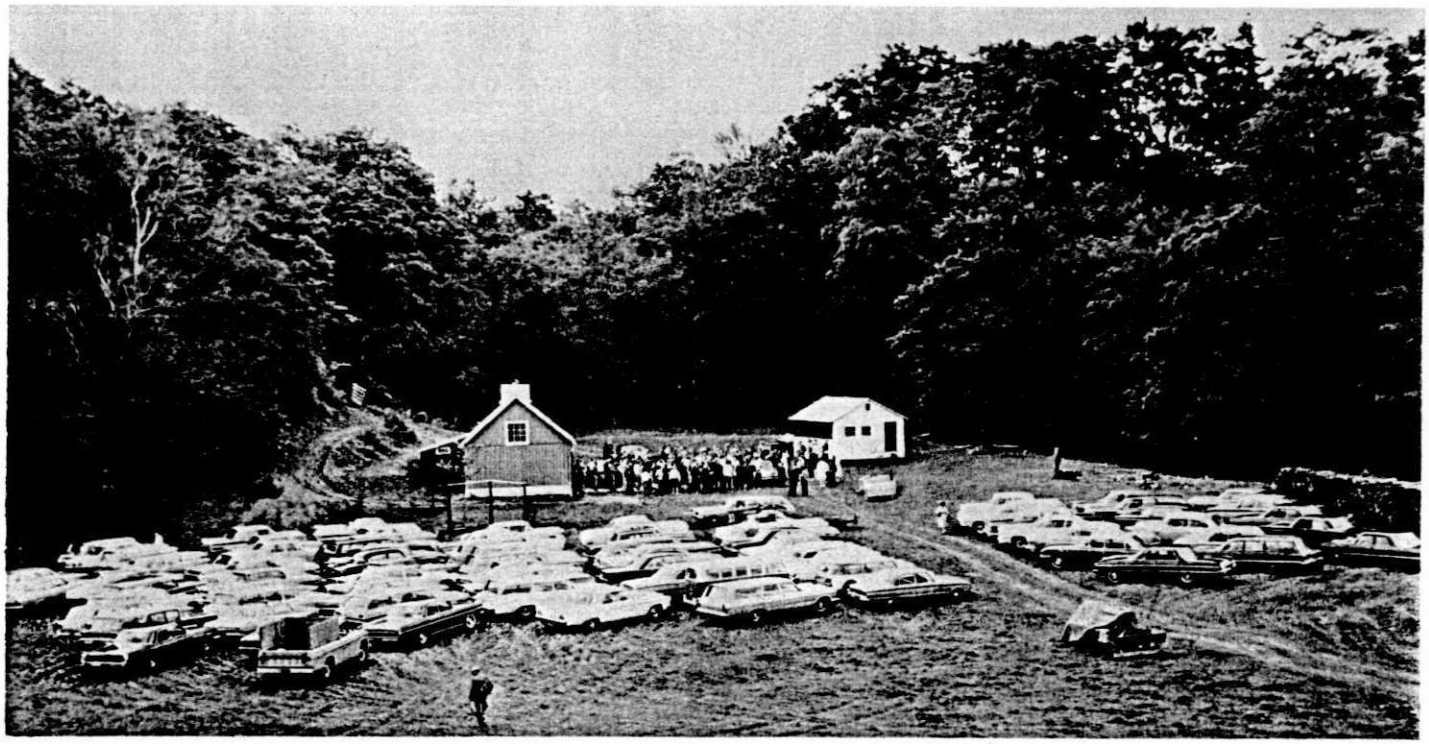
Once again the tour moved east to the farm of James and David Post, Perry, New York. In 1965 the Posts hung 1,000 buckets and made 225 gallons. David Post, the senior member of this father-son partnership, made a few brief but inspiring comments about the younger generation and today's agriculture. It is Mr. Post's philosophy that today's and tomorrow's agriculture will be in a much more competitive position if the young farmers and potential young farmers are given more management responsibilities and more opportunity to carry out their own ideas, for it's the young people who have the initiative and ambition to compete in today's agricultural climate.

Monday evening's program was hald in the glass-enclosed pavilion at Letchworth State Park. The meal was chicken barbecue. The program speakers were: Fred Winch, Dr. Willits, Dr. Robert Morrow, Lloyd Sipple, William Gabriel, Gordon Brookman and Arthur Merle, Jr., Wyoming County Association President. Mr. Merle welcomed the maple producers and Fred Winch performed as Master of Ceremonies. Dr. Willits revealed his usual wit and knowledge of the maple industry as he addressed the overflow crowd. Dr. Morrow gave a very interesting and exact report on Cornell University's Maple Research Programs. Forester, Bill Gabriel, nearly brought down the house with his report on the Sweet Tree Survey which naturally included a resume on "The Sex Life of the Sugar Maple". Lloyd Sipple reported on conferences with the State Sales Tax people. Gordon Brookman outlined the objectives of the new New York State Bulk Syrup Marketing Cooperative and urged all producers present to indicate their interest.

The climax for the evening and for the entire tour was a spontaneous, thundering, standing, ovation given Extension Forester, Fred E. Winch, Jr. for the years of devotion and guidance he has given New York's Maple Industry. Dr. Willits made the recognition and the maple producers responded with this dramatic, spectacular show of appreciation and respect to Professor Winch.

On the morning of August 3rd. we gathered at the Eustace Farm in Castile, where we saw a modern, roadside, central evaporator plant. Ralph and Roger Eustace have really moved into the maple business since they started boiling sap over an open kettle ten years ago. The unique aspect of this plant is the home-made mechanization which includes two gas-fired evaporators, ultra violet light sap and syrup storages, a portable stainless steel vat used for syrup filtering, a syrup pumping system and a canning tank with its own heating unit, The Eustace Brothers' sap producers provide them with more than one half of the sap they process. They made 650 gallons of Maple Syrup in 1965, 90% of this was table grade syrup which is marketed at the sales room in the plant.

The last farm visit of the tour was at William Campbell's, North Java, New York. The theme of this stop was "Sugar Bush Management", for Bill's Sugar House is near the bush and is connected with the farmstead by an excellent gravel lane. After an orientation of the business by Bill Campbell at the sugar house, we took a short hike back in the woods where sugar bush management was discussed by State Conservation Forester Tom Breslin and Dr. Rob-



**Parking Was No Problem at Bill Campbell's.**

ert Morrow. In 1965 the Campbells made 2,000 taps and produced 370 gallons of syrup. The woods has a potential of at least 3,000 taps and the Campbells have made as much as 800 gallons.

We extend our thanks and appreciation to everyone participating in the tour for cooperation and cordiality was at its pinnacle throughout the two day period. The success of an event such as this is determined by the reaction of those attending. Your reactions to date have been labeled the **1965 NEW YORK STATE MAPLE TOUR A SUCCESS.**

Stuart F. Smith

NOTICE

**BACK ISSUES AVAILABLE**

**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**

**We still have a supply of most of them but they are getting scarce, and they are expensive to mail. If you lack any, drop us a card stating which copies you would like and we'll send them if available.**




**This will probably bring back fond memories to some of our readers. Photo was sent to the DIGEST by Bernard Guilmette, East Berkshire, Vt. and shows how Frank Moffett, Montgomery, Vt. and Ben Williams, Eden, Vt. used to make syrup the hard way.**

# MAKES SAP RUN LONGER

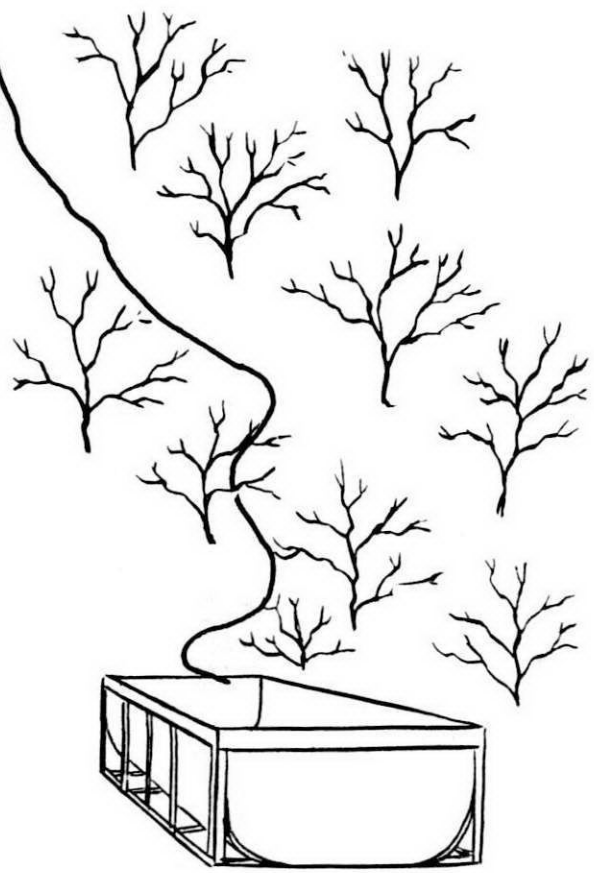
## What we mean is...

A long way down the hill from a bush that's hard to get to.

## BUT THAT'S NOT ALL IT'S GOOD FOR.....

**Lamb's Naturalflo tubing has many advantages . . .**

- Spreads out your labor requirements by practically eliminating the gathering crew.
- Makes a better quality syrup. Ultra Violet rays from the sun penetrate the tubing and kill bacteria.
- No buckets to run over and waste sap.
- Gives you more time to gather. Large tanks won't freeze as quickly as buckets.
- Makes each day longer. It's easy to pick up sap from tanks at night.
- Freezing won't hurt tubing - - - buckets burst.
- You can tap earlier – By using FLOMOR pellets in the tap hole you tap any time and not worry about the wind blowing the buckets into the next county.
- Easier to wash than buckets. Tubing is light, easy to handle, and can even be washed when it's raining.



**There's a lot more ways that tubing can help you, but - if you've got plenty of help, and you're not too fussy about quality or how much sap runs on the ground - - we think you should use buckets.**

## A. C. LAMB & SONS

LIVERPOOL N. Y.

## SUGAR MAPLE SURVEY OF POTTER COUNTY

**By: Garner P. Mitchell**
**County Agent**

During the past month of March a rather extensive survey of sugar maples has been conducted by both the local office of Forests and Waters and the Agricultural Extension Service. Allan Kane, local Service Forester and myself have tested approximately 600 trees in eight sugar bushes in various locations throughout the county. Another name for this project is called the location of "Sweet Sue." A year ago the maple producers were interested in having their trees tested for the sugar content so the local Extension office purchased a sap refractometer to do this job. Over a thousand trees have been random sampled and tested with some rather "eye opening" results.

Last year about 400 maple trees were tested by myself in seven different locations. With only a sampling of this size more assumptions than conclusions prevailed. What it did accomplish was to bring about a more complete and scientific survey that Al and myself have just finished for this year.

The objections of this survey were to locate trees of exceptionally higher sugar content based on genetic rather than environment factors. By this I mean a tree to be selected as superior in sap sugar content must be at least 50% higher than any tree immediately adjacent. This survey also points out some environmental factors such as soils, fertility, exposure, etc. which we try to eliminate for this study. It makes provisions for this initial screening of unusually sweet trees which will be tested three times this year which has already been done, and at least once next year. Then a final screening by a team of geneticists will make a final decision on the cataloging of these superior sweet trees for future research work on propagation of these sweet trees.

The eight sugar bushes, selected for the survey based on location in the area, were as follows: Charles and George Barker, Ulysses; James Blake, Genesee RD; Harold Baker, Sartwell Creek; Claude Ford, Shinglehouse; Leo Tauscher,

Roulette; Frank Mitchell and Sons, Galeton RD; R. H. Russell and Son, Coudersport RD; and Robert Hemphill, Coudersport RD.

Approximately 75 trees in each of the eight locations were tested. The initial test in early March indicated to us a possibility of eight sweet trees. At that time they averaged 60% more sugar content than their standards. These same eight trees and the respective standards were checked again in mid-March and early this month (April). On the third test only four of the eight could be considered as sweet trees. The composite sugar content of each of the eight bushes ranged from 1.9% to 2.9% at the initial test. After the initial test only those eight so called sweet trees and standards were retested to find that most of the sweet trees had decreased in sugar content while many of the standards increased in content of sugar. Thus the percentage of differential had dropped several percentage points. At the conclusion of the third test four of the eight sweet trees were eliminated.

In addition to the above survey for genetically sweet trees we are trying to see how much influence environment has on the sugar content. Mr. Teuscher and the extension service are experimenting with five small plots on different soil types to see what effect fertilization will have on sugar content. These five plots range from a half-acre to an acre in size. The initial testing of tappable sized trees would indicate that sugar content and soil type follow a definite pattern. The better soil types yield a higher sugar content. This experiment will be carried out for two years based on different levels of fertilization. A control plot will also be used as a base with no fertilizer applied. The initial test of each of the five plots show a composite sugar content of 2.44, 2.48, 2.59, 2.76 and 2.92% respectively from poorer to richer soil types.

We realize quite well that little if any such fertilization of forest trees is considered a practical commercial venture. Mr. Teuscher is very much interested in trying such a program so if you see us spreading fertilizer by hand on top of Colesburg Mountain you will know there's two crazy people on the loose.

**BEST MAPLE SYRUP** in Maine is a distinction which Virginia and Ray Titcomb of Farmington are proudly upholding for the second year in a row. Here they are being congratulated at the 1965 Maine Maple Festival at Strong by Theodore (Ted) Harding (right) of Athens, president of the Maine Maple Producers' Association. The Titcombs again won the coveted trophy in competition with 15 producers.



## *Classified*



**DIGEST ADVERTISING RATES**

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# Something NEW for '66.....
# from Reynolds!!!

## ...a new kind of SAP BAG!!

HOLDS AS MUCH AS A LARGE BUCKET

**JUST THINK - NO WASHING**
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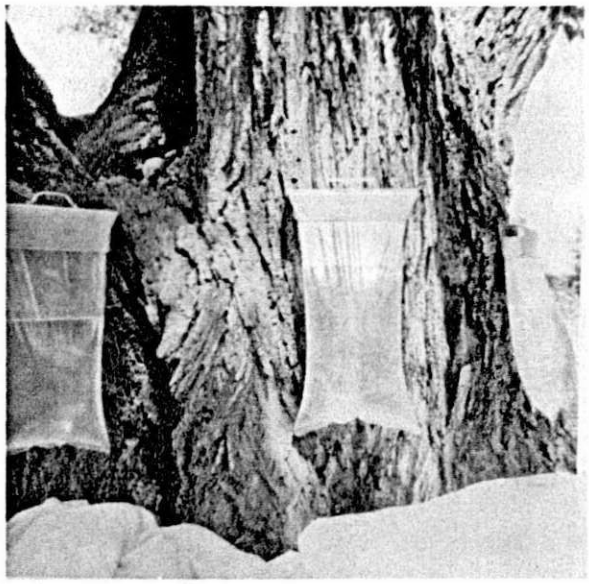
**. . . COSTS LESS THAN A DIME ! . . SO CHEAP YOU CAN THROW IT AWAY AFTER EACH SEASON.**



Cover Holder is bought but once, as it will last indefinitely. Holds bag and hangs directly on any regular sap spout without a hook. Pours from either right or left and has convenient handle for easy carrying. Write for prices and descriptive folder. Expected to be available through all dealers. *Hundreds tested during '65 season ! (Patent applied for)*

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**we make it, we buy it, we pack it, we sell it... we help others do the same. May we help you?**

### PELLETS

*SAPFLO*

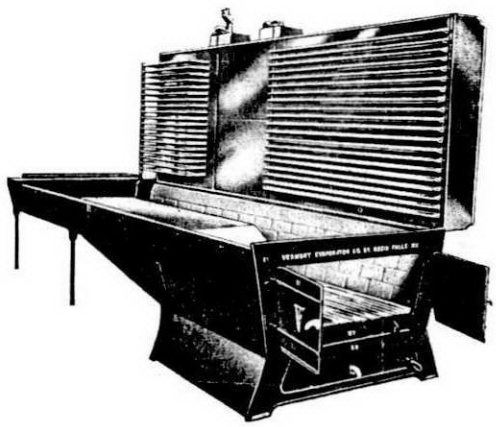
*FERMABAN*

*MYVEROL*

*"QUICK" SAP DEFOAMER*

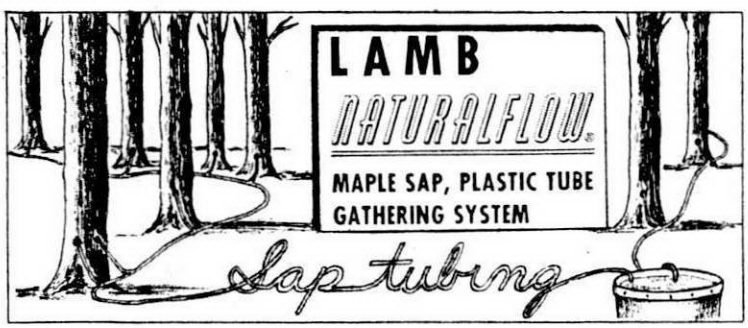
**WRITE FOR NAME OF DEALER IN YOUR AREA OR ORDER DIRECT**


### VERMONT EVAPORATORS



Vermont Evaporator showing bottom pan construction. Special designs for wood, oil, and gas fired operations.

### LAMB TUBING

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