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NATIONAL MAPLE SYRUP DIGEST NATIONAL



Vol. 8, No. 3

October, 1969

FROM THE PRESIDENT

Burton, Ohio
Oct. 1, 1969

Dear Maple Producers:

With this October issue of the Digest I bid my swan song as President of the National Maple Syrup Council. It has indeed been a rewarding experience for me to carry this position for the past two years.

Our basic problem in the industry is the attempt to get more interest in the making of syrup. As a general rule in all areas of maple, the numbers of producers is diminishing. Some say it is the labor situation, others say it is too hard work for the little you receive, and many other excuses. It is like anything else, if you have an interest in something you carry it thru to the end. I know of people that buy antiques like crazy, others are coin collectors, now all of these people have sugar bushes, but it just sets there, and no regard is given to it, so you see there is no interest. About the next thing that is going to happen, is, some woods operator will talk them into selling the woods so they can buy more antiques and coin collections. It is a vicious circle.

Oh, well, we can always hope that some day they will sell the place to someone that will have an interest in Maple, and we can have another in the fold of syrup producers. You meet some very fine folks in this maple syrup business. My associations over these past 25 years have been ever so grateful. I have belonged, and still do, to many other organizations, but never to a group so dedicated to an industry like our folks in the maple industry. The monies we receive for research are paying dividends for everyone, not just a select group. The dissemination of the material is nationwide to all the maple producing states, what better system of communication can you get? My hope for the industry rests in the hands

of those who will carry on, and for those generations yet unborn. May the Great Architect of the Universe look after our destinies and guide us on the course which will have the greatest good for the greatest number.

Again thanking all of you, for everything you have done for me, I bid you farewell as an officer, but will see you at the Council meetings as they come up.

Sincerely,



Ture L. Johnson

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Burton's Maple History



by B. J. Shanower

Burton, the headquarters of the National Maple Syrup Producers Council, is well steeped in maple tradition.

Perhaps the first example of community effort goes back to 1874 when a group of citizens transplanted more than 500 maples in the Village Common to enhance the beauty of the Village and to provide shade for the many events to be held there in the future.

In 1931 another group, The Burton Chamber of Commerce, erected a log cabin sugar camp, which is open about two months every spring. It has become one of the greatest attractions in northeastern Ohio and has been a profitable project for the Chamber as well. This past season their sales amounted to more than \$26,000.00.

The most recent community endeavor occurred July 7th when sixty men, mostly Amish, turned out to clear up the park, which lay in shambles after the storm of July 4th. The trees blown down were cut into wood and most of the debris was burned. Visitors

who came to the town to see the destruction, were amazed at the result of this one day's work. Visitors also expressed their concern over the next years syrup crop.

Burton was not caught entirely flatfooted by this loss. Back in 1939, Charles Haas, who was then County Agent, called to the attention of Burtonites that the trees in the park were all set out at one time and therefore were likely to disappear in a comparatively short time. Therefore a plan of replacing the trees as they died was adopted, and a Community Forest Committee was organized. The committee sponsored a small levy for the purchase of lands for a community forest. About thirty one acres of land was purchased at a tax sale. Part of the open land, along Rapids Road, was set out in maples and should be ready for tapping in about twenty years. The pines set out among the maples were to be sold for Christmas trees, but this was not done and are now a hinderance to the maples. It is hoped that this

will be done to give the maples every chance for proper development.

Back before the turn of the century, The Sugar Makers Convention was held each year in Burton. Producers came together for the day to discuss their common problems. It was at one of these meetings that A.J. Thrasher presented to the group his plan to have an Ohio Maple Booth at the Worlds Fair in Chicago. Thrasher secured the help of Rep. E. J. Clapp and Senator E. L. Lampson. As a result, largely by his efforts, the following legislation was passed by the Ohio Legislature.

Section 1: Be it enacted that by the General Assembly of the State of Ohio, that the County Commissioners of any County in this State are hereby authorized and empowered to appropriate out of any monies to the credit of the County Fund, any sum not exceeding \$1,000.00 for the purpose of making a suitable exhibit of the Maple Sugar and Maple Syrup product of the County at the Worlds Columbian Exposition at Chicago, Illinois.

Section 2: The Executive Committee of the Worlds Columbian Exposition for Ohio is hereby authorized and required, within ten days after the passage of this act, to appoint some suitable citizen of the State as Superintendent of the said Sugar Exhibit, who shall receive reasonable compensation, payable from the appropriation for the Worlds Fair Commission. The funds appropriated under Section 1 of this act shall be under the control, and expended by the said Superintendent, with the approval of the said Executive Committee and Superintendent shall proceed immediately upon his appointment to collect, transport, and place on

exhibition and have charge and control of the said sugar and syrup product of the state under such rules and regulations as may be prescribed by the Board of Commissioners of the Worlds Columbian Exposition for the State of Ohio. In obedience to this act A.J. Thrasher of Burton, Ohio was appointed Superintendent of the Ohio Maple Syrup and Sugar Booth by the Worlds Fair Managers.

It is interesting to note that Geauga and Portage Counties each appropriated \$500,000, other counties lesser amounts.

Some of the syrup, awards and pictures of this exhibit may be seen at the Geauga County Historical Museum in Burton, Ohio.

Lewis Maple Producers Spray To Control Caterpillar Pest

We want to express our thanks to the Watertown Daily Times for supplying these excellent photographs and allowing us to reprint the following article.



William Rockwell and Bruce S. Schneider of the New York State Conservation Department check the map of the area to be sprayed.

By Bette Schoff

Saddled Prominent Caterpillars... quite an impressive name for a killer: a small pest causing maple producers plenty of concern as well as the possibility of financial losses if defoliation

production in the State, has started to take the "prominence" out of the caterpillar and in its fight has lined up a capable and determined task force to do the job.

of course, those most personally affected, the maple producers themselves.

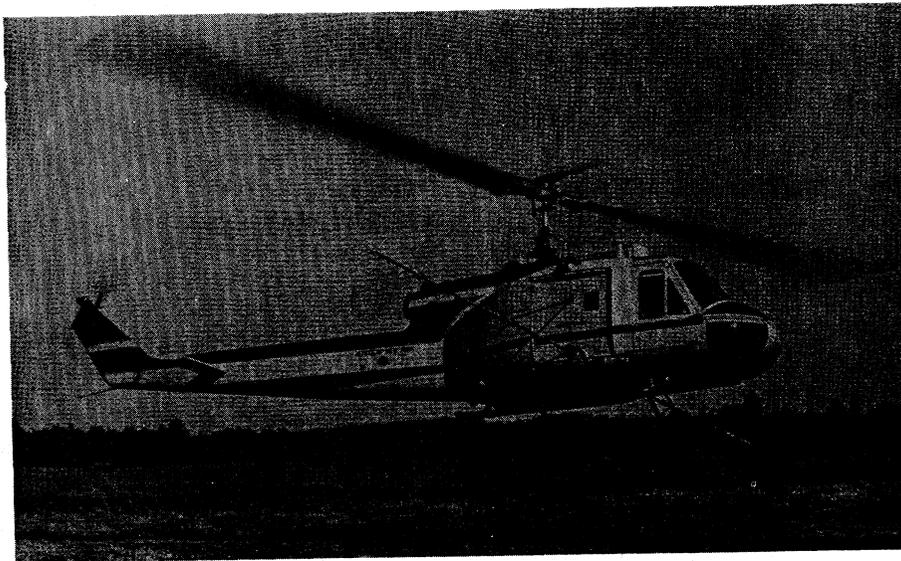
C.F. (Neil) Handy, Cooperative Extension chief, provides a look into the back ground of the problem in an excerpt from an article he wrote last year for the National Maple Syrup Digest:

“During July and August of 1968, saddled prominent caterpillars attacked more than 100,000 forest acres in Lewis County.

“They were identified as feeding on maples a year earlier in the Belfort area. The infested area at that time was confined to about 200 acres and the caterpillars were nearing the end of their feeding cycle. It was in this area that a great saddled prominent moth population explosion was noted during April and May of 1968. Each female moth is capable of laying from four to six hundred eggs. Eggs are laid singly on leaves, hatch in about eight to ten days, the young larvae appear, feed on the



Gerald Lyndaker, on whose farm this particular flight was originating; Clifford Hebdon, an area foreman of the Department, and C.F. (Neil) Handy, county extension agent, discuss last-minute details.



The "chopper" returns for another load of spray. Two thousand acres were sprayed in 1968.

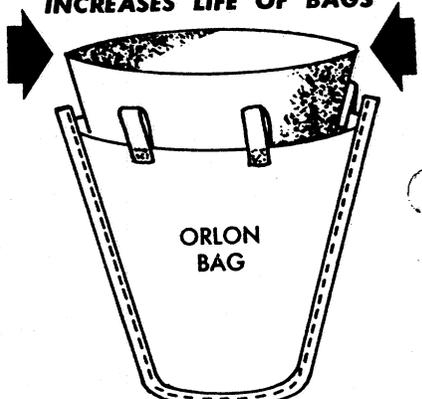
leaves of both maple and beech, molt four times, becoming full grown during late July or early August.

"Then they crawl down the trunk or drop to the ground and fashion silk-lined pupal cells in the lower moist layers of leaf mold or in the upper layer of soil, in which they pupate and spend the winter.

"More than 2,000 acres of maples were sprayed from the air during the last three weeks of July and first two weeks of August. Sugar bushes that were sprayed when feeding was first observed remained green with dense foliage. Where no spraying was done, caterpillars stripped all the foliage from the trees in infested areas.

"The infestation in Lewis County starting with 200 acres in 1967 and spreading to more than 100,000 acres in 1968, was of grave concern to maple producers."

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Action Is Taken

Mr. Handy said that following these observations, the Lewis County Board of Supervisors was approached and, with the District and Forest Practice Board, petitioned the New York State Conservation Department to initiate, compile and present plans for controlling "this pest that threatens the maple, forest and tourism industries in the area".

The state obliged and agreed to a share-cost program (with maple producers) for spraying areas in danger of infestation.

A survey was made to determine these blighted areas and this year 99 per cent of the producers in need agreed to share cost for spraying. A total of 4,000 acres will be treated and the operation is extraordinary in its precision planning.

Clifford Hebdon, area foreman for the Conservation Department's Forest Pest and Disease Control program, is the boss "on the ground," (although he is noted for his daring tree climbing to place balloon markers above the tree tops for aerial identification.)

"Cliff" has detailed area maps, and air-to-ground walkie-talkies enable him and his men to guide the "boss in the air," helicopter pilot, former Navy Lt. Cmdr. Amsden, "Ace" Howland, and his co-pilot, Bill Krom.

Spraying Carried Out

This writer, on hand for spraying operations at the Gerald Lyndaker property, arrived in time for the first spray run of the day. An early morning fog had postponed the usual 4 or 5 a.m. starting time, so take-off was nearer 9 a.m. (Because of atmospheric conditions, spraying must be done in the early morning hours and is usually completed before 11 a.m.)

"Ace" came whirling in with an unexpected turbulence into the open field, (unexpected, that is, to this lone female who in a split second was sporting a Phyllis Diller hairdo). Ralph M. Pettit, Times Chief photographer,



The aerial spraying is in progress.

appeared unruffled and nary a hair blew as he placidly "shot" the helicopter in action. Neil Handy, our guide for the trip, was perfectly at ease with the situation very familiar to him.

The instant the chopper landed, "Cliff's" crew, operating much like a volunteer fire department in drill competition, charged with hoses from a nearby truck and filled the spraying tank with the caterpillar's death potion. The mixture includes 1¼ (one and one fourth) pounds of "sevin" to a gallon of water, plus 4 ounces of "pinolene," an extender which helps make the solution "stick" to the foliage. A gallon of the formula is used per acre and costs over a dollar per pound.

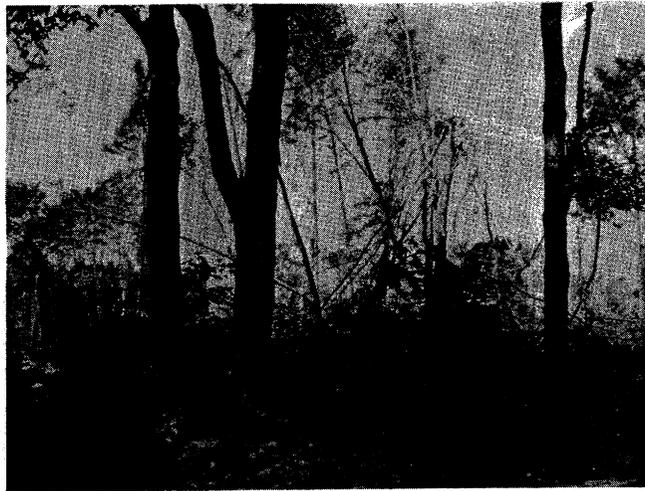
DDT is a "naughty" word in the North Country, and although it costs a great deal less than sevin, is not used since the cost could be greater from the standpoint of detrimental effects on fish and game so highly regarded in our area.

Within a matter of three or four minutes, "Cliff's" men had filled the tank and "Ace" was off with a roar to the designated position, returning for the same quickie refills each time the supply was depleted.

This time I was more prepared for the sweep of air and took cover in a car. As I peered around me after the "take off," there was photographer Pettit still calmly getting "ground to air" shots, Neil Handy was still explaining the hazards of the "prominent caterpillar" to yours truly, and probably the most unconcerned spectator of all, young Gerry Lyndaker, remained busy at routine tractor work in the field, never bothering to look "up" at all.

Storm Damages Sugar Bushes

By Leland Schuler
County Agent
Burton, Ohio



Woodlot on Aquilla Road owned by city of Akron.

Fourth of July Storm causes excessive damage to sugar bushes in Geauga County.

1969 in Geauga County, Ohio, will be remembered as one of the wettest years in weather history. July 4, 1969 will be long remembered as one of the worst cyclonic storms in northern Ohio. Geauga and lake counties caught the brunt of the wind storms and farther south and west parts of Erie, Holmes, Ottawa, Sandusky, Seneca, Medina, Lorain, Ashland, Huron, and Wayne counties were nearly washed away with torrential rain storms.

The windstorm and tornados caused damage to sugar bushes and woodlots in an area approximately six miles wide and twenty miles long from northwestern Geauga County to the southeastern part of the county.

Damage in individual sugarbushes varied from 25 to 50 trees, to entire woodlots of 55 or 60 acres. An unofficial estimate of 20 million board feet of salvage timber was made about a week after the storm. The estimate indicated as high as 70% of this salvage timber was maple. Burton park looked like a battlefield after the big storm. Most communities were without electric power or telephones from one to seven or eight days.

The State Forestry Division of the Ohio Department of Natural Resources responded almost immediately to the storm by sending Farm Foresters from all over Ohio to assist sugarbush and woodlot owners to survey the damage and begin the marking and grading of salvage timber. The Division is to be congratulated for their understanding and recognition of the Disaster. At the present time, there are



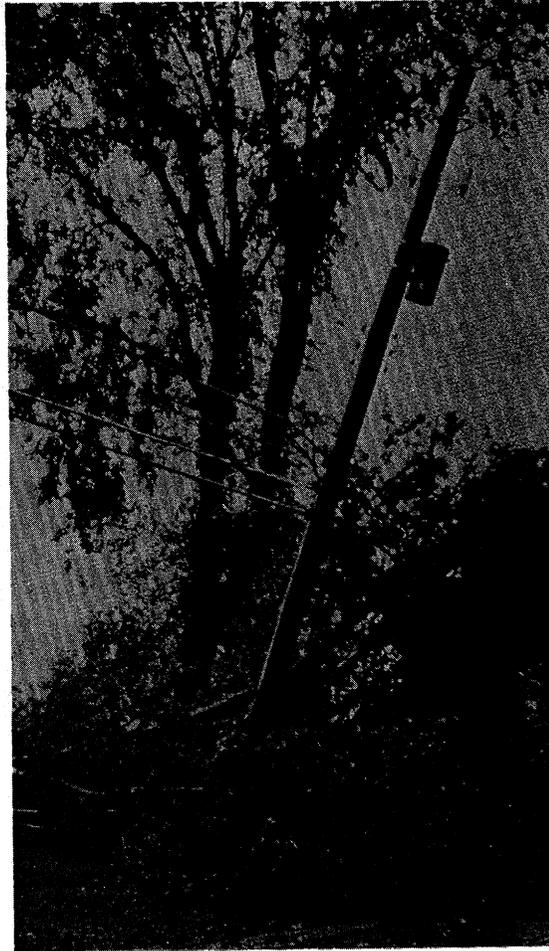
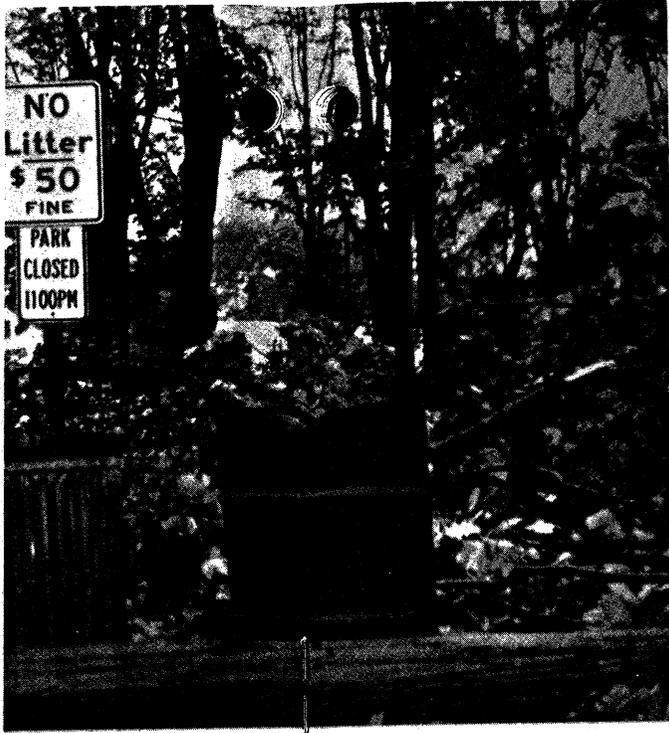
Charles Vanac sugarhouse and sugarbush.

Burton Park Sugarbush
(above and at right) shows
force of July 4th storm.

eleven Farm Foresters work
Geauga County in the sugarbush
woodlots.

Almost miraculously no one
seriously hurt, or killed in the
Our sugarbushes took the brunt
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Most of our Geauga
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Burton Park Sugarbush
(above and at right) shows
force of July 4th storm.

eleven Farm Foresters working in Geauga County in the sugarbushes and woodlots.

Almost miraculously no one was seriously hurt, or killed in the storm. Our sugarbushes took the brunt of the storm. Although there was damage to homes and buildings from fallen trees and wind movement we were fortunate that the trees helped break the fury of the storm.

Most of our Geauga County residents had little or no warning of

the severity of the storm. It developed in Lake Erie and below the Canadian border so most of us were unprepared for what followed.

The real storm damage occurred in the county at about 8:30 P.M. Ture Johnson, National Maple Council president, and his family were in northern Michigan on vacation. My wife and I were just preparing to take a few days off on a trip to Lancaster county, Pennsylvania. We planned to leave the morning of July 7 after the holiday 19

rush and traffic. We did not make it to Lancaster county, Pennsylvania until the following weekend.

Most of the National Maple Council know that we have a very small sugarbush at the back of our home on Hale Road in Burton township. It is hard to describe ones feelings and ones actions during a time of stress such as the July 4 storm.

The storm started much as any thunderstorm starts as the temperature and humidity builds up in the late afternoon. The wind was out of the southwest and kept increasing in velocity to about seventy miles per hour. The skies became increasingly dark and mean looking. Suddenly the wind died to almost a calm. At a distance you could hear the fury of the wind building from the northwest. It was then I told my wife that we had better move to the basement of our home. I had an awful time convincing her since there had been no announcements on television or the radio.

My wife, Marjorie decide to accompany me to the basement when she heard the crashing of falling trees and breaking limbs in the distance. I managed to open the door on the east side of our home before the full storm hit us. If you have never been in a wild storm next to a sugarbush you have no idea of the sounds of crashing trees and the violent turbulence of the trees. I

lost twenty five trees on our small acreage and am just now after a month able to say that the cleanup is nearly over. I spent three days after the storm digging out the debris in our back yard. A few hours each day with a chain saw have helped to clean up the worst of the debris. Dan Wengerd, our neighbor, helped me to pull some of the lodged trees out of others that were still standing, with a tractor.

Volunteer workers appeared after the storm to help clear roads and remove trees from parks, damaged homes, and buildings. Some of us that were without electricity had to find freezing facilities for our forzen food. Water was at a premium since pumps will not work very well without electricity.

Each county in the United States has a disaster committee that functions in an emergency such as ours. The disaster committee of the USDA went to work a few days after the storm. A special meeting was called of ASCS township and county committeemen on July 14 to survey the extent of damage to cropland, sugarbushes, and farmsteads. Total loss of income for maple syrup, grain and hay crop production and loss in value of timber stand and orchards plus added expenses to famers replacing fences and repairing damaged buildings was estimated to approach or exceed the two million dollars figure over the next five or six year period.

A special emergency ACP debris removal practice was written by the State and County ASCS offices for Sugarbushes, Orchards, Vineyards, and

Small Fruit plantings to help get them back into production. These emergency practices were submitted to the Federal CS office for their approval, at the highest level of assistance possible, for Geauga and Lake counties. The State ASCS office will be able to announce these practices as soon as it has received final approval from the USDA.

The Geauga County Extension Forestry Committee called an emergency study meeting of the committee, other agricultural agencies, and foresters from the Division of Forestry, and Ohio State University on July 29. A tour was made of some of the storm damaged sugarbushes and woodlots. In the afternoon the group discussed the situation and made their conclusions.

The recommendations and agreements of the study group were as follows:

1. To urge sugarbush owners to have salvage lumber in the buyer's yards by the first of the year.
2. To prepare a list of buyers that are interested in salvage lumber.
3. To ask for more farm foresters help in marking trees provided more woodlot owners contact the Farm Fore-

ster's office for assistance.

4. To ask for a priority on marking sugarbushes since sap trails will need to be cleared for next spring's maple season.

5. To ask the ASCS committee to prepare a special ACP practice on debris removal on sap trails in sugarbushes.

6. To send a special letter to sugarbush owners and woodlot owners about salvage lumber disposal and debris removal procedure and include a list of buyers of salvage lumber.

7. To prepare lists of owners with amounts of salvage lumber and species for sale that can be distributed to buyers and distant sawmill operators.

8. To arrange a special meeting of sugarbush owners and the Internal Revenue Office to help develop an income tax ruling on loss deductions for the July 4 storm.

The Maple Syrup Industry in Geauga County has been dealt a severe blow, by Mother Nature, but we are still planning on hosting the National Maple Syrup Conference at Punderson on October 20, and 21. Hope to see you there.

1969 VERMONT MAPLERAMA

J.W. Sumner
County Extension Agent
Woodstock, Vermont

Photographs by Bob Lamb

Two hundred sugar makers from Maine to Illinois, as well as Canada, attended the Maplerama tour in Central Vermont this year. The two days were spent visiting sugar bushes, maple processing plants, and retail sales facilities.

The gathering point was David Harlow's sugar house in Ludlow, Vermont, on Friday morning, August 8. He has a new, modern sugar house which also serves as salesroom during the tourist season. His oil-fired evaporator is rigged with automatic controls which stop the boiling if the sap supply is low.

The picnic lunch planned for Coolidge State Park moved to Ludlow

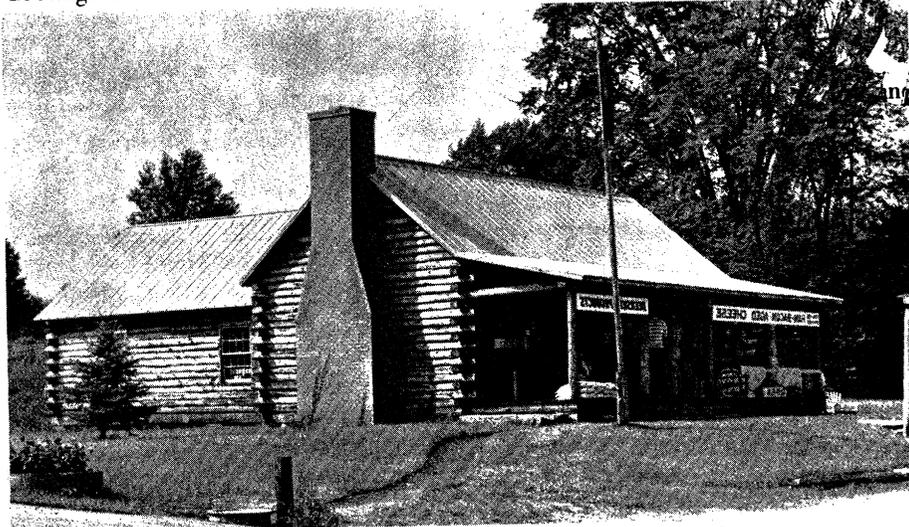
High School because of threatening weather.

In the afternoon the group traveled to Henry Merritt's planted sugar orchard in Hartland, then to Clair Lovell's sugar house in Quechee. Lovell buys sap, boils it down in two oil-fired evaporators and sells syrup, sugar, wool, deerskin products and other items in his log cabin salesroom across the road.

Overnight lodging, exhibits and evening program were at Vermont Technical College in Randolph Center.

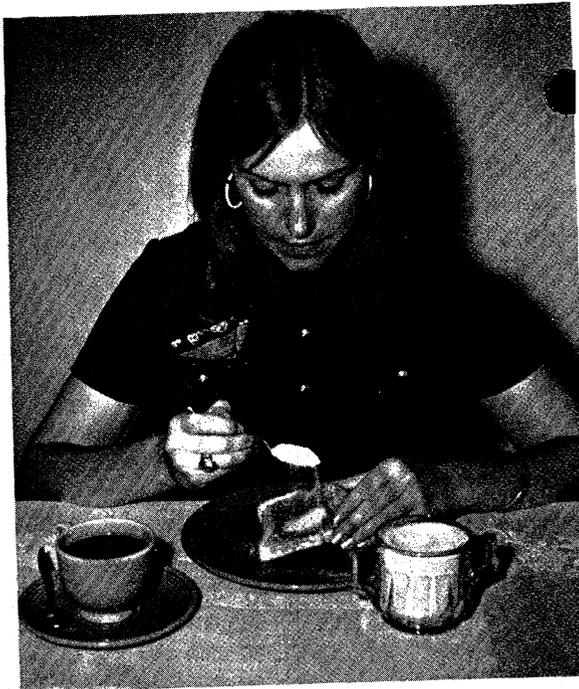
A chicken barbecue dinner was served at nearby Lake Champagne Recreation Area. The last chicken was handed out just about the time the sky opened up with a thundershower. However, everyone got under cover in the shelter, with a few eating in their cars.

The evening program featured a local singing group and a slide talk on maple research results by Carter



Clair Lovell's log cabin salesroom in Quechee.

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J. Clyde Underwood
Eastern Utilization Research and
Development Division
Agricultural Research Service
United States Department of Agriculture

Stirred sugar is a maple product regaining a popularity it lost many, many years ago when cane sugar became a commercial success. Maple sugar in

this granulated form can be used in many ways as a maple flavor. Because of the manner in which it is made, stirred sugar has a special molecular arrangement that renders it readily soluble. This property makes advantageous its use as a maple flavoring in liquid preparations. On the other hand, the granular structure of stirred sugar facilitates its dispersion where a sirup would not be desirable. The product is delicious on such things as grapefruit, cereal, baked-goods, baked ham, etc.

The recent development of dry mixes for making food products has initiated another use of stirred sugar.

Where a maple-flavored product is desired, the maple flavor can be incorporated into the dry mix by substituting maple sugar for the ordinary in the formula. However, one property of stirred sugar has prevented such use. Stirred sugar, again due to its manner of manufacture and molecular arrangement, is higher in moisture than cane or beet sugar and tends to cake upon standing. This is undesirable if the sugar is to be stored for some time before using, either alone or in a mix.

Many of our dried food products, mixes and otherwise, are plagued with caking upon storage. One of the newer solutions to this problem is the incorporation of micronized silica into the product. In a larger particle size silica gel has been used for many years to absorb moisture to maintain low-moisture atmospheres in containers and other small enclosed spaces. The micronized product is now being used in many food products and has been declared by the FDA safe for use up to 1% of the weight of the product being treated. Table salt, tooth powder, dried egg powder, powdered sugar, powdered gelatin desserts, instant beverage mixes, cosmetic dusting powder, and face powder are examples of products using anticaking agents.

Preparation of Stirred Sugar

Stirred maple sugar is a granulated form of maple sugar which can be made according to directions in the Maple Syrup Producers Manual. Briefly, the procedure is (1) boil a good maple sirup to 43-45°F above the boiling point of water; (2) pour the hot mix im-

mediately into a container suitable for stirring. If steam kettle is used to concentrate the sirup, no transfer is necessary as the steam kettle is an ideal stirring vessel; (3) stir the hot mix until granulation is complete and a "dry" mass of sugar crystals is obtained. (4) allow the hot product to cool. The cooled sugar may then be processed to prevent caking or stored in a closed container for later treatment.

Addition of Anticaking Agent

Place a weighed amount of the sugar in a container large enough to permit thorough shaking. Add anticaking agent equivalent to 1.5% of the weight of the sugar (1.5 ounce to 5 lbs. sugar). Close the container and shake

until the mixture is completely uniform. The treated sugar can be stored for long periods of time in open or closed containers without caking.

The effect of treating stirred sugar with an anticaking agent is shown in the illustration. Half of a lot of commercial stirred sugar was treated with 1.5% micronized silica. The pour test shown was performed after the two samples had stood uncovered on the laboratory bench for two months.

As the technique of making stirred sugar will produce a somewhat variable product, the producer may want to vary the suggested amount of anticaking agent used for optimum results. If an excess of the material is added, a dusty mix will result.

For sugar that has already caked, the effectiveness of the treatment will vary widely. If the sugar is slightly caked and can be broken up easily to original uniform particle size, the treatment will give good results. But if a lot of sugar has hardened into a mass which cannot be reduced again to uniform small particles, it can only be melted and recrystallized.

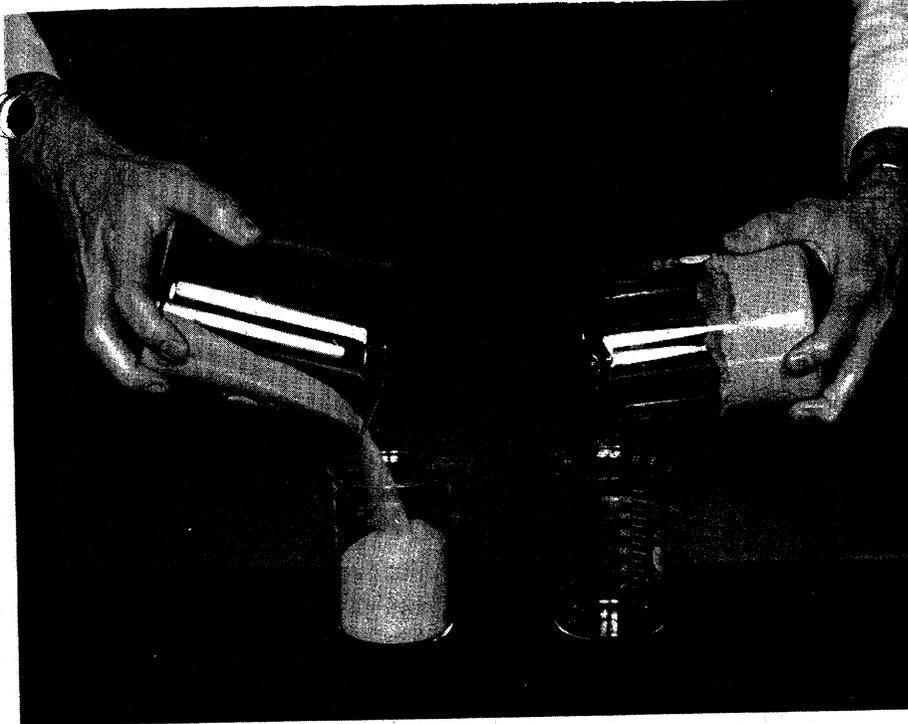
It should be pointed out that the production of the free-flowing prod-

uct destroys an important characteristic of stirred sugar, the ability to "creep". As "creep" is a characteristic measured in the judging of the quality of stirred maple sugar at contests, a sugar to be submitted at a fair or festival should not be made free-flowing.

The anticaking agent may be obtained from several sources. Each company would have to be contacted to get up-to-date information on prices and amounts in which the materials is available. Several such anticaking materials and their manufacturers are:

1. Syloid 244. Pigment and Additives Department, Davison Chemicals, 101 N. Charles St. Baltimore, Maryland 21203
2. Quso F22. Sales Department, Philadelphia Quartz Company, Public Ledger Building, Philadelphia, Pennsylvania 19106
3. Santocel C. Norda-Schimmel International, 475 Tenth Ave., New York, New York 10018.

The mention of these companies does not constitute a recommendation of their anticaking product over like products of other companies. Although cleared for use by FDA, since the micronized silicas are additives, a



Stirred sugar treated with micronized silica is free-flowing after open storage.

declaration of the identity and amount of the additives must be made on the labels. However, the proper wording requirements of the declaration should be discussed with the agency that clears your complete label.

There are many uses of stirred maple sugar where it is not necessary to have a free-flowing material. However when the free-flowing type of sugar is needed, modern developments have made it possible to prepare it.

Highlights of Forest Service Tubing Research

Carter B. Gibbs
Northeastern Forest Experiment Sta.
Forest Service, U.S. Department of Agr.
Burlington, Vermont

Research by the U.S.D.A. Forest Service to evaluate the various methods of installing plastic tubing was begun in the spring of 1966. In the past four seasons work has been completed in five general categories: (1) vented and unvented aerial installations; (2) vented and unvented groundline installations; (3) vented aerial and groundline installations; (4) unvented aerial and groundline installations; and (5) the use of artificial vacuum.

Tubing installation and tapping procedures were rigidly controlled in all experiments. Tubing was 5/16 inch in diameter and tapholes were 3 inches deep exclusive of bark thickness. In each comparison the tapholes, drops, and lines were paired, two taps per tree, so that the only difference between installations was in the methods being evaluated.

Vented and Unvented Aerial Installation

In 1966 comparisons were made between 15 vented and 15 unvented lines, each with 20 tapholes. Total seasonal yields from the unvented lines were 43 percent greater than those from the vented lines. Yield differences were found to be related to the natural vacuum developed by the weight of the

sap in the unvented lines.

The study was repeated in 1967, with the cooperation of individual sap producers. Yield increases of 34 percent in favor of the unvented lines were obtained. Again the increases in yield was attributed to the presence of natural vacuum in the unvented installation.

Vented and Unvented Groundline Installations

The study of vented versus unvented lines was in 1967 with groundline installations. The unvented lines yielded more sap than vented lines, but the difference was only 8 percent. Natural vacuum did not develop to any marked degree in the unvented lines.

Vented Groundline and Aerial Installations

In 1968 we compared aerial and groundline installations. The season was extremely poor, but the aerial lines yielded 9 percent more sap than the groundlines. The reason for this difference is unknown, but at this time we do not feel it is of practical significance.

Unvented Groundline and Aerial Installations

In a 1969 comparison of unvented groundline and aerial installations, the aerial lines yielded 12 percent more sap than the groundlines. However, natural vacuum was present in both aerial and groundlines.

Vacuum Pumping

The presence of natural vacuum in unvented tubing led us to investigate pumping with a jet-type vacuum pump. In 1967 we paired spouts, vented and

unvented, on 171 trees and vacuum-pumped the unvented lines. Total seasonal yields for the vacuum-pumped lines were over 300 percent greater than those for the vented gravity-flow lines. Also, through dye and pressure-dissipation experiments on individual trees, we

determined that we were actually pumping sap from the trees.

In 1968 we compared yields between 30 paired trees: 15 were vacuum-pumped and 15 were hung with buckets. The pumped trees yielded 250 percent more sap than those not pumped. We also found, through cooperative research, that pumping increased yields on slopes in commercial-type operations and on level or slightly downgrade slopes in experimental areas. The major advantage of vacuum pumping seems to be that it not only increases normal yields but also produces sap at temperatures above 35 degrees when gravity flow does not occur.

Summary

Briefly our results may be summarized as follows:

- Natural vacuum, which will increase sap yield, can develop in carefully graded unvented lines on sloping land.
- With vented spouts, the method of tubing installation - - aerial or groundline - - makes little difference in total yield.
- The effective use of vacuum pumps can increase normal flows and produce yield when gravity flows are not present.
- The more intensively tubing is used, the more care it must be given.

Details of the experiments conducted are available from the Northeastern Forest Experiment Station, 6816 Market St., Upper Darby, Pa., Ask for Research Papers NE-90, NE-107, and Research Note NE-91.

Classified

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Our new tapper and Pump attachment to fit REMINGTON Chain Saw Models PL-4 and SL-9 ready for 1969 Season.

Complete outfit or Attachment separate available to all Maple Producers.

SPECIAL offer on Sugar and Cream machines still in effect.

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1 5 ft. Right hand Clark Band Mill
Roller bearings complete
1 Hantchett Saw grinder for above.
1 42" Automatic Right hand carriage — 3 head blocks
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NEW. Price is \$10,500.00. (Terms arranged by owner)

Jack Webb, Bernhards Bay, N.Y.
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For Sale: 1945 GMC Truck with 1961 Chevrolet engine, and 1000 gal. Vacuum filled Tank. Built to haul sap. **Sipple's Maple Products, Bainbridge, N.Y. 13733. Area 607-967-5851.**

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Used equipment sale: 5x14 Grimm-Wood, 4x12 Grimm-Wood, 4x12 Lightning-Wood, 5x12 Lightning-Oil 42"x10" Lightning-Oil, 4x12 Vermont-Oil, 5x8 Vermont series flue pan-Oil arch, 3x8 Lightning Series flue pan-Oil arch. Thousands of buckets, covers, spiles, excellent to poor condition. Several good used tanks-gathering and storage. All subject to prior sale.

SMADA FARMS
GREENE, N.Y. 13778

For Sale - Complete Outfit: 3050 Taps, 50,000 feet 5/16" Tubing, 2000 gal. Stainless Tank, 2-1000 gal. Steel Tanks, 2 power Tapers, 2700'-3/4" Tubing & Fittings, 5200' -1/2" Tubing & Fittings, 30 gal. Stainless canning Tank, Filter press, 2x6 Stainless gas Finishing evaporator, Automatic draw off. 5x12 evaporator with hood and 16 g.p.h. oil burner, 4x14 evaporator with hood and 13 g.p.h. oil burner. Extra pans. Misc. smaller Tanks and equipment.

Rainbow Lake Recreation Area, Inc.
East Otto, N.Y. Ph. 716-699-2618