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MAPLE SYRUP DIGEST

Official publication of the NORTH AMERICAN MAPLE SYRUP COUNCIL

DIRECTORY

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COVER PICTURE:

Sugarhouse of Stephen and Diane Jones, St. Johnsbury, Vermont.

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GREETINGS FROM YOUR PRESIDENT



Snowflakes are glistening. They are piled on the ground about a foot high. Birds and squirrels are eating at the feeder. The trees are bare but stately with an icy glitter. The winter woodpile is about half gone. The Christmas tree is still up with lights twinkling. Gifts all unwrapped below and scattered around. Wonderful smells still drifting from the kitchen. Our families have returned home safely. Memories are forever. Peace is on most of the earth. The New Year is bright on the horizon. Pleasant thoughts fill our lives. We have fulfillment. Anticipation will be with us for all the coming year. Love swells within us. Again Christmas will come. Life goes on. We are all very lucky. We can all count our blessings.

Maple season is just around the corner. It has actually begun in some southern areas. To some, there is a concern for getting it all done. "How will I be able to do it in time?" Well, relax, take a deep breath, close your eyes, count to ten, and make it your goal to get through the next 15 minutes. The rest will take care of itself. Take it from one who has had to learn the hard way. We will all do just fine and everything will work out for the best.

Some dramatic happenings have occurred in the Quebec syrup surplus situation. The "Third Line De-

fense Committee" has completed its study and provided its recommendations to the Canadian Government. Agriculture wasted no time in issuing its declaration to help the situation. The Government is appropriating \$10 million for financial aid to offset costs for maintaining syrup inventories. The committee's recommendations of restoring balance between production and marketing was highly endorsed by the Government. In addition, the Minister of National Defense announced that the Canadian Armed Forces would be supplied with pure maple syrup for extensive use. It is not for me to decide whether all of the actions taken by the Canadian Government are good for all of us. But I am in a position to say, that I am pleased to see an action such as providing syrup to the Canadian Armed Forces as a positive move in eliminating the surpluses. Now, lets get the U.S. Armed Forces to use pure maple syrup. Why not?

I repeat my invitation to Quebec to come join us on the Council. I feel the only way to provide direction for our industry is to show solidarity in discipline for a market-production balance. In my opinion, the only way to achieve this direction is to create a forum of all major maple producing areas. The Council provides this forum. We need Quebec to join us. Lets go Quebec, we're ready to help. Ouebec, its your move.

The challenges to our industry are enormous. I know we are up to meeting these challenges together. Our main obstacles are the fear of the unknown and keeping our-

5

selves fully informed. The Maple Syrup Digest is this very critical link for these communications and information. We must make certain that all of us support this publication. It certainly makes sense to me.

Please keep those contributions flowing into the Research Fund. Maple's very survival could rest on the amount of knowledge we possess. Knowledge is attained by experience and education. Our experiences are invaluable, but our education has unlimited potential from research. We are the only ones that provide maple research. This is the vehicle upon which we can ride to a wealth of knowledge. However, we are the ones that have to pay for this ride. The ride isn't cheap, but the benefits are valuable. Lets keep the wheels rolling.

So to all of those that have not started making syrup as yet, I wish you the best season you have ever had. I want all of you to sell just a little more syrup than last year. If we all sell just a little more, maybe there will be just a little less that we have to call "surplus." Help me bury this word in maple. I know we can do it - Sell, Sell, Sell. Together we can sell the word "surplus" right out of our vocabulary. Then, we must all join hands in determination to make production equal with market and to always maintain that balanced equation.

My wishes for you to have a happy Spring. We will talk again in June. My best to you all.

Lynn Reynolds Your President

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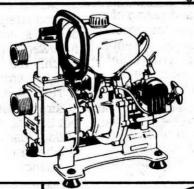
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E D I T O R I A L WE OUGHTA BE ASHAMED —

By Lloyd Sipple

My wife says I'm getting to be a crabby old man and maybe I am. I'll probably make some folks sore at me but the good producers should be happy. Anyway, what I've got to say needs saying and now is as

good a time as any.

To start with, there's still a sizeable surplus of syrup in Canada. A few years ago the Canadian Government subsized production by helping the producers buy new equipment — tubing, etc. — to make more and better syrup. This would have been fine except that 3 or 4 bumper crops in Quebec produced a whale of a lot of syrup more than anyone ever expected. Then they set up a syrup bank to handle all the buying and selling of bulk syrup and stabilize the price. This was a good idea too, except that they made more syrup than the bank had the money to handle and the interest on it is killing them.

The good part is — most of the syrup is of the top grades. The dark stuff is gone and they're selling medium amber at reduced prices to be used in place of the dark. That ought to get rid of some but they'll lose money doing it which sounds like some of the deals congress has pulled that helped make the good old U. S. of A. go bankrupt.

You're probably thinking that's Canada's problem, but I'm afraid it's our concern, too. We've always had to sell most of the Canadian syrup because there aren't enough people in Canada to buy it. But if you're short of syrup and would

like to buy a few drums — forget it. They don't seem to want to bother doing business with anyone but a big packer that can handle a couple of carloads at a time.

We've got some distributors in the U.S. who could handle that kind of a deal and then pass it on in smaller quantities. That might be a good way to go about it but the buyers would have to be careful about the flavor. All the Canadian syrup is graded with a machine which is very accurate and honest so you can depend on getting just what you order. The problem is the machine can't taste. But then, from what I've seen sold around the country lately, a lot of our producers can't taste, either. That's what I started to write about in the first place — before I got lost up in Canada.

There's an awfully lot of off flavored maple syrup being sold. It seems like there's more of it around lately than there was years ago. It's probably because we've had weather that warmed up too much, too early, causing some trees to produce buddy syrup.

Yes, I mean buddy syrup. A lot of folks say, "Oh, yes, it's off flavored but it's not buddy" or, "It's not buddy, just a high acid flavor!"

When maple trees come out of dormancy, they begin producing free amino acids which are present in the sap in the summer time but seem to disappear in the winter. This was discovered by Dr. Willits at the Philadelphia Laboratory back in the 50's or 60's. These amino acids are what cause buddy flavor. This usually happens a little before the buds start to swell so it doesn't do any good to watch for the buds — you'll smell it in the sugar house first. Since the flavor turns about the time the buds start to swell it's

called "buddy" for want of a better name.

When only 1 or 2 trees out of a hundred start producing amino acids it's diluted enough so you just get a touch of it. That's why you say it's just "off" flavored, but if you knew which trees were the early budders and boiled some of that sap separately, it would probably knock your socks off. Diluting it may make it tolerable but no amount of dilution will ever get entirely rid of it.

Apparently, some producers seem to think it's all right to sell it if it isn't "too bad." Or maybe they just can't taste it. In either case they insist on putting some awfully bad stuff on the market.

Maybe this is why more syrup isn't being sold and there's such a surplus in Canada. If we're going to sell off the surplus, we've got to

put only good quality merchandise on the market. And I mean everyone from the backyard producer to the commercial packers. After all, we should be able to sell at least twice as much syrup as we now sell because maple syrup isn't bad for most folk's health. It contains no additives, no preservatives, no cholesterol, practically no sodium, just 100% pure calories.

A good rule to go by is: Put only perfect syrup in a can or jug. Don't even put the "crap" in a drum — the commercial companies don't want it either. Don't be so greedy you have to get every drop out of a tree. Stop before you make any of the bad stuff. What this industry needs is more team work and less individuals trying to beat their neighbor for the almighty dollar.

Hope you all make a lot of GOOD

syrup this year.



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EDITORIAL

Boy, did I goof last issue — in case you didn't figure it out it goes like this — on page 16 the columns got switched, the left hand column is the end of the article on page 17 and the right hand one is the end of page 15. Just checking to see if you folks are reading your digest!

Another year is upon us already. This is the time to look at the expiration date on your label. If it reads 2/92 the last issue you will receive is the June issue.

The tough economic times have their effect on us also. Advertisers are cutting back so we have to do likewise. This is the issue we normally put an envelope in. The cost of this envelope is way to high for the returns we get back . . . so we are eliminating it to save money. Please cut off and mail the coupon on this page.

My appeal for articles has been rewarded. We have a lot for this issue. Thank you to all who have contributed. We are enlarging this issue to 44 pages.

I hope we all have a good season and sell just a little more than we make to help with the surplus.

Editor

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MAPLE IN THE SOVIET UNION?

By Roland Jorns

Upon coming home from our National meeting in Eau Claire this fall, I was greeted by two ladies at our sugarbush shop that asked for a donation of maple products to give to the Russians as a gift in return for a military tank the Russians were donating to our new Wisconsin Military History Museum about a mile from my sugarbush. It wasn't really a total shock as Arnie Tanch. Vice President and his wife. Marietta, Secretary of the new museum asked about the possibility of such a donation about a year and a half earlier, should the Russian T-34 tank become a reality. At this time they assured me their dream had come true as the tank had already been unloaded from the Soviet freighter Aleksander Starostenko in Milwaukee, Wisconsin. The first Russian tank to ever touch United States soil had landed in Milwaukee as a monument to peace and goodwill. Mrs. Tanch mentioned that they were having a ceremony that night in Milwaukee and the following night we would have a ceremony in our new Town Hall here in Egg Harbor with the Soviets and four American servicemen from the 1158th Transportation Company of Monroe that would be bringing the tank from Milwaukee to Egg Harbor.

As the ladies left, I asked who do I make this donation out to? Gorbachev? Their answer was "yes". At this point I thought they were pulling my leg, so I said "get me Gorbachev's correct title and spell-

ing." The next morning the phone rang, it was Mrs. Tanch, she said, "make your donation out to Soviet President Mikhail S. Gorbachev" and she assured me it was for real.

Lucky for us, our daughter Terry was up (she does our artwork) she burned in the cover of a large cheese box a map of Door County and the spot the tank is to be displayed also several clusters of cherries, another industry Door County is noted for. On the inside she burned the words: To Soviet President Mikhail S. Gorbachev is appreciation for the T-34 tank. We then filled the box with as many items of maple as we possible could, a few preserves, dried cherries and a 24oz block of Wisconsin cheese. I also enclosed a short letter of appreciation emphasizing the historic and tourist value the Soviet tank will mean to our community and our brochure on maple.

Upon arriving at the Town Hall, there was the Soviet T-34 tank of World War II, with flood lights showing her off, I must say it was quite an impressive sight. Then entering the over-crowed hall we were introduced to four Russian delegates accompanying the tank, they included Major General Mikholai Zlenko (in full uniform), First Secretary of the Soviet Embassy in Washington, D.C., Yuri Menshikou and tank technicians Roman Bar and Alexander Vorobieu.

We had several speeches from our town chairman, Jim Anschuty, our Sheriff, Brann, our museum President Robert Costa and Mayor General Zlenko. Mayor General Zlenko had these comments: "Thank you very much for all your

kind words. On behalf of my president and the Soviet people I am happy to present to the American people and the Wisconsin Military History Museum this relic of World War II. This is a great event. Soviet and American people fought against fascism during World War II. There is no person, not even a grade school child, in the Soviet Union that does not know that your country and mine were allied in the defeat of the enemy. In April of 1945. American and Soviet forces met as brothers on the Elbe River, as the Nazis were defeated. Millions of Russians, civilians and soldiers lost their lives on Soviet soil and many villages were destroyed. We resurrected the villages from the ruins, but what was impossible to resurrect was our brothers, sisters and children left in common graves across the country. Let this tank be a symbol of our thankfulness to the Americans and Soviet veterans of World War II, and symbol of both our great nations for their sacrifices." He called the tank a monument to the friendship between the United States and the Soviet people. "I'm sure the relationships between our country and yours will get better and better every day."

When the speeches ended numerous gifts were given to the Soviets. At this time, I was asked to make my gift presentation to Major General Zlenko, who in turn would see that Soviet President Gorbachev would receive it. We then had lunch and refreshments, the balance of the evening was used visiting with our Soviet gusts and the men from the 1158th Transportation Company. It was at



this time that my wife Donna suggested we distribute maple syrup to Major General Zlenko, his men and the men from the 1158th Company also.

The Major General was even excited about posing for a bit of promotion for the maple industry. The Soviets were so friendly and warm it was hard to say good-bye to them.

This whole story came about by Robert Costa, president of the new Wisconsin Military History Museum who loves military history. He simple wrote to Gorbachev in May 1990 and asked for a T-34 tank, stating, "We would display this tank with honor." Three months

later Gorbachev answered, "yes."
"It's unbelievable" says Costa,
"that an average person can make
a request of the President of the
Soviet Union and he'd take time to
approve it."

At the time of this writing President Gorbachev's future looks doubtful, and in the Soviet Union before maple syrup comes into use, there must be meat and potatoes, but the seed has been planted.

The Soviet T-34 tank will be kept at Patton Museum of Armour and Calvary in Fort Knox, KY for about a year at which time our Wisconsin Museum is expected to be completed and the T-34 returned.

DEADLINE FOR NEXT ISSUE MAY 1, 1992

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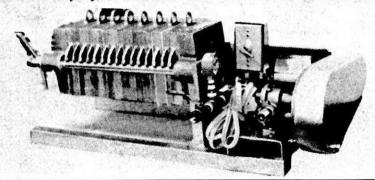
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STRATEGIC PLAN FOR THE ONTARIO MAPLE SYRUP PRODUCERS' ASSOCIATION



Mission Statement:

The Ontario Maple Syrup Producers' Association fosters a positive reputation for Ontario maple products through promotion, research, and education.

Operating Principles:

The Association is committed to the following principles as a guide to its activities.

- Encourage profitability of the Industry.
- Encourage high quality standards.
- 3. Promote new technology wherever applicable.
- Seek out new markets and marketing techniques wherever possible.

- Encourage cooperation, support, and input from all sectors of the Industry and Government.
- 6. Promote sound sugarbush management.
- Encourage research and development projects related to the production and marketing of maple products.
- Inform consumers about standards and uses of maple products.

Integrity of Product:

1. Strategic Goal

To ensure that Ontario is recognized as a source of quality product.



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- 2. Strategic Direction
- a) Establish an Ontario 'Quality Seal.'
- b) Promote Ontario Pure Maple product to retailers and consumers.
- c) Coordinate standardized grading and testing formulae.
- d) Encourage training schools for producers (sanitation, judging, etc.).

Consumer Education:

1. Strategic Goal

To increase awareness of Ontario Pure Maple Products.

2. Strategic Direction

- a) Develop promotional material stressing the uniqueness and nutritional value of the product.
- b) Become an identity with outside groups e.g. Ag in the Classroom, Ontario Agricultural Commodity Council, Ontario Federation of Agriculture, etc.
- c) Enhance our relationship with the media.
- d) Develop strategy to market to specialty groups, school children and others.

Research and Extension:

1. Strategic Goal

To enhance the quantity and quality of research and extension

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- 2. Strategic Direction
- a) Compile a list of current 'Maple' research and publicize same to the members.
- b) Devise ways and means to direct future research through government grants, Association 'seed' monies and industry.
- c) Promote current technology through tours, newsletters, books, etc.

Board/Local Relationship:

1. Strategic Goal

To ensure that the organization develops a strong infrastructure to implement its principles.

- 2. Strategic Direction
- a) Increase communication flow through more reports, newsletters and activities.
- b) Encourage local fundraising and marketing initiatives with assistance from provincial organization.
- c) Rewrite constitution to reflect needs e.g. sunset clauses, separate bylaws for ease of change, etc.
- d) Develop lists of producers for consumer groups and individuals desiring tours or products.

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USDA TO ESTIMATE **MAPLE SYRUP** PRODUCTION AND PRICES IN 10 STATES

The National Agricultural Statistics Service (NASS) is about to begin collecting and publishing more complete statistics on the U.S. maple syrup industry. Production and price statistics will now be completed in Connecticut. Maine. Massachusetts. Michigan, New Hampshire, New York, Ohio, Pennsylvania, Vermont, and Wisconsin. This new price and production data should give producers a better view of the U.S. industry.

The data will be collected and estimates published at two times during the year. The production information will be collected in the spring and published June 10. The price information will be collected in October and published Novem-

ber 10. All information provided by producers is strictly confidential and is used only in developing State level estimates. It is a violation of the law for NASS to share the information with any other firm, public or private. The only goal of USDA is to provide producers and others involved in the maple syrup industry more information for their own use.

It is critical that every producer that is contacted provide information on their operation. Excellent cooperation is required for the statistics to be meaningful and accurate. Many people have worked very hard to get the estimating program expanded so as to better serve the industry.

Please remember that the data provided is strictly confidential and will only be used to produce State estimates. If you have any questions concerning the maple syrup estimates, please feel free to call Kevin Hintzman at (202) 720-7092.

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NEW ASSOCIATION MEETS

By Dan Garner

The first annual meeting of the Indiana Maple Syrup Association was held at the high school at Rockville on December 7th. We had a very nice turnout with about 60 percent of the membership present. Several equipment dealers were also present to display their wares and discuss the latest in maple technology.

The meeting proper was called to order by president Kenny Shipley, who introduced the officers of the association and the visiting vendors. Next there was a panel discussion of tubing management, with Dan Garner, Mike Goering and Keith Ruble sharing their experi-

ences with the group. Keith Ruble talked about his thinning practices and tree selection.

Following an excellent lunch prepared and served by our friends at the high school, Randall B. Heiligmann from Ohio State University talked about a whole range of issues concerning the maple industry, including proper tapping methods, tree selection and thinning, sanitation, and planting new groves.

Our new logo for the association is a maple leaf over an outline of the state of Indiana. We have plans to have stickers printed to be placed by members on their containers.

The next meeting will be on December 5, 1992 at a place to be determined in the central part of the state.

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YOUR AMERICAN MAPLE MUSEUM

By Fred Schneider

Things are quiet at the Museum during the winter months but plans are underway for some renovations and the first pancake day of the year will be Sunday, March 1. If you're in the area stop at the Museum for pancakes and sausage. Serving starts at 7:00 a.m.

The American Maple Festival, marking the season reopening, will be Saturday, May 9. As usual the day will begin with a pancake breakfast at 7:00 a.m. followed by the opening ceremonies at 11:00 a.m. It is during these ceremonies that two people, selected by the North American Maple Syrup Council, are presented for induction into the Maple Hall of Fame.

Another part of the opening ceremonies is the selection of a New York State Maple Queen. Last year Jennifer McAdam of St. Lawrence County was selected to represent the New York State maple industry at the State Fair and other events around the state.

Wanda Bush, maple queen committee chairperson, says that any young lady between 16 and 21 years old and from a maple producing family or who has worked in a sugar bush is eligible to compete for the title. For information contact Miss Bush at (315) 688-2028.

Warren Allen is the industrial exhibit chairman and says that space on the Museum grounds is limited. Manufacturers and distributors who wish to set up should contact him as early as possible at (315) 346-6706.

If you need information about the Museum or the festival, you may call me at (315) 376-3356. Should you need a motel, there are several within a few miles of Croghan but none within the village. We work closely with the Lewis County Chamber of Commerce which has a toll free number and can provide information on motels and points of interest. Call 800-724-0242.

The Lowville and Beaver River Railroad will be running excursions from Croghan during the festival for those who enjoy riding trains. It is possible that they will have a steam engine running by then but if not, diesel power will be used. The train station is just down the street from the Museum.

Would you like to donate something to the Museum? We need a Canadian flag to display in the dining room and one to fly on the flag pole on the front lawn in honor of our neighbors to the north who are well represented in the Maple Hall of Fame. Our address is: The American Maple Museum, P.O. Box 81, Croghan, NY 13327.

We wish everyone a happy and prosperous New Year.

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CLEAN TAPPING IMPROVES MAPLE SYRUP QUALITY AND KEEPS THE TREE HEALTHIER

By MariaFranca Morselli and Mary Lynn Whalen

SMI Consulting Inc., 1 Pamela Ct. Williston, VT 05995 802-878-2928

It has always been suspected by researchers and maple syrup producers that clean and proper tapping of trees is the key to produce quality syrup and reduce maple wood damage (Robbins 1965; Baggett 1983; Buzzell, 1986; Laing 1988). In more recent studies (Morselli and Whalen, 1991), by collecting sterile sap from individual maples during six sap seasons using an aseptic method previously tested within our laboratory, we were able to verify early studies and test some hypotheses. Our objectives were to 1) substantiate preliminary studies (Edson 1910) that sap is sterile while it flows in maple wood xylem vessels; 2) confirm that contamination at the taphole by microorganisms can be minimized by an aseptic tapping technique; 3) test how long into spring sterile sap, in a volume sufficient for syrup production, can be collected using an aseptic technique and a vacuum system; and 4) test if aseptically collected sap produces syrup of lighter color than sap collected with traditional methods (control) throughout each of several seasons.

We are summarizing here our re-

search and the results (Morselli and Whalen, 1991):

An aseptic technique was used to collect 227 sap samples from 84 tapholes, including several initial and successive collections, of 27 sugar maples (Acer saccharum Marsh.) over six sap flow seasons (mid-February to late April). In this technique, all material used is sterilized, and the bark as well is sterilized with alcohol. Of the 227 sap samples, 62.5% were sterile or essentially sterile (0-10 colony forming units of microorganisms per milliliter), and of the 74 sap samples from initial collections, 83.8% were sterile or essentially sterile. in contrast with successive collections from the same taphole (P =0.001). The 35 composite sap samples collected from 1800 nonaseptically tapped tapholes on 900 which were our control, trees. all contaminated were greater than 800 colony forming units of microorganisms per milliliter. Sap obtained with the aseptic tapping technique produced 92.8% light amber grade syrup and 7.2% medium amber grade syrup. Sap obtained with the traditional tapping technique produced 61.8% light amber syrup, 11.8% medium amber syrup, 14.7% dark amber syrup, and 11.8% syrup that was darker than the dark amber grade. The grade was determined both visually and by a spectrophotometric method. If sap microbial contamination is minimized and cold sap storage is used, syrup of lighter color grade than what is achieved with traditional practices (P = 0.001) can be produced up to the end of the season (see Table).

We have substantiated Edson's (1910) hypothesis that sap flow is sterile or essentially sterile in the healthy tissue of sugar maple trees. However, the presence of microorganisms in sap from a newly tapped taphole even early in the season can be explained by contamination of tree bark. Although we have demonstrated that it is possible to minimize the contamination at the taphole with an aseptic tapping technique, sterile and essentially sterile sap were consistently more likely to be obtained from initial rather than successive collections from the same taphole. Furthermore, there was a greater chance of successive tapholes yielding sterile sap early in the sap season. Sterile sap was also obtained from initial tapholes during the second part of the season as late as early May. We also found differences of percentages of sterile

samples among seasons and within individual trees and tapholes.

We have shown that to prevent microorganism growth, vacuum collection systems should be used to a greater extent than gravity systems when sap flow rate slows down due to weather conditions, especially during the second part of the season, as evidenced by the heavily contaminated sap samples obtained only by gravity collection.

Previous research has related taphole closing and sap flow stoppage early in the sap season to microorganism invasion (Naghski and Willits, 1955). Costilow et al. (1962) advocated the use of a paraformaldehyde (PFA) pellet in the taphole to delay microorganism growth and to keep the taphole open longer at the end of the season. We have demonstrated that our method of sterilizing tapholes yields sap very late into the season, rendering PFA pellets unnecessary (see figure). Recently the use of the PFA pellet has been discour-

Color grade of syrup produced from sap collected from aseptically (A) and traditionally (T) tapped trees, over five seasons

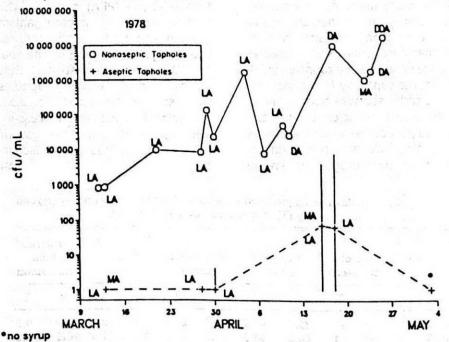
	No. of samples		% light amber		% medium amber		% dark amber		% darker than dark amber	
	A	T	A	T	A	T	A	T	A	T
1977	28	11	85.7	45.5	14.2	27.3	0.0	18.2	0.0	9.1
1978	43	14	86.0	64.3	14.0	7.1	0.0	21.4	0.0	7.1
1979	50	3	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	27	3	96.3	66.7	3.7	0.0	0.0	0.0	0.0	33.3
1981	4	3	100.0	66.7	0.0	0.0	0.0	0.0	0.0	33.3
No. of				4.71				7		
samples	152	34	141	21	- 11	4	0	5	0	4

Note: Color grade of syrup produced from traditional tapping is significantly darker than color of syrup from aseptic tapping (P = 0.001).

aged. In Vermont it has been always considered a pesticide, and its use illegal. This action has been supported by other studies (Shigo and Laing, 1970; Walter and Shigo, 1978), who demonstrated that the wood discoloration and compartmentalization of the xylem above and below the taphole treated with a PFA pellet is longer and wider than that of an untreated taphole, with greater damage to tree health.

Throughout the sap flow season, the succession of syrup color grade traditionally progresses from light amber to darker than dark amber when processed from contami-

nated sap. This sequence did not occur when we processed syrup from aseptically collected sap. Even when the total count of microorganisms in a few aseptically collected sample during the 1978 season reached heavily contaminated levels, the processed syrup grade was still light or medium amber even as late as early May, well after most syrup producers have ended sap collection. We have shown that the aseptic sap collection technique, along with keeping sap cold in the field and cold storage prior to quick processing, minimizes the sap biochemical changes



Comparison of degree of contamination of sap from nonaseptically (traditional) (N=14) and aseptically (N=47) tapped tapholes pooled over the 1978 season (P=0.001). Both 0 and 1 cfu/mL (colony forming units/mL) are plotted at the 1 cfu/mL for logarithmic plotting ease. The aseptic tapping data are presented as the mean \pm SD. The color grade of syrup processed from collected sap is also shown: LA, light amber; MA, medium amber: DA, dark amber: DDA, darker than dark amber.

brought about by microbial enzymatic activity, which darkens and caramelizes the boiling liquid. Our studies on sap storage (Morselli et al. 1985) indicated that sap stored in cold conditions yields lighter grade syrup. Our studies of sap collected by utilizing a microorganism-reducing method, the inultraviolet line liaht system (Whalen and Morselli 1982; Morselli and Whalen 1984), also demonstrated that light color grade syrup can be produced longer into the sap season if microbial activity can be kept at a minimum after sap collection.

While an aseptic tapping technique is not a practical procedure for sugar makers, our research points out that the traditional nonaseptic technique could "cleaned up" to yield less contaminated sap, hence increasing production of light color grade syrup with a more maple and less caramel flavor. We recommend that drill bits be cleaned by dipping them in alcohol solution and heated with a flame prior to tapping each tree. This minimizes transfer of infection from tree to tree. Before and at the end of the sap season spouts should be sterilized in boiling water of alcohol, and handling minimized to prevent human contamination. The practices of blowing into the taphole to remove wood shavings and chewing tubing to soften the frozen plastic contaminate the taphole and tubing with microbial flora from the mouth and should be discouraged.

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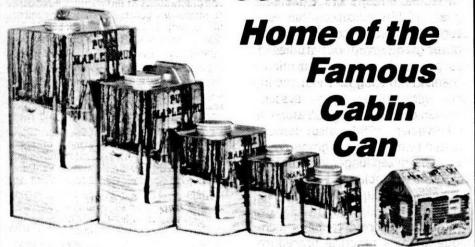
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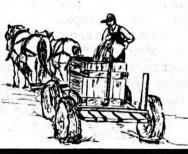
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1991 OHIO FALL TOUR AND BANQUET

By Tom Hoffmann

The city of Wilmington, in southwestern Ohio, was this year's location for The Ohio Maple Producer's Association annual Fall Tour and Banquet. People began arriving Friday. November 1, at Robert's Arena where they were able to renew old acquaintances and view the equipment displays. Representatives of all the maple equipment manufacturers were on hand to answer questions and show their latest offerings. These included the latest in R.O. machines, vacuum systems, and evaporators.

Joe Dill gave a marketing presentation explaining how they have successfully marketed their syrup and candy at craft shows and fairs. His main point was that a syrup seller must actively sell his product. You can't sit behind your display and wait for people to come to you.

Later that afternoon there was a tour of the Airborn Express air freight distribution hub. This is a huge facility that services the entire country. It is the point where all flights terminate each night and the freight is then redistributed to other planes for delivery the next day.

That evening everyone enjoyed the buffet dinner which was followed by the annual business meeting. After the Secretary's and Treasurer's reports, Ture Johnson, delegate to N.A.M.S.C., reported on this year's meeting which was recently held in Wisconsin. He, along with Associate Delegate Paul Richards and Associate Member Hilton Farley, announced that two other Ohioans, Gordon Feindel and Randy James were elected Associate Members of the Council, Ohio's representative on the governing board of I.M.S.I., Paul Richards, gave the report on this year's meeting.

A vote of the membership approved raising the Association's dues to \$18 annually in order to meet increasing costs and continue with promotional efforts. District elections were held with Dave Herring of Harpster being newly elected in District one. Re-elected were Joe Dill in District two, Bill Brown in District three and Hilton Farley



NO SHORTAGE OF FIREWOOD HERE! Don Wical of Wilmington, Ohio has firewood for years to come for his 950 tap syrup making operation.

in District five. District four had no election this year. With the business meeting completed everyone sat back and listened to the United Country Band, who have performed in Nashville.

Saturday morning made people realize that tapping season was not to far away, with a stiff wind and occasional flake of snow in the air as the buses left to tour the sugarbushes. Tom Morris' sugarcamp sits on the bank of a creek in Hillsboro where gravity tubing brings half of his 730 taps directly to the sugarhouse. The remaining sap is brought in from a neighboring woods. Boiling is done in a 2 ½ x 8 woodfired evaporator, with the wood delivered to the arch doors by overhead trolley.

The next stop was Hank David-Maple Syrup Camp in son's Lynchburg, Along with John Meddock and Carl McClain, Hank and his wife gather sap from 1000 taps using gravity flow tubing. Syrup is produced using a 3 x 8 wood-fired evaporator. Steam is removed from the sugarhouse by means of an omni-directional metal cupola which is not affected by wind direction. Syrup is sold to his many honest customers who help themselves using the honor system.

Following a huge lunch at Stacy's Buffet in Wilmington, the tour continued at Don and Mary Wical's 950 tap operation outside of Wilmington. Gravity flow tubing collects the sap which is boiled down in a 3 ½ x 10 wood fired evaporator. Syrup is sold at the farm during the Maple Season. Several season's worth of firewood is cut and stacked outside before being placed in the wood shed.

Fourteen year old David Wical wanted to make syrup so badly that he and his father, Dick, built all their equipment themselves. 150 home made buckets are used to gather sap which is boiled down in a home made 2 x 6 wood-fired evaporator complete with cylindrical drop flues. Dave had his evaporator operating for the tour and the smell of the syrup he put in the boiling water made everyone think it was Springl

The final stop on this year's tour was Mike Keiter's sugarbush near Lumbertown. Parents Ed and Jean, and brothers Jim and Steve all lend a hand with the 1500 buckets on this more than 100 year old operation. Syrup is produced on a 4 x 16 wood-fired evaporator. Corn, wheat, soybeans, hay, and beef are also produced on their 1000 acre farm.

This year's tour showed that maple syrup can indeed be made in Southern Ohio. The fact that three of the five sugarbushes have been in operation eleven years or less shows that the Ohio maple industry is comprised of new as well as older, experienced producers.



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VERMONT NOTES

By Ray Foulds

The Vermont Maple Industry Council met at the Waybury Inn in East Middlebury, VT on November 5, 1991. Discussed were the new Sugar House at the Proctor Maple Research Center, nutritional labelling, 1992 maple syrup grading kits, maple reorganization and cuts in the University of Vermont College of Agriculture and Life Sciences, research on containers, distribution of the new Maple Grades poster, and activities of the Vermont Maple Promotion Board. It was noted that the 1992 Vermont Maple Festival will be in St. Albans on April 24, 25, and 26, 1992; and that the current Vermont Maple Queen is Jennifer Cole of Cambridge, and the Vermont Maple King is Gary Corey of Fairfield.

Sumner Williams reported that a new sugar house had been constructed at the Proctor Maple Research Center in Underhill. More money is needed to finish it — possibly Hatch money or funds contributed by sugar makers. Sam Backus and Howard Duchacek did the work, and an architect helped. Two evaporators are desirable — one wood-fired and one oil-fired.

Williams also reported on progress in container research. Three taste-tests have been made, and some layering was noted. A sixmonth taste-test will be done in January. Something new in drums may be needed — perhaps plastic. (It is hard to clean odors from a galvanized drum.) A drum needs to stand a high of 250 degrees Fahrenheit and a low of — 20 degrees Fahrenheit and withstand a drop off the end of a pick-up truck. It is

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difficult to get rid of old galvanized iron drums.

It was reported that some of the new maple containers are thin, as in the case of one half-gallon. There is one new cream-colored plastic container that is quite good.

Bruce Martell and William Rice. lawyer for the Vermont Department of Agriculture, discussed the legal aspects of the Food Labelling and Nutrition Act. This is a new Federal law, passed in late 1990. which takes over State laws and is important when maple products are labelled. It refers to "Maple Standards of Identity" by the Food and Drug Administration. It refers to additives and preservatives. On October 16 the State applied to F.D.A. for exemptions in the Vermont Maple Program. What we can do is to support the Department for this temporary, and finally permanent, exemption. (Otherwise the federal regulations will preempt the State grading laws.) Tyree felt that we all need to understand what nutritional labelling is. If the federal law goes through Vermont cannot have more strin-

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gent standards than other U.S. areas. Perhaps drums should be numbered with code numbers. There is a question about the licensing procedure for dealers.

Barbara Burns of the Vermont Department of Forests, Parks, and Recreation reported on tree health. In general, the trees look good. Pear thrips is not serious this year. They are doing forest health surveys. (One in cooperation with other States and Provinces — in its 4th year. This shows tree health has improved). They are trying to streamline methods of spraying. Lack of money is a problem for State Lands Management people — it hurts the surveys.

David Marvin said that the funding of the study is most important especially in Canada (Saskatchewan). The principal objective of I.M.S.I. is to promote the industry and help sales. There has been much change in the industry in Quebec. Lately there has been no purchase from producers by industry because of the surplus. A marketing board, U.P.I., is working on the supply side. They now have some money for promotion which may help. (It is mainly a French-Quebec group). We need to work with them. It is estimated that the surplus syrup on hand is about 31,000,000 lbs.

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AT LEAST THE SAP IS FREE

By Loudon Young

Every spring in Vermont the sugar maple does its thing. The sap runs. You never know exactly when it will or why it does, but it does. The maple does this all for free.

Just because it does it for free and you like maple syrup doesn't mean the syrup will be free. That is where people make their biggest mistake. The collecting, transporting and converting the sap into syrup is costly and frustrating.

Why don't we begin at the bottom and demonstrate just how costly it can sometimes be? Suppose you have a few maples and your neighbor does also, then by golly you're all set to go. Borrow a few spouts from someone, hang a few buckets and wait for it to run. For at some point run it will.

When it has run a little, the kids will help you gather it and your ever-suffering wife will probably let you boil it down on the kitchen range. Man isn't that good? And everyone had so much fun, tool

Then you enjoy a real run, just a drop at a time how could that be so bad? You come home from work and your buckets are all full. This is "Big Time."

The kids don't want to gather, so guess who is on for that? All your pails are full, the garbage can is full, and all of wife's pots are on the kitchen range, so supper if it appears, will be right out of the microwave. The best news is that sap is still running.

The first thing you learn is this

size operation is that you can't watch basketball on TV and boil at the same time. So you burn one of wife's prize pots, the replacement cost is about \$40 and by the time sugaring is over the kitchen paper is hanging. Guess the humidity was a bit too high. So new wallpaper. Of course the paint doesn't match, so new paint, new pots. The total cost of three gallons of syrup is something like \$400. Remember the sap was free.

By now you are a "sugar maker," it's in your blood, you are addicted to making maple syrup. Now that the kitchen is redecorated, sugaring again there is out.

You search all summer for a few more trees, a few more buckets and a backyard sugar rig. Can't boil sap outside in the rain, so up goes the sugarhouse. You need storage in the sugarhouse, a supply of wood, a gathering tank of some kind for the pickup and a whole lot of little incidentals. Syrup hydrometer, straining tank of some sort for syrup and the list goes on. Money, money, all the time money.

Spring comes again and you are ready to go. All tapped and waiting, then whoosh, the first one is a big one. Again you are flooded, but not discouraged. Of course the operation is again an evening and weekend enterprise. Good runs never happen on weekends. It's some kind of law, I guess. So you try to keep up, hot, sticky and bleary eyed by the time the run is over. You feel like you have been run over. But now you are a real sugar maker.

You got stuck with your pickup up the backroad, got pulled out for

only \$25, but the transmission now sounds kind of funny. Your back yard is all muddy and rutted up, take you all summer to get it grassed over again.

The wife is threatening divorce, the kids won't own up to you as their father, all mud covered and sooty, and the neighbors are ready to sue you for the smoke and noise.

When sugaring is all over, you're out-of-pocket costs are close to \$75 a gallon, some improvement, eh? Nothing for labor, of course.

Remember all this money, sweat and mud was because the sap was free!

Glad you had time to read mine and believe me, syrup is cheap! Thanks.

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ONTARIO MEMBERS HONORED

At the recently held Annual Meeting, two of OMSPA's members were honored by the organization.

Angus Wilson of Cumberland was presented with the Ontario Maple Syrup Award. Angus was a Director of OMSPA for many years and was President of OMSPA from 1980—1982. His many years of dedication and involvement in the maple industry and the Association were cited as significant contributions to the welfare of 'Maple' in Ontario.

David Gardiner of Eganville was recognized for his involvement in Renfrew Local and on the Board of Directors of OMSPA for the past several years. His quiet enthusiasm and hard work was recalled during the presentation.

Both of these members have contributed much to the welfare of the organization, thus OMSPA is pleased to make these awards available to them.

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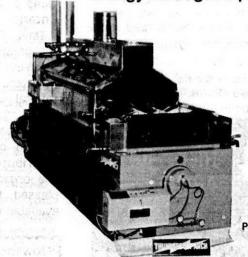
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OMSPA ANNUAL MEETING

The 25th Annual Meeting of OMSPA was held in Farrell Hall, Perth, Ontario on October 4 and 5, 1991. Among the many highlights were historical recollections by Clarence Coons and Walter Humphreys. Tony Hopkins discussed the Maple Decline project. Mike Andrassy told us how to get the most out of a meeting. Reverend Bob Hill gave us a humorous look at life as the banquet speaker. The assistance of Chuck Bokor to help us discuss the Strategic Planning process that OMSPA is currently undergoing will be of much help to the committee. The Maple Auction contributed greatly to the coffers of the Association with the highlight being a quilt donated by Waterloo local. A draw was held on the Silver Anniversay quilt and was won by Barbara Crain, McDonald's Corners. Angus Wilson, Cumberland was presented with the Ontario Maple Syrup Award for 1991. The Maple Syrup contest was won by Doug and Wenda Wheeler of Snow Road. After a delicious pancake breakfast on Saturday morning, tours were hosted by Earl and Glen Stead, Steep Rock Resources mine and Jamie and Sherry Fortune.

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MARKETING TIPS

By David Kopp

Never underestimate the importance of what people think about your business, yes their perception. If they think well, it can give you a prosperous edge, even though you may be located in an out of the way place or sometimes, even if your pricing is higher than some.

People on the outside often form their opinion based on their first dealing with your outfit. It may be by mail order, face to face or by telephone. If you, as owner and operator are able to make every connection with the dealing public, this can work to your advantage. However, as you expand and must depend on your employees to handle more dealings be aware of their attitude toward the public, especially when you are not around. Each person is so important in a small enterprise. Your people at this point give the business a good or bad reputation.

Yes, reputation may be more important than reality. To those on the outside, "Perception is all there is."

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FUNGUS THAT SLAUGHTERS GYPSY MOTHCATERPILLARS PROVES ITS WORTH

by Ann Hajek

A fungus that slaughters gypsy moth caterpillars proved its worth in the first large-scale field tests this spring by destroying up to 74 percent of the targeted caterpillars.

Furthermore, the fungus successfully caused infections at 27 of the 34 experimental fungal release sites.

"Even though the fungus thrives in wet conditions, the fact that the fungus was so active in this year's dry weather and relatively easy to introduce to new areas is very promising," said Ann E. Hajek, an insect pathologist at the Boyce Thompson Institute for Plant research, a private, independent research organization based at Cornell University.

Last year, in a smaller study under more normal, wetter weather conditions, up to 95 percent of the targeted gypsy moth caterpillars were killed by the fungus.

Gypsy moths continue to be a major problem. In 1990, about 7.4 million acres were defoliated in the Northeast, and experts predict that gypsy moths may continue to increase in 1992 and spread to new areas.

The success of this year's experiments fortifies earlier hopes that the fungus could be used as a lethal biological weapon against the leaf-devouring gypsy moth, perhaps by the end of the decade, said Hajek.

The fungus is harmless to animals; it attacks only gypsy moths and a few closely related caterpillars. Yet, relocating the fungus and its habitat soil from one region to another requires detailed study to ensure that other hidden plant pathogens are not unintentionally spread, Hajek said. Before commercial availability, the fungus will also have to be grown in mass production.

Furthermore, Hajek and collaborator Joe Elkinton of the University of Massachusetts have found that the fungus is spreading fairly rapidly on its own — though not as quickly as the gypsy moth — and will devastate even relatively low-level gypsy moth caterpillar populations, unlike the commonly occurring nucleopolyhedrosis virus (LdMNPV) which only strikes when gypsy moth populations become very dense.

"The fungus is not a silver bullet. We do believe, however, that it may be an extremely important mortality factor that is easy to manipulate and introduce into new sites," Hajek predicted.

When gypsy moth caterpillar populations were ravaged by a fungus in several northeastern states in 1989, Hajek and Elkinton set out to study the fungal pathogen. With colleagues at Cornell, University of Toronto, and the U.S. Department of Agriculture, they identified it as the Japanese fungus Entomophaga maimaiga, which had been brought into the United States in 1909 by Harvard scientists who released it in 1910 and 1911 near Boston. E. maimaiga is known to be a deadly natural enemy of gypsy moths in Japan, Korea and northern China but had not been noticed here until two years ago.

In 1989, Hajek and Elkinton found the fungus in almost all the samples they collected from Massachusetts, Connecticut, New Hampshire, eastern New York, southern Vermont, northeastern Pennsylvania and New Jersey, and in none of the samples from western Pennsylvania, Maryland or Virginia.

By 1990, however, the fungus was found in 10 states and new areas, including central Pennsylvania, northeastern Maryland, northern Delaware, southwestern Maine and central New York. The fungus was still not found in West Virginia or Virginia.

In 1991, Hajek and her colleagues deposited about 7.5

pounds of soil from Massachusetts known to have the fungus around the base of targeted trees infested with gypsy moths at 34 sites scattered throughout northern and western Virginia, northeastern West Virginia, Maryland and western Pennsylvania where the fungus had not been detected.

Forest rangers and research crews monitored the 34 sites as well as 15 control sites weekly during June, looking to see if the fungus established itself and was killing caterpillars. So far, the fungus has been found as far as 328 yards from the introduced site.

"These findings suggest that the fungus can spread on its own," said Hajek. "We now need to study how fast it spreads."



Findings from the 1990 research have been published in the first issue of *Biological Control: Theory and Applications*.

The fungus kills gypsy moth caterpillars by beginning its attack in late April or early June when eggs hatch, Hajek said. By producing microscopic spores that invade the skin of the caterpillars, the fungus then multiplies quickly, devouring the insect from the inside. Once infected by the fungus, the caterpillar dies within a week or so, Hajek said, and produces spores to infect more caterpillars. The fungus also produces another type of spore that remains dormant all winter and develops in the spring.

The fungus has kept gypsy moth caterpillar populations constant when increases and subsequent defoliation had been expected, and in one plot caused the population to decrease. Hajek pointed out that researchers have not yet tried to boost fungal densities to determine if there is a threshold that would cause a gypsy moth crash.

This fall, the BTI insect pathologist and her colleagues will assess

the egg-mass density on trees where the fungus has been introduced and compare them to controls. Next year, they plan to monitor this year's sites again to determine whether the fungus is thriving and how far it has spread. Hajek said she also plans to study in greater detail the overwintering spore stage of the fungus.

The gypsy moth, first introduced in the United States near Boston in 1869, has spread into southern Canada, throughout New England, New York, Pennsylvania, Michigan and more recently into Virginia, West Virginia, Maryland, North Carolina and Ohio. In its largest outbreak in 1981, about 13.8 million acres throughout the Northeast were defoliated — an area about the size of Connecticut, Massachusetts and Vermont combined.

The populations then crashed to relatively low densities until 1989, when they began to climb again.

Hajek's research is supported by the U.S. Forest Service and the USDA.

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ARCHIE'S SUGARBUSH

Dear Mr. Editor:

My wife, she sez, "Honest Archie," sometimes she calls me Truthful Archie, "why don't you tell that nice Mr. Editor man about the year of the big snow?" Well, it wuz like this:

I've told you about the year of the blue snow when it wuz so deep and cold we had to use steam locomotives to thaw paths to gather the sap. Well, three years after the blue snow things wuz worse yet. About the first of February we got a real bad one. It snowed a little over 9 feet in one weekend. Then a week later we got another 3 feet over night. It was so deep and heavy we couldn't begin to plow it. To get to the barn to do chores we just tunneled through it. Worst part was, it was so cold it didn't melt any the whole month.

We thought about using steam locomotives to melt paths like we did the year of the blue snow but couldn't. It was so cold the engineer on the Put-Put, De-Rail, & Western Railroad had to slow his train down to 5 miles an hour because steel gets brittle in cold weather and he was afraid the tracks would break. Going that slow the boiler froze solid while coming down the long grade of the mountain and never made it into town.

We decided we could work on top of the snow with snowshoes so we started tapping. We hung the buckets as low as we could — tubing hadn't been invented yet — because we knew the snow was

deep. Guess we didn't realize how deep 'till the snow melted some in a warm spell and the help complained they couldn't reach the buckets. We soon fixed that.

With a man in the bucket on our loader we could lift him up where he could dump the buckets into a hopper that was connected to the gathering tank behind the loader with a 3" downspout. This worked fine until the tractor ran over a stump and the jolt broke the pipe where it went past the driver. Covered him with sap. It was so cold we thought he'd freeze to death but after we got the ice chipped off him he was in pretty good shape.

About that time we noticed the guy in the bucket was missing. We soon found him. Seems when the tractor hit the stump, the jolt flipped him out of the bucket. He landed head down in a snow bank, tried to dig his way out but hit frozen ground 'cause he didn't know which way was up. We got things straightened out about quitting time but didn't get the sap gathered.

The next day a guy from O.S.H.A. heard about it and came out and told us what we had to do. Weld stakes on each corner of the bucket and make a board fence 6 feet high so a man can't fall out. We asked him how a man was supposed to dump buckets with a fence in the way. He said that wasn't O.S.H.A.'s problem.

He also said we'd have to put a cab on the tractor. We told him it would take 2 weeks to get a cab and the season could be all over. He



said that wasn't his problem, either. We ended up handing the bucket on a nail in the tree where we could reach it and stuck a piece of garden hose on the spile to bring the sap down into the bucket.

Now this is all the truth. If I'd wanted to exaggerate, I would have said it snowed 10 feet the first weekend.

Your truthful friend, Archie



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COMING EVENTS

OHIO

The 63rd Geauga County Maple Festival will be held **April 23, 24, 25, & 26** in Chardon, Ohio. The long weekend includes the crowning of the Queen and her court, a sap run, beard shaving with an ax, antiques show, amusements and the highlight of the event, the Maple products judging. For more information contact the Geauga County Maple Festival, P.O. Box 124, Chardon, OH 44024.

NEW YORK

Andover Maple Festival, Andover — April 4 and 5, 1992

Marathon Maple Festival, Marathon — April 4 and 5, 1992

Scoharie County Maple Festival, Jefferson — May 2, 1992

American Maple Museum Opening, Festival, State Queen Contest and Hall of Fame Induction at Croghan — May 9, 1992

N.Y. State Maple Festival, Albany — Week of **April 24, 1992**. Information — John Adams 607-656-4058.

New York Maple Tour, Otsego County Fair Grounds, Morris, — July 20 and 21, 1992. Information next issue.

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IN MEMORIUM

ROBERT B. HUXTABLE, 94, founder of his own sugar company has passed away. His career started in 1907 when he first made maple syrup in an iron kettle on the family farm near Lansing, Michigan.

After completing a degree in Horticulture at Michigan Agriculture College, now Michigan State University, Huxtable clerked on banana boats from the United States to Central America.

After a brief stint in the field of paper sales in 1934, Huxtable founded the Sugar Bush Supplies Company, a mail order supply house which offered a full line of maple needs. He also worked with the MSU Forestry Department and the United States Department of Agriculture researchers to help formulate attractive color packaging for his products.

Huxtable worked on designs for a number of products. He sold the company in 1976.

Huxtable was also a collector of classic cars. He owned a 1906 Reo, one of the first automobiles manufactured in Lansing and one of the rarest cars made by the company. He acquired the car in the early 1950s in almost mint condition, and restored it to its original condition.

He drove the car for the next 15 years, and in 1982, sold it to the R.E. Olds Museum. it
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