

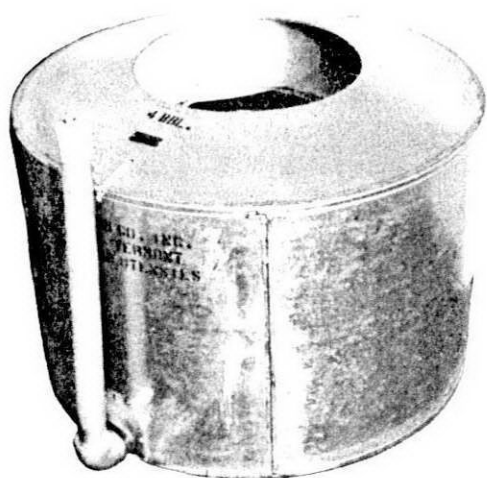
National Maple Syrup

• DIGEST •

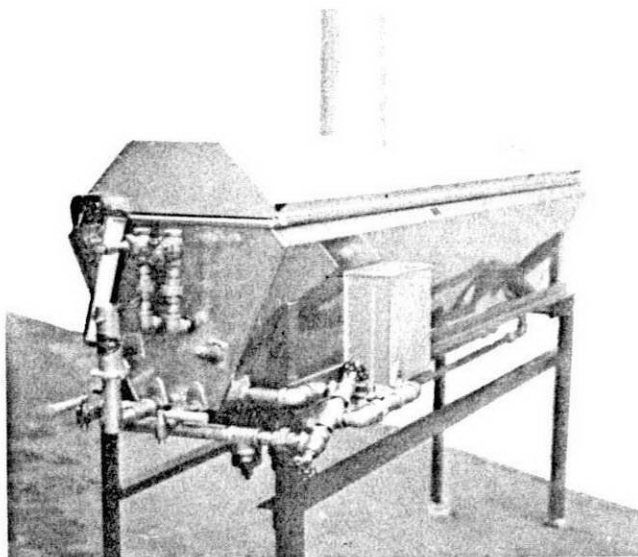
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VENTED - UNVENTED
MAPLE TOURS



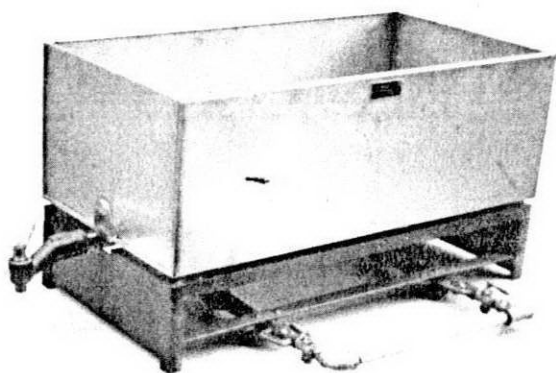
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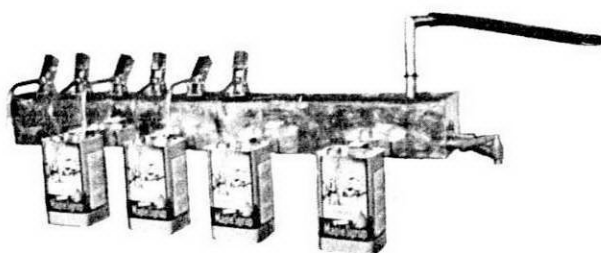
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COVER PICTURE

This beautiful sugar bush, owned by Norval Blair, Franklin Center, Quebec, was visited by the New York Maple Tour this summer. An exception to the rule in Canada, it contains mostly large diameter trees and has almost completely overcome the tremendous damage caused by an ice storm about eight years ago.

NOTICE BACK ISSUES AVAILABLE

The following issues of the
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Vol. 1, No. 1, 2, 3, 4
Vol. 2, No. 1, 2, 3
Vol. 3, No. 1, 2, 3, 4
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Editorial

About 1:30 last night, or rather this morning, I woke up with the horrible realization that I had not only neglected to write an editorial for this issue, but didn't have the faintest idea of what to write about. Since I have had this feeling many times in the past, experience has taught me that the one thing that will alleviate it at this time of day (or night, I should say) is a big bowl of cereal.

So I slip out of bed, put on my bathrobe and sneak down stairs to the kitchen where I am met by Alex. Now in case you aren't acquainted with him, Alex is our German shepherd who was given to us by our kids when he was a little puppy and we made the mistake of feeding him three times a day plus a few snacks between meals. He now consists of 125 pounds of a big loveable boob that wouldn't dare pick a fight with a cocker spaniel. Alex always sleeps in the kitchen (he's a watch dog) except during thunder storms when he makes his way upstairs to our



ALEX

bedroom to protect us.

Well, anyway, after I've been greeted with a couple of swipes across the face with a cold, wet tongue, I go to the cupboard and pick out a brand new box of Grape Nuts Flakes, a brand I know Alex is especially fond of. Usually, Mary Lou has already opened the box, but this one is all sealed up just as it came from the store. No problem, it says "Lift tab to open".

Don't kid yourself! There's enough glue under that tab to seal up fourteen boxes. It refuses to budge. So I use a butcher knife and end up with three tabs instead of one, a cut finger and the waxed liner is slightly mutilated.

Okay, so I'm sitting here at the table, munching on the cereal with Alex breathing down my neck waiting for his handout. I unconsciously read the printing on the box (you can get a genuine chantilly tablecloth for only 50¢ and 2 box tops) and I notice the words: "Net contents 12 oz." This makes me think of the new fair packaging laws the Bureau of Standards have come up with. I remember when it took about four bowls of cereal before you could even find the contents. And they don't allow any misleading words either, like: "Contains a Big 12Oz." Big ounces don't weigh any more than little ounces. All the wording

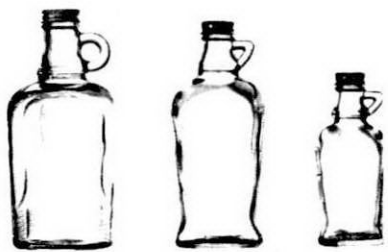
has to be just about so on every container now so the housewife won't be confused, but just let a husband try to open a box of cereal that says "Lift Tab - -" and he's in trouble.

All these labeling requirements go for syrup containers too. In case you have your own labels printed, maybe you better refer to the July issue of the Digest for that information.

Another thought that just came to me before I sign off and go back to bed is this: The cans we're using now, that everyone says are so antiquated aren't so bad after all. At least I can open them. You simply unscrew the cap, jab a hole in the seal with a screwdriver, and pop it out. If you do it just right and don't tip the can over, you're in business. Of course, it doesn't tell on the can how to open it, but then, it doesn't tell on the box what to do when the tab doesn't lift, either.

LIFE'S A FUNNY PROPOSITION AFTER ALL

Man comes into this world without his consent and leaves it against his will. During his stay on earth his time is spent in one continuous round of misunderstandings and disappointments. In his infancy he is an angel; in his boyhood he is a devil; in his manhood he is everything from a lizard up. In his duties he is a fool; if he raises a family he is a chump; if he raises a check he is a thief; if he remains single he is selfish; if he is a poor man, he is a bad manager and has not sense; if he is rich he is dishonest and fraudulent; if he is in politics, he is an undesirable citizen; if he goes to church he is a hypocrite; if he stays away he is a sinner; if he donates to foreign missions he does it for show; if he doesn't he is a tightwad. When he first comes into the world everybody wants to kiss him; before he goes out they all want to kick him. If he dies young there was a great future before him; if he lives to a ripe old age he is in the way, only living to save funeral expenses.



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Connor Firm Sponsors Study

From the Ironwood, Michigan,
DAILY GLOBE

Connor Forest Industries of Michigan and Wisconsin has awarded a \$6,900 research grant to Michigan Technological University to study the feasibility of fertilizing sugar maple trees.

The concept is similar to fertilization techniques employed for farm crops, but on a more massive and complicated scale.

In announcing the grant, company President Gordon Connor, Sr. expressed his hope that the MTU research would result in practical techniques for fertilizing trees of high potential quality.

"Connor Forest Industries is growing trees on approximately

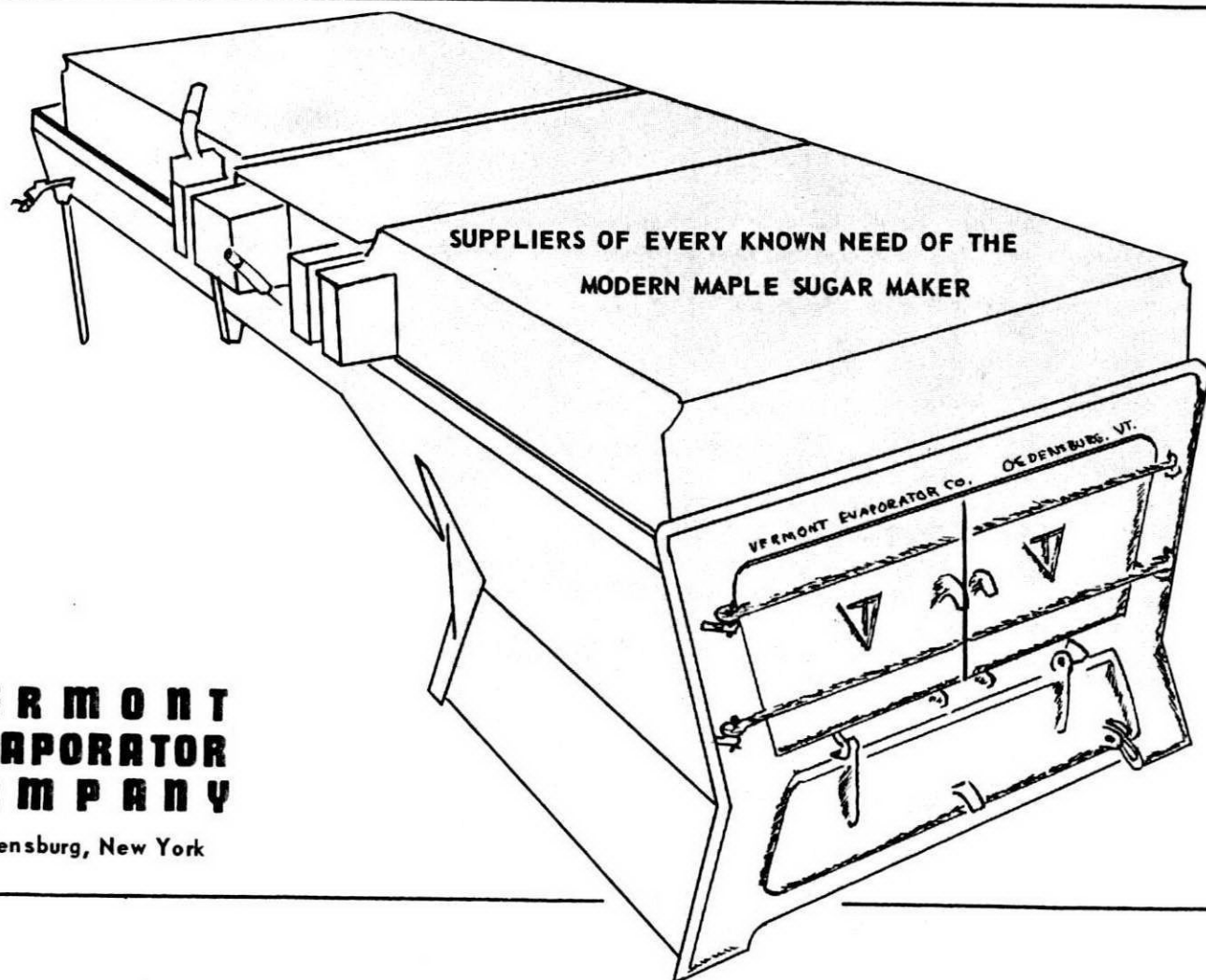
200,000 acres of forest land in the Upper Peninsula of Michigan and Wisconsin," stated Connor. "Even a 10 per cent increase in growth on this land is equivalent to the yield from 20,000 additional acres," he added. "Valuewise, it may be several times as great, due in part to the fact that this additional volume of available timber would be adjacent to our operating mills and served by our well-developed road system".

The project director is Dr. Eric Bourdo, director of Michigan Tech's Ford Forestry Center near L'Anse. The field studies are being conducted by Dr. Stephen Shetron, research

forester at the center, with the assistance of Ronald Henninger, graduate student in forestry.

The study involves two approaches. Fertilized and unfertilized strips on 40 acre tracts have been established on Connor holdings near L'Anse, Newberry, and Wakefield, Mich., and near Laona, Wis., to determine the differential response to fertilization of a wide range of soils. The second approach involves comparing paired treated and untreated trees by foliar analysis and other measurements to determine the best fertilizer mixtures.

Encouraging the growth of selected, high quality trees should increase the supply of the high value logs which always are in demand. Connor Forest Industries is among the first forest enterprises to promote fertilization practices in the forest similar to those which have been so successful in agriculture.



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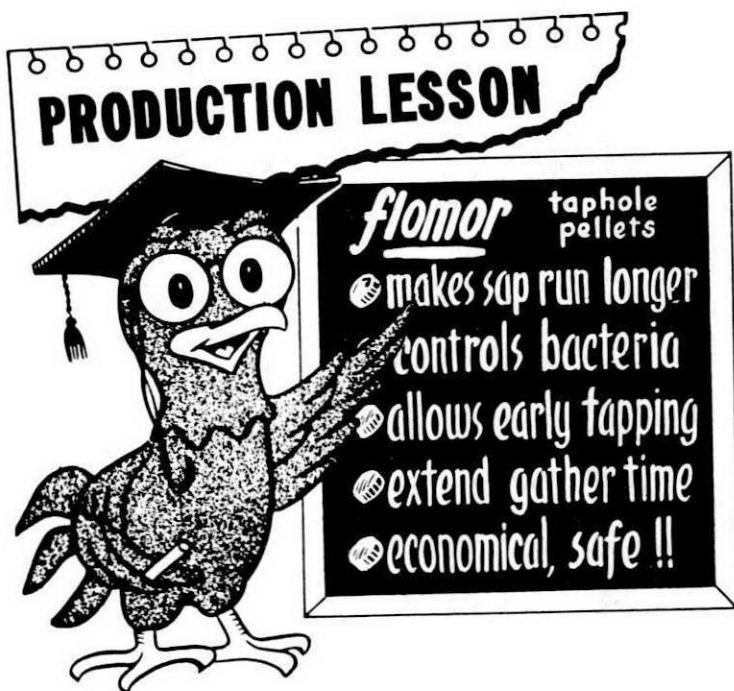
By Ray I. Pestle
Windham County Extension Agent



Vermont Maplerama gathers at Harlow's Sugar House.

Nearly 200 maple sugarmakers, their wives and associates attended the 1968 Vermont Maplerama on Friday and Saturday, visiting local sugarhouses and retail outlets from Putney to Jacksonville. The group came to see the different methods and packages used to sell and promote maple product sales as the theme of the event - - - More Dollars from Maple - - - proclaimed. From Ontario and Quebec, Canada to Pennsylvania and Maine to Ohio, the sugarmakers came, with the Dennis Riordan family from Eastate, England traveling the farthest. They were visiting their son working on a farm in Pawlet, Vermont.

Action started with registration and a tour of the Donald Harlow sugarhouse and salesroom. The host



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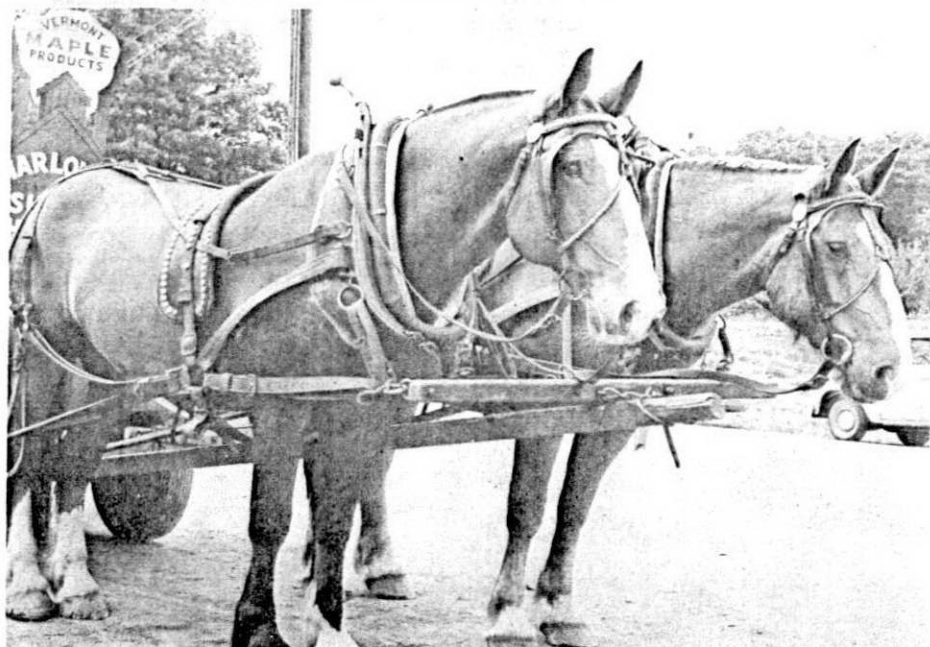
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A page from the day before yesterday. Roger Fellows matched team gave wagon rides to the youngsters.

told the audience that roadside sugarcane locations were a key factor in maple promotion but producers should advertise, exhibit at fairs and look for new ways to use and sell maple products. He cited the figure of 5% of gross income for advertising budget. While the oldsters

looked about and visited the youngsters were given free wagon rides

by Roger Fellows with his fine matched team.

Led by County Forester Gil Cameron the cavalcade of cars arrived right on schedule at Dwight Miller, Jr.'s apple storage and sales room in Dummerston. The owner described his fruit farm and maple operation mentioning that most sales were to local customers and that maple was one of several products retailed at the farm. It is necessary to buy syrup to fill orders most years. In 1876, maple products from Maple Ridge Fruit Farm (Millers) took prizes at the Philadelphia Exposition. Many of the group were surprised to see the fresh local peaches on sale.

Without a hitch, the group of nearly 50 cars moved on to Merton & Donald Hazelton's where they parked a bit hesitantly in an old strawberry bed. Merton Hazelton told them that he did no direct advertising but relied on personal contacts and visitors



Vermont Maple Museum operated by Elroy Coffin.

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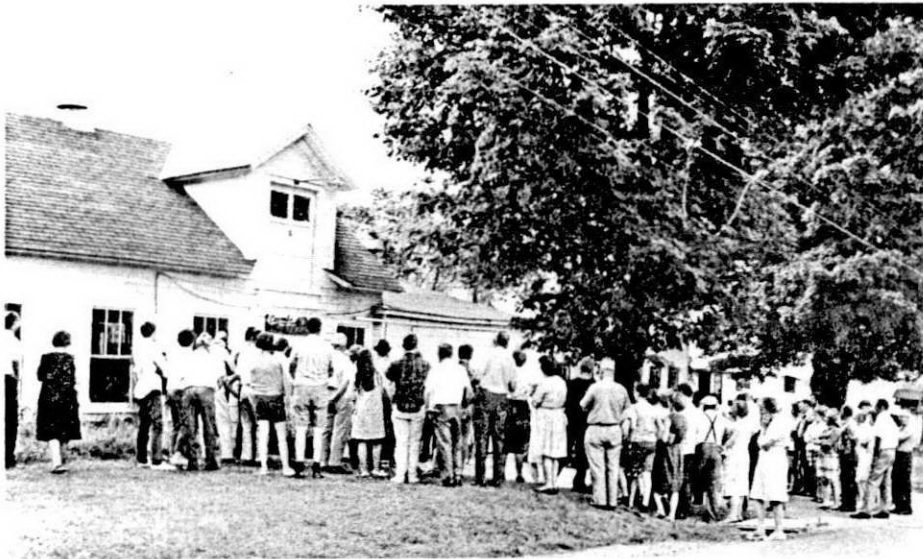
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The Vermont Maplerama visits the home of Coomb's Maple Products.

who stopped at his roadside sugarhouse to market his products. He retails and wholesales. The tourists viewed the neat sugarhouse which is visited by hundreds of people yearly and then motored to Mountain Mowings Farm over the finely graded road.

Frank Hickin described his combination sugarhouse, greenhouse and retail market which started about 20 years ago. He uses maple syrup to flavor pickles and other varied products put up by his wife Mary and family. The raising and selling of fresh vegetables, flowers and plants plus fruits and maple products provided the group with an unusual farm operation. Far from the main travelled roads, many found it hard to believe that Frank retailed most of the farm products. A reputation for top-quality built up by years of promotion and serving the public was his answer.

Ahead of schedule the tour moved back to Putney and Windham College, the headquarters for the evening program. Following a banquet served to 176 people, the group went to the Field House to view the many varied exhibits relating to maple production and marketing. Stuart Thurber, Jr. of West Brattleboro was in charge of them. The Vermont Department of Agriculture, Northeastern Forest Experiment Station of Burlington, Rutland County Maple Pro-

ducers Association, Richard D. Smith of Greenfield, Mass., Vermont Maple Industry Council, Vermont Extension Service, Vermont Maple Sugar Makers Association, R.N. Johnson, G.H. Grimm Company, Robert Lamb, Leader Equipment Company, and Coombs Maple Products were among the large group of exhibitors.

Robert Coombs, Jr., Chairman of the 1968 Maplerama opened the formal program by introducing the committee members and giving their assignments. Donald Harlow, vice chairman, served with the chairman

on meals and lodging. Stuart Thurber, Jr. and Elroy Coffin - exhibits; Dwight Miller, Jr. and Richard Stickney - brochure and program; Hugh Evans and Merton Hazelton - tours and traffic; George Ranney, Fred Parker and Ray Pestle - promotion and publicity; Gilbert Cameron - maps and history; Mrs. Rodney Clark and Mrs. Arthur Tenney - secretaries.

Rockwood Berry, Executive Director of the New York - New England Apple Institute, guest speaker of the evening, discussed Promotion and Advertising of Agricultural Products. He mentioned that advertising and promotion is consumer education and no single producer can do it alone. Farm groups must unite to do the job in stores and at other retail points. Producers, like consumers, must be informed of any program. No amount of effort will sell a poor product. To create consumer acceptance, and demand ideas of others in the selling business must be used, he said. This takes money, an industry tax with no free riders backing a single organization. Then he introduced Gus Bruggeman who handles advertising for the Institute.

He described factors favoring maple sales and others going against them. Market research must be done first to learn what people want, where



An abundance of roadside trees near the Coomb's plant at South Whitingham, Vermont.

and how they want it, and other points before launching any program. Many consumers don't know that maple products exist or how to use them, he said. A strong advertising and promotion program for all kinds of products is the end product to be undertaken backed 100 percent by a strong producer group, he concluded.

After a good round of applause, Dr. C.O. Willits, who has developed the reverse-osmosis process for removing water from sap, spoke briefly. The process, which costs less than one cent a gallon, is in its infancy but will have great impact on the industry in the future.

Saturday morning the group drove to the Vermont Maple Museum where proprietor Elroy Coffin and his staff were waiting. There, the group were shown both the production and marketing facilities and asked many questions during their leisurely visit.

The next stop was Coomb's Beaver Brook Sugarhouse where the steam was moving out the ventilator when the group drove in. Robert Coombs, Jr. and his assistants showed folks how the sap was handled from start to finish in the largest central evaporating plant in southern Vermont. As a result of the tour action many sightseers stopped to see the cause of activity.

At noon a broiler barbecue was served by the Jacksonville Couples Club at the Municipal Center. The meal was a bountiful one and relished by all.

As the final stop of the Maplerama the group visited the home of Coombs Maple Products in South Whitingham where Mrs. Mary Coombs the President had her staff at work making maple candy and packing it. All enjoyed seeing the process and where the well-known maple candy was made that is sold on many roadside stands and in stores. Each guest had a chance to ask questions and sample the product before leaving for home. Many remarked how smoothly the event ran which was due to the fine cooperation of the committee.

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Plastic Tubing



Figure 1. — Tubing installations. Members of a paired replicate were kept as alike as possible in line sag, tubing length, and other factors.

A Comparison of Suspended Vented and Unvented Installations

By Barton M. Blum
Northeastern Forest Experiment
Station, Upper Darby, Pa.

THE QUESTION OF VENTING

Plastic tubing for sap collection has been acclaimed as a major factor in modernizing the 300-year-old maple sap industry. Tubing reduces the labor costs involved in sap collection, keeps the sap cleaner, reduces loss due to spillage, and is relatively easy to install. Yet in spite of these advantages, tubing is used by only 9 percent of the maple sap producers.

One of the primary reasons why tubing does not enjoy more widespread use among maple producers today is that the initial installations did not operate efficiently. When tubing first appeared on the scene, maple sap was thought to issue from

the tree at considerable pressure, and many of the first installations were patterned after high-pressure water systems. These installations were unvented (closed to air) in the anticipation that tree pressure would be sufficient to force sap through the lines.

It was soon found that the anticipated sap pressure was not adequate, and that in reality sap issues from the maple tree over a range of pressures. Some tubing advocates then designed their installations for gravity flow, and vented the installation at each spout. Since the completely vented installation allowed sap to flow under a variety of ad-

verse field conditions, the vent system was adopted by many producers.

However, a significant number of producers were able to make unvented installations work efficiently and continued to use them. This indicated that some of the trouble with these initial unvented installations must have stemmed from layout and design problems.

But the two methods of installation were never formally compared on the basis of sap yield until F.M. Laing, J.W. Marvin, and W.J. Chamberlain conducted a small-scale comparison of the two, using the sap yield from 40 trees located in northern Vermont. The results of this

study indicated that the unvented system outyielded the vented system by about 55 percent.

The subject of venting nevertheless remained somewhat controversial, and most tubing users continued to vent. Therefore, researchers at the U.S. Forest Service's sugar maple project in Burlington, Vt., designed a large-scale comparison of vented and unvented tubing installations for the 1966 sap season. The objective of this study was to compare sap yields from the two methods of tubing installation and to investigate the factors involved in any observed differences in yield.

THE STUDY

To provide a statistically sound comparison, we suspended tubing in paired vented and unvented installations. The installations were identical in the number of tapholes, po-

sition of spouts and drops in relation to exposure, degree of slope, total tubing length, the amount of sag between trees, and other factors (fig. 1). All tubing was 5/16-inch diameter, and all fittings were identical for each installation in the pair. The only difference between members of a pair was the treatment — one was vented, and the other was unvented (fig. 2).

For further reduction of experimental error, tapholes were paired 6 inches apart and bored to a controlled depth of 2½ inches, excluding bark. Since there is little lateral translocation of sap, paired tapholes yield independently of one another. Tapholes were placed 4½ feet from the ground except where they were adjusted to maintain adequate slope. Paraformaldehyde pellets were used in each taphole. Vented and unvented installations were assigned to the tapholes at random.

Differences in yield between vented and unvented tapholes were tested for significance with a "t" test for paired replicates.

To provide a comparison large enough to duplicate commercial conditions, we used 15 replicates. Each replicate included 18 to 20 pairs of tapholes, making a total of 580 in-

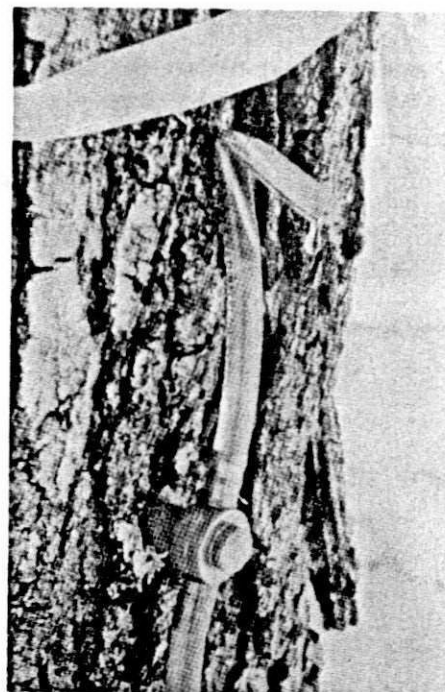


Figure 3.—Sap leaking from a vent. These leaks are caused by obstructions in the line that back up sap. They sometimes form large icicles during cold weather.

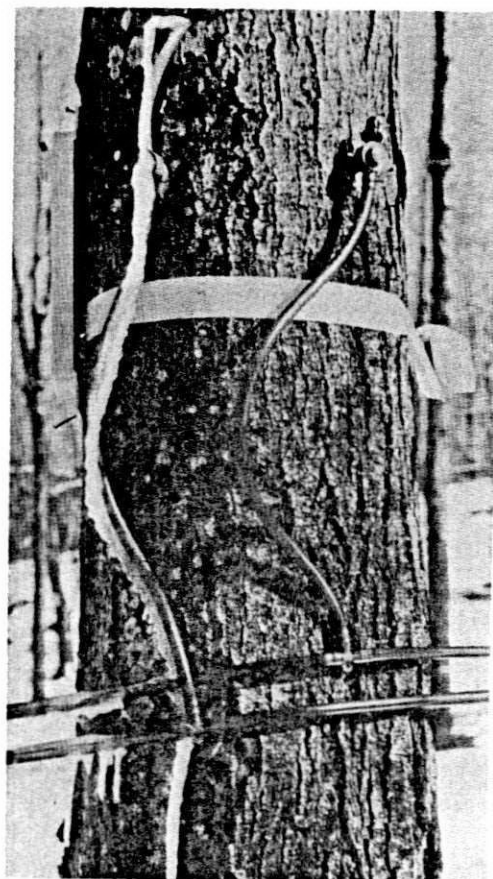


Figure 2. — A taphole pair, typical of those in the paired replicates. Note icicle formed by sap leaking from the vented member of the pair (left).

dividual tapholes in the study. The 18 to 20 individual tapholes receiving the same treatment in a replicate were connected into one tubing system.

Table 1.—Season yields and yield differences for unvented and vented members of the paired replicates, 1966 season

Replicate	Tapholes per member	Yield per taphole		
		Unvented	Vented	Difference
No.	No.	Gallons	Gallons	Gallons
1	19	7.60	6.66	0.94
2	20	13.12	5.42	7.70
3	18	9.89	8.57	1.32
4	19	8.68	6.98	1.70
5	19	9.97	7.42	2.55
6	20	10.57	5.59	4.98
7	20	6.53	5.17	1.36
8	19	7.87	5.49	2.38
9	20	8.91	6.67	2.24
10	20	7.74	4.88	2.86
11	19	8.36	6.99	1.37
12	19	7.23	6.03	1.20
13	19	5.64	5.90	— .26
14	20	10.91	6.25	4.66
15	19	10.94	5.80	5.14
Total	290	133.96	93.82	40.14
Average	—	8.93	6.25	2.68

The length of tubing used for each member in the paired replicates ranged from 237 to 347 feet and averaged 300 feet. The slope of the lines varied from 14 to 21 percent and averaged about 18 percent, although some pairs had nearly level segments. Vertical drop from the first tree tapped to the collection barrel ranged from 17 feet to about 30 feet. No attempt was made to minimize abrupt changes either in the slope or in line direction.

The sugarbush used for the study is densely stocked with about 200 trees per acre; the trees averaged 12 to 14 inches d.b.h. This bush slopes generally northwest and is situated at an altitude of 1,000 feet. It is located in northwestern Vermont in the town of Jericho.

RESULTS AND DISCUSSION



Figure 5. — A drop line distorted by vacuum buildup in the tubing system.

Yield Comparisons

Venting significantly (0.01 level) affected the seasonal yield of sap collected in plastic tubing. From the first week in March to 2 May 1966, the combined yield from the unvented installations on all 15 replicates was 43 percent greater than that from the vented installations (table 1).

Although the unvented system had an average yield for the entire season that was 43 percent greater than that of the vented system, there was considerable variation in the magnitude of this increase from one measurement period to the next. This variation appeared to be related to the volume and rate of flow during the period. In general, fast flows of relatively large volume produced a greater difference in the percent of yield between the two systems. However, yield increases for the unvented installations occurred consistently, even during the extensive period of low-yield, weeping flows between 7 April and 2 May. There was also considerable variation in the size of the yield difference among the 15

paired replicates, a factor that will be discussed in some detail later.

Based on the average yields found in this study, the increase in seasonal yield for an unvented system in a 1,000-taphole operation would be about 2,680 gallons of sap. An increase of this magnitude is economically important, amounting to \$134.00 if the sap is sold for \$.05 per gallon. This additional yield at 2.5 percent sugar content would make 78 more gallons of syrup — worth \$468 at an average of \$6 per gallon — for the same outlay of sap collection labor and equipment. And many sugarbushes would have an average sap sugar content of more than 2.5 percent, further increasing the value of the difference in yield. The somewhat cheaper initial equipment costs for an unvented system will also be important in new installations.

We do not know whether this additional yield reflects a reduction of sap from the vented installations or an increase from the unvented installations. However, some information was gathered on this question

Table 2.—Vent losses from replicates 6 and 11, and the yield increase for the unvented members of these same replicates, 1966 sap season

Replicate	Vent loss per taphole	Yield increase for unvented member per taphole
No.	Gallons	Gallons
6	0.16	4.98
11	.22	1.37

Table 3.—Vacuum at the uphill end of the closed installations, measured during a moderately heavy flow

Replicate	Vacuum	Replicate	Vacuum
No.	mm of mercury	No.	mm of mercury
1	40	8	20
2	450	9	210
3	20	10	210
4	200	11	250
5	140	12	150
6	470	13	0
7	(1)	14	300
		15	400

¹ Vacuum lost during measurement.

during the study.

Loss of Sap from Vents

Producers using vented installations often express concern over sap loss from the open vents (fig. 3). This loss usually occurs when sap is forced out of the vents by an obstruction in the tubing. Obstructions most commonly cited are ice blockages and gas or vapor locks. Vent loss may also occur when too much sap is present in the branch line (this might happen during very heavy flows) or when too many tapholes are put on a line, or when slope is insufficient. Vent loss is particularly noticeable when the weather is very cold, as evidenced by icicles formed where the sap leaves the vent.

Sap loss through the vents was measured for the entire season on the vented members of two paired replicates, numbers 6 and 11. Both were chosen because they had a number of long spans, shallow slopes in some segments, and a number of sharp changes in direction and slope — all thought to be conducive to vent loss under certain conditions. Actual losses recorded were less than 3 percent of the total seasonal yield of the vented members of the two replicates. Compared with the yield differences between the vented and unvented members of the replicates, these sap losses were slight (table 2).

In any given year this vent loss could have been either larger or smaller, depending primarily on temperature conditions conducive to ice obstruction during the season. Close observation during the season indicated that vent losses from the other replicates in the study did not differ greatly from those measured on replicates 6 and 11.

Vacuum Relationships

It was apparent that some factor or factors other than vent loss from the vented installations must be involved in the greater yields obtained from the unvented installations. One factor investigated in this study was the presence of vacuum on the unvented lines and its relation to

yield increases.

Because of the movement of sap through the tubing, some vacuum was expected to develop in the unvented installations. However, shortly after the first flows occurred it was evident that this vacuum was of considerable magnitude and actually caused tubing distortions on some lines (fig. 5). The possibility of a correlation between vacuum and yield was considered, and steps were taken to measure vacuum at the upper end of each vented installation (table 3). Vacuum readings, taken with a standard vacuum gage, were obtained during a moderately heavy flow for all 15 replicates.

The vacuum-forming and holding capacity of each replicate ap-

peared to be a function of slope, the amount of sap in the tubing at the time of measurement, and the vacuum integrity of the fittings, spouts, and tapholes.

The vacuum readings were plotted against the seasonal yield differences found between the unvented and the vented members of each replicate (fig. 7), and a linear regression line was fitted to these data. The resulting correlation coefficient of 0.86 was significant at the 0.01 level. Since actual vacuums measured on the installations would vary for any given flow, the prediction equation is not of great practical value.

Attempts to get vacuum readings during weeping flows were mainly

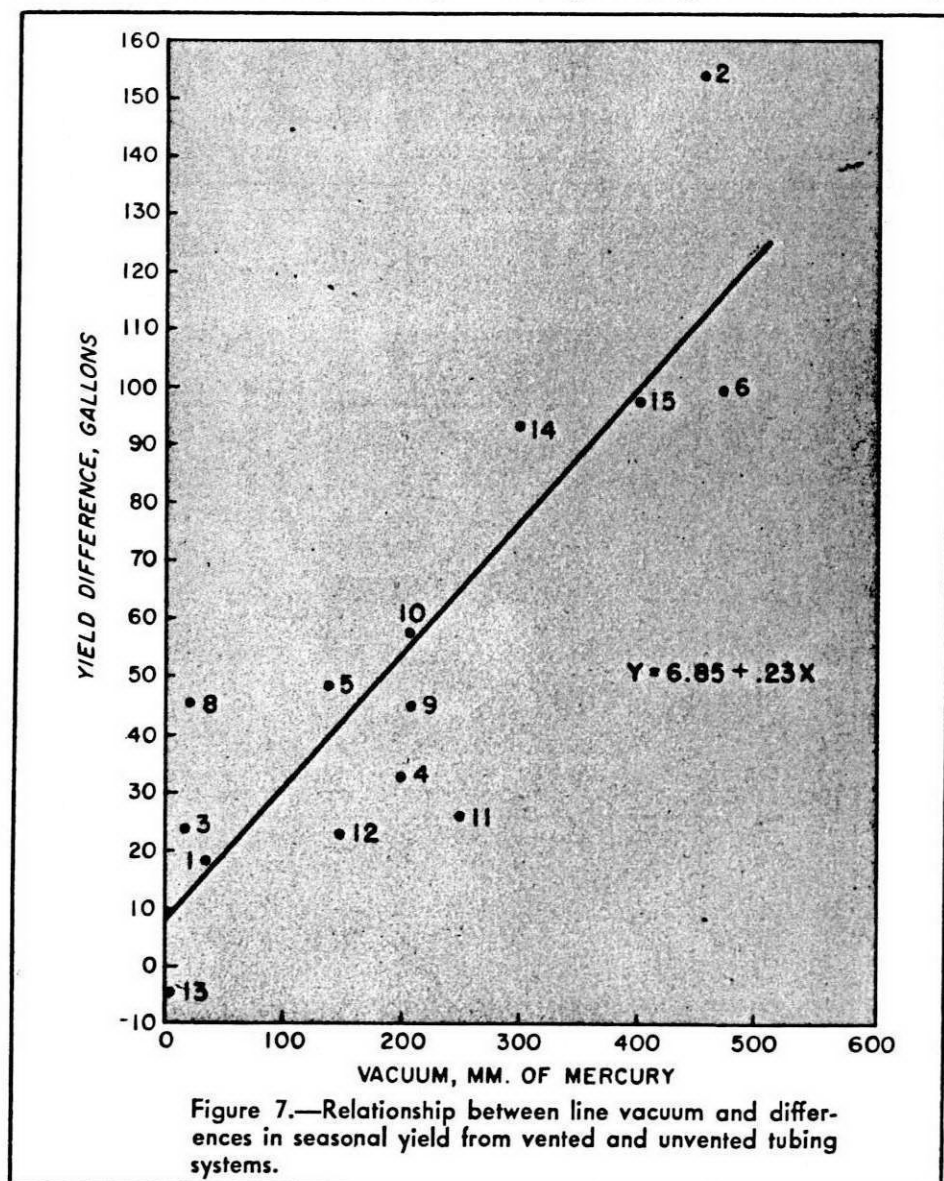


Figure 7.—Relationship between line vacuum and differences in seasonal yield from vented and unvented tubing systems.

unsuccessful. However, on one occasion some relatively low vacuum readings were obtained on about half of the replicates, and these were plotted against corresponding yield differences from this same flow. The resulting regression line was also significant at the 0.01 level and indicates that yield increases are also related to the low vacuum levels associated with very light flows.

In view of the strong relationship between vacuum and increased sap yield, and since direct losses from the vented system were small, it appears that the vacuum present on the unvented system draws additional sap from the tree. The mechanism of this action is unknown. It may be that the vacuum simply prevents a build-up of sap behind the spout, which would restrict flow. Or it may be that the vacuum somehow alters the normal sap translocation processes.

CONCLUSIONS AND RECOMMENDATIONS

This study indicates that higher sap volumes can be obtained from unvented installations. Increases in yield can be expected with certainty

only from installations similar to those used in this study and installed where similar conditions of weather and topography prevail. Nevertheless, it is reasonable to assume that yield increases will be obtained from unvented installations over a range of topographic and weather conditions. This likelihood will be studied at a number of locations in the maple region during the spring of 1967.

Coupled with the possibility of greater yields of sap from unvented tubing installations are other advantages: Sap is less likely to be contaminated with micro-organisms in an unvented installation than it is

in a vented installation; and in the costs of initial installations, costs are somewhat less. Although no particular difficulty was experienced with the suspended installation used in this study, we must caution that a properly working, suspended, unvented system may need tailoring to each different set of field conditions, just as any tubing system does. Since yield increases of the magnitude found in this study are a definite possibility, producers now using vented installations may find it profitable to experiment with sections of unvented tubing under conditions found in their own sugar bushes.

LAMB TUBING SUPPLIES

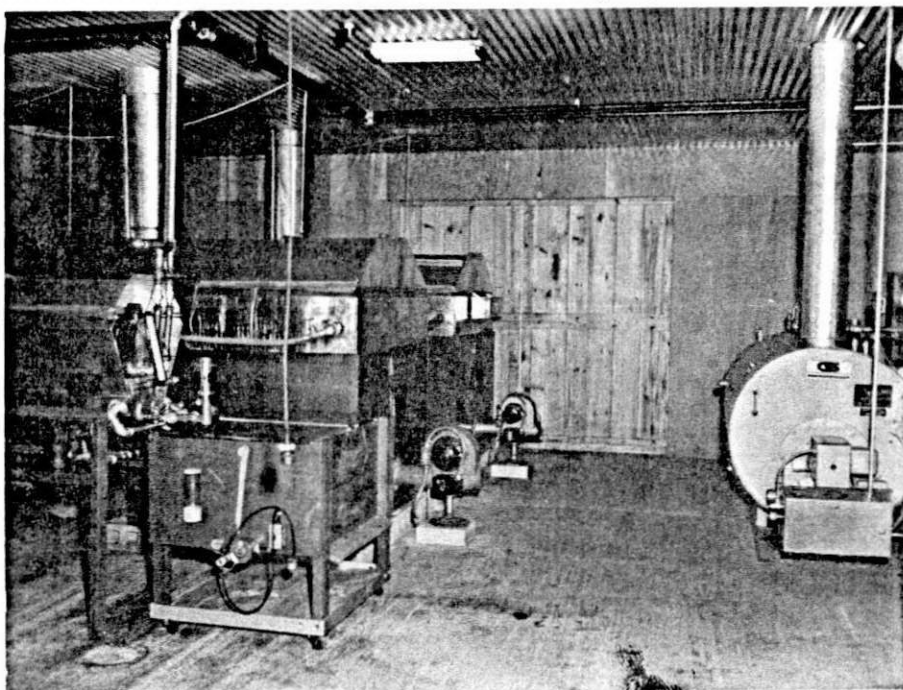
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Several of the participants of last year's New York Maple Tour have sent inquiries to Fred Winch as to what Gerald and Catherine Lyndaker's new sugar house installation was like when completed. Fred sent us the picture shown below taken as it was used this spring.



On the right is his steam boiler for use with the finishing pan at far left. This pan is equipped with automatic drawoff to an insulated filter tank. Cleanliness is accentuated with fiber glass ceiling, lighting is with fluorescent fixtures.

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Ultra violet color was introduced this season, allowing quick thawing and a new bottom seal corrected any seam leaks. We are trying a heavier bag (6 mil) which is more abrasion and rodent resistant plus other improvements for 1969. We welcome your ideas too.



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But best with hookless cast spout.

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COMPLETE UNITS (no spouts, per 100) 69.00

SPOUTS (cast aluminum, per 100) 14.00

COVER-HOLDERS ONLY (per 100) 65.00

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*TOGETHER-PUTTER (floor model) 25.00

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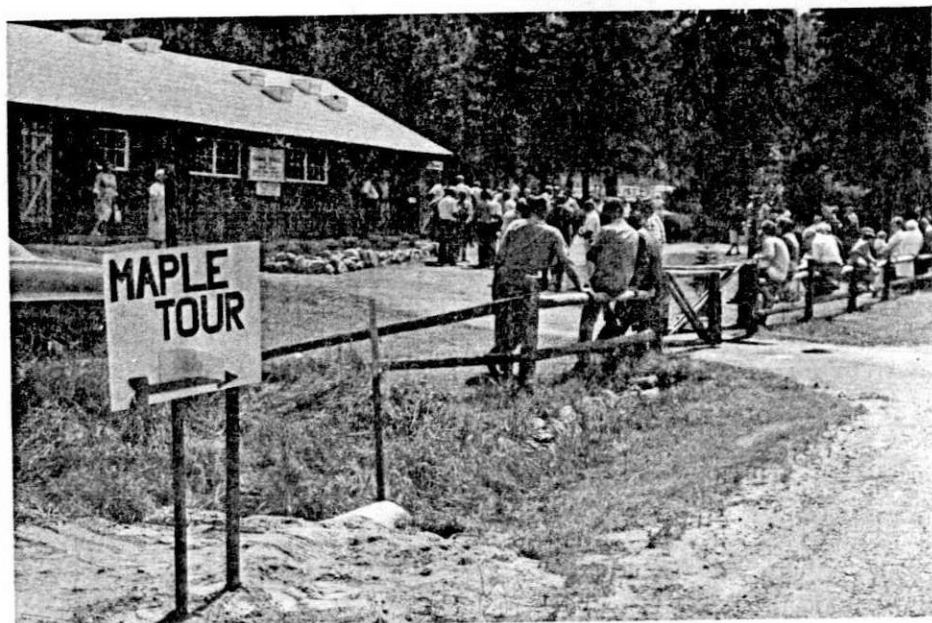
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New York Maple Tour

by William B. Andrews
Cooperative Extension Agent



Signing up for the Tour.



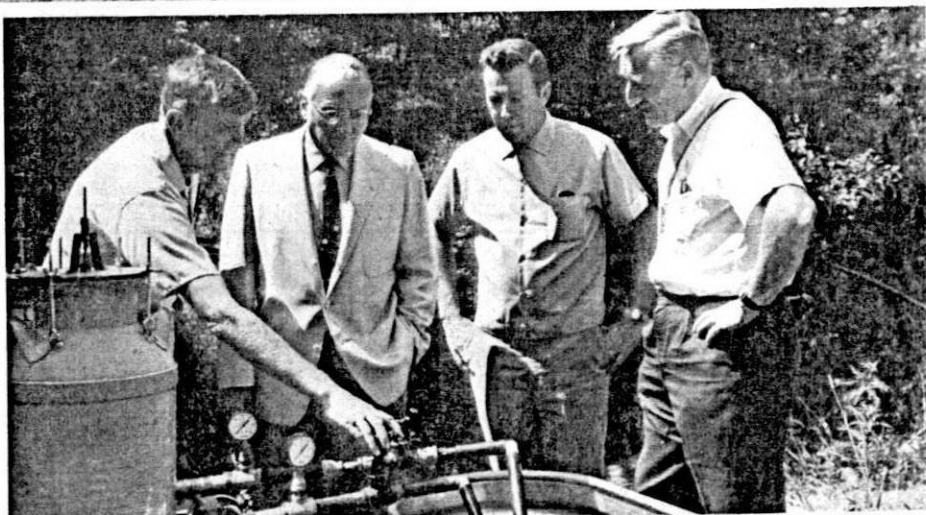
Picturesque setting of the Cornell-Uihlein Research Sugar House near Lake Placid, N.Y.

every ten years, and folks from all parts of New York State, Quebec, Ontario, Pennsylvania, Ohio, and the New England States filled local motels and campsites.

The two day tour started on Thursday, at the Cornell-Uihlein Maple Research Sugar House near Lake Placid.

Henry Uihlein, owner of Heaven Hill Farm, welcomed the group, and expressed his concern for continued maple research. From this interest, a large tract of land was made available by Mr. Uihlein for the project.

Franklin County and Malone played host to more than 200 maple producers and officials connected with the maple industry during the 22nd annual New York State Maple Tour held August 1 and 2. The Tour comes to Franklin County about once



From left: Prof. Robert R. Morrow, Cornell; Henry Uihlein, Heaven Hill Farm, Lake Placid; James Leahy, Franklin Center, Quebec; Prof. A.R.C. Jones, MacDonald College, Quebec.



"Miles of cars" turn the corner around the Art Wood & Son farm in Burke, New York

Dr. R.R. Morrow, Professor Winch, and Lewis Staats, Manager of the Research Project, explained production operations in the experimental bush. He pointed out that the sap from 3000 tap holes is gathered through a network of 15 miles of plastic tubing. These tubes carry the sap from the trees by a new vacuum process that eventually feed into the sugarhouse. Here there are three oil-fired evaporators capable of making 100 gallons of syrup in a 10 hour period.

Following the program the group enjoyed refreshments and the hospitality of Mr. and Mrs. Uihlein on the patio at their Heaven Hill Farm.

The touring group, which included Extension Agents and maple industry leaders throughout the State, traveled to Malone to attend the evening program at the Malone Grange Hall.

Mr. William B. Andrews, Franklin County Extension Agent, who served as general chairman of the tour, was toastmaster at the evening's program. He introduced Franklin County Chamber of Commerce President, Roger Brewer, who welcomed the group of 210 persons. In maple production, Brewer noted, the unusual situation of demand for syrup being greater than the supply for the 60 Franklin County Producers. The potential for the development of this rural resource is great, and the annual county gross income of some

\$60,000 could be doubled. He extended an invitation to all present to return and enjoy the natural scenic beauty of this four-seasons county.

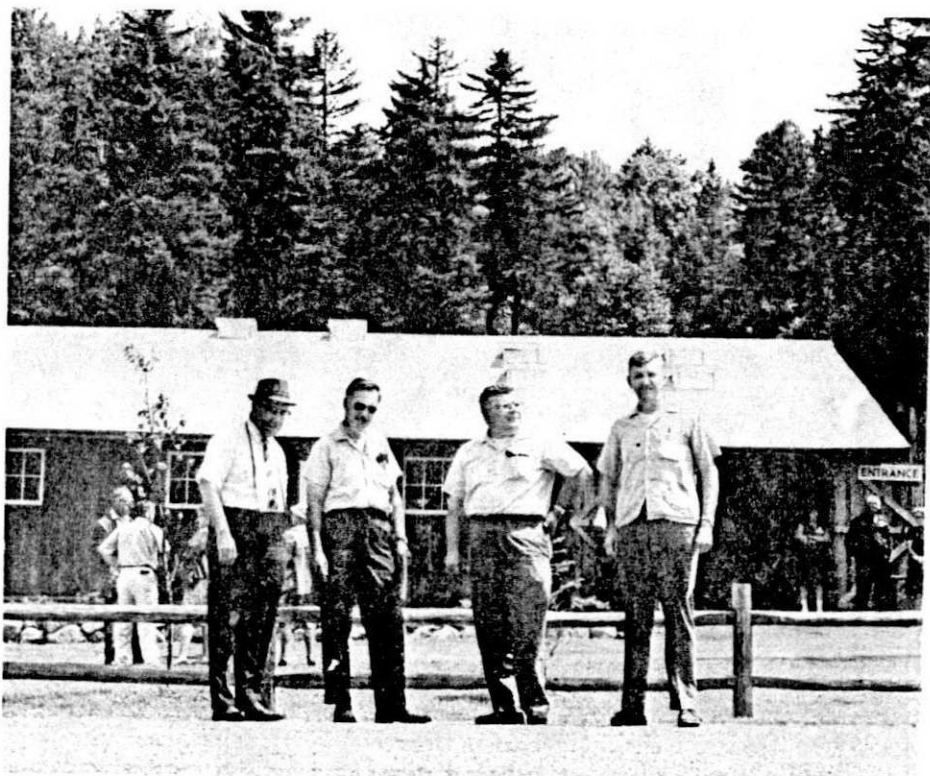
Lloyd Sipple, Editor of the Maple Digest, was introduced, as were Max Neal, New York Maple Producers Association President; Gordon Brookman, of the Maple Marketing Division

of the New York Farm Bureau Inc.; and John Kissinger, with the Philadelphia Research Lab.

Guest speaker for the evening was Dr. A.R.C. Jones, Professor of Forestry at MacDonald College of McGill University. He presented an excellent slide talk of the Quebec maple industry.

Friday morning, the group went to the Art Wood & Son sugar bush in Burke. Mr. Wood reported that the bush has been tapped for 135 years and for 46 consecutive years, by the Wood family. He pointed out that 42 years ago, the wood from one huge maple tree was sold as stove wood. The payment received paid the land taxes on the farm that year. "Of course, you couldn't do that today," he added.

The remaining three stops were in "million Maples Miles" country, at Franklin Center, Quebec, at the farms of Norval Blair, James Leahy, and Peter and Donald Ednie. All operate both maple and apple orchards.



The "Wheels" that made the tour run, parked in front of the Henry Uihlein experimental sugar house. Left to right: William Andrews, Franklin Co. Ext. Agent; Fred Winch, N.Y. Extension Forester; Dr. John Kissinger, Philadelphia Research Laboratory; Dr. R.R. Morrow, N.Y. Research Forester.



Maple Tour pauses (poses?) for picture at Norval Blair sugar house, Franklin Center, Quebec.

Lamb Offers Modernization Program

I feel a great deal of both respect and indebtedness to the brave souls of maple who buy new equipment and try new ideas aimed at the automation of their maple syrup operation. These people carry the load and expense of development and progress, often receiving little in return for their contributions to the industry.

I do not want to be another load on their shoulders. The $\frac{1}{4}$ inch tubing and fittings we put out a few years ago has been almost entirely removed from the field, at least we burned a lot of it. It smokes awful and stinks worse.

Now I want to offer these innovators the opportunity to update their Lamb 5/16 inch systems. If you have the old clear tubing and fittings and want to modernize, regardless of how old your tubing is or how much it has been used, I will furnish replacement materials for half price.

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PLEASE NOTE: These changeovers are not available thru our dealers; only direct with us at Baldwinsville, N.Y., and must be completed by December 1st, 1968, before we get busy. Also, these trade in deals are available only until the money is used up that we made last season. However, since it is worse than pulling teeth to get the old stuff away from you guys, I don't expect this will cause any problem.

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The Leahy Farm was the largest farm visited, consisting of 70 acres of apples and an apple storage of 55,000 bushel capacity, 30,000 bushels of which are stored under controlled atmospheric environment. The maple business consists of sap from 23,000 taps, 9700 of which are on the Leahy Farm, 7100 more from a leased sugarbush and purchased sap from 6000 more taps. The syrup is marketed through the Steinberg Chain Stores in Montreal.

The Norval Blair Farm was the first stop in Quebec. Here the guests observed an excellently managed sugar bush with 6500 taps. Like other farms in the community, this farm started out as a dairy farm, but because of limited farm labor, changed to a combination apple and maple farm. This is a unique situation that cannot be duplicated in too many areas.

A buffet luncheon was held at the local school in Franklin Center, under the direction of the local fire company.

Silverburn Farms, Inc., owned by Peter and Donald Ednie, was the final stop on the Tour. The brothers operate two sugar bushes, consisting of 2800 taps on the home farm, and 3100 taps on vacuum at the Rockburn bush. The group observed a new sugar house, two new oil fired evaporators, built on home constructed steel arches, a Connelly automatic draw-off syrup gage, and a new candy kitchen on one end of the sugar house for canning and making maple sugar and cream. They were very enthusiastic about maple product production and look forward to an expanded market for maple cream.

A program summarization of the tour was reviewed by Professor Fred Winch, Extension Forester, Cornell University.

More than 70 cars forming a mile and a half caravan were assisted by Franklin County Sheriff Percy Lyons and the New York State Police from Troop "B" barracks in Malone. The local tour committee in charge of arrangements expressed appreciation for their assistance.

Bark Thickness: Is It Important?

by H. Clay Smith
Northeastern Forest Experiment
Station, Forest Service, U.S. De-
partment of Agriculture, Burlington,
Vermont.

In the February, 1967 issue of the DIGEST two members of our staff, Bart Blum and Mel Koelling, discussed the importance of taphole depth. They reported that, to get the best sap yields, taps should be drilled into the wood to a depth of 2-1/2 to 3-1/2 inches, excluding the bark. They noted that bark influences the taphole depth because its thickness varies from tree to tree.

We know it is not practical to measure the thickness of the bark each time you drill a taphole. So as a follow-up to Blum and Koelling's work, we examined the data again to see if tree size is related to bark thickness. Our study showed that bark thickness increases as the size of the tree at tapping height increases. So a 20-inch tree would have thicker bark than a 10-inch tree. From our data we developed the following guide to bark thickness:

<u>Tree diameter at tapping height (inches)</u>	<u>Approximate bark thickness (inches)</u>
10-14	3/8
16-20	1/2
22-26	5/8
28-32	3/4
32-36	7/8
38-42	1

For one-tap trees (10 to 14 inches) where you want the taphole 3 inches into the wood, allow ap-

PENNSYLVANIA MAPLE TOUR

MAPLE SYRUP TOUR SET OCTOBER 11-12

Somerset County, Pennsylvania will be the setting for a tour of maple syrup camps, Oct. 11 and 12.

The tour is sponsored by the Pennsylvania Maple Syrup Producers Council. Hosts for the event are the Somerset County Maple Producers Association and the Cooperative Extension Service.

Persons from other states who will be attending the Triennial Maple Conference in Philadelphia, Oct. 8 and 9, are invited to complete their week in the Keystone State by joining in this tour at the height of the fall foliage coloration, says Ed Curtis. All interested persons are invited.

The tour will begin at 1 p.m. Oct. 11 with a visit to a thinned sugarbush. The next stop will be a modern sawmill where all waste materials are being used.

Inspection of a new central maple processing plant capable of producing over 15,000 gallons of syrup a season will be the last stop Friday, Oct. 11.

A banquet and evening program in the Somerset area will conclude the first day's activities.

Saturday morning, Oct. 12, the group will visit two central evaporating plants and several other well established maple camps in the Myersdale area.

All types of fuel for evaporation will be seen including wood, coal, gas, steam, and oil. Concluding the tour will be a pancake and sausage lunch.

Transportation will be by personal car. The only costs will be for meals, lodging, and travel.

For further details such as the starting point, places to stay, and the full program, write County Agent, Courthouse, Somerset, Pa. 15501.

Edward P. Farrand

proximately 3/8-inch for bark thickness and insert the drill bit to a total depth of 3-3/8 inches. For two-tap trees (16 to 18 inches) allow 1/2 inch or more for the bark. And for the larger three - and four-tap trees you should allow nearly an

inch.

Remember, when drilling any taphole, to consider both wood depth and bark thickness. The larger the tree, the thicker the bark and the deeper you should tap.

Bark thickness is important.

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The Quebec Maple Story

By A.R.C. Jones
MacDonald College, Quebec

When it comes to maple syrup and sugar production, Quebec considers herself, and rightly so, to be the queen of the maple bush. In terms of gallonage, Quebec producers together with a smaller number in Ontario and the Maritime Provinces, have topped the combined output of all eleven maple producing states in the United States since somewhere between 1935 and 1940 when total Canadian production expressed in U.S. gallons reached over 3,500,000 gallons. Canadian production in 1966 was 3,226,000 imperial gallons, with a gross value of \$14,558,000. United States imports of Canadian syrup and sugar have equalled, or surpassed, the total U.S. output of syrup and sugar since 1958 when it amounted to 1,408,000 gallons — I might hopefully add, long may it continue. These importations were close to 50 per cent of the Canadian production at that time (1958) and are now closer to 70 per cent. Canada, and Quebec in particular, would be in a bad way without this strong U.S. demand for her maple products (Taylor, Pasto and Southworth, 1967). The Quebec contribution to the most recent (1966) Canadian production amounts to 91 per cent — 70 per cent of world supply, or 2,904,000 gallons valued at \$12,322,000.

The 1961 census gives some useful data on production and the location of the largest number of producers. In 1961 there were 17,282 maple groves operated in Quebec against 21,700 in 1951, a decline of 18 per cent. The number of tapholes for the two years under review was 21,499,191 and 22,443,061 respectively, representing an average of 1,244 taps per farm in 1961 and



Left to right: Norval Blair & son, speaking to N.Y. Maple Tour; A.R.C. Jones, author; William Andrews, Franklin County Ext. Agent; and Fred Winch, N.Y. Extension Forester.

1,034 in 1951 (Quebec Bureau of Statistics — Maple Products 1964). It is estimated that there is an untapped potential in the Province of 100 million tapholes on top of the current 21,500,000.

Approximately 22 per cent of Quebec commercial forest land is composed of broad leaved species, including maple. The greatest concentration of producers is to be found in the counties of Beauce, Megantic and Dorchester south of Quebec City where there are more than 1000 producers per county. Beauce leads all other counties in the Province, with close to 2000 producers. Ontario, the second largest maple province, had 4,759 producers in 1961, with only two counties, Gray and Hastings, containing more than 300 active producers. In Quebec, there are eighteen counties reporting more than 300 producers; all of these, except three, are on the south shore of the St. Lawrence.

From the earliest times, Quebec-

oise have looked on sugaring in March and April as a gala time to celebrate the coming of spring. Even now, many families traditionally come together at this time from far away points to help with the harvest and to celebrate the end of the long winter. In the early days there was another reason for not missing the sugaring season, maple syrup was the only source of sugar.

Since those times, the Province has continued to maintain its lead in the maple industry, gradually modernizing grading standards and production methods. In 1967, the Department of Agriculture and Colonization under its new chief of honey and maple products, Mr. Jean Guilbault, together with Mr. Roch Delisle, Director, Service de la Forêt Rurale of Lands and Forests, embarked on a vigorous research and field trial programme in a rented sugarbush in Arthabaska to study such recent developments in the industry as taphole sanitizing pellets,

various plastic tubing systems, vacuum sap pumping, covered and oil-fired evaporators and sugarbush management. This work is to be expanded in 1969.

Mr. Delisle (1967) recommends the division of the Province into three tapping zones based on relative tree vigour. These zones are as follows: Zone I (southern) suggests one tap for trees 8-15 inches d.b.h., two taps for trees 16-20 inches and three taps for trees 21 inches and larger. Zone II adds one inch to the maximum size of Zone I, and in Zone III (northern) it is recommended there be one tap for trees 8-17 inches d.b.h. and two taps for trees 18 inches and larger.

In the late fall of 1967 and the spring of 1968 a questionnaire was circulated by the Department of Agriculture and Colonization to all sugar producers in the Province to attempt to obtain up-to-date information on the situation. There has been an excellent response to this questionnaire, and when the results of this enquiry have been compiled, there will be some excellent information on the current state of the industry in the Province. For many years, the Department of Agriculture and Colonization has maintained a syrup testing laboratory in Quebec and chemists and technicians from this laboratory have trained inspectors who work closely with the large bulk syrup buyers in order to maintain the grading standards for domestic and export sale of maple products. Grading is now done with an electronic colorometer. Unlike the other Canadian Provinces, only 30 per cent of the annual Quebec maple crop is sold directly to the consumer. The remaining 70 per cent is purchased in bulk form on a per pound basis in 30 gallon drums by five large maple syrup processors and wholesalers. These firms, in most cases, produce their own brands of pure syrup, such as Citadelle, Camp, Grove, Old Colony, and others, from the higher grades purchased (Grades AA, A and B). The lower grades, B, C and D, are largely exported to the United States for

remanufacture into blended syrups. You may not be aware of the fact that federal law prohibits the sale of all but pure maple products in Canada. However, artificial table syrups are permitted and each spring well over a million pounds of artificial syrup is produced to augment the natural harvest. La Societe les Producteurs de Sucre d'Erable de Quebec is estimated to control approximately 50 to 60 per cent of the bulk market, purchasing from about 6000 producers who are registered members of their co-operative. This firm has been in operation since 1924 and, under normal conditions, they set the price to be paid for Canadian bulk syrup. In recent years, it has been around 30 to 33 cents per pound for Fancy to 22 to 26 cents per pound for Grade D. Usually there is a bonus of one or two cents per pound paid just prior to the beginning of the next sugaring season - in 1967 this was two-thirds cent per lb. The price of container syrup is generally determined by production costs and the state of the market - around \$6.00 to \$6.50 per gallon was the current price paid for Quebec Fancy syrup in 1968.

Quebec, as I have said, has a long tradition connected with the maple industry, and a considerable folk-lore has built up around sugaring, sugar parties and Festivals d'Erable. Huntingdon is no exception to these traditions, although they may have started later than in the areas around Quebec city. Earliest settlement of Huntingdon occurred in 1790, but it was not until 1820 that settlers arrived in large numbers. The early settlers were heavily dependent on the forest for their livelihood, and by 1930 the extensive maple forests in the region had been heavily depleted for potash production and by lumbering. After this time, the expanding population directed its attention to agriculture. In 1853, a pulp and paper mill was established at Valleyfield in Beauharnois county to the north, and in 1869 the first groundwood pulp in North America was manufactured at this plant. During the 46

years the mill operated, a substantial part of its raw material was acquired from the virgin and second-growth forests of Huntingdon county. In the first 25 years of the present century, several firms swept through the best remaining stands of timber near Covey Hill and along the American border. In the past 35 years, the remaining woodlands have been reduced to their present condition by several stages of depletion: - (1) the depression of the 30's which saw much harvesting of young timber for firewood, followed by (2) extensive infestations of the sugar maple borer in the late 30's and 40's, and (3) the disastrous hurricane of 1938 damaged much of the best sugarbush in the county. These factors serious-

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ly curtailed the production of maple syrup, and together with the establishment of several major wood using industries, furniture and smelter plants in or adjacent to the county, and a very severe ice storm in 1961 marked the final stages of depletion of the surviving maple stands of the county. There is an estimated 40,000 acres of forested land left in Huntingdon, but a great deal of this land is rough and rocky and of low productivity.

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The northern part of the county contains the fertile and flatter lands where dairying is still the keystone of the economy. This activity is on the decrease, as everywhere else in Canada. In Quebec, the agricultural labour force was 12.5% in 1956, in 1965 it was only 6%. The 1961 census reports 1,133 farms in Huntingdon, of which 790 are classified as commercial (annual sales exceed \$1,200). Many small family units are being consolidated into larger units or have been converted to non-agricultural uses, and recreation and residential holdings are steadily increasing. In the southern part of the county, apples and maple constitute important crops. There are around 200 orchards, with a crop valued in 1961 at close to \$1,000,000, with at least 4,000 acres under cultivation and increasing. For the same year, there were 148 maple producers reporting 185,043 taps, or an average of 1,250 taps per producer, with a total production of 18,242 gallons of syrup valued at \$68,000. However, because of the depletion effects of factors previously mentioned, both number of producers and quantity of maple products has been declining. I would estimate close to 100 producers in the county at the present time. Nevertheless, Huntingdon producers make up in quality and enterprise what they may lack in numbers. The county appears to be well situated to catch the early runs of sap, and regional differences are such that Franklin and district producers will be finishing sugaring before some of the northern and eastern counties have barely begun. This provides a substantial marketing advantage and Huntingdon county syrup is the first to be sold in the Province.

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Lansing 48904, Michigan

et Forêts, Quebec.

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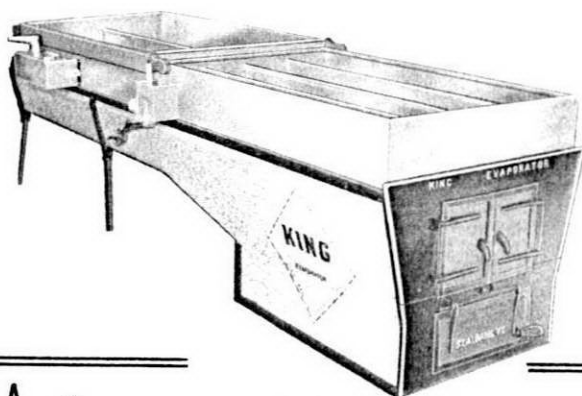
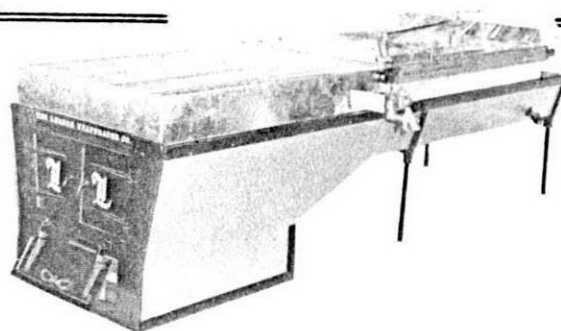
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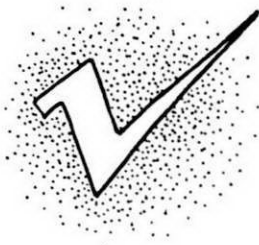


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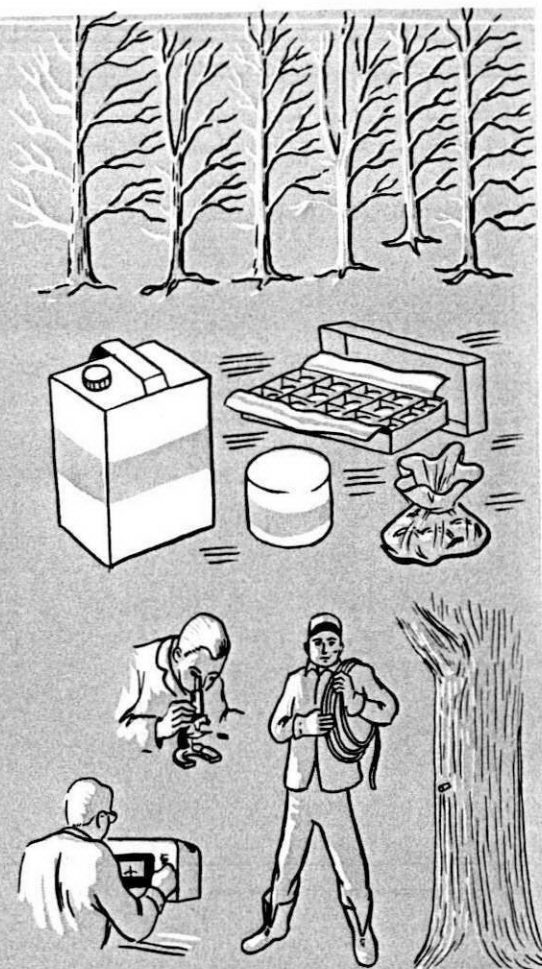
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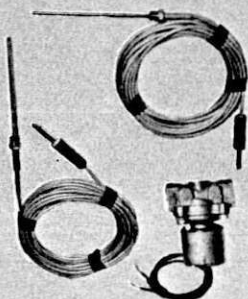
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