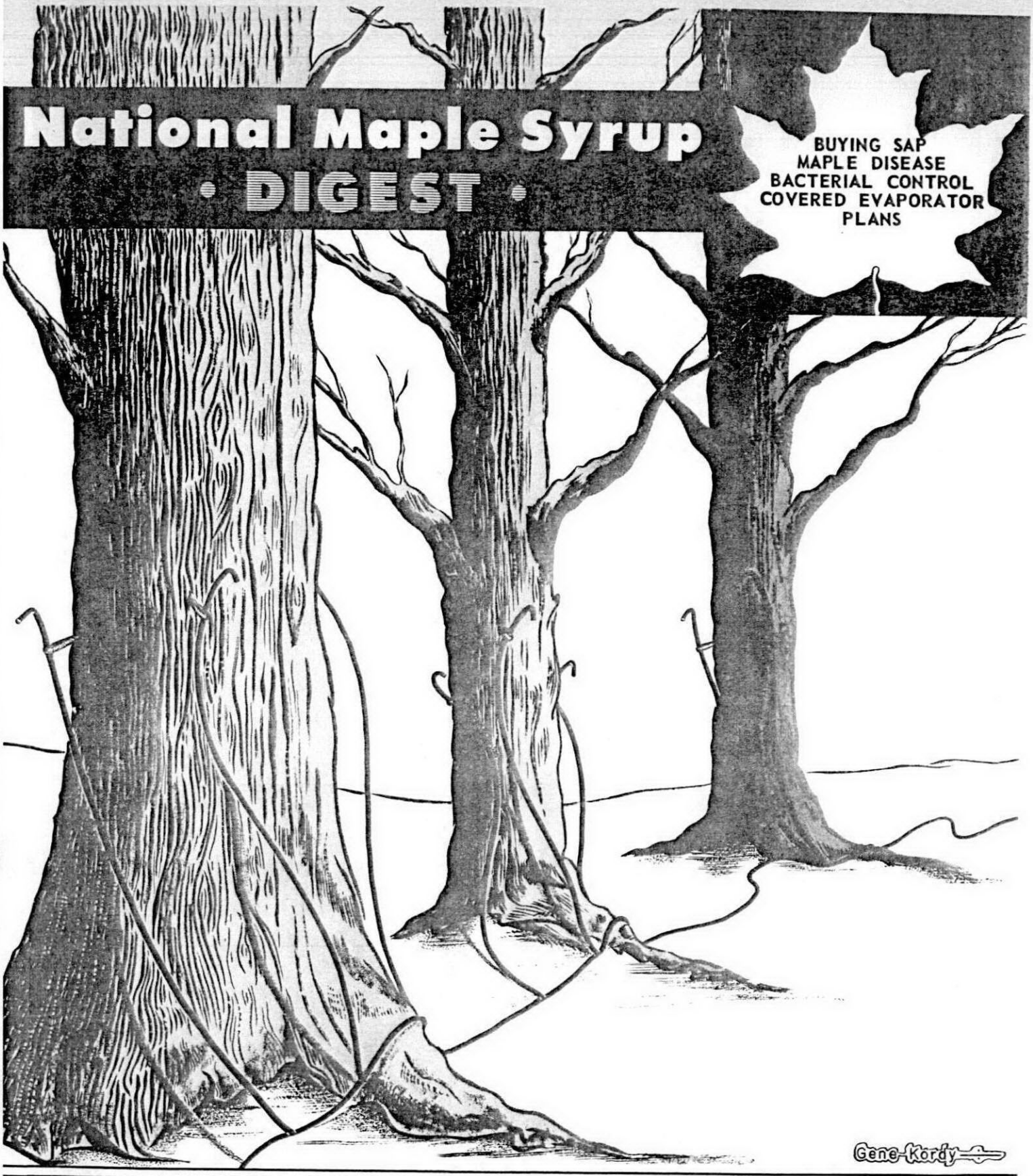
National Maple Syrup
• DIGEST •

BUYING SAP
MAPLE DISEASE
BACTERIAL CONTROL
COVERED EVAPORATOR
PLANS



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BACTERIAL CONTROL

The first step is to start with clean spiles and equipment. Bacterial control in any equipment can be done with the versatile readily available chlorine bleaches which volatilize readily and when heated pass rapidly off as gases without flavoring the product. Clean spiles may be obtained by soaking and later washing in 1 part of commercial bleach to 10 parts of slightly warmed water. As chlorine in this form is a detergent and bacteriacide it will clean spiles as never before. After washing, remove the spiles from the solution and place them in buckets without rinsing. Cover with a solution of 1 part commercial chlorine bleach to 20 parts of cold water and carry them to the sugar bush in the bucket. Carry the hammer or driving tool in the solution as well. When the spiles are placed in the tap hole they are placed wet from the bucket. When handling spiles thus treated, use rubberized gloves to keep hands from cracking.

The above two steps will produce better sap for a longer period of time. A further step is necessary to maintain quality during the latter part of the season. On the end of a run, 15 to 18 days after the start of the season, when buckets have been emptied, a two-man crew should make the rounds of the buckets. One man carries a few quarts of a solution of 1 part of commercial bleach to 40 parts of water and with a syringe, squeeze wash bottle or knapsack sprayer, squirts ½ to 1 oz. of the solution into each tap hole through the spile. A few minutes later the second man follows and sloshes the bucket, with the solution that has dripped into it, and throws it out. This sterilizes the bucket. This process is repeated once or twice more during the season. Quality is immediately improved and the tap holes prevented from "drying up."

Between runs, gathering tanks and storage tanks should be swabbed out with the above solution to prevent bacterial contamination of the sap.

If and when the new paraformaldehyde pellets are approved and available, they can be used in place of the chlorine solution in the tap hole at the time of tapping and during the season. This will not take care of bacteria in the buckets and tanks, so they should be washed and sterilized as described above.

The response received since the first issue of the DIGEST was mailed was much more than we anticipated. There's one thing we don't seem to understand. All the letters contained congratulations and very sincere approvals of the DIGEST. For this, we want to thank everyone who took the time to write.

But where are the criticisms? This publication just can't be that good. Sure, we goofed a few times and the parties involved expressed their complaints which we will try to correct in this issue. Aside from that, how do you expect us to improve if you don't submit constructive criticisms? We would like more letters from both sides of the fence.

This brings up another point. Some of the letters received are worth printing but we just don't have the space to do it. We ran out of space in the first issue and had to cut some articles. It looks as though we would catch up and get everything in this time, but there are so many subjects which should be written on that it won't be long and we'll have to add some more pages.

Now, how are we going to pay for this? More advertising would do it, but we want to publish a magazine, not a catalog. In the past three weeks, literally hundreds of people who received the first issue approached me with the desire to pay for a subscription. We don't sell subscriptions, but it certainly would not do any harm to accept donations. So, if you think that this publication has been, or will be, of any help to you or the maple industry, why not slip a dollar in an envelope and send it to the MAPLE SYRUP DIGEST, Bainbridge, N.Y. Your donations will be used to give you a better publication, and insure against the possibility of the National Council going broke on the whole deal.

There is another thing I would like to remind you of. We can print only that which is sent to this office. No one is being paid to dig up this material so how about hearing from more of the Foresters, Research Stations, etc.

TO OUR FRIENDS IN CANADA

We regret the fact that the National Maple Syrup Council and the MAPLE SYRUP DIGEST was set up to cover only the United States. Many requests have been received from Canadian producers to send them the DIGEST.

Our third class bulk permit does not allow this, but if those in Canada who would like to receive the DIGEST would send us $1.00 to to cover the extra cost of handling and postage, we will be very pleased to send them every issue.

At the next annual meeting to be held in October, 1962 the Council will take up this matter and come to some decision.

The Editor

REPORT ON MAPLE DISEASE

Maple "disease" or fungus, or maybe a combination of the two factors, what is it? Is it new or has it been with us for some length of time and been completely ignored or just not noticed? This is the problem, it must be solved and will be, although it may take considerable time and money, or it may be solved quickly. To say the least, the problem is recognized; is being studied and progress is being made.

The writer has been aware of this problem for a period of twenty years or more. Many professional people were consulted, who in turn just bypassed the problem as being a whim of nature and it would eventually solve itself. Nature does many fine things and it cannot be beat in general, but there are times when help is needed, and now is the time to give help to the Maples.

In 1959, this problem was called to the attention of Lester P. Nichols, Extension Pathologist and Dr. William J. Stambaugh, Forest Pathologist of Pennsylvania State University, who started initial studies on this particular problem. The study originated in Somerset County, Pennsylvania where an investigation of sugar bushes was made. The disease had been observed only recently 5 or more years, in the area represented by the poll. When damage was evident, an estimated reduction in sap yield was 10-20%; reduction in sap yield was attributed to the cankered condition of the trees.

This canker condition of the bark exists elsewhere without recognition, as an extensive review indicates that this particular type of damage has not been reported previously. By personal observation, this disease has been recognized in West Virginia, Ohio, Pennsylvania, New York and Wisconsin, which leads one to believe it will be found over the entire range of Sugar Maples – from Maine to Minnesota and on into Canada.

It remains to be seen if Maple "blight," Maple "dieback" and Maple "decline" are synonymous or are a complex of problems related to the predisposing effects of unfavorable environment followed by attacks of weak fungi and insects which ordinarily would not damage vigorous trees.

Canker development or localized killing of the bark is extremely variable in outward appearance. What are presumed to be early stages in canker development will appear as small, raised circular areas on bark (blisters) which may be scattered to a point where they completely cover the stem. Death of the inner bark underlying the blisters, ultimately reaches the cambium and areas of dead wood are exposed as the dead bark gradually peels off. Cankers on branches or stems of smaller trees may appear sunken, or raised plates may be evident. On larger stems, the majority of cankers appear as longitudinal cracks or fissures, which may be active and extend into the wood, or may be partially or completely healed over. Slit type wounds are often associated with various types of cankers, suggesting an insect vector or wounding agent relationship. In cases of severe infection, all types of cankers may be present giving the stem an extremely gnarled appearance. In many instances the exposed dead portions of wood may appear to be healing over, but if examined closely will be found to be bridge grafted, and will eventually die.

The damage potential of this disease is relatively unknown. The most obvious of these are excessive mortality, reduced sugar yield, and extreme down-grading of lumber quality. This not only affects the sugar producers, but the lumberman as well. From the standpoint of timber production, the major loss results from the reduction of merchantable volume, reduced growth and lower lumber quality. Heavily infected stems will have both surface cankers and those that have healed over, dating back ten years or more. These are so numerous in some stems that obtaining clear lumber from such infected trees would be an impossibility.

The canker disease is serious and is found in almost every Maple woodlot in the Eastern United States. It affects both Red and Sugar Maples. However, a serious, conscientious effort is being made to determine the cause of possible control and cure of this threat to one of our major dominant tree species. I firmly believe a control will be found sometime in the near future that will enable farmers and tree industries to take preventive steps at a reasonable cost.

John B. Zimmerman, Forester
J. V. HAMMOND COMPANY
Spangler, Pennsylvania

Paid Pun by LAMB

"I just put in a FLOMOR pellet"

GEAUGA COUNTY HOLDS 22nd ANNUAL MAPLE INSTITUTE

Over three hundred maple syrup producers and woodlot owners in Geauga County and Ohio attended the 22nd annual Forestry and Maple Syrup Institute at the Burton Fire Hall on January 23rd. There were also maple syrup producers from New York, Pennsylvania, and Wisconsin that made the trip to Geauga County for the meeting. Lloyd Sipple, president of the National Maple Syrup Council and editor of the NATIONAL MAPLE SYRUP DIGEST, was present and explained the purposes of the Council and the new publication.

One of the features of the Maple Syrup Institute was the introduction of the Central Evaporator House to Ohio maple syrup producers. Fred Winch, Extension Forester of Cornell University, explained the growth of this innovation in New York State. The Central Evaporator house consists of several evaporator pans connected in series and the maple syrup process completed in a finishing pan. Howard Taylor in Bainbridge township will have the first Central Evaporator plant in operation this season. The Forestry Committee plans to hold a tour to Howard's sugar house this summer.

Dr. C.O. Willits, Head of Maple Research Investigations at Philadelphia, made some outstanding contributions to the Institute on technical details of making maple syrup. Of particular interest to producers was the reading of hydrometers and temperatures of syrup to check the density of the product. Dr. Willits also introduced the group to a new product called "Maple Fluff." This product is a type of topping for desserts and confections. It is very similar to a fondant in consistency.

Others on the Institute program included Bill Cowen, Extension Forester in Ohio, and Dr. D. R. Davis of the Experiment Station in Wooster. Bill Cowen reported on a study of the "Economics of Timber Stand Improvement." Dr. Davis gave a progress report on Sugar Sand Investigations that is being done at the Experiment Station.

All maple syrup producers were reminded that they must continue their sanitary practices in the sugar house and sugar bush if they wish to obtain the best results from their operations. These Forestry and Maple Syrup Institutes are used by sugar bush operators to keep up to date on new developments in these fields and exchange ideas with others in the enterprise.

Producers are reminded that special maple sap weather forecasts will be carried by radio stations. These forecasts will provide helpful information on the date of tapping after February 1. It is hoped that producers will be able to tap a day before the first run through the use of these forecasts.

A maple syrup producers committee will meet at the Extension Office on February 7 at 8:00 P.M. to consider organizing a Maple Producers Association. This information will be presented to maple syrup producers at a later date to determine the interest in such an association.

Leland Schuler

Geauga County Extension Agent

Berkshire Pioneer Maple Producer's Annual Report

The Berkshire Pioneer Maple Producers Association is one of the outstanding examples of what can be done with an organization. Since the maple producers of the state of Massachussetts formed this association in 1947, they have come a long way in controlling the quality of syrup packed in their association cans which they now use. This one achievement has resulted in the fact that Massachussetts is now recognized by the consuming public as a producer of high quality maple products.

The financial statement below shows that they are as sound financially as they are efficient in quality control.

TREASURER'S REPORT

RECEIPTS		PAYMENTS	
Dues	$ 457.00	Syrup bought	$ 7,712.86
Cans sold	8,032.42	Cans bought	8,831.87
Syrup sold	7,961.11	Shop. Bags	226.25
Cartons sold	261.40	Cartons	227.27
Money Borrowed	6,000.00	Notes repaid	6,000.00
Eastern States Exposition	1,414.85	Interest on notes	25.32
Franklin County Fair	214.15	L.B. Lesure, Commissions paid	948.35
Wrap Labels	24.00	Annual meeting	12.00
Seals	1.05	Bond	12.50
Caps	2.20	Sales slips & dispenser	54.85
Acid	6.60	Prepaid postage	70.00
Face labels	2.00	National Maple Council	25.00
Boxes, bags, etc.	47.70	Pioneer Valley Association	25.00
		Insurance on cans	38.25
		Change for Fairs	38.34
		Flyers for Eastern States	40.00
		Part Expenses to Wisconsin	100.00
		Printing dues cards	13.75
		Stamps & postage	54.48
		Equipment	48.50
		Office Supplies	23.34
		Advertising	26.82
		Stickers	36.00
		Franklin County Fair	103.60
		Eastern States Exposition	807.98
		Miscellaneous	18.05
TOTAL RECEIPTS	$24,424.48	TOTAL PAYMENTS	$25,520.38
Cash on hand 12/31/60	1,391.63	Cash on hand 12/30/61	295.73
	$25,816.11		$25,816.11

BALANCE SHEET – December 30, 1961

ASSETS		LIABILITIES	
Cash on hand	$ 295.73	L. B. Lesure	
Cans – Litho	4,497.00	Unpaid Commissions	146.70
Plain	198.00	Treasurer	75.00
Carton	315.00	Storage	100.00
Shop. bags	120.00		
Syrup on hand	413.75		
Syrup sold but not paid for	1,200.00	TOTAL LIABILITIES	321.70
Prepaid postage	70.00		
TOTAL ASSETS	$ 7,109.48		
TOTAL LIABILITIES	321.70		
NET WORTH	$ 6,787.18		

Let's Talk About Buying Sap

The newest approach to the increased production of uniform quality maple syrup is the central evaporator plant. Many former producers and new farm operators hesitate to invest in replacement or new equipment for boiling sap to syrup. The cost of such equipment is generally high per gallon of syrup produced for the small operator. Buckets, collection equipment and trees for tapping are the only items necessary for sap production.

On the other hand, some syrup producers who have been in business for a considerable length of time have found the market for syrup and syrup products (both bulk and retail) growing. With their experience in producing and marketing these products they can better use their time and experience in producing such products. Their problem is to get enough sap to satisfy their needs with their labor supply. Both of these problems may be solved by the central evaporator plant.

On the one hand, the operator with a limited capital and time can produce sap, haul it to the central evaporator house, and be paid for his efforts. On the other hand, the syrup maker can satisfy his demand for more syrup with a relatively small increase in his labor force and present equipment and make a reasonable profit on the enterprise.

The technique involved in buying and selling sap is simple. The seller and the buyer both must know the volume of sap in the transaction as well as the sugar content of the sap and they must agree on a rate of payment. A few other precautions should be agreed upon before the start of the season by both parties. The factors to be considered are:

SELECTION OF SAP PRODUCER

The buyer **must** know the character and reliability of the person supplying sap. This will eliminate many problems during the season. This arrangement must be a cooperative venture between both parties.

CONTROL OF QUALITY

It should be mutually agreed upon at the start of the season what sanitary practices are to be carried on in the bush and on delivering sap. Some of these would be the type and condition of equipment (buckets, covers, spiles, tubing, gathering tanks, etc.); the sterilization of equipment (washing procedures and materials); sterilization of tap hole (chlorination or tap hole pellets); regularity of gathering and time of delivery. The buyer should reserve the right to reject sap not meeting standards agreed upon before beginning of season (buddiness, off color, high bacteria content, etc.).

TAPPING DATE

The buyer must notify seller when to start tapping and gathering sap.

CALIBRATION OF VOLUME

The easiest method is to measure the volume of tanks and make dip sticks to be used to measure delivered volume. Seldom is the tank exactly full. Calibration of the tank can be done by determining the contents in cubic inches and dividing by 231 to obtain the gallonage. Other methods such as weighing or metering may also be used.

SUGAR CONTENT

This can only be determined accurately by using a brix hydrometer to 1/10 of 1% or a refractometer. The hydrometer is more accurate and less expensive.

Instructions for using and correcting for temperature may be found in A.R.S. publication No. 73-28. A simplified correction factor is as follows:

Sap Temperature	Correction (subtract)
32 to 42	-.4
43 to 53	-.3
54 to 62	-.2
63 to 66	-.1
67 to 69	0

SUGGESTED RATE OF PAYMENT

Sugar Content		Price Per Gallon Delivered
1.3		.005
1.4		.01
1.5		.015
1.6		.02
1.7		.025
1.8		.03
1.9		.035
2.0	(Base Price)	.04
2.1		.043
2.2		.046
2.3		.049
2.4		.052
2.5		.055

Continues on up at rate of .003¢ for each 1/10 of 1% sugar content.

If sap is purchased at roadside instead of delivered to central evaporating plant, a deduction of from ½¢ to 1½¢ per gallon is made for cartage.

PURCHASE SLIPS

For a matter of convenience and accuracy a standard form in duplicate should be used to record each delivery. Original is retained by the buyer, the duplicate given to the seller. Such a form may be as the one shown here.

CENTRAL EVAPORATING PLANT
Anytown, U.S.A.

Maple Sap Purchase 3/14/62
Producer ..... John Doe
Hydrometer reading @ 68° F 3.2
Temperature of sap 39 °
Difference in Brix. ..... -.4
Corrected Brix of Sap 2.8
No. of gallons 320
Price per gallon ..... .064
PH .....
1280
1920
20.480

TOTAL 20.48

Signed JD

With these facts in mind, the syrup producer whose syrup supply does not meet demands can increase his volume of production. Usually, by increasing his volume, he is reducing his per gallon cost of production since his fixed charges for the season are pro rated over a larger production and his labor force is kept employed more fully. While he is able to maintain a more uniform quality of syrup, he is also producing a large enough volume to develop a better and larger distribution. This fact alone could increase the sale of maple products many times in the area where this enterprise exists. Maple products have never been in surplus. Poor distribution is usually the cause of lower retail prices and local shortages.

Existing central evaporating plants have proved to be a successful approach to uniform quality, increased production, and better all-around efficiency in processing, handling and marketing the oldest native product of the United States.

WISCONSIN CENTRAL EVAPORATOR PLANTS

There has been increased attention to promoting the latent potential of the maple industry in Wisconsin. More trees are going to be tapped with the expansion of the central evaporator idea. At least three new plants are planned or completed for the 1962 sap season. An account of one will indicate the progress and potential of this trend.

The Ogema Sugar Bush Company was established by Ray Norlin and Louis Motley in Price County during the past year. Sap from about 5000 trees not now being tapped will be made into syrup, candies, and creams.

Operation of this plant will be on about the same basis as many former cheese factories. Sap will be purchased from sap-producer patrons on the basis of per cent sugar content. This will be picked up at the woods by tank truck or delivered to the plant by patrons. An 11,800 gallon sap storage facility will handle the purchased sap. An annual return of about $4500. is expected for the sap producers, with a potential increase as the entire project grows.

Construction of the central plant started last June and an open-house was held in October. The evaporating building is 28 x 32 feet. Initial operations will employ two evaporators. The main unit is a 6 x 20 foot evaporator with a capacity of 500 gallons of sap per hour. It will be oil-fired, consuming 50 gallons of oil per hour. Twelve to fifteen gallons of syrup will be produced per hour. A small wood-fired evaporator will be used as a pre-heater of sap for the increased production of the main unit.

Future plans include an expansion of the plant and the operation. The Ogema and Sugar Bush Company will contribute significantly to the economic welfare of the region by using a partially-developed resource – the sugar maple tree.

T. A. Peterson
Wis. Extension Forester

The Covered Evaporator

When Dr. C.O. Willitts was at the New York State experiment station in Geneva, N.Y. in 1936, he experimented with a cover of the evaporator with a stack to take away the steam.

From this has come what we now know as the completely covered evaporator. It is the ideal system for removing steam from the sugar house. It is easier and cheaper to construct than flue type ventilators and works regardless of wind direction or velocity, air intakes in the building, or type of construction. There is absolutely no steam in the sugar house, no condensate dripping from the roof and since the cold air cannot come in contact with and oxidize the impurities which boil up in the flue pan, practically no skimming is required.

The plans and specifications given here are the result of the construction and use of several covers by maple syrup producers in various parts of the country. Since maple producers are an ingenious breed, new ideas of design and construction are bound to be born. This will give you something to go on.

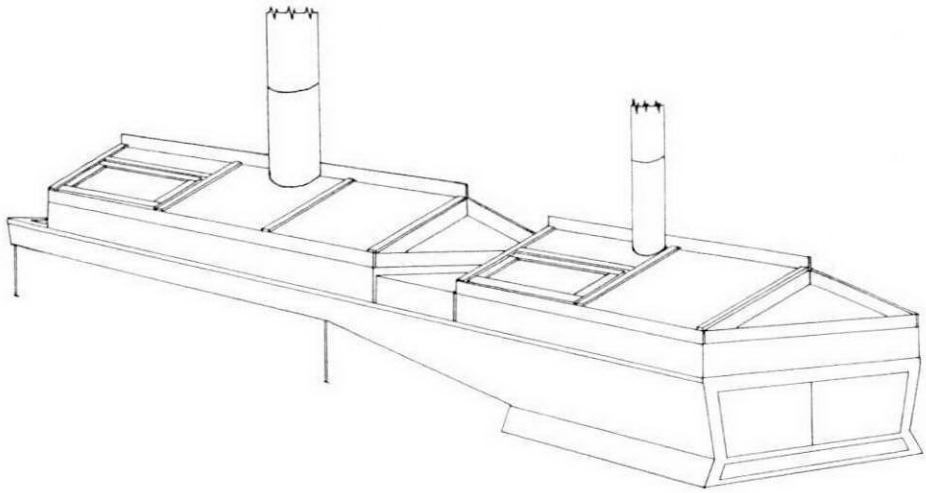


Figure 2

General Instructions for Building

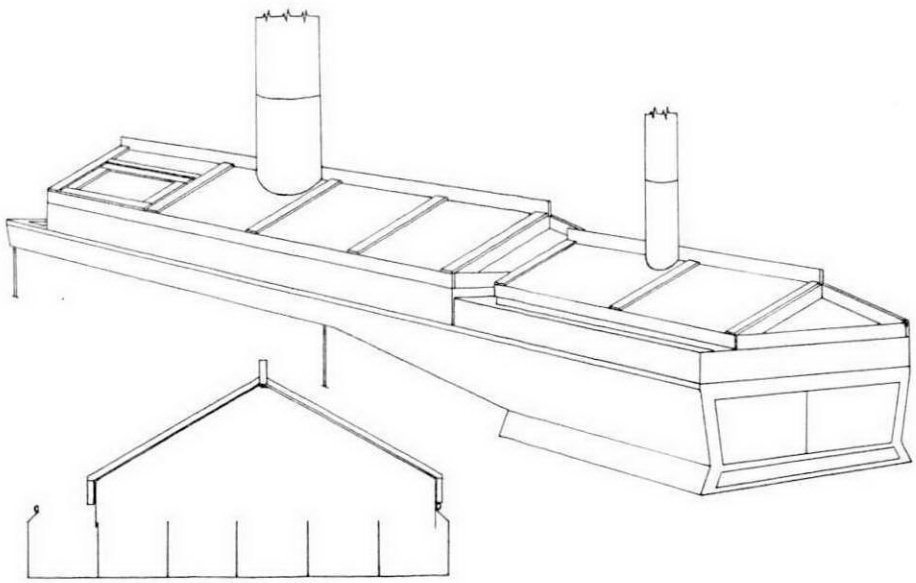
The frame is made of 1" x 2" and 1" x 4" wood, preferably spruce or basswood. Pine is apt to exude pitch which might flavor the syrup. The frame is lined on the inside with .022 thick sheet aluminum nailed in place with aluminum or some other non-rusting nails. Do not use galvanized iron sheets. Steam will take the galvanizing off in about one year.

The stack is made of the same material, dovetailed to the cover and extending through the roof only as high as the ridge of the building. If it is not extended higher than this, condensation inside the stack and cover is negligible. A tight fit between the cover and pan is not required; neither is it necessary to provide any air intakes.

The slope of the roof is not important but 6" to the foot or 30° is the most desirable. Two ropes should be fastened to the ridge piece (one on each end) of each cover and run over pulleys to facilitate raising the covers. The collar of the roof saddle is made 2" larger in diameter than the stack so that the stack will slide up through the saddle when the cover is lifted. A cap on the saddle will close it when it is not in use.

Using these materials and design, it will cost about $50.00 to purchase the materials for a cover for a 5' x 14' evaporator.

Figure 1



Two-Pan Evaporator

A cover for a two-pan evaporator can be built in one piece with one stack and observation doors put in over the sap intake in the flue pan and on each side over the syrup pan. However, two separate covers are easier to construct and have advantages over the single cover.

The cover over the back or flue plan has doors in each side over the place where the sap enters. The front cover is built to cover all except one outside compartment (see cross section, Figure 1). By leaving one compartment open, the operator can watch the syrup and no doors are required in the cover. There is not enough steam produced in this compartment to be concerned about. When the evaporator is reversed, simply slide the cover to the other side.

The roof collar is centered over the evaporator. The stack leans a little to one side or the other depending on which side the cover is positioned.

Three-Pan Evaporator

Two separate covers are used on the flue pans of a three-pan evaporator (see Figure 2). The center pan (syrup) is left uncovered. Very little steam is produced from this pan and the cover would be in the way.

Size of Steam Stack Required

Single cover over flue and syrup pan

Evaporator Size	Stack Size
3' x 10'	12"
4' x 12'	14"
5' x 12'	16"
5' x 14'	18"
6' x 14'	20"
6' x 16'	22"

INDIVIDUAL COVERS

Flue Pan Size	Stack Size
3' x 7'	10"
4' x 8'	12"
5' x 8'	14"
5' x 10'	16"
6' x 8'	16"
6' x 10'	18"

Syrup Pan Size	Stack Size
3' x 3'	6"
4' x 4'	8"
5' x 4'	8"
5' x 6'	10"
6' x 6'	12"

Other sizes may be estimated accordingly.

TOO MUCH GOOD MATERIAL NOT ENOUGH ADS

This issue BROKE us but we hope it's worth it!

MAINE PRODUCERS HOLD ANNUAL MEETING

The annual meeting of the Maine Maple Producers Association was held January 13 with 44 members in attendance.

The following officers were elected:

President, Curtis Lombard of St. Albans

Vice President, Ralph Hilton of Anson

Secretary-Treasurer, Mrs. Belle Whitt tier of New Sharon

Directors—Wendell Mosher of North Jay and Edgar Cobb of Harmony

The President appointed a publicity committee composed of the following: Warren Voter, Farmington; Mr. and Mrs. Orlando Small, Farmington and Mr. and Mrs. Lawrence Cook of Phillips.

PUMPS

Moving sap and syrup without the aid of gravity is a problem facing many maple producers. It is accomplished with a pump; but what kind of pump, how big should it be and how much power is required?

These requirements vary considerably with the application. Dr. James Marvin of the University of Vermont in Burlington has published a bulletin on pumping sap out of buckets with instant suction. If you are interested in using this method of collecting sap, you should contact Dr. Marvin. If your problem is moving sap from the bush to roadside or sugar house over level ground or up hills, Adin Reynolds of Aniwa, Wisconsin can probably help you. He has been using small pumps for this purpose for several years with excellent results. He has units which use your tapping machine engine for power if electricity is unavailable.

Several producers have been using tank trucks with vacuum systems for collecting sap from both buckets and tanks. To facilitate building a unit of this type, J. L. Sipple & Son, Bainbridge, N.Y., have printed a set of plans and directions for construction, which may be obtained from them for $5.00 a copy.

The plain bronze gear pump has proven itself in many applications. It is simple in construction, self priming, and positive in action. It is not the best pump for every purpose, but a good one to start with because it will do practically every job.

We hope to be able to publish specifications, applications and performance data of several types of pumps in future issues of the DIGEST.

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Can be used successfully on hillside or flat land.

THE EASY WAY

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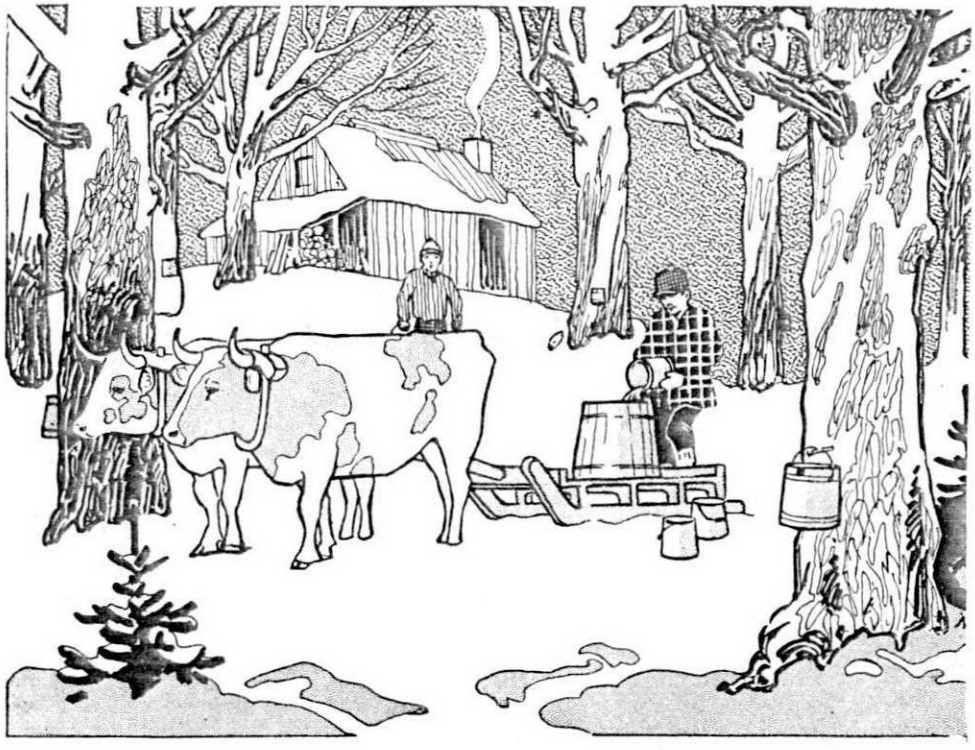

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