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FARMSTEAD

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POSTMASTER: PLEASE SEND CHANGE OF ADDRESS FORM 3579 TO FARMSTEAD MAGAZINE, BOX 392, BLUE HILL, MAINE 04614.



Letters

Dear FARMSTEAD,

My husband and I purchased your fall issue of the magazine and I happened to come upon "Ask FARMSTEAD." Well, in this, someone asked you about the creosote and soot problem in chimneys. You recommended Chimney Sweep, but I found it most expensive considering how often we use it. So I asked my mother what they used when there was no Chimney Sweep, and she told me a handful of salt every week is what the old timers used. So for those of you who haven't \$1.29 to spare every week, try salt.

Julie A. Livingston

Dear FARMSTEAD,

First let me say your magazine is most valuable and interesting to us. Keep up the good work.

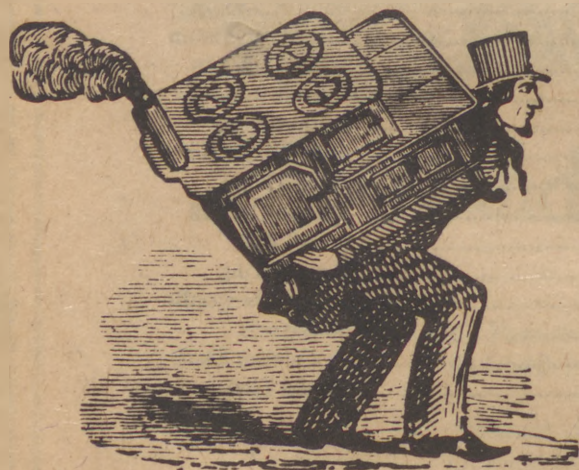
Second, the article about Old Time Apples was most interesting as we are planting an orchard of these varieties. We have found our best stock and selection is from: James Lawson Nursery, Route 1 Box 294, Ball Ground, Georgia 30107.

John A. Lautzenheiser
Ridgway, Ohio 43345

Dear FARMSTEAD:

Readers invaded by carpenter ants might like to know of this simple method of eliminating them.

Make sticky syrup of brown sugar and water. Leave in low rimmed dish in cupboard where they have gathered. Leave alone for several days until they are feeding in hoards. Sprinkle in a light amount of chlordane. Not too much or they will not eat syrup. In about four days the ants will be gone. It goes without saying precautions must be taken if there are children about. We taped our doors shut with warning. For younger children, ultimate watchfulness.



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Please Let FARMSTEAD Know...

We need your help to assure prompt delivery of magazines. As we have grown, changes of addresses have caused one of the biggest service problems to our circulation operation. If you plan to move, please use this form to notify us at least six weeks in advance. Also, please attach the mailing label from the front cover when writing about service or change of address. Thank you.

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Ant cups have proven ineffective. But above method has been 100% effective for us. Enjoy FARMSTEAD.

Ruth Ludwig
Augusta, Maine

Dear FARMSTEAD:

In the Spring of 1975, I started the "True Seed Exchange." Its purpose is to contact people who save old varieties of garden seeds and then put them in contact with other gardeners. This way they can swap and spread their old varieties and help new gardeners learn how to save their own seed. The Exchange works like this. If you are presently keeping seeds that you know from *your personal experience* runs true — send me your name, address and a list of the seeds you expect to have at the end of the 1977 gardening season. (This also includes bulbs, plants, root cuttings, grains and legumes.) Sometime next Winter, I will have a list printed of all the people's names, addresses and what they have. Anyone can get this list by sending me 50 cents to cover printing and mailing costs. Send it now, if you want. The people who participated in the Exchange last year are really fired up about it and so am I. It lets serious gardeners in like-climates correspond and swap seeds. It will give all of us seeds we can save from year-to-year (which is not only economical, but may soon be downright vital.) And it will help to spread alot of old, reliable, superior varieties that might otherwise be lost. There must be thousands of older gardeners in our mount-

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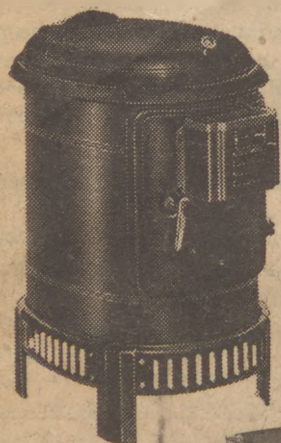
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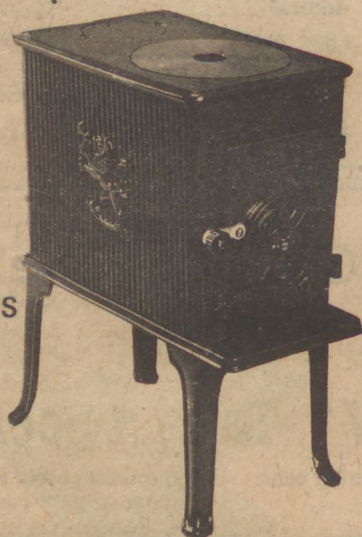
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"True Seed Exchange"

Kent Whealy

RFD 2 (F)

Princeton, Mo. 64673

Dear FARMSTEAD:

The object of my letter (see "Letters, Summer '76) to Mr. Rolerson was to bring to his attention some facts concerning the possible success of Carpathian Walnuts in Maine that were not mentioned in his article (see "A Grove of Walnuts", Fall 1975) and that he was apparently unaware of. This in the hope that he would be encouraged to look deeper into the subject and perhaps provide a more detailed article in the future. But, since he seems to be satisfied with what he already knows, it apparently falls to me to provide further information on the subject.

With this in mind, I am forwarding my copy of the Handbook of North American Nut Trees (in case you want to review it) and suggest that it be mentioned as a source of

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information for those who are seriously interested in planting nut trees in Maine. You might also mention the Northern Nut Growers Assn. — a non-profit organization for the promotion of nut growing, both amateur and professional, in existence for over fifty years. Besides the Handbook, they also print an annual report or collection of papers on the subject which covers the latest developments in the field. I also recommend the Louis Gerardi Nursery, RR 1, Box 146, O'Fallon, Ill. 62269, as a supplier of grafted nut trees. His latest catalog listed ten pecans, seven hicans (pecan-hickory cross), ten hickories, fourteen black walnuts, eleven carpathian walnuts, six heartnuts, two butternuts, four chinese chestnuts, one chinquapin and ten filberts.

I won't take the time and space to argue the merits of

Mr. Rolerson's "divergent views" except to say that a man has a right to farm in whatever way he chooses, but he also has the right to any and all information about the subject in order that he can make an intelligent choice.

The N.N.G.A. has many members in the northeast who have a lifetime of experience producing nuts under conditions similar to those in Maine, and who often write articles on the subject.

Other facets of nut tree growing also deserve mention, including timber, reforestation, and tapping for syrup.

I hope this information will be useful to those interested in nut trees, and encourage further interest in the subject.

L. White
Ellsworth, Maine



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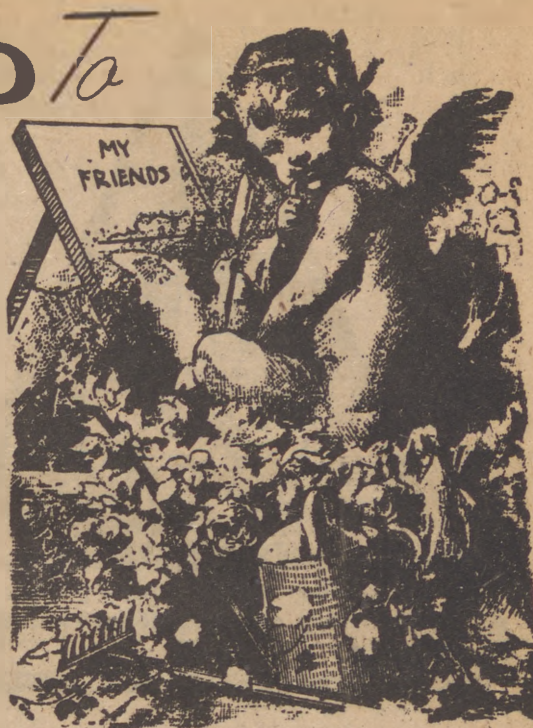
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Note: The Northern Nut Growers Assn. may be reached through Spencer B. Chase, Secretary, 4518 Holston Hills Rd., Knoxville, Tenn. 37914.

Dear FARMSTEAD,

I grew up in Appleton, Maine on a dairy farm, but I made the mistake of leaving. Now I chase the elusive dollar by teaching and living on a busy street in Portland.

However, my wife and I both love the country and were able to build a small A-frame in the woods on Appleton Ridge. We cut our cost by using studding from an old silo on my dad's farm. We got the windows and doors by begging from people with old torn down barns and houses.

We now have the A-frame with wood stove and loft, plus a small shed all completed. The cost was under \$1500.00.

Someday, we plan to stop playing this material success game and move into our "camp." I have always been interested in books and magazines which would help us do this on a low cost basis.

FARMSTEAD seems to be the best of many. Keep up the excellent work. Enclosed you will find our 2 year subscription. See ya in the woods. Peace,

Doug Moody
Portland, Maine

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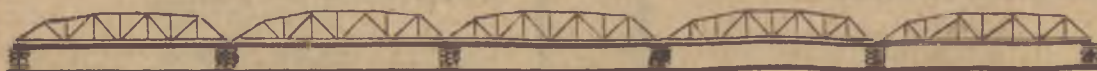
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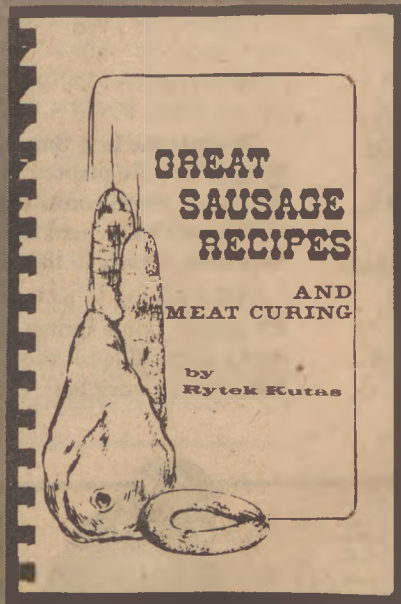
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Ask Farmstead

We encourage questions from readers. Also if you have a better or another response to a question already answered send it in! Many of the questions will be answered by experts from the University of Maine Extension Service.

"What caused the tips of raspberry canes to die?"

Jack Smagula, Small Fruits Specialist with the Cooperative Extension Service, answers: Damage reports came from many areas of Central Maine and most likely problems are in other areas too. The females of the raspberry cane maggot, *Pegomya rubivora*, girdle the stem, move down about 1/2 inch, lay an egg into the stem, and then girdle the stem again about 1/4 inch lower. The stem turns blue and begins to wilt above the first girdling and breaks off easily as if it were cut. Breaking off the stem below the girdled point, enough of the stem should be cut off to remove the maggot from the remaining stem. Burning the cuttings is helpful. Next spring, the adult, which somewhat resembles a housefly except that it is half the size and has a more pointed abdomen, will lay her eggs on new shoots. Application of methoxychlor before blossoming next spring should be helpful.



"When is the best time to cut green manure and rototill the garden? We planted winter rye in our garden last fall and didn't get to rototilling until just about the beginning of May and had a hard time breaking up the soil. Should we have done it early in the spring?"

Winter rye has to be worked into the soil very early in the spring. Some springs when we have a lot of rain, it is nearly impossible to rototill it soon enough. Plowing it under seems to work best, but again as early as possible.

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Members FDIC

"Can FARMSTEAD tell me where I could find plans to construct an outdoor bread-baking oven like the ones I've seen outside homes in Quebec? They are dome-shaped and seem to be about four to five feet in height."

We've seen plans advertised in *Sodbuster Catalog* for an "authentic French-Canadian clay oven." It sounds like what you're looking for. They cost \$3.00. Mail to Dept. SB, Lengardeau, Bais-Comeau, P.Q., Canada.

"What are the tax rules which qualify the home and property owner as a 'Farm'?"

Brooks Mills, farmsteader and part-time tax consultant replies: Refer to the Spring 1975 issue of FARMSTEAD and my article, "Income Tax Deductions For The Small Farmer," discussing this question and others. The IRS publishes each year their booklet, Publication 225 "Farmer's Tax Guide", which covers the subject thoroughly.

In Chapter 5, about page 24 and under the topic "Farm Business Expense" it states, "A farmer who operates his farm for profit may deduct all his ordinary and necessary expenses of carrying on the business of farming. The farm must be operated for profit. Whether a farm is being operated for profit must be determined from all the facts and circumstances in each case. However, you will not ordinarily be considered as operating a farm for profit if you raise crops or livestock for the use of your family, but derive some income from incidental sales. You are presumed to be operating your farm for profit for the current year, unless established to the contrary by the IRS, if in 2 or more out of 5 consecutive tax years (7 con-

secutive tax years in the case of . . . horses) ending with the current tax year, your gross income from the activity exceeds the deductions attributed to it."

Speaking from experience, we started our farm on a part-time basis and kept detailed records of time, work description, income, and expenses. We were audited after four consecutive years of losses. Our records substantiated our intentions and we were allowed these farm losses against outside income. We have been farming full time for five years since then with no further queries from the IRS. Our losses and investment credits have been applied to our outside income as before. Our farm income has exceeded operating expenses, but depreciation charges throw the farm into the red. After ten years, it looks like 1976 may see the farm in the black for the first time.

Farming today is a very difficult and expensive undertaking, as many have found out to their dismay. It takes considerable effort and skills in management and marketing to make a go of it. Those seriously considering farming need and deserve every tax break they can get. If you are subsistence farming on the side and looking for a tax break against outside income, you may be getting into that grey area of "hobby farming." This limits farm deductions to the extent of farm related income and does not allow any losses to go beyond the farm operation.

Just as the IRS descended en masse on the fishermen three years ago, the hobby farmer may have his day of harassment ahead. Those hit hardest will be the high tax bracket taxpayers who appear to be playing with an easy tax haven, and those who have not kept good records.

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"Where can I find information on Dexter cattle?"

Mark L. Davis II, President of the American Dexter Cattle Association in Decorah, Iowa comments: Dexter cattle are hearty little animals (cows average 650 lbs., bulls 800 lbs.) that have been withstanding the rigors of Ireland, Scotland and England for centuries. They also do quite well in British Columbia and Quebec. Based on this I would be inclined to say that they should do quite well in Maine. Dexters are a dual-purpose breed kept for both milk and beef. Daisy Moore, our secretary, in Decorah, Iowa will send you a pamphlet describing Dexters. If you would like additional information, I would suggest that you contact your local library or Mr. Spaulding McCabe in Salisbury, Ct. for a copy of the book, *The Dexter Cow*, by W.R. Thrower.



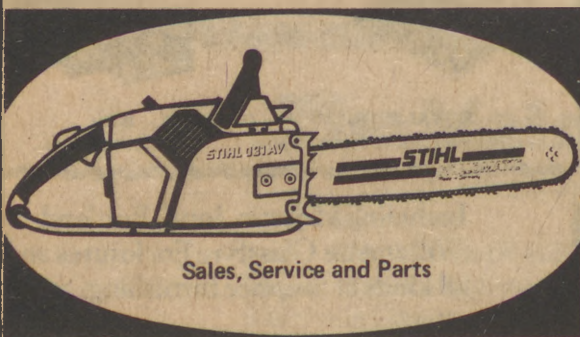
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"How can barley and oats be hulled at home on a small scale?"

Rob Johnston of Johnny's Selected Seeds responds:
In old Scotland, where oats have always importance in diet, there was commonly used a tool called a "quern." It was a sort of hand mill where the stones turned horizontally. The stones were set to scrape the hull off of the oat without damaging the kernel. Sadly, these have been out of use completely for some years, according to the Scottish Agricultural College in Aberdeen, to which I wrote for information on this subject. I also wrote to Quaker Oats about methods they first employed in oat hulling. The way they did it was with special grist mills, like a large-scale version of the Scottish quern. Now Quaker, and other firms who prepare oats for human consumption, use a machine called an impact huller. The grains are fed centrifugally at high speed into a rubber-lined drum, the friction hulling the oat kernel. (This is also the way sunflowers are hulled commercially.) I really don't know how a homesteader would hull oats with any present farm or household equipment he/she may have around. Conceivable a quern could be built, but this would require someone to inform of the design. Anyone just back from the Scottish Highland farming district? We own a Japanese machine (mfgd. by CeCoCo) for hulling seeds. It cost us about \$650 two years ago. It is powered by hand, and is, in actuality, a small impact huller. It was designed for hulling rice, but does a good job with oats and sunflowers,

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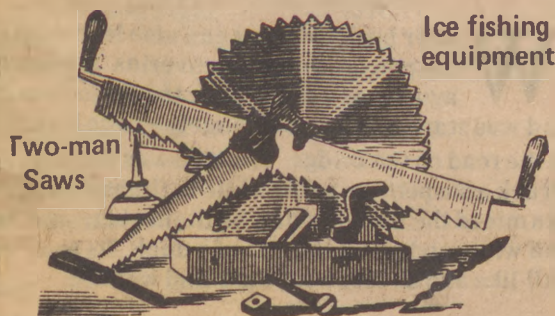


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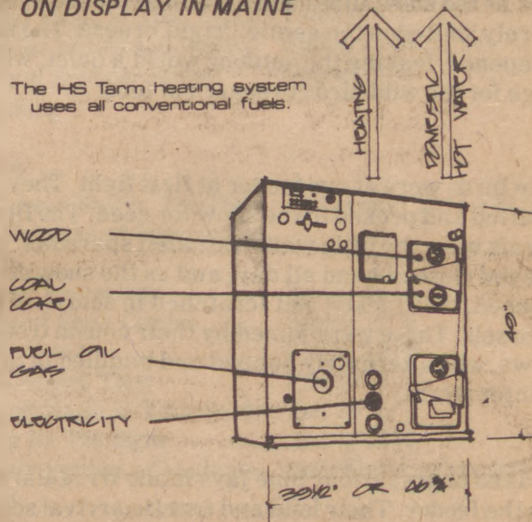
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could possibly handle millet, and will hull buckwheat if in conjunction with a better-than-average winnowing mill. I am more than casually interested in discussing the possibility of manufacturing this type of machine in Maine. I believe that it could be made much more cheaply with some design changes.

Barley is another story. On oats the hull fits rather loosely. The hull on barley fits tightly, and there is a piece of the hull which actually runs down into the kernel. To remove this hull, nearly half of the kernel is ground off, so that that little piece of hull in the kernel is ground off, for delicate palates. The process is gloriously referred to in the trade as "pearling." Pearled barley is the product. The fact is that barley is much more delicious, and certainly more nutritious, if only the exterior hull is removed. This "hulled" or "milled" barley is available at times from natural foods distributors. Erewhon has recently been selling it. We have a hand barley pearler which resembles a hand grain mill. Thing is, it was designed for examining field samples, and the output isn't even practical for a one family kitchen. It works by scraping the kernels which are retained in a cast chamber with a revolving wire brush, similar to what you might buy for use with an electric drill. Once again, I don't know how we could hull barley with common tools. Our Japanese huller won't even come close.

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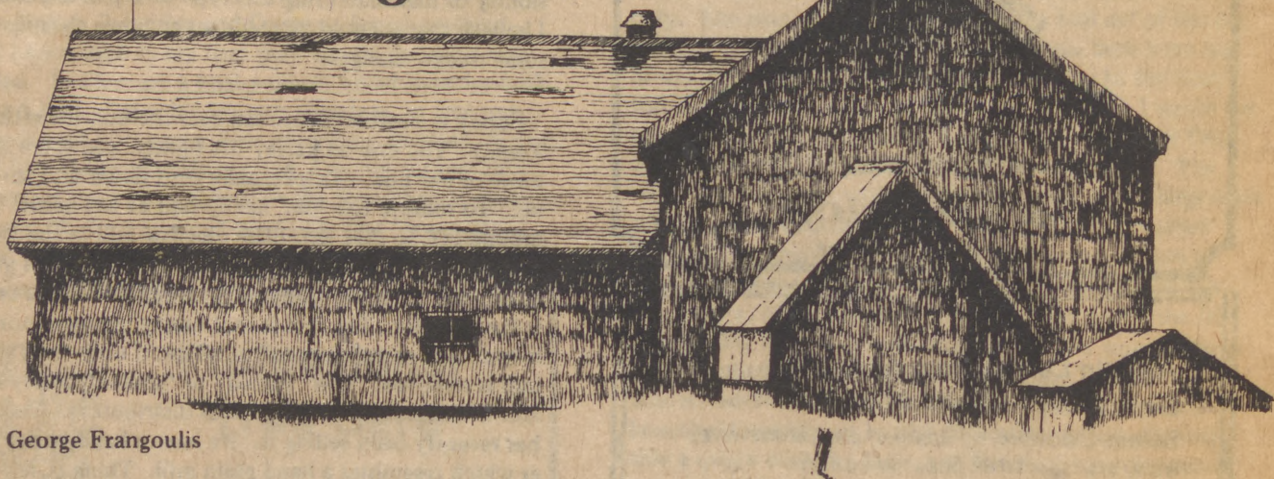


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Looking East



by George Frangoulis

Winter Bird Watching

Today the snow began as a white and icy mist. The thermometer at the kitchen window read just twelve degrees. Too cold to amount to much, I thought, but the misty snow thickened and continued steadily all day. There was very little wind, and as the snow sifted down through the dark maples it barely shifted in the gentle, frigid breeze. The snow deepened, leaving the outdoor world a quiet, white refuge for the wild birds in search of food.

The birds were at our feeder at first light. They scuffed and pecked in the snow for seed. The first arrivals were the little white-throated sparrows. They stayed close at hand all day, and as the snow deepened, they kicked and scratched in search of tiny morsels. These were joined by their cousin tree sparrows, who alternately hopped and huddled in the winter storm.

A band of gregarious blue jays made irregular forays on the feeder. Their loud and frantic arrival sent the shy, smaller birds to flight. I have walked the village in winter and seen the same band of jays travel from one feeder to the next, constantly squabbling while sampling the offerings of seed.

Like the blue jays, gangs of evening grosbeaks visited off and on during the day. These gaudy, yellow fellows descended for quick snacks, then were gone, presumably to other feeders in the village. Purple finches and nuthatches also visited during the day. But the long cold vigil was kept by the white-throats, who stayed close to the feeder until dusk.

Winter bird watching can also lead to interesting and dramatic discoveries. A few days ago, I was driving near the Penobscot River, and was startled to see a strangely exotic looking bird in the road on the bridge. The bird was dead, having struck a suspension cable while in flight. I stopped and examined the bird. It was a brilliant contrast of black and white and about the size of a duck. Its beak was gull-like and its feet were dark and webbed.

I could not positively identify the bird, so I took it to Chandler Richmond at the Stanwood Bird Museum in Ellsworth. He told me it was a Murre, an Arctic bird that spends most of the time at sea. They are occasionally found off the Maine coast during winter months. This specimen would be delivered to the University of Maine for study, and possibly to be stuffed and mounted.

This same stretch of road beside the Penobscot River revealed an even more dramatic sighting for me recently. The road runs about two or three hundred feet above the river at this point. The embankment is steep and heavily wooded. I was travelling east towards Bucksport when I saw a large hawk-like bird in one of the trees on the bank.

I was less than a hundred feet from the creature when I was readily able to distinguish its markings. It was an extremely large and magnificent bird with a brown body and solid white head. It was a Bald Eagle. It was the first one I had ever seen living in the wild. As I watched, it slowly and deliberately moved its wings. It left its perch in the tree and gained flight over the river. Turning, it circled above me, then pumping hard against the crystal air, flew high and beyond my sight.

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Photos by Robert Shetterly

by Will Bonsall

If I were to make the statement that most agricultural practices are more "mining" than they are "farming," you would probably assume that I was referring to the giant agribusinesses and those large chemical farms using chemical fertilizers and pesticides. However, the term "mining" could include most backyard organic gardens, as well as many rural "back to the land" enterprises. When I compare "mining" and "farming" (or "gardening"), I have in mind an extension of Newton's Law of Conservation of Matter. Simply stated, this law maintains that matter is neither created nor destroyed, merely changed. When we, as gardeners, consider that "matter" in terms of "organic matter," the law loses some validity, quite fortunately. Otherwise, all farming would be inherently a losing game. However, I believe that gardening with Newton's Law in mind can make good gardeners better.

The Commonsense Gardener

Consider for a moment some things an organic gardener might put on his 30' by 80' plot — manure from a local farmer, home-made compost, leaves from a neighbor's lawn, ashes from the stove, bonemeal from the store, granite dust and lime from local quarries, and industrial by-products such as cottonseed meal, rice chaff, and cocoa hulls. Now, since we talk of "putting back" into the soil, just which of these excellent organic materials actually came from that 30' by 80' in the first place? Only the compost; the others originated on another piece of ground.

Now, if we are truly thinking organically beyond our own gardens and tables, we should at least consider this question. "Are the amendments which I am bringing in 'ripped off' from the place where they are now absent?" My answer is "Not necessarily, but quite possibly." Obviously, the lime, granite dust, rock phosphate and greensand were literally and figuratively "mined." They are non-renewable. They will never grow back. On the other hand, neither are they destroyed; they are merely changed and redistributed. Take another example. That cottonseed meal was not turned back into the soil which grew it. Therefore, must not its equivalent be replenished from another source? Otherwise, won't the land soon experience a humus deficit? In this case, certainly. If the produce of one acre is used to enrich another's acres, and the produce of that yet another, wherein then does humanity gain and the farmer prosper? How does mankind step off the treadmill? These questions are more than just armchair philosophizing when you consider that in all our organic crusading we are implying that everybody could use organic methods while opponents of organic farming maintain "there aren't (and never could be) enough organic materials to go around on all the farmland." Is your garden proving them right? Could you get enough cottonseed meal, if *everyone* (including the cotton-grower) farmed organically? Since everyone would value their own residues very highly, where would yours come from? If we are to show the correctness of the organic grower's position, we must at least keep in mind this concept of "whence it comes and whither it goes." In other words, we must show a favorable balance sheet on our humus account. We must show organic folks aren't a limited elite who have successful gardens only because they can afford to gather the makings onto a small plot.

Fortunately, as I have said, the Law of Conservation of Matter cannot be exactly applied to "organic matter," or else farming would never have been possible. The fact is: "You can get something for

nothing," if you know how and how much, and the world can be perennially better for it.

One example is manipulation of plant populations. Consider plants in terms of their humus requirements (R) and their yield (Y) as humus. The ratio Y/R, if it could be quantified, would give us a sort of index of a plant's humus value. An index of less than 1 would mean a net humus loss. Such a plant is pumpkin. Although this doesn't at all impair the value of growing pumpkins as a crop (after all, from our own point of view, the food value almost always outweighs the humus value), it does mean that if one grew pumpkins continuously on the same ground without fertilization, the land would be depleted. On the other hand, take the example of buckwheat. Solon Robinson mentions the case of a piece of poor land sown to buckwheat for 26 consecutive years with no fertilization other than itself (minus the seed), which gave reasonable yields, and improved the soil so that it could support more demanding crops of corn, wheat, and clover. Here is a plant with an index evidently well over 1. So considering a plant's "humus index" can help the land grow more of its own humus (to compensate for the pumpkins), in addition to the crop.

Another example of "something for nothing" is atmospheric nitrogen precipitation. Sounds fancy, but you can do it in your own backyard. Every snowstorm drops tons of snow on a field, and with it, several pounds of nitrate. When the snow melts, the nitrate either runs off with it or joins the soil, depending on the shrewdness of the farmer and his "eye for a bargain." In the

Soviet Union, the fertility of snow is so appreciated that farmers string drift fences across the fields to hold the snow there.

Furthermore, we know that nitrogen is common in the air around us, and that atmospheric electricity (greatest during thunderstorms, but always present) causes this to precipitate as NO_3 . Wise gardeners can increase this precipitation by stringing copper wire on poles around compost heaps and bean poles to reap a little nitrate every moment.

Legumes themselves are another un-salaried labor force (although an "advance" of a bit of lime gets them on the job faster). Their soil bacteria (*Rhizobia*) are constantly "grabbing" nitrogen out of the air and rendering it to a useable form. The same effect may be achieved without legumes by innoculating the soil with azotobacteria. So there are ways to "create" organic matter.

Traditionally the good farmer has viewed his humus and general fertility as "principal," and the crop as "interest." In order to maintain fertility when the crop dipped into the "principal" (Crops with a humus index of less than one), the farmer simply had to replenish the "principal" periodically to restore the amount depleted. This was fine and easily done, because the farmer could "draw on" other organic accounts, whose owners didn't recognize or appreciate their value, such as Neighbor Jones' manure pile. To Jones it was a nuisance, and 10-10-10 is easier to handle anyway. The difficulty, however, is the nation's growing awareness of its fertility deficit; now Neighbor Jones begins to recognize the value of that manure pile. Another difficulty





is accessibility. All that manure in Greeley, Colorado is pretty useless to a corn-grower in Nebraska, even if that manure *did* get its start in his cornfield. So perhaps you and I had better be giving a little thought to how our 30' by 80' can start generating more of its own "soil capital."

Humus is only one part of it. Remember our soil capital also consists of phosphates, nitrates, potash, calcium, zinc, iron, texture, structure, even water, and lots more. How can we get more of what we already have? How can we farm more and mine less? We have already seen some hints as to how this might be done; let me make some general suggestions, and you will undoubtedly think of many more.

First, let's not abandon importation; i.e., bringing things in from away. However, let's be more imaginative and resourceful in finding materials whose value is not yet recognized in the general market. Take, for example, the woman in Kalamazoo, Michigan who rakes, sweeps and shovels out the town ditches and trundles the organic matter back to her garden in a wheelbarrow. She imports it. It didn't come from her land. Yet she's not "ripping off" the soil; the gutter doesn't need it. In fact, it was already "ripped off;" she's merely returning it to the only source that wants it back — her garden. Likewise, consider brooks, swamps, farm ponds. All the detritia of bygone lives gathers in these hollows and does less good than it might elsewhere. That old farm pond may need dredging in places anyway, and that residual muck is g-o-l-d. But be careful now! Take heed lest your

gleaning becomes mining. Don't dig so as to leave mini-sloughs for mosquito-breeders. Does this brook drain better here now, or worse? Don't leave things bare to erosion. Cover your muck-bank with rocks and ferns, or invest a few pennies in grass seed. Don't tear up all that cat-tail bed, or those cress. Take some and use it, but think about it.

The same idea applies to tree leaves in the forest. Maple leaves are ideal. They are alkaline and rich in rare phosphates. The leaves form a composted layer several inches deep which rivals guano for goodness, and it's not all needed there. But again — caution. You may overdo and remove more than what the land needs for itself. The tree itself will not suffer so much (some trees have a very high "humus index"), but you will begin to notice an absence of ferns, mushrooms, wildflowers, etc., which depend on the yearly application of leaf humus. They can spare a year, but wildflowers don't thrive in strip-mines. So again, use sense.

Stop fertility leaks. There are more than you realize of these sinks where fertility drains out of your garden system. The worst, most diabolical fertility drain in the U. S. must be the common flush toilet. Every good and wholesome thing that is consumed in the household is ejected into the nearest waterway, or more recently, sewage treatment plant, where it nonetheless is wasted. In Asia, a more sensible people carefully gather every bit of human waste and cart it back to its source, the soil. By composting and reasonable care in handling, every home could re-use its bodily wastes safely and directly.

Protect your compost pile. If the compost and manure heaps are over in some corner exposed to the elements, you are throwing away fertility. Notice the lush burdock and beggar's-lice and ferns growing around it. They are getting something which your crops aren't, because it's already been leached out. Build some crude shed over the heaps, or lay cornstalks thickly against them tent-wise to help shed rain. Protect your compost heaps.

Use such cultural methods as covering the entire growing area with vegetation of some kind. Plant in swaths or raised beds, train on fences or poles, use companions, live mulch, etc. Anything that gives more compostable material per area of ground. Remember — the more you grow, the more you *can* grow. If you are going to plant a crop of squashes or melons (which must wait until the ground is warm), try sowing the area between the rows a couple of weeks earlier to some quick-growing, easy-to-pull green manure, like rape or mustard. While the young squash vines are just starting to fill that space, the rape will already be converting sunshine into compost material. Pull it as the squash advances, using younger plants for greens, composting the rest. This way you avoid having part of your garden look like a well-cultivated desert for several weeks of the growing season.

Another approach is the "spare garden." The idea is that of your total "farming" area, only part, say half, is actually growing the food. The other half is growing food for the food, or soil; for example, hay. Here we can make judicious use of species. We need a crop which can perpetually replenish itself while

supplying the greatest possible surplus of organic matter for the garden. For reasons given earlier, pumpkins are an unwise choice. Better a grass such as rye or maybe buckwheat. Alfalfa and comfrey are excellent; although they require soil-building themselves at first, thereafter, they much more than repay their keep. I personally place a high value on nettles and pigweed in this respect.

Using a green manure or soiling crop is the same idea. It's grown to be turned under to feed a crop on the same ground next season. Like the "spare garden" however, a soiling crop has the disadvantage of not actually growing food on *all* the land.

In the case of some nutrients, you might be able to accomplish more by manipulation. Put more simply, this is something we "do," as opposed to something we "add." Merely adding enough of some material to effect a balance ("cake-mix gardening") is often unrealistic. Take, for example, a hypothetical plot of ground, poorly drained, covered by standing water and matted popple leaves, with compacted clayey soil, and lying in the shade of a large fir tree. The soil tests out to have a very low pH; it's sour'n a green persimmon and won't grow anything but a venus' fly-trap. Solution: so many tons of lime per acres. The pH rises half a point, but next year it's right back down again. "Cake-mix gardening" can't help here. Now let's take that piece all over again, and don't add a spoonful of lime. Remove that tree and let the sun in. Sunlight all by itself has some pH-raising power, I don't know why. Improve the drainage and the soil dries out and warms up, further raising the pH. Also now air can enter. Spade or plow up the

place, letting more air in, and further raising the pH. The presence of oxygen encourages aerobic soil reactions which produce fewer acids than the putrefying water-logged conditions. Spade in some organic matter such as leaves and hay, and now you have a world more congenial to earthworms, whose calcareous glands secrete significant amounts of lime. Where does this calcium come from? The calcium (along with magnesium and potassium) was there all the time, but in that environment, it remained locked up in insoluble precipitates, making it effectively unavailable. Congratulations — you have pulled a rabbit out of the hat which before had appeared empty!

The main benefit lime can give is due less to its chemical properties than to its mechanical properties. A relatively small amount of finely ground limestone can separate clay particles way out of proportion to its weight. I'd say it's analogous to adding a few teaspoons of shortening to several cups of fine flour. Lime makes a "flakier" soil. This improved texture of course increases soil aeration, drainage, root penetrability, etc., in effect raising the pH; but not primarily due to its alkalinity, which is weak.

One can go on to think of other ways to avoid "cake-mix gardening," and one should. It's fine to use Neighbor Jones' manure pile if he doesn't want it, or if the price is right. But remember, we'd like to make the whole world a little more organically balanced, not just our backyards. Everything comes from somewhere and everything goes somewhere. By keeping track of these "somewheres," we can keep out of the "mining" business, and be better gardeners and farmers because of it.





Photo by Jo Barrett

Farming with a Draft Horse in Quebec

by Greg Whitten

One of our reasons for settling in this part of Quebec was because draft horses are still commonly used here — mostly for wood-cutting and maple sugaring, but also here and there for odd jobs around the farm such as cultivating potatoes and hay-raking. There are even a few dairy farmers who still use nothing but horses - but sadly that is going out of style. Thirty years ago it was all horses here, so it is still easy to find harness and horse-drawn equipment, plows, harrows, mowers, rakes, wagons, sleds, etc., in quite good condition.

Our farming is predominantly to provide for ourselves and our animals, the mare, two cows and a few chickens. We farm only about twenty acres of our 100 acres with about eight acres of hay and grain fields and twelve acres of pasture. The rest is woods. We also make hay (or gather it) elsewhere as our own hay crop is not yet sufficient. We produce as much as we can of our needs - grass, hay and grain for the animals and grain, potatoes, vegetables, fruit, dry peas and beans, milk, eggs in summer and meat in winter for ourselves. At this point we are 80-90% self-sufficient in food and farm produce.

Our mare is a basic part of our subsistence economy. She helps provide for us and provide for herself, and helps us earn a small income from maple sugaring and wood-cut-

ting that covers our monetary expenses. We are tied in to the cycle of life on our land, as most of the needs for our life here derive from the sun and the soil of nearby fields and forest.

Girl, our eight year old mare, is about 1400 pounds. We have had her for four years now. She was born and raised in Notre Dame des Bois, about ten miles from here. Girl is a good worker and we get on pretty well, though she gets rather lively at times because we don't have enough steady work for her. Sometimes after a few days off she is a bit too quick and excitable for my liking. I generally try to arrange it so that she does some job not too exacting to slow her down before plowing or yarding logs in the woods, where a slower pace is essential.

I do most of the work with the one horse working single. However, for plowing and disc-harrowing I usually borrow the neighbor's mare who matches ours pretty well, and work with a team. This is because these implements are designed for a team. One horse can pull them but they are heavy, and you have to pause a lot to let him catch his breath. As the other mare is handy and Lucien doesn't work here in summer I generally work double if I have more than one-quarter acre to plow or harrow. The other alternative would be to find or rig up a smaller plow and disc-harrow

for working single. Light soil, and moist soil make it easier for the single horse while heavy soil, dry soil and sod make it hard. It is often hard to get a single horse to pull the plow slowly enough at first. They tend to want to get a heavy object moving faster and try to trot. A short-legged horse or a heavier horse is more able to plow slower. After a while they will get used to it, but perhaps some quicker horses might be pretty difficult to slow down. At first it will take two people, one holding back on the reins and the other holding the plow, but as the horse and the plowman get the hang of it, he can put the reins around his waist.

Plowing with the horses is very pleasant when it's going smoothly, but it can be tricky and exasperating in heavy sod or rocky soil. With the team I can do up to an acre in a day (this is by no means a record), generally less if there are rocks, sod, or a lot of turning around. Single I get one-sixth to one-quarter of an acre done in half a day. It doesn't pay to plow single the whole day as by the afternoon Girl is too tired and too slow.

My neighbors say they got better crops with their horses than they do now with their tractors. With horses you tend to plow more shallowly, and horses compact the soil less. You can get onto the field earlier in the spring to work it, and there is no risk of getting stuck in a wet part of field in the hay-season as a lot of heavy tractors do here in a rainy summer.

A horse will work and give you manure to help support himself, and so fits in well with a self-sufficient style of living and gives a degree of independence from the vagaries of modern economic and political systems. A tractor will pay for itself, if you farm enough, but for us it certainly wouldn't. A tractor would be a weight around our necks. Apart from the Freudian thrill of having so much power between the legs, I wouldn't enjoy much being seated on two tons of vibrating steel, breathing its fumes and exhaust into my lungs as I went about my daily work. I prefer to deal with the personality and muscular strength of a horse, and I prefer to smell hay, horse and manure rather than gasoline, oil and exhaust, which are all poisonous to some degree (especially gasoline, lead tetra-ethyl and carbon monoxide). If I'm going to farm organically, I want the work to be or-

ganic as well as the produce. I don't believe you can operate such a machine without taking in a certain amount of these poisons and without them affecting your health to some extent. Using them every day one can become insensitive, but if you go for long periods at a time, as we do, without being exposed to the contaminants from internal combustion engines, you would be amazed at how sick and poisoned they make you feel. What you don't take in yourself is going out for something else to take in somewhere else. Maybe diluted enough to do no harm, but not always, and who knows? At this stage it is impossible not to produce (and consume) these pollutants, directly and indirectly, but we can at least cut down on our own contribution.

Anyway a horse runs on grass, hay and grain, all of which can be had to grow on the average farm. What and how to feed a horse could fill a whole article in itself. One thing I will say is that I tend to feed my horse much less grain than is generally recommended. I grain her only if she is doing regular heavy work or if she is getting underweight. Less oats seems to make her quieter. However, I do go to the bother of making good quality hay for her, and she seems to keep in good condition on it. It is no doubt a matter for the individual and his situation, but for us it is easier to put some extra work into haymaking rather than produce a lot of grain (or buy it at today's prices) to supplement poor quality hay.

Girl does the bulk of the heavy work in the hay season. She mows the hay, rakes it, and hauls the wagon in the field while we load it and then hauls it to the barn where we unload it. It takes about fifteen tons to winter our animals and supplement our pasture which is still insufficient. Making it is not really as simple as it sounds because of the inevitable rain, and our various methods and contrivances to protect (or try to protect) the hay before it is dry enough to put in the barn without it molding.

In the woods the horse really comes into its own. There has not yet been developed a machine that can do the same work so well and so cheaply (except perhaps his predecessor, the ox). When I cut a tree down I cut it into logs ten to sixteen feet long and hitch the horse to one end with a chain and yard them up to fifty yards (or more if necessary) to the sled road. This way windfalls, diseased, crowded, damaged or mature trees can be cut selectively for fuel or timber, leaving the rest of the forest undamaged.

With selective cutting the way we practice it, only an odd tree here and there is cut, improving conditions for remaining trees and always leaving a full forest where you would hardly notice that woodcutting has been going on. A forest managed in this way is probably three or four times more productive than clear cutting and far more attractive than the scene of desolation left after the passage of heavy machinery. The horse is light so he doesn't damage the soil and can maneuver a log among the trees and obstacles without hitting them. He can also help bring down a tree that is fallen against another and hung up, by pulling out on its butt — I often need to do that.

In Quebec we get deep snow and cold winters. A horse can still start at forty degrees below zero (provided you've kept him in the stable) and make his way through snow up to his belly. Also horses are often used in logging operations in swampy areas where a tractor or timberjack would break through the frozen crust, or in rough terrain.



Greg lets Girl taste maple sap — she really loves it.



Photo by Jo Barrett

In maple-sugaring Girl is invaluable. In the spring as the trees thaw out a sweet watery sap will flow from the sugar maple trees. To catch it we drill a small hole in the tree and drive in a metal spout and hang a two gallon bucket on the spout. After each frost as the wood thaws out the sap runs. We go through the sugarbush with the horse and sled with an eighty gallon barrel on it, collect up the sap and haul it to the sugarhouse where we boil it down to make maple syrup. This is something of a luxury item, and it sells for \$10 to \$20 a gallon. It is one of the few primary industries where mechanization and capital investment don't really pay off. Except in steep locations where pipes can be installed, the horse and sled are the most efficient way to collect the sap through the deep slushy thawing snow. Girl has learned to follow the roads in the sugarbush, and will stop and go and turn left or right when I call to her from a distance, as I go from tree to tree collecting the sap in a bucket and pouring it into the collecting barrel. A machine with caterpillar traction would cost more to buy, run, and you'd have to hire a man to drive it, and it would make you very little extra syrup.

Within thirty miles of us here there are maybe ten farms where virtually nothing but pure horsepower is used - about half of them are run by French-Canadians who like their horses and see no reason for letting them go. The other half are people like us moving back to the land and adopting horses as the most practical, economical and ecological way to work the land.

But there are others, too, who have tried draft horses and not had so much success. I think it is essential to have someone at hand who knows how to do what you're trying to learn and can steer you past the many pitfalls. It can be really dangerous if you don't know what you are doing, for both you and the horse. We have all had a few hairy experiences and I have been lucky that my accidents were not as serious as they could have been — now I know better, I

hope. You can get into trouble with an unworkable work horse - a horse must be sound and he must be workable and dependable. This depends as much on you as on the horse. He must be of good health and temperament to start with, and you must know how to care for him and handle him.

You virtually need someone to guide you right from the start.

One thing we have not tried much yet is using Girl for transportation. We've gone up to ten miles and back in a day, but I'm still afraid to take her into heavy traffic. I don't know what she would do, and I don't know what other people would do. Nobody is expecting to encounter a horse and there are a few mugs on the road who are liable to run into you or run you into the ditch because they don't know any better or because they think it is sport. A horse and wagon are pretty vulnerable, but it could be done. We have a friend who last summer drove his horse and buggy about 500 miles to Cape Breton in Nova Scotia over backroads. He really enjoyed it and says next year he's going to British Columbia. It's probably worth getting used to a slower pace. Motor vehicles tend to deaden our consciousness and really don't save us much time, when you consider how much time we have to spend earning the money to pay for them, and time we spend working on them, and time we spend using them for trips we wouldn't otherwise make if we didn't have them, and the money we spend because they give us access to things we wouldn't otherwise buy. We don't own a car ourselves, but still we manage to borrow one often enough and I'm not always sure that we come out ahead using it, when I consider all the time and costs.

I am sure about our mare though. Our experience owning, working and living with her has been a good one and it has been an essential step in our search for a clean agreeable and rewarding way of living and providing for ourselves on the land. In fact, I don't see how we could make our life here without her.

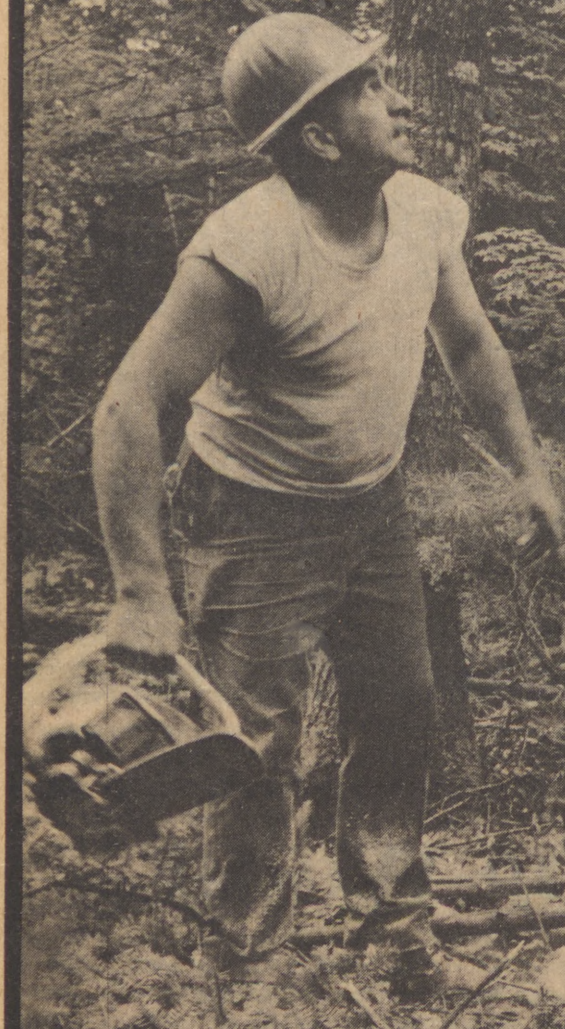


Rediscovering Wood

Wood has been a long-used energy resource in rural areas throughout the country. However, as technology advanced during the past century, wood steadily gave way to gas, coal and oil. This trend away from the use of wood — a renewable resource — continued until we recently realized that fossil fuels are non-renewable, and thus will become increasingly scarce, more difficult to obtain and more expensive.

We are now rediscovering wood. Many homes and farms in New England and elsewhere are returning to the use of wood as both a primary and secondary energy source. It is for this reason that we present the following thoughts on wood. In addition to the discussions on its practical uses, we include an essay on the recreational value and importance of our woodlands. This information comes from individuals presently using wood.

How to Fell a Tree



by John T. Breck

Wood cutting is a dangerous activity and probably the most dangerous part is the actual felling of a tree. With the increase in use of wood as fuel, there has been an increase in the number of inexperienced people cutting wood. It is often said that experience is the best teacher, but in the case of dangerous activities like woodcutting, a certain level of knowledge of safe practices should be attained before one attempts to get experience. Safe woodcutting is a must in order to fully enjoy the benefits of self-cut wood heat.

Before you begin to fell a tree, in fact before you even start to work, make sure your saw is fully gassed and oiled, the breather and oiler unobstructed, and the chain sharp and properly tightened. Proper tension may vary with the type of saw, but mine is adjusted so that at rest, the chain does not hang; but if pulled, will yield about a quarter inch. Always carry your "duty tool" in your back pocket when cutting, as a chain will loosen after use and need re-adjustment. Running out of gas halfway through a tree necessitates a long walk back to the gas can or tools while leaving the tree hanging. A dull saw, madly over-revving, spitting sawdust rather

Diagram 1

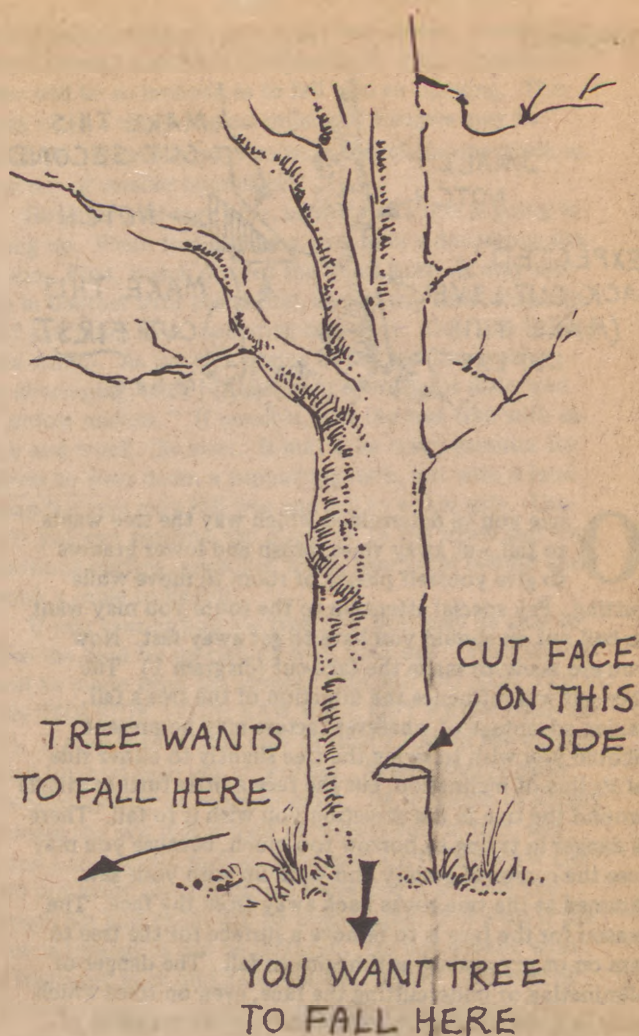


Diagram 2

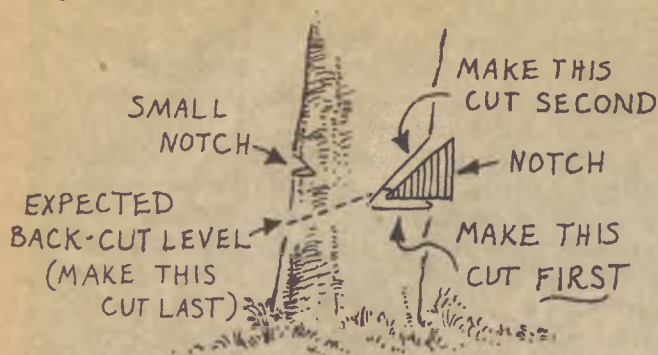
than chips is dangerous too. A chain not getting oil will tighten and stall the engine eventually, but may damage itself and the bar in the meantime.

The next step is to choose a tree and determine which way it will fall. By and large, without heavy equipment, a tree will fall according to its own inclination. Though the trunk may lean one way, the greater weight is given to the upper limbs and leaves, especially in the spring and summer. This weight is in a position of advantageous leverage, and the wind can play havoc with you, tossing the tree-top to and fro, always changing the tree's inclination.

The wind's direction and velocity are the most variable factors in woodcutting, hence the factors to be most aware of. It is the fickle wind that causes most of the accidents among experienced loggers. **DO NOT CUT.** Go home, if the winds are high and gusty. A tree may lean obviously to the right but rock back to the left as a gust passes, inviting disaster. Also present on windy days, lurking unseen above, are the "widow-makers" — dead limbs and tree-tops waiting only to be dislodged and come crashing down to add to their already ominous legend.

Illustrations by Faith Rainbolt

Diagram 3



Once you've determined which way the tree wants to fall, cut away vines, brush and lower branches to give yourself plenty of room to move while cutting. Pay special attention to the route you may want to bail out on should you have to get away fast. Now you are ready to make the face-cut (diagram 1). The face-cut will influence the direction of the tree's fall, taking advantage of whatever factors may be present. Should you wish to swing the tree slightly to either side of its line of inclination, cut the face a little further (dia.2) around the tree in the direction you wish it to fall. There is danger in trying to borrow too much, because you may lose the center of gravity and wind up with your saw jammed as the tree rocks back away from the face. The reason for the face is to remove a surface for the tree to jam on or pry against as it begins to fall. The danger of eliminating or undercutting the face, even on trees which may be growing almost horizontally, is the prospect of splitting.

Some trees are notorious splitters. A tree may split because it is hollow inside, or from grains, internal twists and stresses that may not be apparent unless the wind shifts or the face is cut improperly. Stand to the side as you cut the face — usually on the side to which you expect the tree to come as it falls. This protects you from splits. Cut as low as possible on the trunk as this will give you more wood and is standard good logging practice since the lower the stump, the less danger it presents as obstruction. Also, by bending to make the cut, you give yourself a split-second to straighten up and avoid a murderous split — it takes longer to fall backwards than to straighten up. On high risk splitters, you may make a *small* notch first, on the back side of the tree, slightly above the expected back-cut level (diagram 3), to give the trunk a chance to snap off rather than split.

Always be sure you've cut yourself room to move all around the tree, so you can move in any direction in a hurry. Make the horizontal cut first on the face, anywhere from 1/3 to even 2/3 through, depending on the acuity of the tree's inclination. The greater the inclination, the less need for a deep face. The danger of undercutting is splitting on the back-cut; the danger of over-cutting is the tree falling, in *any* direction, before you can even make the back-cut. With the horizontal cut made, take out the notch, generally from the top down,

endeavoring to make the cuts meet neatly (diagram 3). In some situations, up-cutting the notch may be in order, but it's easier to work with gravity whenever you can.

The back-cut comes next and in making it you may influence the tree's line of fall by "hinging." This hinge is the last piece of wood still holding the tree as it begins to fall, and will continue to pull the tree towards the hinge until the last bond breaks.

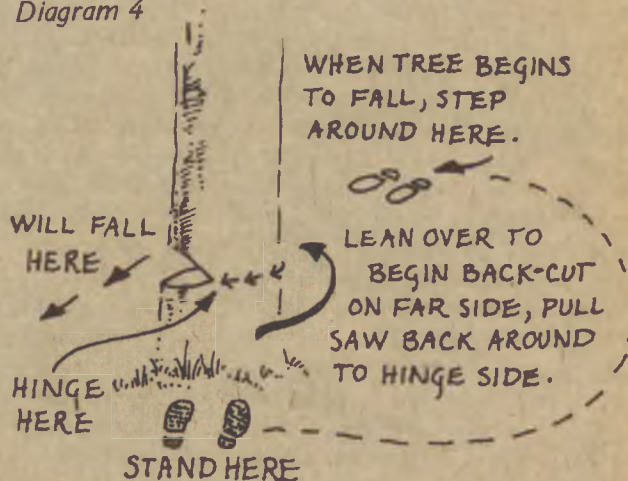
Generally, you would position yourself on the side of the hinge to protect you from splits. Begin the back-cut on the far side and pull the saw across the back towards you (diagram 4) until the tree begins to fall and the hinge twists the tree on the stump and pulls it in your direction. Step around the rear of the tree so that it falls away from you, but don't commit yourself until you know for sure the direction it is going. Should a tree every begin to fall towards you, never succumb to the irrational urge to outrun it. Panic seems to make this a natural human reaction, but with foreknowledge, you need only step around the tree, behind the line of fall.

Sometimes, just as it seems the tree must topple, the wind or a miscalculation may rock the tree back on the stump, pinning your saw and/or jamming tight against the narrow back-cut. If you cannot snatch the saw out of the bind, don't linger. Shut the saw off, step back and with one eye on the tree-top to determine where it might go, and the other out for stumbling blocks and brush, carefully choose the safest line and back off. Once safely away, you may analyze the situation and choose one of several courses.

The safest course is to let the wind blow the tree over. The problem here, of course, is the wind's unpredictability. You cannot go off and leave a potentially murderous situation poised indefinitely. The tree can come down in seconds or months later. You are responsible for the tree; it must fall before your responsibility ends.

The best choice of tools in this situation is a wedge. For all its simplicity, pound-for-pound it's the most powerful tool you may own. If your saw is not pinched in the back-cut, the wedge is inserted and driven in with a small sledge or mallet. Many trees are likely to pinch back and spit the wedge out by rocking back in reaction to the first one or two blows. So, once the wedge has been tapped in place, hit it a good lick, then as the tree rocks forward,

Diagram 4



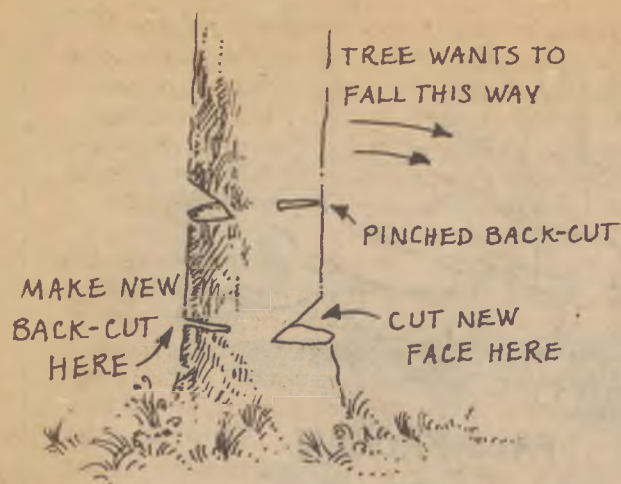


Diagram 5

quickly set the wedge by hitting it again, before the tree rocks back. Whenever driving wedges, be aware that sharp metal chips may fly into your or an observer's eye and cause severe injury. Wedges should be kept trimmed of burrs and splintered edges, and safety goggles are the best insurance against eye injury when using any tools. It is best to carry two wedges, as most jobs will require more than one.

If the fully-driven wedges do not influence the tree enough to tip it back along its intended line, or if your saw is still stuck in the way, and if you have another saw, make a new cut below the first attempt, reversing the face and back-cut (see diagram 5). Be sure you have room to move because this tree could go anywhere at this point.

If the wedges haven't worked, or the tree is looking down on your barn or the neighbor's fence, and you can't drop it back where it wants to go, a long, stout rope or cable and block are in order. Try to anticipate problems such as nearby buildings, etc., beforehand and attach your block and line before beginning to cut. Hooking onto a delicately balanced, wind-sensitive toppler is an adventure of rushing peril. The block should be chained to a solid base; the line run through it and set around the trunks or a limb as high as possible to gain maximum leverage. How to set the line is up to you, but please note; it is foolhardy to climb the tree. If there is absolutely no other way, add your weight to the situation on the side of greatest balance. But before you even consider climbing, tie a light rope to the heavier rope or cable, weight it with a rock, toss the rock over a limb and haul the cable up and around the tree. **BE ALERT**—listen for cracking and groaning and watch the tree top. Have partners well clear and watching for you. Once the line is set, if sufficient pull-power can be applied by truck, tractor, partners or neighbors, the tree will fall towards the block. If you do not have a block, the line can be run around a nearby tree or stump and pulled to, but this is less efficient than a block. In the absence of a suitable tree or stump, you may pull directly towards the power source, but be sure your line is long enough to take you beyond the falling tree.

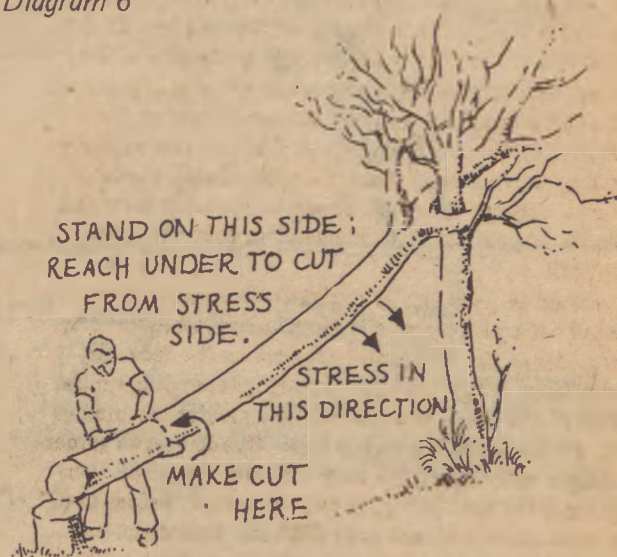
A tree may begin to fall only to get caught in adjacent trees. This may happen often until you learn to fall the trees in a stand with a mind al-

ways to open a path for the next tree to fall. Don't jump into the biggest tree or the one nearest the truck. Walk around a bit before beginning to cut. Usually one tree will be so inclined as to fall into an opening. This may open a whole logical order and hangers may be avoided. It usually pays to treat the whole operation as a series of smaller operations.

However you may plan, sometimes a tree is going to hang up. When that happens, you have a dangerous situation. First, watch out for the tree's butt. It may still be in contact with the stump, and at any time, may slip off and jump back, battering-ram style. Don't be behind the stump. As the tree begins to fall and the problem is developing, back off and keep eyes up for dislodged "widow makers." If possible, pull the tree free with cable and truck. Be alert. It may take many minutes for stress to wear down a supporting limb, but with a loud snap the tree may roll free and fall to either side. Usually you can perceive the direction of the stress and with cautious circling, approach the hanger from behind and hook a cable to its butt.

If you cannot pull the tree free, you may be able to free the bind by up-cutting with your saw. Your up-cut will be made from the stressed side, but **DO NOT STAND ON THE SIDE YOUR SAW WILL CUT FROM** (diagram 6). It may take several cuts to finally loosen the entangled top and each cut is perilous. Again, always make yourself plenty of room to move. Be prepared to simply release the saw if it should be wrenched. In fact, any time a tree wants to take your saw, **LET THE SAW GO!** Do not resist the irresistible force and it is likely the tough bar and chain will be undamaged. But even if the saw is totaled, it can be replaced. Do not wrestle with a tree; step back and keep yourself intact. A friend of mine was making an up-cut on a leaning tree and the bind exploded, throwing him back 20 feet, still gripping his wildly screaming saw. Fortunately, he was unhurt. Fortunate, too, was the fellow he was cutting with. He was standing behind my friend, but far enough back to escape the horror of a face full of chain saw. It is safer to have company in the woods, but whenever cutting

Diagram 6



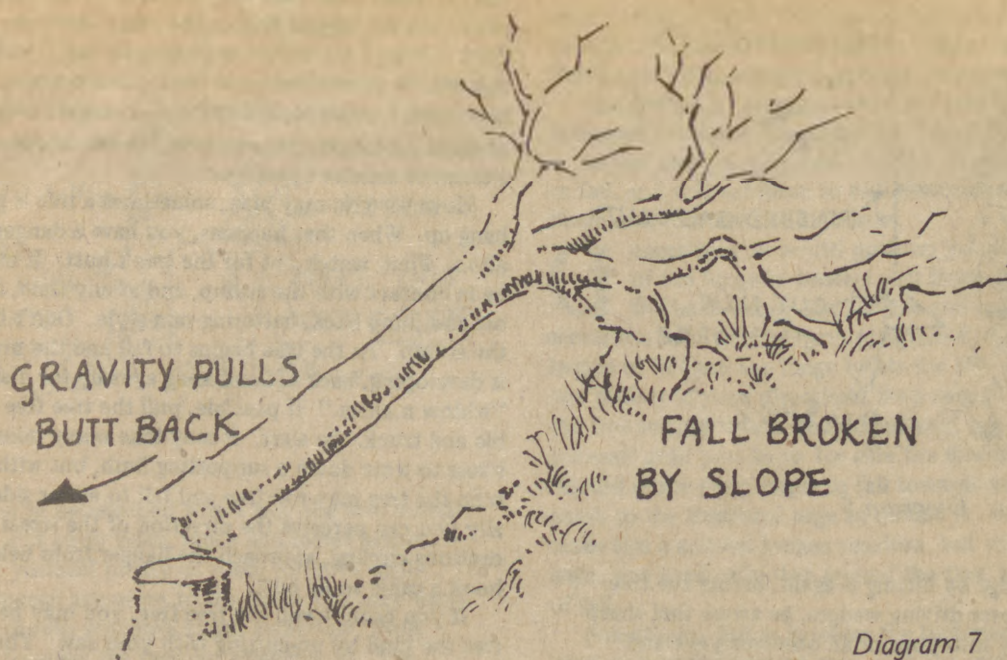


Diagram 7

with others, only one saw should be running in the same area and everyone should focus his attention on the same tree. The cutter should never begin until he *knows* everyone is well out of the way.

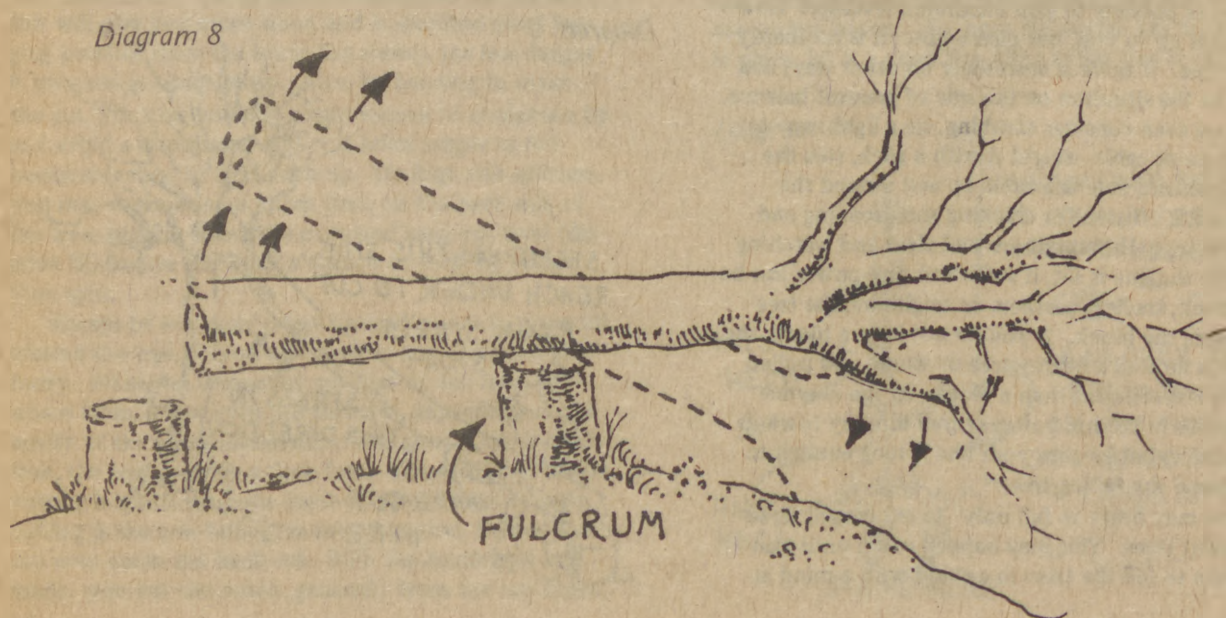
Resist the temptation to “jackpot” by falling the tree in which the first in hung. Probably, you’ll wind up with two leaners, domino-fashion, and this can go on indefinitely.

But say you’ve got the tree on the way down — here are a few more things to consider. A tree falling uphill may kick-back off the stump just as if it had caught in nearby trees. The limbs break the fall and gravity pulls the butt back downhill (diagram 7). A tree falling downhill will jump out and down the hill, sometimes for many feet. The larger the tree and the greater the slope, the broader the jump. Consider the effect in determining cutting order, positioning self and equipment and avoiding obstructions. And speaking of

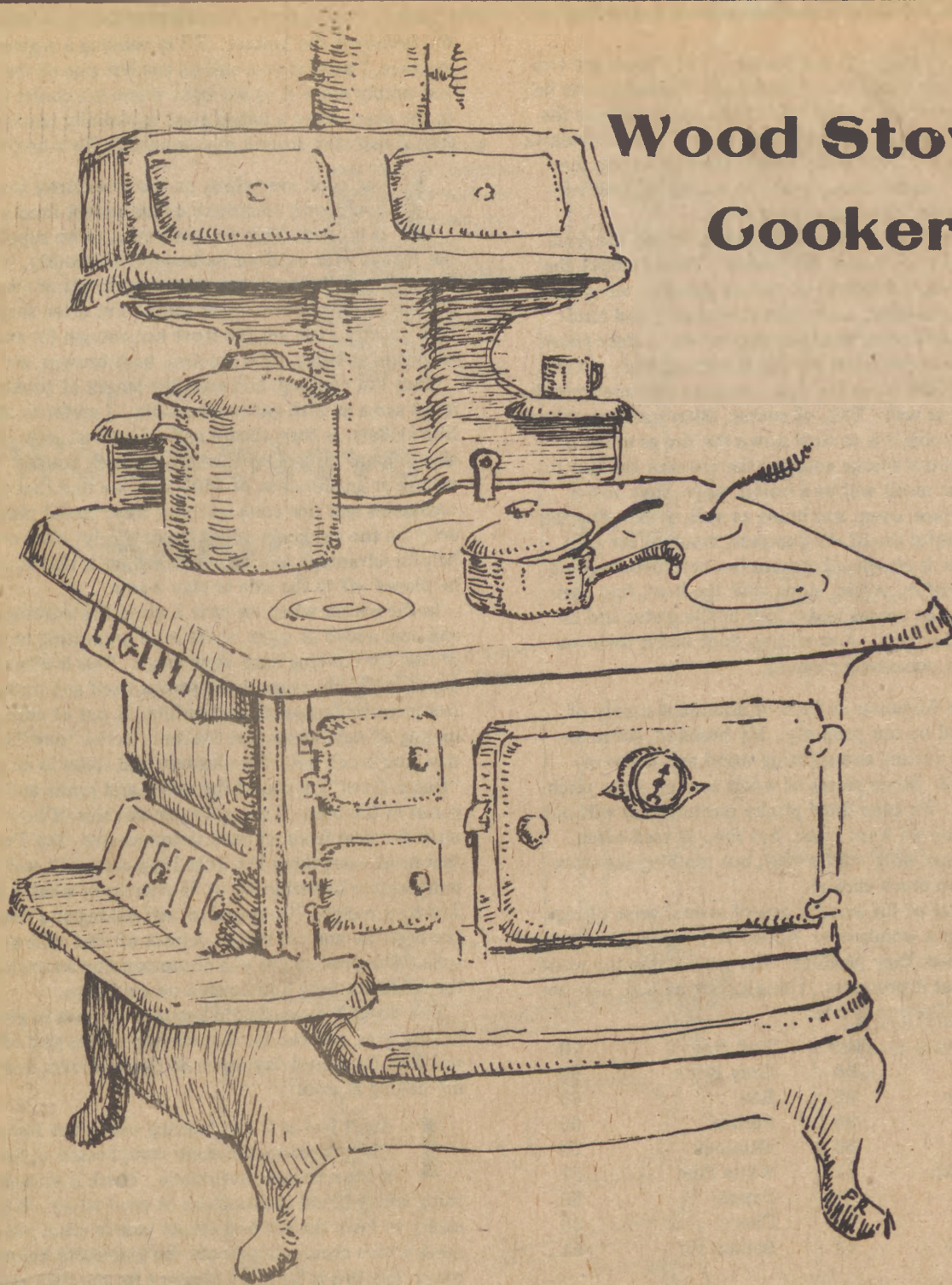
obstructions, a tree may fall across something — a fallen tree, stump or land configuration — and the resultant lever action will flip the butt about with a big Whoosh (diagram 8). An old-timer told me how he was “horsing around...careless...” and such a butt caught him not-so-gently under the chin and set him dazed and blinking, 12 feet up and back atop an old first-growth cedar stump.

Even when the tree is down, you may not be through. The tree may have fallen over tough, pliant brush or smaller trees. Sometimes these will be unbroken and pinned, and when cut as you clear brush, will spring up like some jungle-trap. Stand aside, be alert. As you limb, be aware the trunk may shift and roll as supporting limbs are cut out. Also, cut limbs from the stress side, as when up-cutting, to avoid binds and the jungle-trap effect. If you follow these precautions you should come out with a good pile of firewood, cozy winter fires, and all of your own limbs to enjoy the heat.

Diagram 8



Wood Stove Cookery



by Sylvia Pettem

Five years ago, when we moved into our small mountain home, "The Great Majestic," the big, black, iron stove, was already there. The previous owner had built the house around it, not leaving a doorway large enough to take it with him! When I first saw my woodburning cookstove, I not only felt mystified, but also challenged. How was I, a young woman brought

up with an electric stove, to prepare meals for a hungry husband (and future children)? There were discouraging days when I burnt my fingers and my fires went out. But after considerable trial and error, I realized that wood-

Illustration by Faith Rainbolt

stove cookery is not only simple and economical, but satisfying as well.

The flat cooking surface has six plates. There are two warming ovens above the surface and a full-sized oven below. A damper on the left side of the stove controls the air into the firebox. A damper on the right side circulates heat around the oven and redirects the exhaust up the stovepipe. Another damper on the stovepipe itself controls any downdraft during high winds.

Before starting a fire in the firebox, I clean the grate by turning a knob below the firebox. Then I empty the ashbox, if full. I check to be sure all dampers are wide open. After building a fire with newspapers and kindling, I then add small pieces of split wood. Larger pieces of wood are added when the fire is burning well. At this point, I partially close the right damper and sometimes the left damper as well. This, of course, takes some experimentation. The object is to slow down the fire as much as possible without smoke entering the room or the fire going out. The result will be a hotter range, thus hotter cooking surface, oven, and home as well, while using less fuel. By careful use of the dampers, much of the heat from the fire is circulated around the oven before going up the stovepipe. Ashes, along with the heat, find their way into the air spaces under four of the plates and on all sides of the oven. A small trap door under the oven opens for an occasional cleaning.

We are fortunate to have an abundant supply of wood on our property. My husband, John, enjoys cutting and splitting wood and keeps me well supplied. Some pieces of wood contain more pitch than others. We keep these pitchy pieces to use without kindling when we want a fast, hot fire. If used often, however, it not only wastes heat, but can clog the stovepipe with too much carbon.

The choice of firewood is one of several ways of regulating heat in a woodstove. Woods vary a great deal in the amount of heat they produce. The more dense the wood, the more heat it produces. Using a scale of 100, here are how various firewoods rate:

Hickory	100	Red Pine	70
White Oak	94	Grey Birch	69
Hard Maple	86	Elm	69
Red Oak	85	Spruce	60
Beech	82	Hemlock	59
Yellow Birch	81	White Pine	57
Ash	81	Popple	56
Red Maple	75	Cherry	56
White Birch	72	Balsam Fir	54

Besides the varieties of wood, size of wood makes a difference in heating. Several smaller pieces of wood make a hotter fire than a few larger pieces. Thus, for baking, I use a lot of small split wood, but for simmering stew, a log (as big as I can fit in) will do well. Lastly, green wood will cool off a too hot fire.

Other ways of regulating heat are to adjust the dampers and also to move the cooking pans. As explained above, closing the dampers will create a hotter range. Conversely, opening the dampers will allow more heat to escape up the stovepipe and let the range cool down. But by moving the pan in which I am cooking, I have an immediate

effect on the amount of heat it receives. The area over the firebox is the hottest. If I'm cooking a vegetable, for instance, I bring it to a boil on the left side of the stove, and simply move it to the right where it's cooler to simmer. In the oven, when a baked good is partially cooked, I turn it half way around to compensate for a heat variation.

I can cook everything on the woodstove that I could with electricity or gas except food which is broiled. This we don't miss, as we supplement our menus with outdoor barbeques. Obviously, it takes longer to get the stove hot compared to gas or electricity, but not as long as one might think. I'm often surprised how quickly I can get the stove hot enough for such skillet dishes as tacos, fried chicken, hash-browns, etc.

Once I'm cooking, however, the length of cooking time is the same as with gas or electricity. I prefer to use cast iron skillets, as they absorb and retain heat well. I can also prepare a quick meal with a pressure cooker. Since we live at an elevation of 7500 feet, we find that most vegetables and rice cook best this way. Bread placed directly on the cooking surface toasts nicely. And one very helpful advantage of a large hot surface is that food can be placed off to the side to stay warm.

In the winter when we have a wood fire burning all day and coal added at night, there is no preheating or waste of fuel for cooking long, slow meals. This is when the dependable, old range really proves itself and makes its few inconveniences all worthwhile. A pot of chili, simmering all day, cooks just the same as the "new" innovation, the crock pot. I cook soups and stews in an iron "Dutch Oven" on top of the stove, and roasts and baked goods in the oven. I can get a general idea of how to regulate the heat from an oven thermometer. But I've found that most everything I've baked has come out well if the temperature is within 50 to 75 degrees of what is specified by a recipe. I've found myself baking at a lower temperature and for longer periods of time with good results. The good smells and accompanying warmth from the range are fully appreciated on cold days.

This doesn't mean that in summer we have to give up breads, pies, and roasts. But the stove does give off heat, so I wait for a cool day, open all the windows, and do all my baking at once.

I don't feel as if I'm "slaving over a hot stove." The procedure did seem complicated at first, but it soon became automatic. There is virtually nothing which could malfunction or need repair. It is necessary to keep the ash box empty and to clean out the ashes which accumulate under the plates and below the oven. But this is far more pleasant for me than cleaning a stove with oven cleaner. Any spilled food in the oven or on the top cooking surface burns right off, thus making the woodburning cookstove the original self-cleaning oven. A small amount of water poured on top while the range is hot and wiped with a newspaper keeps the surface spotless. And since we have our own wood supply, there is no operating cost at all.

Someday we may move, and I'll miss the Great Majestic, with a ship carved into the chrome on the oven door and its rounded legs, a product of the early 1900's when people lived at a slower pace. If dinner takes a little longer, it's worth it!

Wood Stove Safety

If stove pipe must pass through, interior combustible wall on way to chimney, install this shield.
Diameter of cylinder shield should be three times diameter of stove pipe
6" pipe - 18" shield

At least 18" to ceiling (or install shielding)

Shield needed if stove is less than 18" from wall

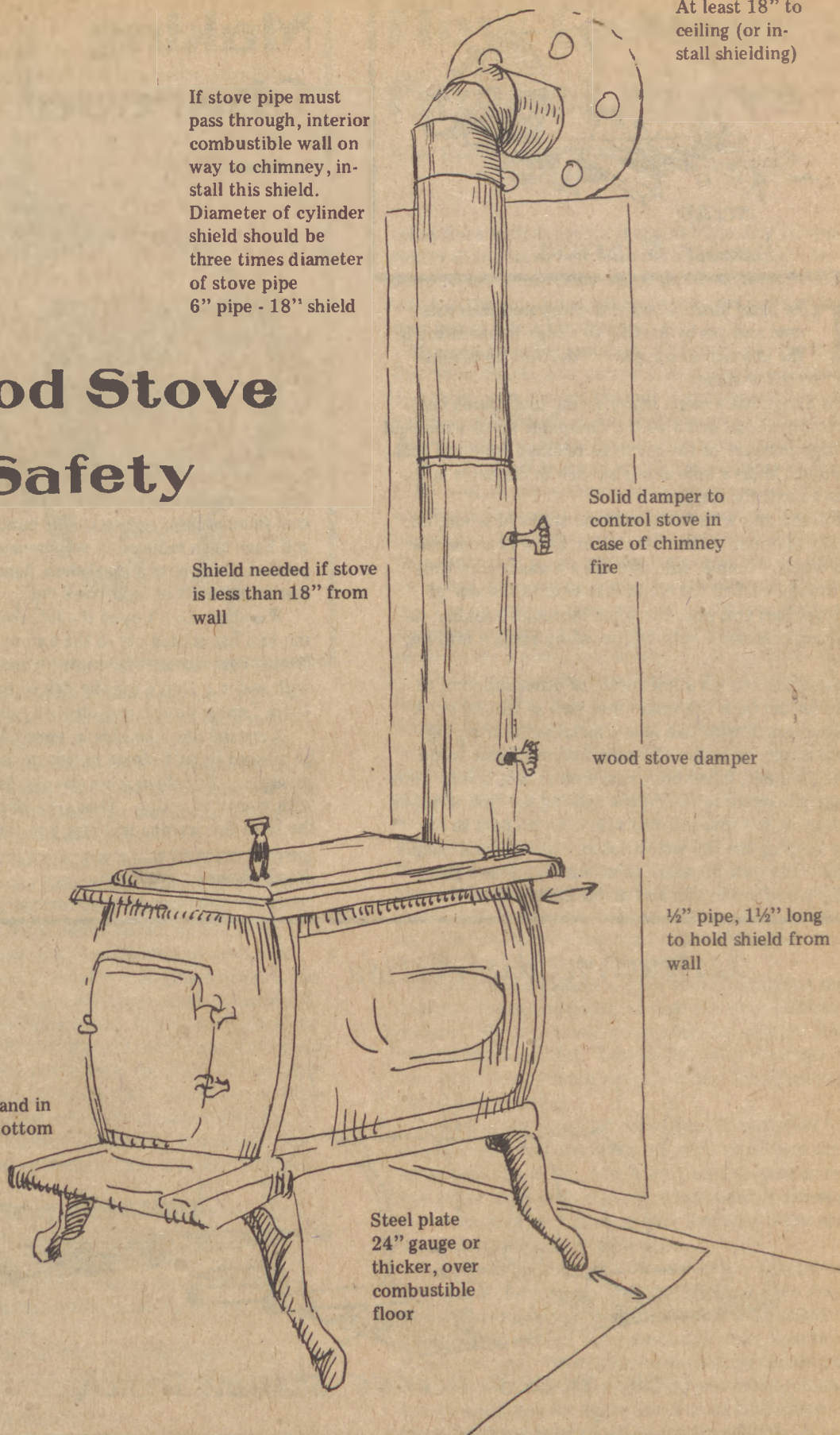
Solid damper to control stove in case of chimney fire

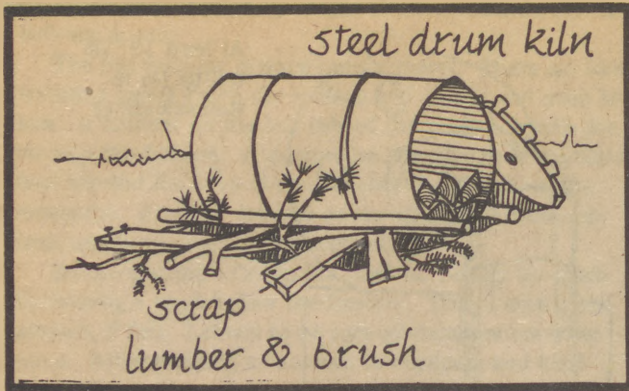
wood stove damper

$\frac{1}{2}$ " pipe, $1\frac{1}{2}$ " long to hold shield from wall

2" of sand in stove bottom

Steel plate 24" gauge or thicker, over combustible floor





Making Charcoal

by George Williams

The basic idea: wood is decomposed into charcoal and gas by heating to a high temperature in the absence of oxygen — “destructive distillation” to the chemist.

As a kiln, use a large, heavy metal, unsoldered can, preferably a steel drum with a clampable lid to withstand the high pressure of the gas to be released from the heated wood. Make a hole about an inch in diameter in the lid as an exit for the gas.

Fill the kiln with fairly uniform sticks of wood, no thicker than two inches. For solid, clean charcoal use hard wood — maple, oak, ash. Don't waste your time and energy cutting the wood into chunks the size of charcoal that you buy, for, after thorough cooking, the resulting charcoal is very brittle, easily broken into nuggets.

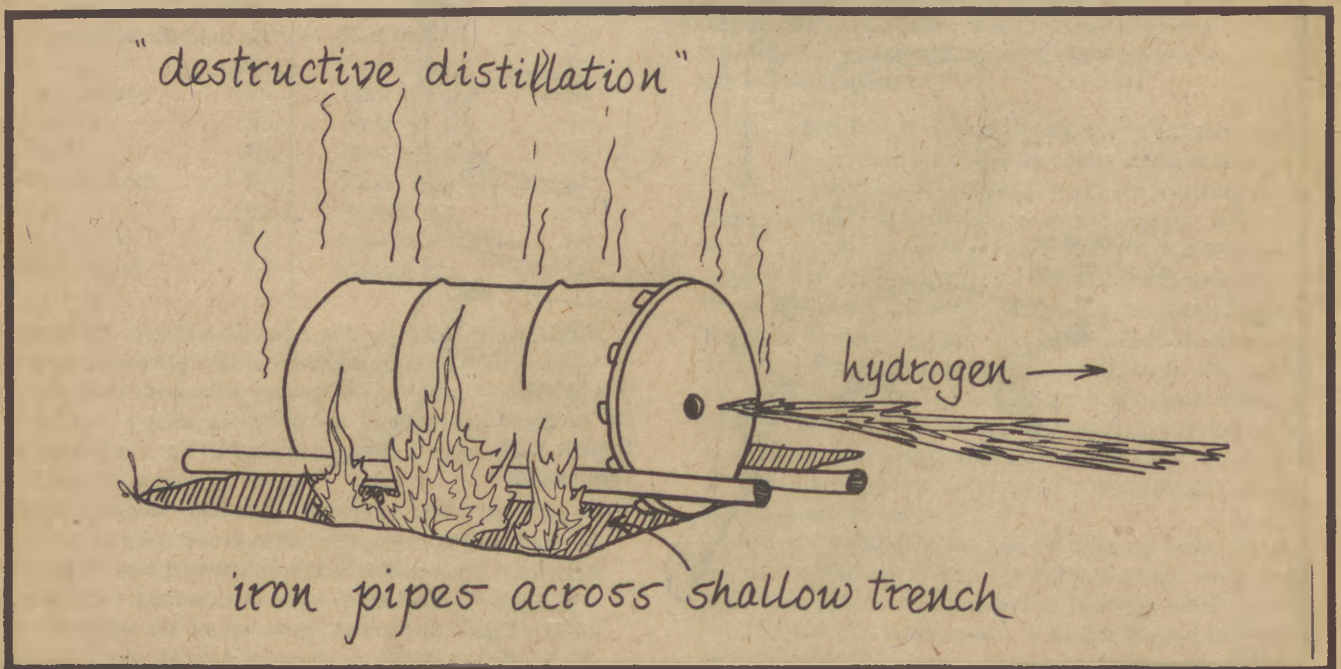
Place the kiln on a few rocks, or other support, so that you can have fire under it as well as around it. A shallow trench with two heavy metal bars (or piping) across it may be better. For the fire, use waste wood: rotting lumber, fallen branches, trash, slash, brush. Have a huge pile ready to use before lighting the fire. (Properly clean-up is a soul-pleasing spin off.) Expect to be busy keeping the fire well stocked, roaring, for a couple hours — the time depends on whether you have green or dry wood in the kiln and on its thickness.

After several minutes of heating you will see a whitish emission from the hole in the lid which is condensed water vapor. This will continue for many minutes before there is a slight change in the color. This change indicates that you now have a flammable gas (hydrogen, mostly). Ignite it with a flaming paper or stick to produce a huge blowtorch. Eventually, perhaps after an hour, the flame will begin dwindling. When it finally dies out, metamorphosis has taken place, wood to charcoal (almost pure carbon). The contents of the drum will have been reduced in volume and weight about 65 percent. You have a smokeless, flameless, easily-ignited fuel to use at your next cook out.

Warning! Don't open the lid, even to just peak, until the kiln has cooled off to the extent that you can handle it with bare hands. (Of course, you can douse the kiln with water.) Don't run the risk of having “incandescence” cause you to end up with ashes instead of charcoal.

A special tip: the kids in your neighborhood would be pleased to participate in this project, even in the clean-up aspect. For them it's a spectacular learning experience with plenty of action. That's it. Here's hoping that the local fire warden will give you the green light.

Illustrations by Liz Buell



How to Make a Barrel Stove

by Al Chase

cellar floor with fireproof material. The damper was installed in the stove pipe leading to the chimney. My first attempt to use the stove was frightening, as I got too much wood in the barrel and the stove pipe got red hot, but we soon got to know the limitations.

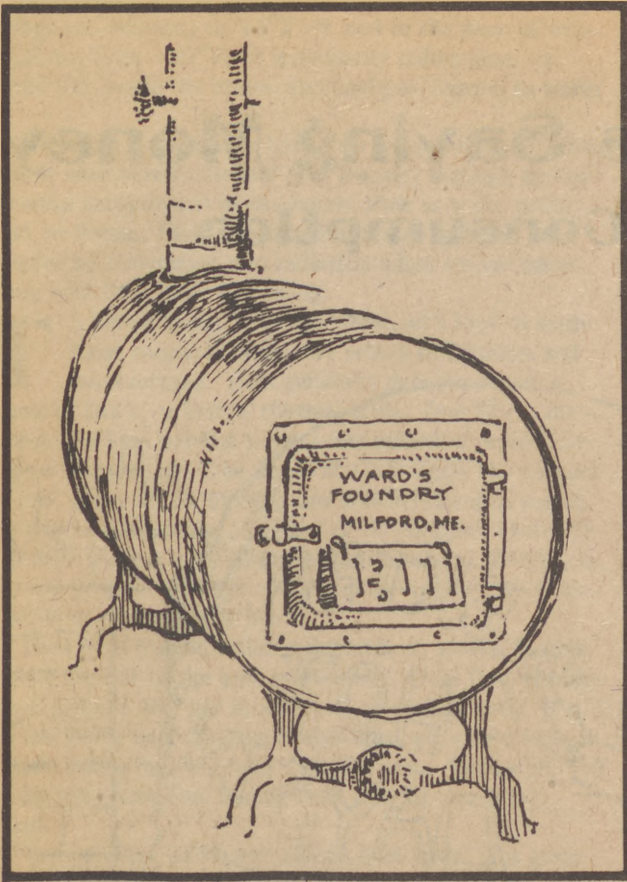
My costs were very modest. The oil barrel was free, the flue under \$5.00, and a stand I later purchased was \$2.00. The major cost was for the cast iron door and collar for which I paid \$55.00 at Ward's Foundry in Milford, Maine.

There are several noteworthy advantages to this stove. With some sand on the bottom of the barrel, it will probably last anyone two winters before needing replacement. There is greater safety in yearly replacement. When the barrel does weaken or burn through (hopefully you would replace it prior to this occurrence) the collar and door are simply installed on your new barrel. The 55-gallon drums are easy to obtain. Some are free, and some you may pay a very few dollars for, but they certainly are a minor investment. You can throw in big chunks of knotty wood without all that splitting, since the door is quite large, and of course barrel length allows for nice long pieces. When you are harvesting wood, you can get by with many fewer chain saw cuts since the pieces can be left long. You can use woods for this stove that you might not otherwise wish to use. Woods that produce sparks or dust are not a problem as they might be in a living room. Provided that your cellar is not drafty, the heat produced during the daylight hours in the cellar slowly rises during the night and you should find the house more comfortable when you wake up than it otherwise would be. Our fires usually last most of the night and we can "catch the coals" in the morning.

If you use this system in your cellar, remember that heat comes to the upper floors through the floor itself by conduction. We have existing vents for the oil stove through which some heat rises. Leaving the cellar door ajar allows for convection currents which increase the efficiency of the heating system.

Regarding the safety of the system, I think that it is very safe provided that one starts out with small fires until familiar with the stove. It wouldn't hurt to keep a thermometer at the stove area, and use a thin sheet of asbestos above the stove. Also, one must be sure that soot is not accumulating along the flue or chimney.

Our investment has paid for itself many times over, in money and in comfort. We have to spend a few days each year in harvesting our wood, but I find satisfaction in the feeling that those are my highest paid days, figuring the money we save. We indulged ourselves by framing our first fuel bill of last winter. It was just before Christmas, and we had filled the barrel the first of September. We owed the grand total of \$4.10 for ten gallons.



In the winter months of two years ago, my wife and I were faced with the prospect of spending hundreds of dollars for fuel to heat our home.

If we relied solely on our oil furnace to do this for us, we calculate we would spend over \$700.00 because our first winter here cost us \$360, and that was at the time when 18 cents per gallon for oil was normal.

Last year our fuel bill was just under \$100.00, and we were more comfortable than in any other winter. We burned wood which was available on our land. Anyone with a woodlot and some ambition can do the same. What we did that may seem unorthodox to some and brilliant to others was to employ a 55-gallon drum in the cellar as our basic furnace. We used a small number-one Franklin stove in our living room. Many, many days our living room was 29°C (84°F), and we did not feel extravagant or wasteful, but joyful from the fruits of our labors.

It is the 55-gallon drum stove that I would like to share with anyone dissatisfied with their present method of heating. It is not a method I invented. It was used in lumber camps for many decades, and it is very effective and simple.

The materials necessary to construct this barrel stove, including tools, were a barrel (55-gallon drum), a cast iron door and collar, a flue, several stove bolts to attach the door and collar to the barrel, a screwdriver and wrench, a sabersaw with a metal-cutting blade, and a drill and bit for the stove-bolt holes.

It took me less than an hour to set my furnace up. I used a six-inch stove pipe, and I raised the stove off the

Illustration by Faith Rainbolt

Saving Energy is Saving Money

Reducing Fuel Consumption



by Mardis R. Warner

Remember last August, 90°F and still climbing? We had a few extra warm days back then. It would be pleasant if we had some way of conserving that heat for cold weather. This is obviously wishful thinking. Asking, "Why?" might get, besides a raised eyebrow, a response such as "The wind blows and it gets colder!" This really simplifies the practical understanding that heat flows.

Since heat does flow, fuel gets burned during the winter to replace exactly the amount of heat that flows out of our houses. We do close doors and try to tighten things up a bit. This correctly attempts to reduce the

Mardis R. Warner is an Agricultural Engineer at the University of Maine, Orono. Illustrations by Faith Rainbolt.

flow of heat from the house. As this flow gets reduced, we can see a reduction in fuel consumption, whether it's oil, electricity, wood, or whatever.

Heat moves at all times from regions of higher temperature to regions of lower temperature, and as a result leaves our houses by following several paths to escape. We should not rely on any single procedure to do the total job of minimizing fuel consumption. Over-emphasizing one segment of winterizing your house, at the expense of other measures, probably will not be as effective as a more balanced approach.

Let's examine this flow of heat in a little more detail. As a somewhat simplified approach, we may assume that flow of heat from your house consists of two segments: infiltration and conductance.

Infiltration is cold air moving into the house. In springtime, this may be 45°F air, and in the dead of winter, it might be -20°F. It is probably colder than we would like inside the house, and fuel gets burned to warm it.

The other big factor in heat flow is conductance. This term is used here to include heat transfer through any of the solid components of the house, such as walls, ceiling, glass, or doors. Usually conductance also includes heat transfer by convection and radiation when we are calculating heat flow from a building.

To better understand heat flow, let's look at some basic concepts before we attack infiltration and conductance. Heat generally gets measured in terms of Btu's, or British thermal units. One Btu is the amount of heat needed to raise one pound of water one degree Fahrenheit. One single Btu is roughly the amount of heat given off by burning one wooden kitchen match. By way of comparison, a gallon of oil contains a total of 138,000 Btu's; a cord of dry hardwood about 25 million. We can be a bit more precise about electricity. One kilowatt hour equals 3,413 Btu's.

Heat flow from a building depends on several factors. One is the size of the area in question. Heat flow is sometimes given in Btu per square foot, to specify area. If we are losing heat through a large area, we would expect greater losses than through a smaller area. Thus a big house uses more fuel than a small one, all else being equal.

Temperature difference affects heat flow. The greater the temperature difference, the more heat flows. For example, in a given area, if the temperature difference between inside and outdoors is 30°F, we will lose only half as much heat, as when the temperature difference is 60°F. You are not going to burn as much fuel if it is 35°F outdoors as you will at zero. Heat flow is directly proportional to temperature difference.

Time is another factor in heat flow. For a given house, the longer time involved, at whatever temperature difference, the greater will be the total heat flow. This too seems only reasonable. Heat flow varies directly with time, usually referred to as Btu per hour.

The final factor affecting heat flow is the insulation value across the area separating the two regions of different temperatures. In the case of our house we must consider the *R* value, or insulation value, of walls, windows, doors, and ceiling that separate our 65°F indoors from outdoor temperatures. The larger the *R* value, the better the insulation, and the less heat will flow. Thus heat flow is inversely proportional to the thermal resistance (*R* value) of the area we're considering.

All this usually ends up being expressed in Btu per square foot per degree temperature difference per hour, to indicate the relative *R* value of a material or combinations of materials, such as in a frame wall. *R* or other insulation measures refer specifically only to single similar sections of the building, such as a square foot of wall or window.

The heat flow we just discussed, did not take into account the wind blowing. As far as a wall or window section is concerned, this factor is usually taken into account in the calculation of the *R* value for them. When considering infiltration, wind veloci-

ty certainly is a large factor. Calculation of infiltration losses presents a slightly different picture. If one gets involved with this, the crack width would be determined (usually estimated), length of a crack through which air moves, wind velocity, and temperature difference would all enter into the calculations. After much figuring you would come up with a number for the Btu's needed to offset the effect of all this air whistling through your house. This all usually gets accounted for by estimating the number of air changes per hour.

Infiltration occurs wherever there is a chance for air to penetrate the house structure — definitely around doors and windows. These are fitted loosely enough to slide or swing and air penetrates the cracks.

Then there is a certain amount of air that relentlessly finds its way behind window trim, through laps of clap boards or other siding, or between sheathing and sills. This may end up whistling by an electrical outlet, for example. Another form of infiltration is simply the air exchange whenever anyone uses the door, when some air rushes out. Replacement cold air comes in with the person. This exchange makes up part of the infiltration heat loss for the house.

Another effect is warm air rising within the house, especially in a house of two or more stories. With warm air rising, an opportunity occurs for cold air to penetrate, replacing some of this rising warm air. We must assume that some warm air escapes to allow replacement by cold air in the lower part of the house. This may be very gradual, but it is part of the infiltration process. Sometimes this gets referred to as the chimney effect of the entire house. Rising warm air may escape through trap doors into attic spaces, migrate through plaster or any breaks in the ceiling, flow by light fixtures fitted to outlet boxes in ceilings, or go up attic stairwells. It can also escape on the leeward side of the building, moving by loose fitting windows or panes of glass. All these contribute to the chimney effect and allow cold air to penetrate lower regions of the house. Then you burn some fuel to warm it up.

Infiltration causes enough problems that usually the first suggestion for winterizing a house is to provide storm doors and storm windows. Some figures of Btu losses show the effect of adding storm doors and windows. An ordinary outside door occupies 20 square feet (three feet wide by six feet eight inches tall). This one exterior door, by conductance and infiltration will lose about 4,000 Btu per hour when the temperature difference is 75°F. This temperature difference occurs when you maintain 65°F inside your house and it is -10°F outside, not too uncommon an occurrence during most winters. Adding a storm door cuts this loss practically in half.

Let's look at windows. An ordinary double-hung window, single thickness of glass, three by five feet, has an area of 15 square feet. For our example condition of 75°F temperature difference, we find 1,580 Btu leaving each hour, each window. This includes the infiltration around the crack that exists because the window can slide. This crack measures 19 feet in a three by five window. Adding a storm sash to this window provides what is called double glazing. Now the heat loss has been cut in half, 760 Btu per hour. These values are

for fairly tight fitting windows. Adding storm sash to a window accomplishes two things at once: 1) it provides an air space between the double-hung window and the storm window, which reduces conductance, 2) it sharply reduces the infiltration between the window sash and frame.

It makes little difference whether the storm sash is the old fashioned wooden kind, tightly fitted and attached to the regular window frame, or a combination window, either double or triple track, also tightly fitted and with tight fitting sash. The important part is the second layer of glass providing an air space and the considerable reduction in infiltration.

Window Heat Flow ^a (75°F temperature difference)	
Glazing	Btu loss ^b
Single	1,580
Double	760
Triple	500

^a One 3 ft. x 5 ft. window = 15 ft.².

^b Btu loss each hour.

Triple glazing cuts heat loss even further (see table). You can get triple glazing several ways. One of the simplest is to tape a piece of plastic to the inside window trim. This will provide an inside storm window to go along with your outside storm sash. Only one problem,



when you peel the tape off in spring you will find a re-decorating job awaiting.

Another way you can accomplish triple glazing is by placing a sheet of plastic on the inside of a wooden storm sash before installing it. This same concept can be used on storm doors. Extra inside glazing is available in clear, rigid plastic panels. These seal windows from inside. The clear panels are held in place by a plastic channel attached to the inside window trim. These channels can be opened to remove the panel during the summer, if you wish. Other extra glazing options include constructing a light wooden framework and attaching plastic film to make a snug fitting inside storm sash.

Anything you do to reduce air infiltration will cut down on fuel bills. The importance of this is emphasized when you consider that a fairly new house, reasonably well insulated, may use one third to one half of its fuel consumption to compensate for its infiltration losses.

We have mentioned door openings, window cracks, and this sort of thing as infiltration sources. Other sources of air leakage are kitchen and bathroom exhaust fans that do not have dampers that close tightly when fans are not operating. Ill-fitting dampers on fireplaces let a lot of warm air escalate from the chimney. This air must be replaced, you guessed it, by cold air from outdoors.

Another source of infiltration is simply the air that must be moved into the house to supply oxygen for combustion of the fuel you are burning. Any open flame, whether oil, gas, coal, wood requires oxygen for its operation. This comes from air, that in turn has infiltrated your house. This usually may not be too noticeable, but it is nonetheless a very real portion of infiltration into your house. To combat this, you might consider a separate, combustion air duct to supply air directly to whatever fuel burning device is being used.

Banking your house is another practice to reduce infiltration. Today this probably takes the form of plastic or tar paper attached to the bottom of clap boards or sheathing around the house, extended and weighted down to the ground. The effect of banking will be much greater on loose foundations, such as a split granite or rock laid up without mortar. The results of banking on a solid concrete foundation without windows, will probably not be as significant. The high degree of variability in foundations and the amount of air that can get through makes assessment of the effect of banking on your house difficult. If you total all other heat losses, it would not be unreasonable to add a five to ten percent allowance for lack of banking. Any barrier that reduces infiltration makes acceptable banking, and any additional material that provides further insulation around the basement wall offers extra help.

The practice of adding storm doors and windows illustrates the addition of an air space to slow down the rate of heat loss. The use of common insulating materials sets up a multitude of air spaces. These prevent convection currents inside ceilings and walls, and drastically reduce the amount of heat that flows through them.

Consider a ceiling without any insulation. With a 75°F temperature difference, this ceiling loses about 23,000 Btu every hour for every 1,000 square feet of ceiling. If your house ceiling is not insu-

lated, you could measure the number of square feet and make a comparison. The table given here provides an idea of the reduction you can expect in the number of Btu's flowing through a thousand square feet of ceiling or wall area, if different amounts of insulation are added.

Ceiling and Wall Heat Flow
(75°F temperature difference)

1,000 ft ² of Ceiling Area		1,000 ft ² Net Wall Area	
Insulation	Btu Loss ^a	Insulation	Btu Loss ^a
0	23,000	0	18,750
2	7,200	3½	4,750
4	4,000	5½	3,250
6	2,750		
8	2,100		
10	1,700		
12	1,450		

^a Btu loss each hour.

One myth some people harbor is that insulation can stop heat flow. This is not so. As stated earlier, any time a temperature difference exists, heat will flow, no matter how much insulation is used, but thicker insulation means less heat loss.

Notice from the table, that adding insulation in the attic does not as much effect per inch of insulation as the thickness of insulation increases. This phenomenon allows a "break-even" point to be calculated. Let's go back twenty years. Anyone constructing a house then could easily have obtained figures that would have shown it was much cheaper to buy oil at 15 cents per gallon, (or whatever it was then) than to add more insulation beyond three or four inches in the attic. In other words, this was the "break-even" point. Placing more than the calculated inches of insulation in the attic would simply cost more than buying oil at the going rate. So, as far as one's pocketbook was concerned, that was enough insulation.

Applying the same line of reasoning today, brings us to the point that we should be figuring about 12 inches of insulation in the attic at current oil prices. If you want to hedge against almost certain price increases then you might want to add a bit more, since you will be in the attic banging your head on rafters and driving splinters into your knees crawling over ceiling joists anyway.

If you are not buying oil but are burning wood, you can console yourself that it will take fewer cords if you put in more insulation. Just maybe, you could get to that blissful state where the woodshed holds more than a year's supply, so it has a chance to dry thoroughly before use.

The table also shows the amount of heat flow you can expect through an ordinary frame wall with different amounts of insulation. This net wall area does not include doors and windows, which should be figured separately.

Vapor barrier protection should be used on the warm side of any insulation and the cold side should be vented to outside air. This is very important because water vapor collecting in insulation drastically reduces its insulating quality. Also water vapor can collect on the inside of outside walls and freeze (Diagram A). In the spring this will thaw, and run down the wall and soak into the sills.

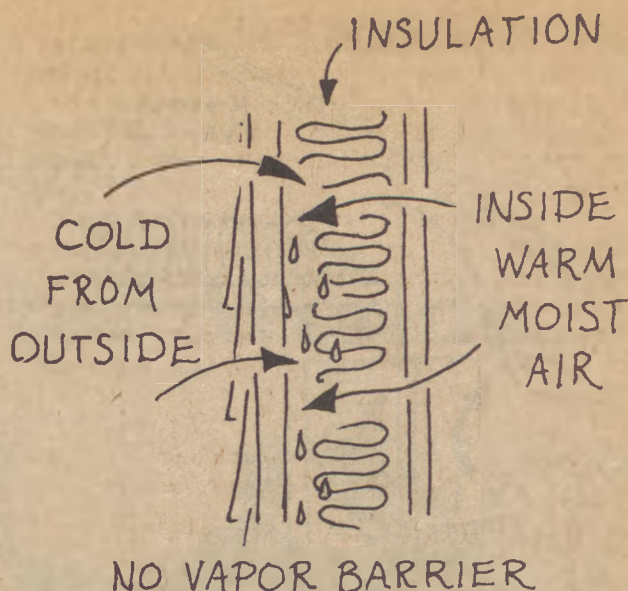


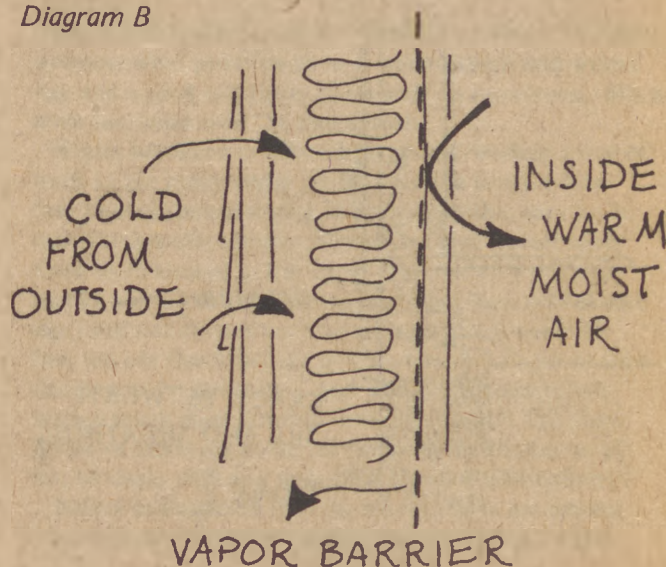
Diagram A

A few years of this and you might find yourself with rotted sills. Ventilating the cold side of insulation eliminates this problem.

Before insulating your attic, you should lay down a vapor barrier of polyethylene sheet plastic, (Diagram B). Then put in the insulation. At the same time, definite attic ventilation should be provided. Gable louvres should be used at the rate of one square foot for each 300 square feet of attic insulation area. This square foot should be at each end of the attic. Use a total of two square feet for each 300 if you are using any screening material over the louvres. The screening material is a good idea to keep out bugs next summer. You can further enhance the disposition of water vapor that migrates into the attic space by using vents and screened openings along the eaves in the soffit, so air movement can cover the entire attic area, (Diagram C).

Installation of vapor barriers in an existing wall is a more difficult process and a wall presents a more compli-

Diagram B



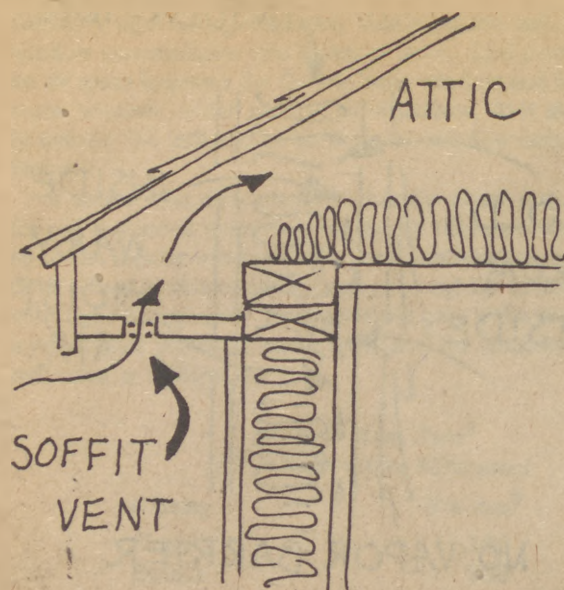


Diagram C

cated problem. Remember the attic space acts as a large air cushion on the cold side of the insulation. Once a wall is insulated, there is not much of any air cushion to absorb water vapor that migrates into the wall and possibilities of water condensation become more acute.

Condensation can be alleviated by proper venting of the wall. Providing a small crack between the sill and sheathing admits outside air to absorb water vapor, (Diagram D). A path for air to escape at the top of the wall can be had with holes drilled in the plate. Another possibility is to connect wall space with soffit areas vented to the attic, (Diagram E). Some improvement in vapor resistance of interior walls can be accomplished with two or three coats of oil based paints or varnishes or applying vinyl wallpapers. Vapor problems after insulating an existing wall should be handled by a combination of increasing interior vapor resistance and providing venting on the cold side of the insulation.

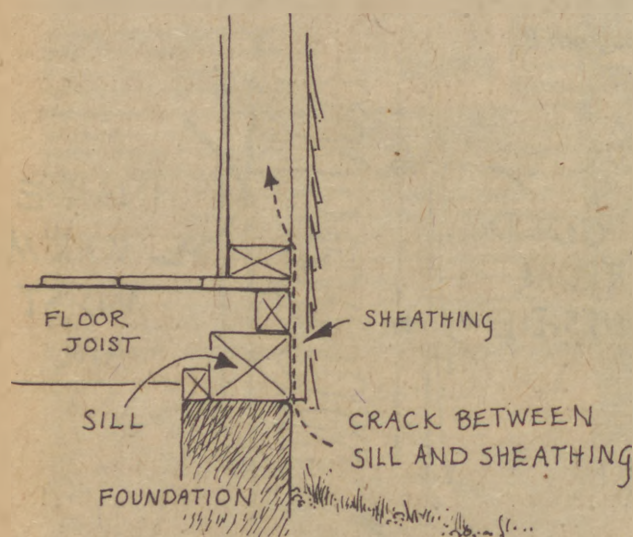


Diagram D

The point was made earlier that heat flows from the total house. Slowing heat transfer relative to all the loss components probably will reduce fuel consumption more effectively than overdoing one item. Consider for a moment the problem you would have heating your house if each window had a pane of glass missing. No matter how well insulated the ceiling and walls were, you would burn a lot of fuel to compensate for all the air that was coming through the broken glass area. Chances are your comfort would suffer also.

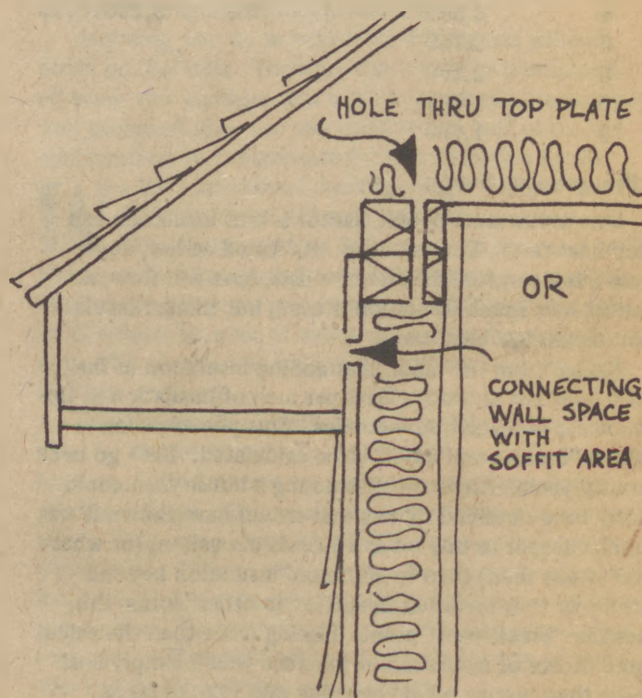


Diagram E

Probably the first priority for conserving fuel is to install storm windows and doors to cut down on infiltration, and heat loss through areas where flow is greatest. Obviously it would do little good to have a well insulated ceiling and walls if wind were still whistling around windows and doors. The second priority should be proper attic insulation.

An additional note I should mention is the use of fireplaces. Using them to supplement the oil tank, may in fact, drain the tank faster. Leaping flames in the fireplace require oxygen. The resulting air infiltration in turn takes more oil to warm it. Judicious use of your fireplace may mean not using it at all, but sealing it off. This is particularly true if the only heat to be gained from it is what gets radiated directly from the fireplace, and the fire itself. Consider also, you can't close the damper until the fire dies out, so the draft taking warm air up the chimney may continue even when the fire is radiating little heat to the room.

Taking stock of where your fuel goes this winter will point up improvements you can add to help out next year. There are a lot of things that you can still do inside yet this winter to reduce fuel consumption.

A Walk in the Winter Woods



Written and Illustrated by John R. Quinn

The day began with bluejays. Garrulous and enthusiastic with feathers fluffed against the fifteen below zero morning, the jays were at the suet outside the house just after dawn, their strident voices cutting the crystal air, tiny breaths feathery plumes against it. A bird's exhalations are not of the greatest volume as one might imagine, but this morning they can be seen, lightly flashing upon the frigid air, as the hardy, adaptable birds squabble and jockey for positions at the swaying suet balls.

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Far off, across the tops of the unmoving trees, crow voices welcome what promises to be a real northern mid-winter day and a good one to try the woods on snowshoes. Much snow has fallen over the past month.

Winter has come in with a heavy hand, lending a ring of truth to the many rustic predictions of a tough winter that I heard spoken during the prior months; corn husks *were* thicker this summer; the white faced hornet nests I saw *were* located in the upper branches of trees; chipmunks seemed to carry their tails higher than ever (a sure sign) and our cat not only sat with her tail toward the fire, (an old Ozark belief), but she also spent a lot of time sleeping under the stove! And woolly bear caterpillars tended much more towards wide black bands this year. So we've hunkered down for the worst nature has to offer; no damp chill and sleet here, this is winter country!

Before setting forth into the woods, there are certain winter rituals to be performed here at a latitude where

the cold is a definite physical presence to be reckoned with. A New Hampshire transplant, it took me awhile to adapt to the necessity of certain survival techniques. Coming originally from New Jersey where snow season is often characterized by a lack of the white stuff, cold, damp and a decidedly less than pure air, and a definite dependence upon technology to keep one warm, it took me some time to adapt to the Yankee approach to "getting by" without selling one's soul to the oil and power companies. Here that is something just short of an art. Here in the north country, where winter extends from November to early April, wood supplements oil, and freezing water pipes, collapsing roofs from the weight of snow, and serviceable snow tires are things to be expected and dealt with. Ice forces its way up underneath roof-edge shingles to spread unsightly stains against ceiling tiles, and on the roads, salt is used with luxurious abandon, eating away fenders and rocker panels of northern New England cars. A biologist friend once ran a test on the spring gutter runoff and found it stronger than the ocean itself.

Wood must be split and stacked by the stove, else the crouching mechanical monster in the cellar will sing all day with its flaming tongue of oil and run the fuel bill up to astronomical proportions. During the coldest days we've had to allow the faucets to run at a slow dribble to prevent the freezing up of standing water in the pipes in the house's earthen cellar floor, a menace whose only other solutions are electrical tape wound around the endangered pipes, or another wood stove down below, with the attendant extra three cords of dry wood to keep it hot and useful.



Once the house has shaken off the night's chill, one can think of going into the woods. "You're going out today?" marvels my wife. "It's at least ten below out there and there's a wind, too!" Mumbling something about loggers doing it and the joys of cold weather hiking, I head for the barn where my "long shoes" hang in repose from a wall spike. Being a 220-pounder, I had long ago found bear-paws, those smaller oval shaped snowshoes, just would not hold me up in deep powder, leaving me floundering helplessly. My own shoes, of the "Maine" brand, are five feet long with a tapered tail that leaves a distinctive line in the trail. They provide nearly the same stability as cross-country skis when one finds a steep downhill ledge to negotiate, though in the hands (or on the feet) of a novice, they can prove cumbersome when maneuvering over those fences or through windfalls that regularly send the unwary sprawling facedown in two feet of powder snow. Regaining one's feet after such a fall can be an awkward procedure (carrying ski poles or at least a walking stick is a prudent forethought here), but if you are touring alone you can grunt and swear without inhibition.

The snow has arrived now by the drift, white and soft, as we've yet had no thaw that will give it a crust of any kind to make snow-shoeing easy. No, this is nearly two feet of powder, snow that even with the supporting aid of the shoes will prove difficult to negotiate. Snowshoes seem a bit more like snow shovels in powder but no matter, the white stuff does have its redeeming qualities and is, in fact, absolutely necessary to the survival of plants and animals in northern places.

Trying to maintain some kind of rhythmic step in this fluff, with the stinging breeze reddening my face and singing past my ears, it's hard to imagine anything surviving a New Hampshire mid-winter, but many species of plants actually need a period of rest and dormancy in order to reopen their buds in spring. Below forty degrees, plants enter the state of dormancy simply because, at these colder temperatures, soil waters are unable to dissolve and supply them the nutrients needed for growth. The buds of a winter maple are protected by small waxy leaves that shield the infant leaves against drying (dessication) which is actually a greater danger to the tree than the cold itself.

But it is the low growing plants and mosses beneath the snow cover in early winter that have things the easiest. They use the principal of insulation, and they use it in pretty much the same way as an animal would. A few inches beneath the snow's surface it is warm. Well, not *really* warm, but on a below-zero day with a stiff Nor'east wind on the move at ground level, temperatures under all that white will remain at thirty- to thirty-two degrees, day and night throughout the long winter. Thus the tender growing things of summer gain shelter below the snow's protecting mantle from the biting winds and severe cold that would otherwise quickly freeze and dry them.

Swinging along, I think of the snow beneath. It's not so bad after all (puff-puff), a warm white blanket (puff), a place of security and rest (puff) — and suddenly arrive at the site of another example of this fact. A partridge hole; the place where one of these "wood-hens" denned up for the night, having probably nose dived right into the snow last evening to escape the cold. This noble game bird, though superbly adapted to



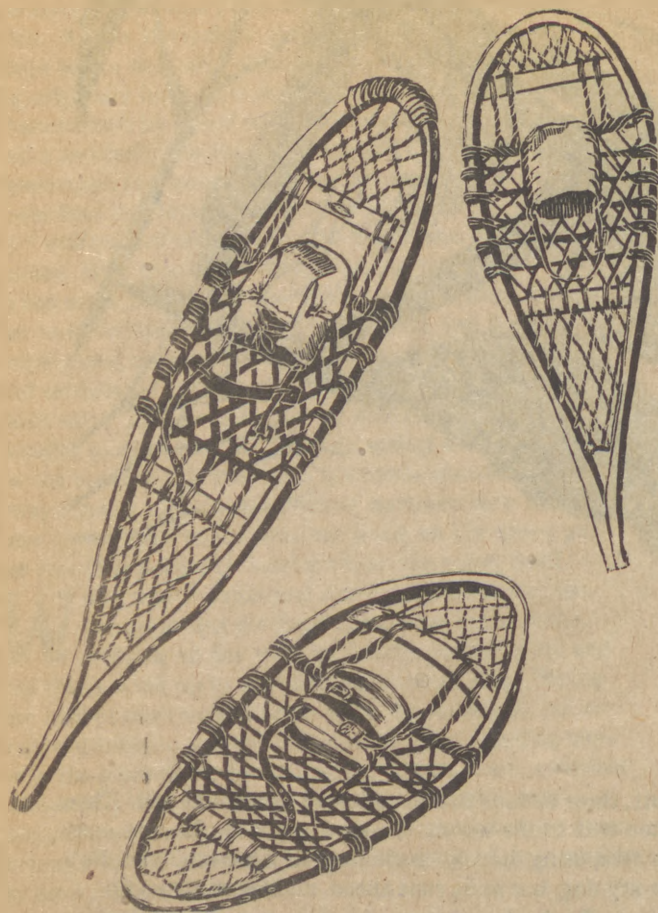
snow life, sometimes provides a spectacular example of the term "birdbrain." On occasion the body of one of these avian speedsters will be found lying twisted, but otherwise undamaged, at the base of some great snow-covered rock face, apparently having, in its rush to get below decks for the night, mistaken its form for a depthless drift, with the resulting fatal consequences.

But here, like a little pale crater in a field of white, is the sign of a successful partridge layover. With first light and a growing hunger, the sleeper can almost be seen emerging, perhaps a bright-eyed head first, with a careful scan for danger, then a shower of snow and the bird walks almost regally, if not stiffly away, so completely alert to the many things around it. Or perhaps the bird, sensing the light tread of an approaching fox, or the soft drop of snow as a sagging hemlock branch released its load, came out flying, in an explosion of white and brown feathers. Here signs indicated the former — a soft tunnel perhaps eighteen inches in depth with a fluffy crater lip around its top and a string of rather stubby, three-toed tracks moving off and away. Grouse at this time of year grow snowshoes of their own; fine fleshy protuberances fan out of each toe giving the bird support in the softest snow and lending a distinctive thickness to their winter tracks in sharp contrast to the thinner "chicken prints" one might find in the spring bogs. No partridge in sight here now but this certainly does not mean that it is not near, perhaps eyeing me from one of the lumps of snow and evergreen that surround me in the silent woods.

Onward, away from the town. One of the dogs of the village barks and strains against his chain, while up and down the skyline others answer until the bright morning rings with near and distant dog-sound. In trips through the winter woods of the east, a traveler will encounter a distressing number of dog trails, especially near towns and villages where there are, for every confined

mutt, three or four that are allowed to roam at will. These often take to the woods. I see a dog ahead. He runs near me here, using the man-made trails of a snowmobile. He's not my dog, but as he runs ahead, making short joyful forays off into this white world of deep snow and shadowy crevice, he looks back and wags his high plumed tail (he's a husky, a snow-loving dog of the north country) and invites me to share in his adventures. To whom does he belong? What is he doing out here in the woods? Can he be allowed to be so unrestrained and free, will he long content himself with snuffing into snowbound chipmunk tunnels, or will he soon tear the haunches from a pregnant doe should he come upon a deer yard, then curl up before the fire and dream the hunter's dreams?

But as I follow this well-packed, tank-tread trail of the ubiquitous snow country plaything, the snowmobile, the husky loses interest in this unresponsive human and heads back into town, removing the image but not the thought of just what effect man's intrusion in the winter woods can have. These woods of mine are within easy reach of dogs, and men and their contrivances. These trails penetrate deeply into prime deer habitat, as well as those of other wild creatures susceptible to disturbances such as bobcat, fox and fisher. The snow depth in the forest normally provides an effective barrier to intrusion by four- (and two) legged predators, but well-used snow machine trails, and even those of snowshoe and ski aficionados provide ready ingress to marauding canines and off-season sharpshooters, all to the detriment of wild bird and mammal populations. This is not to suggest that these various sports and activities are bad — not in the least. But an irresponsible pursuit of them *will* have its adverse effects, are all but unavoidable. These are things to ponder when you next find the carcass of a dog-killed deer or an empty deer yard area criss-crossed with the tell-tale man-made tracks.



BEAVERTAIL, LONGSHOES and BEARPAWS

Though there are other styles of practical snowshoes, these three are the main types for use in the winter woods. The beavertail (upper) is an old Indian design, good for soft powder. The long, or Maine snowshoe (Center) is the one used by the author. Long and narrow, it will support a person of heavy weight, yet does not require a spraddle legged stance, and is good for long hikes. Bearpaws are smaller, rounded shoes, best for persons of lighter weight and scoring higher points in maneuverability. They are favored by trappers and for use near camp or homestead.

The deer yard. What is it and how important is it to the winter survival of the resident herd? The term conjures up visions of a corral-like area of trampled, packed snow in a secluded section of the woods, whereas in reality, a typical yard will consist of a maze of well traveled, winding trails that traverse areas of high food-value vegetation. These tracks are well defined, being packed down due to the regular travels of the animals reluctant, under most circumstances, to leave their safety. Once the deer have yarded up in the dead of winter, their metabolic rate becomes critical. They conduct their daily affairs as close to the pilot light level of energy and activity, as survival in the intense cold places a high demand on energy reserves. Moving about as little as possible, rationing the available forage which may consist of deciduous buds and shrubs and whatever else may be present, the yarding deer are quite vulnerable to any forced activity, such as running through deep snow to escape preda-

tors or harassment. The food and browse levels of mid-winter make it nearly impossible for the animals to replenish any heavy expenditure of energy, thus they may later starve from the exertion. No, unrestrained dogs do not belong in the woodlands, winter or summer, for the list of grievances is too long — nests and young of birds scattered and driven out of their territories, deer attacks, harassment of hikers. The list goes on.

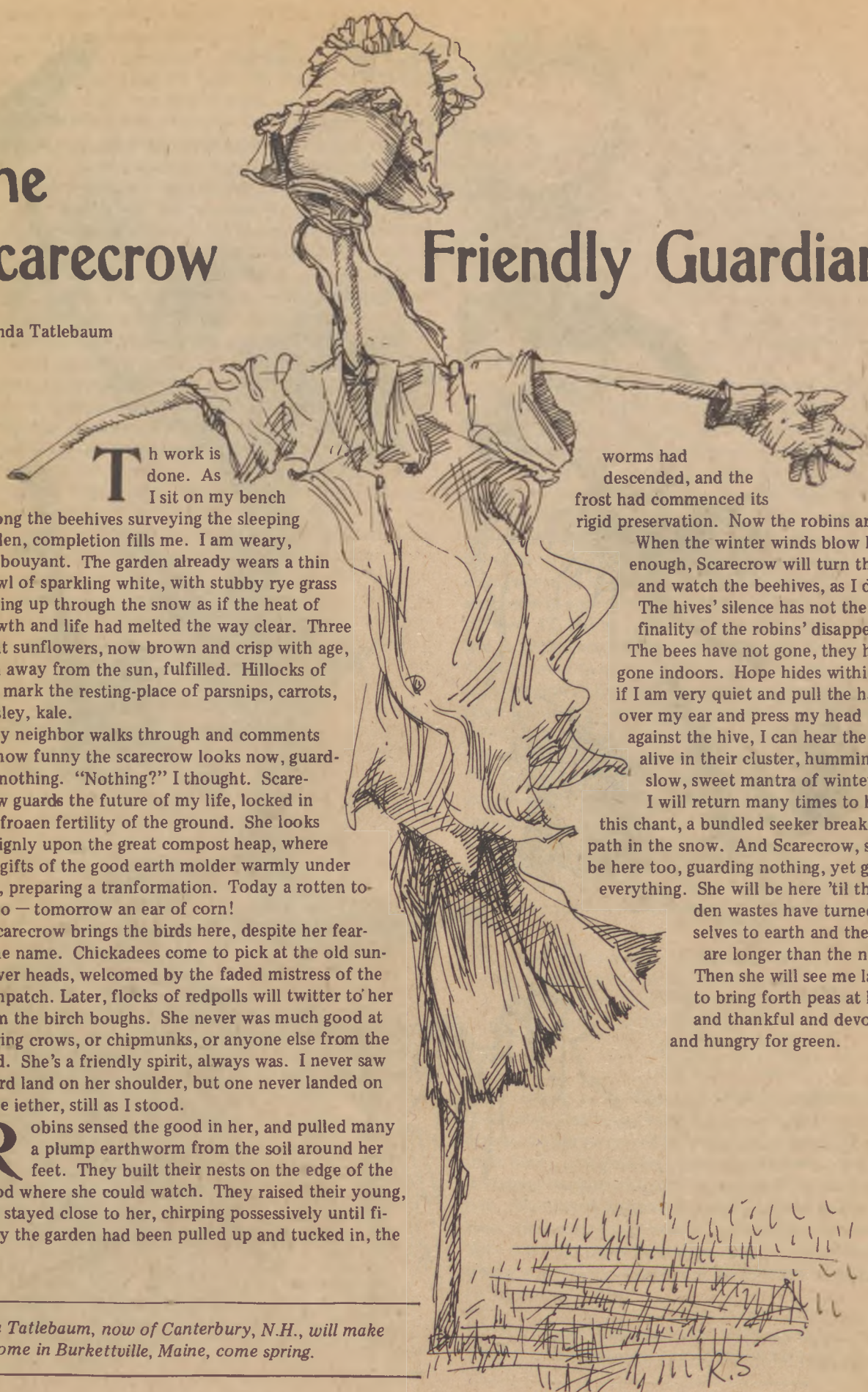
And so do I. Shifting my thoughts back to the trail ahead, I note that I've come to the "turnaround", the place where the snowmobiler found the going too difficult for his versatile but not invincible machine. My benefactor in this case, by providing an easy path of travel in its solidly packed wake, the snow machine is an invention of mixed blessing. Indeed, hailed in the early sixties as an end to winter boredom, the snowbelt ORV (off-the-road vehicle) landed on New England en masse. They were everywhere, at all times of the day and night, and bloody skirmishes soon erupted between detractors and defenders, the former claiming disrupted peace and quiet, harassed game, woodland litter, ad infinitum; the defenders citing the joys of the trail, responsible sportsmanship and even assistance in wilderness rescues. But, as with most fads, there came a leveling off point which, to my mind, has resulted in an actual decline in the number of snow machines seen and heard in the woods today. But though, in the face of better regulation and machine design, many of the more obvious objections to snowmobiles have been alleviated, with time and research a few not-so-obvious ones have cropped up. Take the field mouse for example. A broad, rolling pasture is home to many thousands of the little rodents. Under winter's insulating mantle of snow, the mice remain active, tunneling through the soft drifts and dining on buried grasses, buds and their own stored larder. But if that field becomes a playground for two-cylinder revelers, that soft snow, under the repeated onslaught of 400 pounds of machinery and treads, becomes so compacted and dense that mice, moles and shrews are unable to get through it in search of food and soon starve. Because compacted snow remains on the ground longer than the normal snow of the woods or undisturbed fields, those that do survive often cannot dig up and out of the snow cover to reach the growing plants of spring that they so sorely need at winter's end. The resulting, almost complete, elimination of the resident mouse population might sound to some like a blessing but when one considers the many species of wildlife heavily dependent upon those mice for their survival: bobcat, hawks, owls, raccoon, skunks, snakes, etc.; and understands the interdependence of all life in a healthy environment, the scope of the problem becomes obvious.



The Scarecrow

Friendly Guardian...

by Linda Tattlebaum



Th work is done. As I sit on my bench among the beehives surveying the sleeping garden, completion fills me. I am weary, yet bouyant. The garden already wears a thin shawl of sparkling white, with stubby rye grass poking up through the snow as if the heat of growth and life had melted the way clear. Three giant sunflowers, now brown and crisp with age, lean away from the sun, fulfilled. Hillocks of hay mark the resting-place of parsnips, carrots, parsley, kale.

My neighbor walks through and comments on how funny the scarecrow looks now, guarding nothing. "Nothing?" I thought. Scarecrow guards the future of my life, locked in the froaen fertility of the ground. She looks benignly upon the great compost heap, where the gifts of the good earth molder warmly under hay, preparing a tranformation. Today a rotten tomato — tomorrow an ear of corn!

Scarecrow brings the birds here, despite her fear-some name. Chickadees come to pick at the old sunflower heads, welcomed by the faded mistress of the cornpatch. Later, flocks of redpolls will twitter to her from the birch boughs. She never was much good at scaring crows, or chipmunks, or anyone else from the field. She's a friendly spirit, always was. I never saw a bird land on her shoulder, but one never landed on mine iether, still as I stood.

Robins sensed the good in her, and pulled many a plump earthworm from the soil around her feet. They built their nests on the edge of the wood where she could watch. They raised their young, and stayed close to her, chirping possessively until finally the garden had been pulled up and tucked in, the

worms had descended, and the frost had commenced its rigid preservation. Now the robins are gone.

When the winter winds blow hard enough, Scarecrow will turn this way and watch the beehives, as I do now. The hives' silence has not the lonely finality of the robins' disappearance. The bees have not gone, they have gone indoors. Hope hides within, and if I am very quiet and pull the hat from over my ear and press my head flat against the hive, I can hear the bees alive in their cluster, humming the slow, sweet mantra of winter.

I will return many times to hear this chant, a bundled seeker breaking a path in the snow. And Scarecrow, she will be here too, guarding nothing, yet guarding everything. She will be here 'til the garden wastes have turned themselves to earth and the days are longer than the nights. Then she will see me laboring to bring forth peas at her feet, and thankful and devoted and hungry for green.

Linda Tattlebaum, now of Canterbury, N.H., will make her home in Burkettsville, Maine, come spring.



...or Scary Goblin !

by Marilyn Seguin

Ever since man began to cultivate the earth he has had to contend with the pests that threaten to destroy his crops. Perhaps the most difficult pest to control is the bird, the crow and sparrow who attack from the air. In the farmer's battle against the flying culprits, many ingenious strategies have been devised. One of the earliest weapons used to ward off the aerial pests was magic. The Bohemians believed that if they placed in their fields a piece of wood from which a coffin had been made, the sparrows would not molest their crops. The scare tactic was probably not very effective, however. The Saxons of Transylvania tried to befriend the birds by offering them a handful of corn before the planting began. Whether or not the birds kept their bargain by not attacking the crops is uncertain.

A second method of dealing with birds was to wage a destructive war against the varmints. The *1851 Farmer's Encyclopedia of Cuthbert Johnson* cites an incident in which the farmers of one English colony killed off the rook, a bird allied to the crow. In a short time, the rooks were nearly exterminated. However, the farmers soon discovered that birds thrive on a balanced diet of seeds and insects. Under the circumstances, the insects multiplied so rapidly that they caused extensive damage to the crops and it became necessary to import the rooks again from neighboring counties.

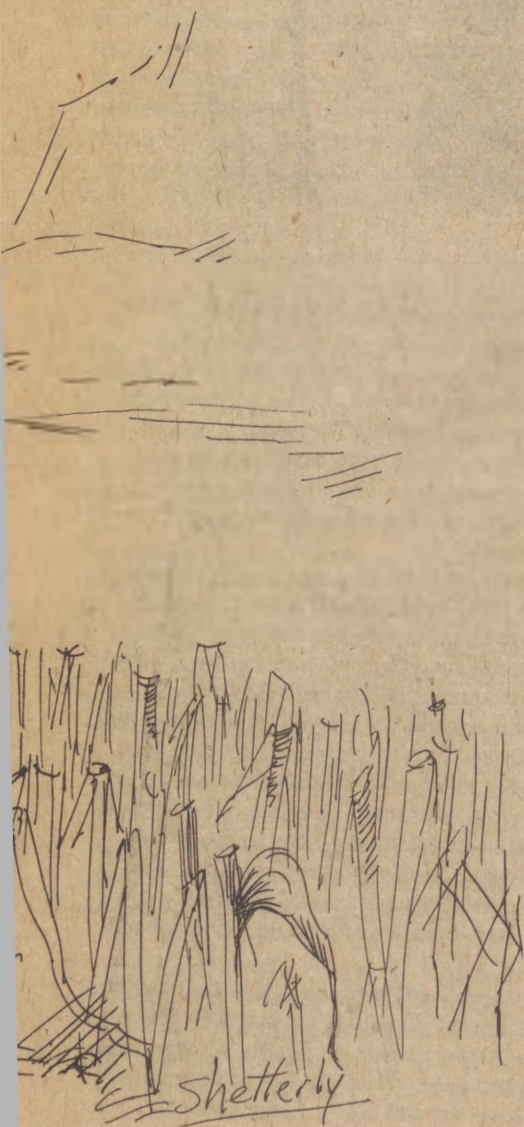
A third method of keeping the birds away from the crops, and perhaps the most ingenious method, was by placing a scare device in the garden. Today some farmers use such sophisticated scare devices as lights, flashers and ultra sonic sound. But the most common of the scare tactics is the scarecrow, that straw-stuffed effigy that has become the delight of children, the symbol of the harvest, and unfortunately, the roost of the birds. The scarecrow was used as early as Biblical days (where its place was certainly recognized): "A scarecrow in a garden of cucumbers keepeth nothing." (*Baruch. VI. 70*) In England, as early as 1553 and as late as 1908, young chaps were employed to roam the fields in order to scare off the birds. They were known as "scarecrows" and were perhaps the forerunners of the straw fellows we post in the garden today. In the eighteenth century and probably before then, a noise device was used in some English counties to ward off the birds. The farmer fastened a bell to a post in the garden and ran a cord from the bell to the farmhouse kitchen. From time to time, whoever passed by the cord would give it a tug, and the ringing bell in the garden would frighten off the birds. This device may have worked for a while, but few devices continue to be effective as the birds soon become accustomed to them, a fact well described by Shakespeare:

*We must not make a scarecrow of the law,
Setting it up to fear the birds of prey,
And let it keep one shape, till custom make it
Their perch, and not their terror.*

*Measure for Measure
Act II, Sc. I, Ln. I*

According to *The Royal Horticultural Dictionary of Gardening*, even today's sophisticated explosive scare devices should be moved from place to place after a short time. Low growing plants can be protected by stretching black cotton threads over them in a mesh pattern. The thread is almost invisible to birds, and scares them when their wings become entangled in the mesh. They avoid the place thereafter. "Logical consequences are the scarecrows of fools and the beacons of wisemen." (T. H. Huxley, 1874)

Marilyn Seguin is the author of *Myth and Magic in Your Garden* which appeared in *FARMSTEAD's* Fall issue.





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Ever since man began to cultivate the earth he has had to contend with the pests that threaten to destroy his crops. Perhaps the most difficult pest to control is the bird, the crow and sparrow who attack from the air. In the farmer's battle against the flying culprits, many ingenious strategies have been devised. One of the earliest weapons used to ward off the aerial pests was magic. The Bohemians believed that if they placed in their fields a piece of wood from which a coffin had been made, the sparrows would not molest their crops. The scare tactic was probably not very effective, however. The Saxons of Transylvania tried to befriend the birds by offering them a handful of corn before the planting began. Whether or not the birds kept their bargain by not attacking the crops is uncertain.

A second method of dealing with birds was to wage a destructive war against the varmints. The 1851 *Farmer's Encyclopedia of Cuthbert Johnson* cites an incident in which the farmers of one English colony killed off the rook, a bird allied to the crow. In a short time, the rooks were nearly exterminated. However, the farmers soon discovered that birds thrive on a balanced diet of seeds and insects. Under the circumstances, the insects multiplied so rapidly that they caused extensive damage to the crops and it became necessary to import the rooks again from neighboring counties.

A third method of keeping the birds away from the crops, and perhaps the most ingenious method, was by placing a scare device in the garden. Today some farmers use such sophisticated scare devices as lights, flashers and ultra sonic sound. But the most common of the scare tactics is the scarecrow, that straw-stuffed effigy that has become the delight of children, the symbol of the harvest, and unfortunately, the roost of the birds. The scarecrow was used as early as Biblical days (where its place was certainly recognized): "A scarecrow in a garden of cucumbers keepeth nothing." (*Baruch. VI. 70*) In England, as early as 1553 and as late as 1908, young chaps were employed to roam the fields in order to scare off the birds. They were known as "scarecrows" and were perhaps the forerunners of the straw fellows we post in the garden today. In the eighteenth century and probably before then, a noise device was used in some English counties to ward off the birds. The farmer fastened a bell to a post in the garden and ran a cord from the bell to the farmhouse kitchen. From time to time, whoever passed by the cord would give it a tug, and the ringing bell in the garden would frighten off the birds. This device may have worked for a while, but few devices continue to be effective as the birds soon become accustomed to them, a fact well described by Shakespeare:

*We must not make a scarecrow of the law,
Setting it up to fear the birds of prey,
And let it keep one shape, till custom make it
Their perch, and not their terror.*

*Measure for Measure
Act II, Sc. I, Ln. I*

According to *The Royal Horticultural Dictionary of Gardening*, even today's sophisticated explosive scare devices should be moved from place to place after a short time. Low growing plants can be protected by stretching black cotton threads over them in a mesh pattern. The thread is almost invisible to birds, and scares them when their wings become entangled in the mesh. They avoid the place thereafter. "Logical consequences are the scarecrows of fools and the beacons of wisemen." (T. H. Huxley, 1874)

Marilyn Seguin is the author of *Myth and Magic in Your Garden* which appeared in *FARMSTEAD's* Fall issue.



TOBACCO

Grow Your Own

by Darrell Rolerson

Before October 11, 1492 — when the Arawak Indians initiated Columbus to the New World — tobacco was unknown outside of the Americas. Not until 1586 did Sir Walter Raleigh introduce it officially into England, to the retort of King James, who described tobacco smoking as a “custome lothsome to the eye, hateful to the Nose, harmful to the braine, dangerous to the Lungs, and in the blacke stinking fume thereof, nearest resembling the horrible Stigeian smoke of the pit that is bottomlesse.” The pope in Rome felt about the same; and sultans in the East condemned tobacco smokers to execution. Even today very few plants are more controversial — because of the public health issue, and because it is the most widely grown non-food plant in the world, followed most closely perhaps by coffee, and grains which get converted into alcohol. All three of these commodities seem to inspire a similar brand of politics, which isn’t new. I have even heard it said of the old folk-warning, “don’t let the cat get your tongue,” that the letters in the word cat refer respectively to coffee, alcohol, and tobacco.

An interesting fact about tobacco is that it is (along with tomatoes, potatoes, and eggplant, incidentally) a

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member of the same family as deadly nightshade. With this in mind it’s easy to speculate on what motivated the Indian to introduce white invaders to this herb. There isn’t any real evidence to indicate that the Indians themselves smoked tobacco as a habit. They had developed uses for it as a medicine, and it may have been smoked on occasion in the “peace pipe,” to stimulate a communication in fellowship, or in the spirit of meeting as the Indians were so oriented.

What happened is that tobacco made a perfect cargo for shipping to the Old World because it took the long voyage without perishing. Commerce was quick to discover it, and to exploit the effect of the narcotic alkaloid nicotine, which is contained in tobacco’s flowering tops and leaves. As a consequence of the addictive properties of nicotine, the tobacco industry has become what it is. The tobacco industry itself — if you smoke tobacco — is reason enough to grow your own. A dozen or two plants can be worth a couple-of-hundred dollars to the person supporting a pack-a-day habit of cigarettes which have been sprayed with chemicals and treated with salt peter by the time they reach their industrial end. And tobacco is an easy plant to grow.

The best time to begin (“Up-North”) is in the middle of winter, even before the tomatoes get planted. Fill a flat with very rich, organic soil — preferably black — and sow the seeds not too deep. Place the flat in your sunniest windowsill; keep the soil moist. Even cover the

flat with a pane of glass for condensation, until the seedlings start. In the south window of a room which is kept comfortably warm for living is ideal.

In the spring the tobacco seedlings can be transplanted at the same time as the tomatoes. The most important thing to know about growing tobacco is that the plants *love* rich soil. The richer the better, with lots of lime in it, and potash — both of which are supplied through woodash. And sun is important, too. The sunniest location is the best for tobacco. If you plant a tobacco bed (a “plantation,” maybe?), situate each plant with about two feet on all sides to grow, and cultivate them with a hoe until the leaves spread out to cover the soil.

Tobacco is a handsome and commanding herb, resembling comfrey. It attains a height of about six feet, with broad leaves a foot or more long, and a stem which is covered with sticky hair. These sticky hairs are what make tobacco an especially useful companion plant for whoever is plagued by aphids. The aphids are attracted to the tobacco stalk, and consequently trapped. A single plant of tobacco can adapt to situations almost anywhere in the garden. Even in a flower bed, in back, it makes a tall beauty, with blossoms that are about two inches long and rose-colored.

Tobacco is harvested as soon as the plant blooms. Or, the blossoms can be picked before the seeds have set to allow the plant more growing time, depending on the length of the season. When the plant is harvested, hang it to cure *slowly* in a warm room, through which a breeze is permitted to pass. A hay mow or attic with an open window is ideal. The flavor of tobacco is developed according to your finesse in curing it. Shredding the cured tobacco can be accomplished a number of ways by using the tools in any kitchen.

The best approach, if you smoke home-grown tobacco is to realize that you’ve got something real, which customarily we aren’t used to. Don’t expect home-grown tobacco to taste the same as what is contained in your favorite brand-name cigarette. Home-grown tobacco is definitely a lot stronger. The best thing for most people to do is to mix it with other herbs to discover whatever blend is most pleasing. There are many herbs to choose from to create a blend with tobacco. The Indians filled theirs with corn silk, “among other botanicals,” so the books say. The common plant coltsfoot is the most widely used ingredient in herbal smoking mixtures today. Hyssop, horehound, rose leaves and chamomile flowers are also used; marjoram, mullein, red clover, and sage. Almost any plant which will brew a good cup of tea can be mixed with tobacco. In Europe the peasants smoke the herb everlasting in their pipes. Europeans smoke the delicate scented herb chervil, too. Mentholate with peppermint. As time passes substitute more and more herbs while you decrease the amounts of tobacco. This actually is one of the best ways to stop smoking altogether, without having to go through what tobacco addicts refer to as “nicotine fit.”

A good source for *Nicotiana tabacum* seeds is the Redwood City Seed Co., (P. O. Box 361, Redwood City, CA 94064). For one packet send twenty-five cents, plus thirteen cents postage. Or just send fifty cents and along with the seeds ask them to include their latest catalog.

for
the
birds



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Winter Deer Feeding

Too Much Help Can Hurt

by Robert Niss

Winter is a time of deep snow and cold wind in New England and many folks have become aware of their species' (human) role in the depletion of the numbers of other species. The urge to help other species is often manifested in winter feeding programs for various animals. The plight of deer in a northern winter has been well-publicized and the urge to do something is in many of us. There are many differences however between what can be done to help deer and hanging out a suet bag for chickadees. One must understand the requirements of any animal species in order to assist it.

Deer are well equipped for harsh winters in terms of both physiology and instinct, given the proper habitat. Without a knowledge of an animal's habitat requirements and physiology, all too often someone's well-intentioned efforts to help prove futile, perhaps fatal.

Like the familiar barnyard cow, the white-tailed deer of the northeast is a ruminant, meaning that it is equipped with a rumen (or paunch) which pre-digests most of its food. From the rumen a ball-like "cud" is regurgitated into the mouth cavity for additional chewing prior to final digestion. The rumen, located before the stomach's three other cavities, is filled with innumerable micro-organisms which assist in the breakdown of ingested materials. These micro-organisms change in type and number as winter approaches, preparing the deer's digestive tract for the drier substances on which it will subsist for as many as five months. The changes in the micro-organisms are not so radical as to permit the animal to totally alter its customary diet — and that's a plain and simple fact which too many people overlook when contemplating a program of deer assistance.

As is the case with humans, deer require two things if they're to make it through an average winter, food and shelter. Their natural winter foods consist of hardwood twigs and buds, some softwood greenery, lichens, mosses, bark and wind-cleared grasses. Their shelter is provided by evergreen groves where umbrella-like limbs ease the bite of wind and snow and under which snow is not so deep.

Normally solitary animals, deer become social during the winter, congregating in small herds which, depending on their size, eat and sleep within the often clearly defined boundaries of a "yard." A yard is simply defined as an area where deer traditionally seek winter shelter year after year and may vary in size from several square miles to 40 acres, but might shrink sharply during stormy weather. The herd will normally feed between dusk and

dawn, following and seldom venturing far from deeply rutted trails which may have been so used for generations. Deer eat in a decidedly leisurely fashion, yanking a bud or twig from one bush and moving on to the next. If hard-pressed for food, a herd will sometimes venture from its inner sanctum during daylight hours.

There are two basic courses of action one may pursue in helping deer in their search for food, "mobility assistance" and "preferential feeding."

The former practice involves frequent and regular visits to a herd's "yard," following their most deeply rutted feeding trails and thereby providing a firmer track. Deer expend an amazing amount of energy in simply getting to and from their feeding grounds, and if the snow is sufficiently deep or unpacked they may lose as much energy in reaching those areas as they gain upon consumption of the buds and twigs therein.

Snowmobiles, dirty and noisy as they may be, can be a great boon to wintering deer since they so easily pack great lengths of trail, but their presence often so frightens the animals that their increased mobility is countered by the energy they expend in flight. Snowmobile trails can also give the deer's most persistent winter enemy, the domestic dog, a fatal advantage.

I prefer snowshoes and cross-country skis, the former for hilly or brush-filled terrain, the latter for open woods or fields. Such silent methods of transportation give me a decent chance of actually seeing those animals whose tracks I'm following.

The second method, "preferential feeding," consists of supplying the herd with additional quantities of its customary food, but in pursuing such a plan one unavoidably achieves many of the aims of the "mobility assistance" approach.

Whenever I venture into the winter woods, I carry with me a small bowsaw and a pair of pruning clippers. During "rest stops" I carefully examine the surrounding terrain for any hardwood trees or shrubs which, for one reason or another (disease, malformation, overcrowding), should be culled. These are quickly felled and left atop the snow where the deer can then reach previously unreachable buds and twigs. Larger trees sometimes need to have their limbs similarly cut and placed on the snow.

Landowners whose acreage includes berry or fruit plots should find this selective cutting method particularly beneficial. They will not only be providing their resident herd with much-needed nutrition, but will simultaneously be clearing their plots of sun-blocking growth — and perhaps saving some of their berry twigs from being eaten. If you are such a landowner, consider the possibility of doing your cutting in regular winter visits, rather than in one massive cut in the early spring. If cut in a single operation, much of the succulent twig and

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bud growth will lose its value to the herd before it can be consumed.

I would additionally suggest that the stubs of such cuttings not be treated with chemical retardants. If left untreated, the stubs will send forth arrays of new growth in the spring and summer, but the growth will not be so thick as to overcrowd the berry or fruit trees, most of which are pollinated before the regenerated growth reaches light-blocking heights. Moreover, the new growth will make excellent deer food during the following winter.

What about feeding deer hay or grain to help them through the winter? It won't help and might harm deer if not done all winter long. The micro-organisms in a deer's rumen do much of the digesting of food. Different species of micro-organisms assist in the digestion of different foods. It takes about two weeks of a slow change in diet for the micro-organisms to change. Food which a deer is not used to does little good during this two week period. If a deer is in poor condition in mid-winter, but used to eating woody browse, an all-of-

a-sudden abundant source of something like hay might even cause the deer to starve to death during the two weeks which it takes for the micro-organisms to adjust and digest hay. This is why hay or grain must be fed all winter or not at all.

If your acreage lacks a deer herd, it may well be because it lacks adequate shelter, and deer will not tarry long in tracts without shelter, regardless of the food supply. The easiest means of providing sufficient cover for a small herd of deer is to clear-cut an entire section of forest, providing both firewood for you and, in a few years' time, a tangle of new growth to make any deer pleased. Hemlock and cedar are the favored conifer trees for winter shelter and these can be planted. It takes a long time for hemlock or cedar trees to attain sufficient size that deer may use them for winter shelter so you might be creating a deer yard that your grandchildren can enjoy.

In my thinking, the term "shelter" includes protection from certain predators, specifically those not a traditional part of a deer's winter existence. Uppermost in that category is the dog and "coydog," the progeny of domestic canines and coyotes.

Most states and municipalities have strict laws prohibiting persons from allowing dogs to run free in areas frequented by deer, but even the threat of heavy fines doesn't deter some people, and a certain percentage of any region's dog populace is found to take to the woods permanently. It is estimated in some areas of the country that dogs slay more deer in an average winter than poachers and all other predators combined. In the spring of 1975, Maine game wardens, armed with high-powered rifles and frustrated in all other attempts to curb renegade dog packs, took to helicopters to solve the problem. If your resident herd is harrassed by dogs, by all means let your local warden know about it.

Dogs, be they chihuahuas or St. Bernards, pose a particular threat to deer in the spring or during mid-winter thaws when the snow develops a sufficiently thick crust to hold a dog's weight while not supporting the much heavier deer. A dog will instinctively chase a deer for miles, literally running it to death. The deer's pursuer may never catch sight of its quarry. Deer have been known to take refuge in spring-thawed swamps or ponds, only to die of pneumonia.

Spring is a difficult time for deer in another respect. Although the blast of mid-winter seems the animal's greatest threat, many deer can survive that period only to die of accumulated starvation amid the plenty of spring. Deer are equipped with a fat reserve system capable of sustaining them for several days without food or with limited food for even longer. But once that reserve has been exhausted there's little that can be done beyond awaiting the end. It is therefore imperative that any assistance program be started in mid-January and continued through March.

During an average winter, a deer herd will suffer a ten percent death rate from natural causes, and chances are that you'll find a carcass or two protruding from the wet spring snow. The human mind tells us to bemoan the passing of such creatures, but we should not place any greater emphasis on their demise than we do upon the passing of our own elderly and sick.

If you find a deer carcass there are several means of determining how the deer met its death -- if you are strong of stomach. Slit open its stomach and examine the contents: if it's filled with a dry, powdery substance the animal probably starved to death after exhausting all normal food supplies and turning to largely worthless fir or spruce needles. Break open a leg bone and check the marrow: if it's white and greasy the animal had not exhausted its fat reserves, but if it's reddish in color and has a jelly-like consistency it did exhaust its reserves and died of starvation. Examine the position of the carcass: if the animal's legs are drawn close to the body, fetus-like, it probably curled up to die naturally, but if the legs are extended and head raised away from the body it was just as likely pursued to death. Even if there are markings on the carcass indicating that it was partially eaten or mangled, one cannot easily determine if the "attack" occurred before or after death.

In the final analysis, any program whereby one assists a deer herd through the winter is, in the pure sense of the term, unnatural. Your herd may, if accorded too much help, outgrow its physical and nutritional resources, at which point you must halt your program and permit a natural paring of the herd's numbers. By the same token, periodic hunting should not be precluded by an assistance program: you and the hunter are, in a sense, fooling with Mother Nature.

If you allow more deer to survive the winter because of your assistance program, there will be more deer around the next fall and winter. If these are not taken by hunters or die of natural causes, that will mean even more deer to assist next winter. No population can increase forever (not even man's) and in the long run, for every animal that is born, one must die. Deer usually die as a result of starvation, disease, predation or hunting. Before you plan to assist deer through the winter, you should consider this fact.





Lambing Time

by John C. Goater

The sheepman should plan to spend extra time with his flock during the lambing season. For the shepherd this is his harvest time. You should do everything possible to save your harvest. Saving the extra lamb will mean more income for the sheepman.

Breeding dates should have been recorded, so you will know when to expect lambing. Three weeks before lambing time the sheepman should start getting ready. The wool should be clipped from the ewes udder, flank and up to the dock. Why? For sanitary reasons and to keep the lamb from eating wool, a habit which often leads to death because of "wool ball" formation in the lamb's stomach. The ewes should be made to exercise. One way to accomplish this is to feed some of the hay outside away from the barn. The ewes will travel to get the hay, and as a result get the exercise they need. A medicine chest should be set up with the following items: iodine (for use on navels of young lambs), soap, sterilized cotton cord (keep in sterilized bottle), lubricant, disinfectant, paper towels, rubber gloves, hand sheep shears, methiolate, dosing syringe, nursing bottles and nipples.

Sheepman should have all equipment needed for lambing ready beforehand. The area that is being used for lambing should be clean, disinfected and dry. Individual lambing pens, at least five by six feet, are a must. Portable pens are convenient and easy to make and at least one pen should be available per five ewes in the flock. The ewe and new born lamb should be kept in this pen for 2 days.

Feeding Ewes and Lambs

The last six weeks before lambing the ewes should be getting at least one pound of grain per day, plus hay and all the water they will drink. Grains that can be used are

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14% dairy feed, or 16% dairy feed if hay is poor. You can mix your own grain mixture made up of:

60 pounds oats	50 pounds oats
30 pounds corn . or	30 pounds corn
10 pounds soybean oil meal	20 pounds soybean oil meal

For the first two days after lambing the amount of grain mixture fed to the ewe should be reduced by half. After this the ewe should get one pound of grain if hay is good and one and a half pounds if hay is poor. This feeding should continue until the flock goes out to pasture.

Milk is the best feed for lambs, but this should be supplemented with grain as fed to ewes and the very best hay. The lambs should be fed in a creep feeder by themselves. This creep feeder should be built in a sunny corner of the barn, by spacing slats at a width which allows the lambs to enter but excludes the ewes.

Signs That The Ewe Is Going To Lamb

It is very difficult for a person to tell just when the ewe will lamb. If you have kept records on breeding dates this will help in estimating the lambing date. A good shepherd watches ewes. The udder will fill, the ewe may keep to herself, and her external sex organs will swell and have more color. When the ewe shows labor she should be allowed to take her time. She will strain and get up and down. When the front foot of the lamb appears, then the other, then the nose everything is normal.

If this position is not showing or the ewe has been in prolonged labor she is going to need assistance. Before you assist the ewe, disinfect your hands and cut your fingernails. Sanitary precautions are very important when helping a ewe. The first step is to determine the lamb's position by gently entering the ewe's vagina with your hand. Before entering the ewe your hands and arms should be washed with soap, then rubbed liberally with oil. If you have any



Proper position for normal birth

cuts on your hands, disinfected and oiled rubber gloves should be used. If the lamb is in the wrong position, you can assist the ewe by gently moving the lamb into proper position.

Among the wrong positions are: head and one front leg forward other front leg back; head forward with both front legs back; head back with both front legs forward; lamb lying on back; or backwards. In all these positions except backwards, the lamb should be pushed back with the hand and straightened to normal position. In case of

the lamb coming out backwards the lamb should not be turned, but delivered in this backward position. When doing any of these jobs the shepherd should be very careful, working slowly and easily since the uterus of the ewe is very thin and can be damaged very easily.

Care of New Born Lamb

Following birth of the lamb iodine should be put on the lamb's navel cord immediately to prevent infection. Lambs often have a film over their nose and nostrils which should be removed at once to prevent smothering to death.

A lamb that is lifeless at birth can sometimes be revived by giving artificial respiration, slapping the side of the lamb, primping the front legs, blowing into the mouth, and picking the lamb up by the front legs and spanking sharply. The shepherd should help this type of lamb get some mother's milk immediately. This can be done by setting the ewe on her rump and laying the lamb on its side, put a teat into the lamb's mouth, and squeeze milk into it until the lamb gets a taste and begins to nurse on its own. It is extremely important that the lamb be nursing and getting milk from the mother and that the mother is owning the lamb. This is why the ewe and lamb must be isolated in the lambing pen for a few days.

What should you do about a disowned lamb and how can you try to get the ewe to own the lamb? Proper nutrition for the ewe will help. Try to get the ewe to recognize her lamb by smell by smearing some of her milk on



Lambing pen 5' x 5'. Keep ewe and lamb in this pen for two days after birth.

her nose and then on the lamb. Tie the ewe in a small pen so the lamb can nurse frequently. It might also help to put a dog in the next pen to make the ewe more possessive of her lamb.

If you must breed an orphan lamb from a bottle, keep the bottle clean and warm the milk to body temperature. Give a small amount of milk every two hours, and in three to four days increase the amount of milk and the time between feedings. A good mixture to use is 13 ounces each of evaporated milk and water with two tablespoons of corn syrup.

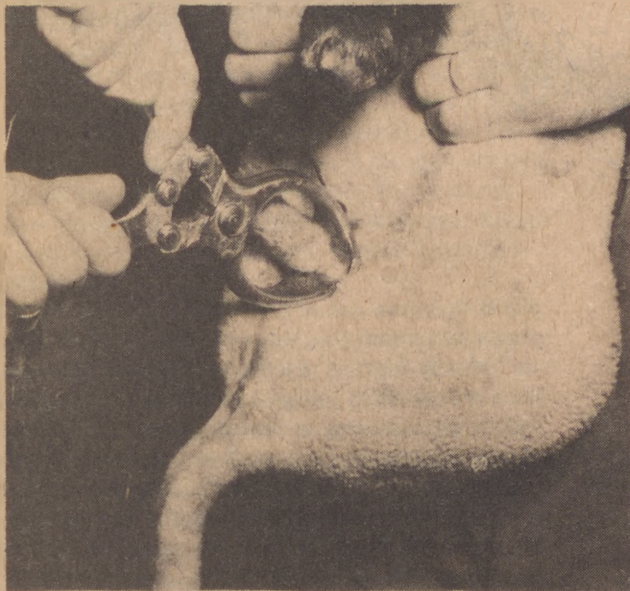
Shortly after lambing a ewe's udder should be checked for mastitis and she should be observed to see if she is over producing milk. If a ewe is over producing she should be milked out by hand or she should be held so other lambs can nurse her. It is also important to make sure that the lamb is taking milk from both sides of the udder.

Lambs born during cold weather may become chilled. One of the best ways to revive a lamb that is badly chilled is to rub it briskly with a cloth and wrap the lamb's head and body by rolling it in a dunlap bag. With your hand, hold the lamb's head and after removing your hand there will be an opening so the lamb can breathe. Always try to get some milk into the lamb before wrapping it. When the lamb has revived, it will come out of the bag.

All of the extra time you spend with your ewes and lambs during this lambing period is well worth it. The good management practices you follow could mean a greater return on your sheep enterprise.



Treating naval with iodine.

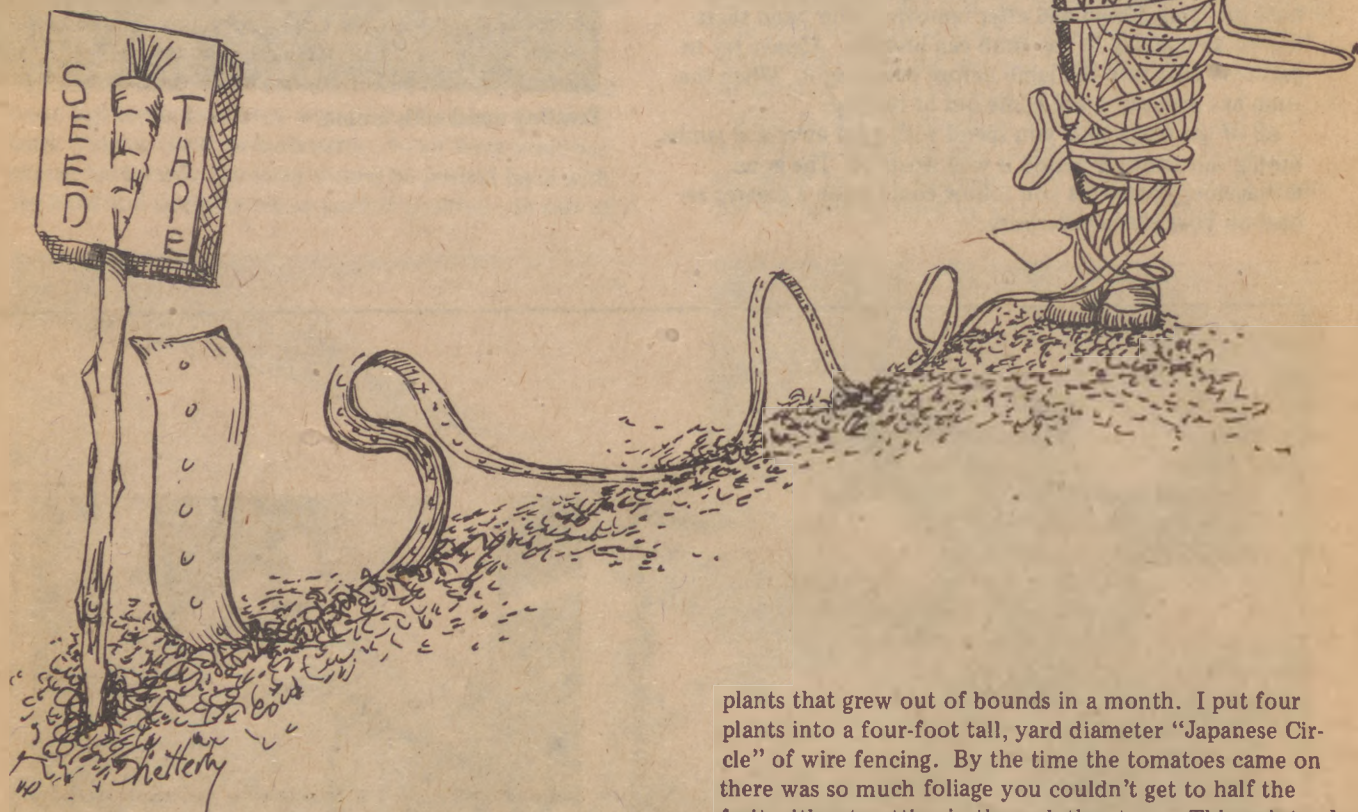


Castrating a lamb with clamping iron. Do this after the testicle have descended into the scrotum.



Docking a lamb's tail. Do this two days after birth and leave only a short stub.

John Vivian's Convenience Garden



by John Vivian

Last year we tried a few new garden ideas and short cuts, and to be honest, most all proved to be bummers. The first mistake was to give in to a too-hectic schedule of non-garden activities in early spring and put off starting tomatoes and other slow growers so long we had to go out and buy commercial flats. Home-started Moreton Hybrid tomato seeds from Joseph Harris have always produced beautifully. The store-bought plants grew spindly and only reproduced one set of relatively tasteless fruit. On the other hand, the Supersonic hybrid tomatoes (which we'd never tried) produced

plants that grew out of bounds in a month. I put four plants into a four-foot tall, yard diameter "Japanese Circle" of wire fencing. By the time the tomatoes came on there was so much foliage you couldn't get to half the fruit without cutting in through the stems. This unintended pruning seemed to do no harm, though, and production was excellent. We also found that Supersonics picked green after the first light frost are the best keepers we've ever had. Even the smallest ones, kept in the cold room till needed, will turn a bright red in a sunny window and taste almost as good as those fresh from the plant. Next year the Supersonics will go two plants to a wire circle and we'll start them and our own Moreton Hybrids from seed.

John Vivian's newly published book, Wood Heat, is reviewed on page 93.

A purchased flat of a dozen unidentified eggplants produced exactly one fruit, and it proved to have been invaded by a field mouse. Eggplant is simply unable to tolerate any of the wilts many tomato varieties can resist, so we never plant eggplant where tomatoes have been for the previous three years and the frosted vines of both vegetables go to the chickens rather than compost or be tilled back into the soil. So, I suspect that the soil these bought plants were grown in already carried the disease. Never again!

Another experiment was with the "miniature" vegetables advertised as novelties or for small gardens. They often come in sets of a half dozen or so varieties. A midget carrot is commonly sold, which seems silly, as we can get midget carrots — and do — with each thinning of the regular carrot rows. Same for the Tiny Tim tomato. The fruits are small, but past experience has produced indeterminate vines that grow huge, taking over half the garden if you let them. More suitable, but expensive, would be one of the new "Patio" type hybrids that turn out medium-sized to small fruit on very small plants, suitable to container growing. We did try the other midgets though, with relatively poor luck. A miniature eggplant didn't even germinate. The cucumber billed as midget turned out smallish, very seedy fruit, but the vines went wild. Hardly suitable to the limited-space gardener. The midget corn was a joke. Many super-early sweet corns grow on little yard-high, usually purple-tinged stalks. But they produce medium-sized ears that aren't as sweet as later season varieties, but are good eating. These midget plants were as big as the early varieties, but the ears were only a couple of inches long, many with no more than a dozen normal or larger-sized kernels with a taste that most horses would disdain. As most gardeners find out in time, there are a lot of "new wonder varieties" that turn out to be less wonderful than advertised. There are also a few out-and-out gyps and an occasional genuine rip-off. I'd place the midget vegetable promotions in the gyp category. Oh yes, there was also a midget cabbage. They grew alright, a few headed up into softball-sized cabbages, though all were mainly air — few of the firm internal leaves of a normal cabbage.

Have you tried those seed tapes or the pelleted seed that many catalogs are pushing? I had to give them a try out of sheer curiosity. For about a dollar you get fifteen feet of a soluble tape with seeds properly spaced. I bought a standard Nantes type carrot which had a seed about every inch, maybe 200 seeds. Buying a standard packet I'd have gotten at least twice the number of seeds for half the price or less. Anyway, you're supposed to be able to scratch out a shallow trench, pop the tapes in, cover them and forget it till harvest time. I found the blasted tapes tended to hump and twist and spring up out of the trench. I figure that this new and marvy "convenience" took me twice as long to plant as if I'd done it the usual way. Plus, only about half the tape germinated, due most likely to my having to put too thick a layer of soil over the small, weak seeds to keep their blasted tape in the ground. What carrots we got were good as any. But no more tape planting for us.

The pelleted seed is a regular seed entombed in a little grey bead about a quarter inch in diameter. Some of them are made of chemical fertilizer.

The price difference is about the same as with the tapes: half the number of seeds for twice the cost. They sell most anything in pellets, including beets — that have seeds already almost as big as the pellets. The pellet's advantage is that you can control spacing, depth, etc. more easily, an admitted advantage with such tiny-seeded vegetables as carrots. But beets? I ordered a European variety of leek in pellets, planted a small row and got zero germination. The pellets are supposed to dissolve and nourish the seed. Perhaps the rains didn't cooperate or maybe the European seed didn't like our ornery New England soil — a problem we've had consistently with both Oriental and English or French-raised seed. We'll probably never stop fooling around with new varieties and gadgets, but for the main food supply, we'll stick with the proven home-grown goods.

This reminds me of a meeting I once had with one of the people who think up things like pellets and tapes for home gardeners. He was raving about the latest hot item, a stick about three inches long, 3/4 of an inch wide, pointed at one end and with a hole bored through just up from the point. Inside the hole was a blob of fertilizer mix and inside that was a seed. The fellow says, "Just pop it in the ground, and look, each stick has the vegetable name printed on it." The stick read "radish." Honest! Can you imagine going through all that for a radish? The product is on the market, by the way, or I've seen a few ads for it. Don't know if radishes are offered, but they wouldn't be if the howls of laughter the silly thing produced from me had any effect.



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Photos by Robert Shetterly



Harvesting Salt Hay in Grand Marsh

by Miriam Colwell

The salt marsh extending for a hundred and fifty acres around the head of Grand Marsh Bay in Gouldsboro, Maine took a long time in the making. For thousands of years root systems were slowly forming in the alluvial mud as the tides washed in and out. Vegetation was creeping back through the ooze beyond the clam flats, grasses began to wave, sea lavender bloomed.

In fall glasswort turned scarlet along the shores, seaside goldenrod and salt marsh asters blossomed amongst the reeds. The cycle of growth and decay multiplying over the centuries, fed by the interchange of salt and fresh waters, became a rich habitat for life.

Ducks and geese in their yearly migrations fed in the pools and along the edges of the brook that wound through the rooted hillocks. Insects hatched, bringing more birds. Eagles nested in the tall trees nearby, and marsh hawks flew over the waving grass hunting for mice. Herons fed there and sandpipers. As the clam beds increased around the mouth of the marsh, fed by its fertile compost, raccoons and mink came to feast on the clams. Rabbits and deer, muskrats and foxes all came to the marshes.

Long before the early Gouldsboro farmers found the

salt marsh, Indians followed game there and found the fat clam beds. Great screaming clouds of gulls gathered over the brook at the western side of the marsh to feed on the vast schools of herring, the alewife, fighting their way up its rocky bed to spawn.

When the first colonists came to Gouldsboro, perhaps one of its attractions was the wide flat expanse of waving grass at the head of Grand Marsh Bay. Clearing forest land or fields was slow hard work and haying the marshes along the New England coast was the general custom. Men with scythes and pitchforks joined in group expeditions when the hay was ripe. It could be cut most easily on a summer neap tide (lowest tide of the month) and had to be dried and piled on rough platforms for storage until winter. In the cold frozen months teams could cross the icy wastes and carry loads back to the home barns.

As machinery gradually began to appear on New England farms, the mowing machine and the hay rake, harvesting the salt marshes became more complicated and more hazardous. There were experiments with broad board or iron shoes for the horses' hooves, and broad wheels for the mowers. The unstable footing added to the cumbersome attachments on the horses' feet must have made it an agonizing task for them. There were also clouds of vicious horseflies and deerflies rising from the swampy waters, and always

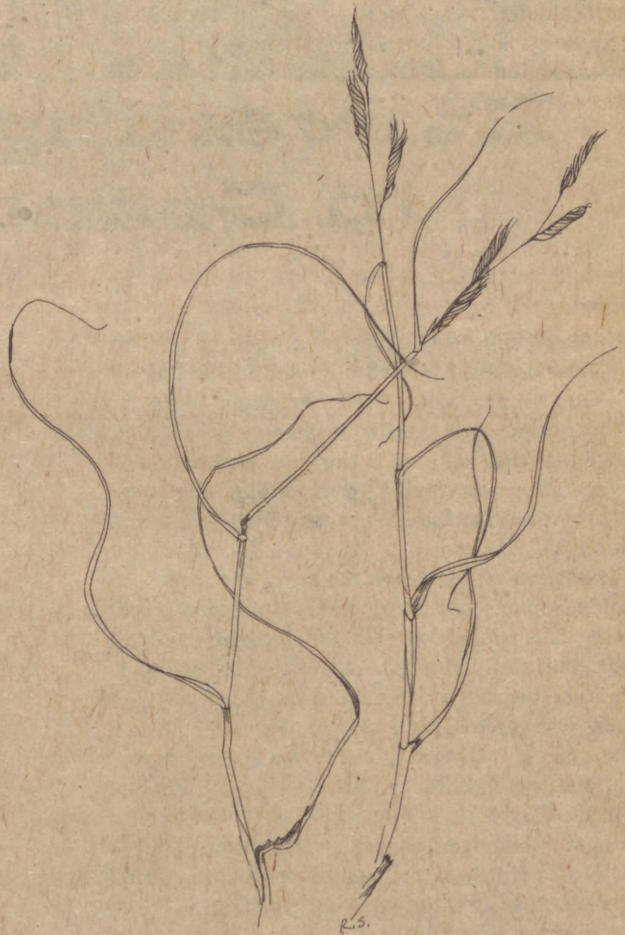
continued on page 63

Miriam Colwell, recently retired postmaster of Prospect Harbor, has published three novels.

Grasses of the Salt Marsh



Spartina alterniflora



Spartina patens

mosquitoes. The horses' heads had to be covered with netting and straw hats to give them some measure of protection.

In Gouldsboro, a dike was built across Grand Marsh in the early years of the 19th century. It was a formidable undertaking: to build a wall of rock, mud and timber a quarter of a mile in length, sometimes reaching a height of six or eight feet.

Henry Wadsworth Longfellow, describing the land of Arcadie, home of Evangeline, wrote, "Dikes, that the hands of the farmers had raised with labor incessant, Shut out the turbulent tides; but at stated seasons the flood-gates Opened, and welcomed the sea to wander at will o'er the meadows."

In the Grand Marsh dike there was also a flood-gate or tide valve called a clapper, an ingenious bronze arrangement designed to open with the pressure of fresh water draining through the marsh to the sea but closing against the salt tides. With the great stretch of marshland dammed against the salt water, the land firmed and a vast green meadow of *Spartina* grasses stretched inland for a mile.

Ann Merriam of Prospect Harbor, spending summers at The Sands as a child, remembers the marsh as a "striking green" expanse, a remote quiet but rather perilous oasis where children were firmly warned not to venture. She remembers seeing a long line of loaded hayracks from the Marsh lumber slowly down the hill behind the Shaw house at The Sands. They were headed home at the end of a long summer day of haying the salt marsh, ten or twelve teams, one behind the other, wheels creaking, shafts groaning as the great carts lurched and slid down the rough track of road, the pairs of horses interspersed here and there by a slow-moving yoke of oxen.

Around the turn of the century, there were eight barns standing on the marsh and most of the Prospect Harbor farmers had lots deeded in their names ranging from one and two acres in size to five, seven and

fifteen acres. Dick Shaw remembers haying there until the need for fodder diminished because of few cattle. He recalls horseflies as large as bumblebees!

In 1928, the Town of Gouldsboro still collected taxes on seventy-five acres of dike marsh, though now the dam itself was falling in disrepair and few men continued any interest in maintaining it. Salt water cut channels through the dike and joined the fresh drainage in the creek; the ground grew spongy again. Over the years the barns disintegrated and disappeared. There was little to disturb the quiet forces of nature as the marsh continued its invaluable productive role in the biological system. A few duck hunters came each fall.

But the great social changes sweeping the country and the world inevitably reached the Maine coast. In the 1950's and 60's with the press of population and prosperity, land took on a new meaning and a new value. Real estate speculators moved up the coast like a wave of locusts, stopping only to defoliate as they came.

Salt marshes, so near the sea, part of the golden coastline, could be drained, filled, bulldozed, turned into marinas, housing development or industrial parks. But there were protesting voices, voices speaking for the value of marshes in the great ecological chain of life that sustains all life. The State of Maine now requires a permit before any coastal wetland may be altered.

Grand Marsh has been threatened from two sides by land development but it remains, no longer remote but at least protected. Perhaps one day it may again have young farmers swinging scythes to harvest the ripe salt hay for their cattle, stepping over the muskrat holes where horses or tractors could find no footing.

In the Maritimes, the Canadian government is financing a big program for the reclamation of the marshes for haying. In both yield and fodder value, *Spartina* salt grass seems to compare with upland meadow hay. After all, cattle of coastal New England lived on it for three hundred years.





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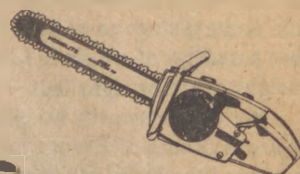
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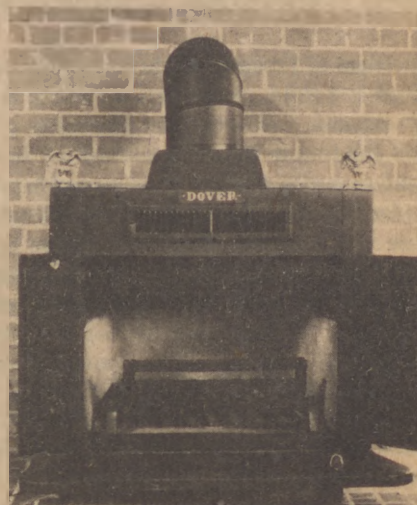
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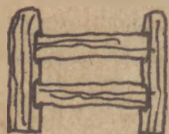
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The Truth About Tomatoes



by Derek Fell

In spite of the fact that the tomato is America's most popular vegetable, a great deal of nonsense continues to be written about it. Probably more misinformation surrounds the growing of tomatoes than any other vegetable. It took 400 years, for example, for the tomato to lose its reputation of being deadly poisonous.

*Derek Fell is the author of several gardening books including **How to Plant a Vegetable Garden** and **New Ideas in Flower Gardening**, Countryside Books, 200 James Street, Barrington, Ill. 60610. He is former director of the National Garden Bureau, an information office sponsored by the garden seed industry.*

The tomato is native to Central and South America, Spanish priests having introduced wild species of tomatoes into Europe around the mid-1500's. The Italians took an early interest in it and, in deference to the yellow-fruited kinds, called it Pomodoro, meaning Golden Apple. It is not true that the tomato was considered to be an aphrodisiac. The common term, "Love Apple" comes from an early botanical name, Poma amoris, meaning Amorous Apple, "for the amorous aspect, or beauty of its fruit," according to an early English herbalist.

The tomato soon developed a reputation for being poisonous because the wild species looked similar to deadly nightshade, a poisonous plant common throughout the



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waysides of Europe. Also, the vines and leaves do contain a toxin, and most insects and foraging animals are repelled by its nauseous odor (sniff your hands after handling tomato stems). Anyone brave enough to taste the wild fruits found them to be rough skinned, seedy and sour — they tasted terrible — the natural inclination was to spit out the first mouthful and rinse your mouth with water.

Herbalists, always seeking medicinal properties in plants, decided that while the tomato was probably inedible, its juice had a soothing quality, and there are many old references to the juice from tomatoes being used to relieve all manner of aches and pains.

Eventually, some special selections from the wild tomatoes did become cultivated as vegetables, especially in France and Mediterranean countries where the long growing season probably helped to mature the fruit more successfully than in England or the American New England states.

Until about 1870 tomatoes earned very little space in seedmen's catalogs, since the poison myth was slow to dissipate. There is even an account of a gentleman in Salem, New Jersey standing on the courthouse steps and putting on a public display of eating a tomato to prove it was not poisonous.

What changed the fortunes of the tomato more than any other single incident was an enterprising Ohio farmer, Alexander W. Livingston. He had started a small seed company, and he began experimenting with tomatoes to

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see if he could breed some better varieties with improved eating qualities. After five years of selecting, he succeeded in developing a superior variety he named Paragon which had good, smooth round shape and excellent meaty flavor. Paragon became the first commercially successful tomato, and from it the fame and popularity of the tomato spread throughout the world.

Today, the town of Reynoldsburg, Ohio, where Livingston did his breeding work, honors his accomplishment with an historical marker stating, "Birthplace of the Modern Tomato." The town holds a tomato festival every year. The company that Livingston founded is still in business, in Columbus, Ohio, but deals strictly wholesale.

Within twenty-five years of the introduction of Paragon, the tomato zoomed to our number one most popular vegetable — no small achievement when you consider that other native American vegetables such as potatoes and squash already had thousands of years of cultivation by the Indians behind them; and European vegetables such as cabbage and melons had been domesticated even longer. Today the tomato is estimated to be a billion dollar food crop.

However, even today, in spite of the tomato's world-wide popularity, the myths continue to abound. An example is the "supermarket tomato." It is not true that supermarket varieties of tomatoes are flavorless, and that good flavor has been sacrificed for shipping and mechanical harvesting qualities. Left to ripen in the field, super-

market varieties are *every bit* as fine flavored as home garden varieties. (I know, I've tasted them in California and Florida.) The problem is that they are picked in the "green mature" stage, and allowed to ripen during transit, so the full flavor never develops. A better flavored supermarket tomato will not come about by breeding a better flavored supermarket tomato. It will come from a better understanding of enzyme action — knowing how to arrest enzymes responsible for ripeness and then to again reactivate them.

Tom-AY-to or Tom-AH-to? Since the English way is to pronounce tomato as tom-AH-to, most people think that is the correct way. However, the English pronounce Pot-AY-to, so one has to be wrong, since both words have origins in Central America. In fact, the word tomato comes from the Aztec name *tomatl*, and the correct pronunciation is the American way, tom-AY-to. The English pronounced it wrong because they were introduced to the word by way of France and copied the incorrect pronunciation.

Blossom-End Rot. Most textbooks I've ever read about tomatoes say that blossom-end rot is caused by inadequate watering. That's true, to a point. Failure of the tomato to transmit moisture to its fruit can be caused by drought, but more often it is caused by damage to the tomato roots at the time of transplanting or after the tomato has been planted. Pay more attention to proper transplanting, planting your tomatoes deep so they have a portion of stem below ground. Avoid damaging roots, especially



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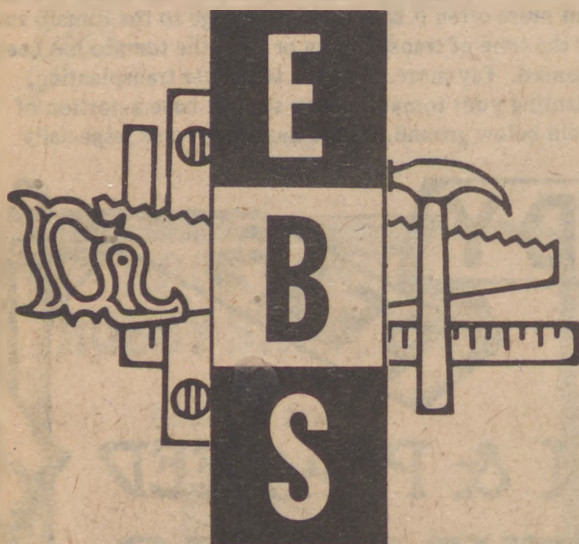
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the fine root hairs, and don't cultivate too close to the surface roots. Also, the use of a mulch to conserve moisture is helpful.

Late Ripening of Fruit. "To get early ripening of fruit, choose an early tomato variety", is the general advice given by experts. Don't be fooled. In my experience early tomatoes have poor flavor, and it's worth the wait for a mid-season variety to gain that real meaty, large-fruited flavor. In any case, an early ripening tomato won't produce early fruit unless you have plenty of phosphorus in the soil, an important plant nutrient responsible for ripeness. Most gardeners load their soil with a fertilizer or manure high in nitrogen. That can produce too much leaf growth, and the fruit takes an eternity to ripen. Load the soil with phosphorus, such as bone meal, and your tomato fruits will ripen on schedule.

Organic Pest Controls from Tomatoes. The beauty about a tomato is that it has its own built-in, natural pest control — a toxin found in leaves and stems that is repellent to most insect pests and foraging animals. For this reason, it is untrue that a Preying Mantis can be used to guard tomato plants. In reality, a Preying Mantis will go nowhere near a tomato plant if it can help it. In fact, a good general purpose organic pesticide can be made by mixing a bunch of crushed tomato vines in a pail of water, and using the mash as a spray on your other vegetables, flower beds and even indoor house plants. I recently had a call from the 3M Corporation, manufacturers of pesticides. They were asking my advice about a new pesticide they were considering, and I told them about the tomato's natural repellent properties. They sounded keen to start experimenting, and I wouldn't be surprised if in the near future 3M Corporation introduces an organic pesticide made from "extract of tomato", or some such definition.

Growing Tomatoes in Containers. Yes, you can grow tomatoes in containers, but it's not as easy as some people will have you believe. The trouble is, the containers keep drying out. The most successful technique has been developed by a Long Island cartoon cameraman, Leopold Klein, after fifteen years of experimenting in a planter box just two feet square by two feet deep. The box is made of wood or masonite, for good insulation, and lined with layers of old newspapers to provide extra insulation. He uses a planter mix of equal parts garden top-soil, peat moss and sand. About the widely publicized "garbage can" system whereby a plastic garbage bin is used as a container, Mr. Klein says: "You don't have to be an expert to know that 1/16 inch of hot plastic is not enough to protect roots from the hot sun. Thus wilting becomes a problem during the hot summer months, which is almost always followed by blossom end rot." Mr. Klein should know. He reliably grows one hundred pounds of fruit on four staked tomato vines in his planter box, which he fondly calls a "tomato machine."

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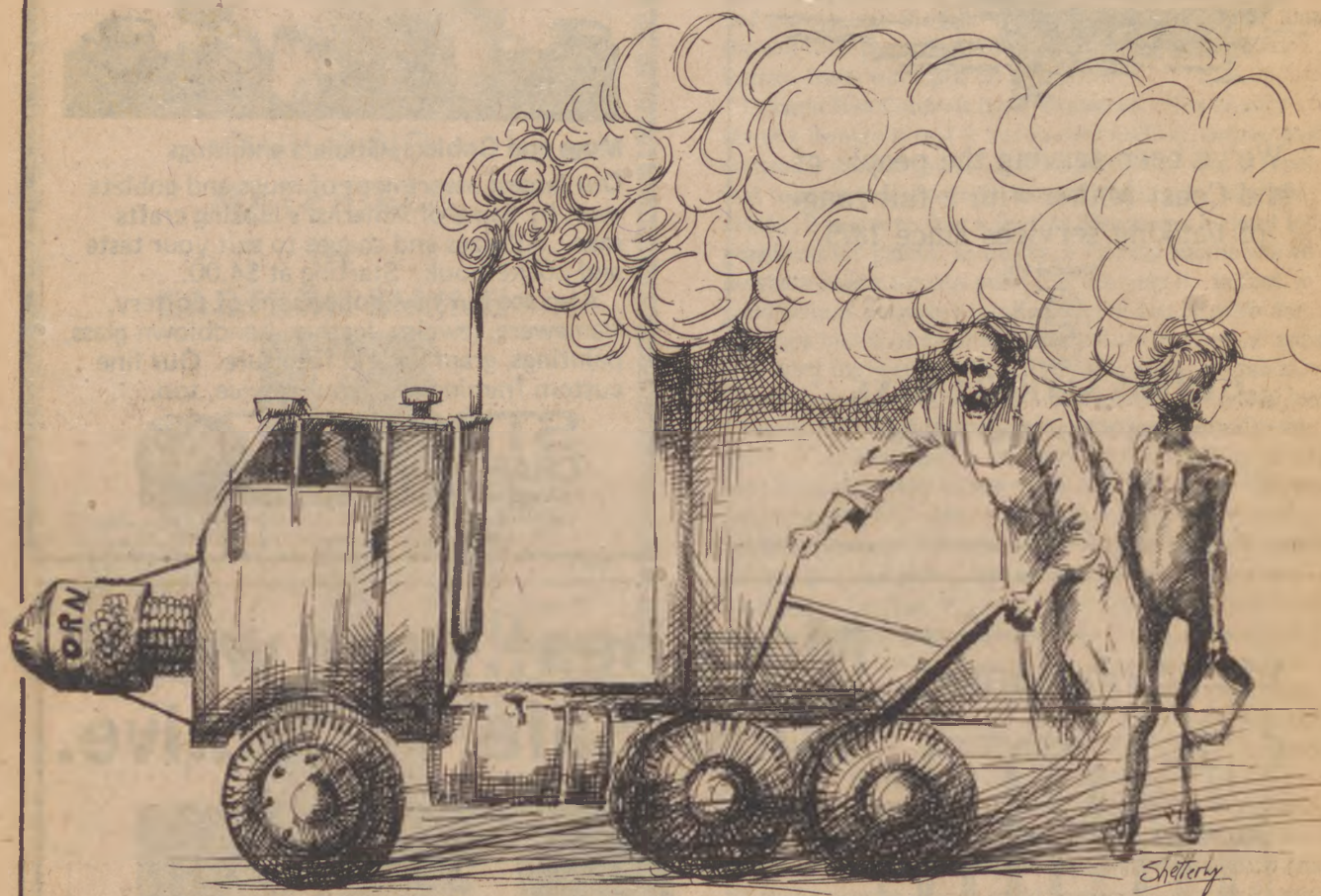
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Energy Consumption in Today's Food System



by Dennis King

Food provides our bodies with fuel, a fact that we all know. We depend on plants to convert solar energy to food by photosynthesis. The sun is the ultimate source of almost all of the usable forms of energy. Even though modern agriculture is still tied to direct solar energy, recently other energy sources (hydrocarbon fuels) have become much more important to agriculture and to our entire food system. David Pimental, an insect ecologist at Cornell, has quantified the various energy inputs into the U.S. food system and some

Dennis King is an associate editor of FARMSTEAD MAGAZINE.

enlightening points emerge. He made his name in the field by publishing a paper on the subject in *Science* magazine during the 1973 oil embargo — good timing.

At a recent seminar in Orono, Pimental went through some of the well-known statistics familiar to most of us; for example, the U.S. has 6 percent of the world's population and consumes 34 percent of the world's energy. On the average, "our food system" uses 8 calories of fuel energy to produce each calorie of food we eat. Of our total national energy use, 15 percent is used in our food system. The rest is used in transport, industry and residences. Even though only 15 percent of our total energy use is in our food system, if we tried to feed the world's 4 billion people with our food technology and

system, the entire world oil reserves would be depleted in fourteen years.

The implications of these statistics are alarming, but as yet few people seem to be worried. Energy conservation, or fuel conservation, is given a low priority in our national energy policy, but its value is underestimated.

What can self-sufficient farmsteaders do? Pimental gave an example of the energy required to get a can of sweet corn to the average American table which gives some clues. A can of sweet corn weighs 320 grams and contains 270 food calories. The breakdown of caloric energy consumed to get that to the average American table goes like this: produce on farm — 200, processing (canning) — 1200, transportation — 230, distribution — 60, personal shopping — 700, home cooking — 400, for a total of 2,790 calories. We get about 1 calorie of food energy for 10 calories of fuel energy burned in production, processing and distribution.

What does it cost a farmsteader in terms of fuel energy for an equivalent amount of sweet corn? A lot less! Let me make a few guesses. If modern agribusiness spends 200 calories of fuel to produce that can of corn, which includes fuel to make fertilizer and pesticides, burn in tractors and make tractors, I'd guess it costs less than 50 calories to produce it in your home garden. If it cost 1200 calories to process that can of corn, plus make and throw away the can, a farmsteader might use 500 calories in the home pressure canner with a reuseable can. Transportation, distribution and shopping, 990 calories on the average, costs a farmsteader nothing. Let's say we have a modern electric kitchen on the farmstead, though few of us do, so that 400 calories remains the same.

Okay, the farmsteader has used a maximum of 950 calories, one-third the average amount, to get a 270 calorie can of corn. Still not too efficient, but if we dried the corn or ate it fresh to reduce the energy required for processing and cooking, it would cost even less in terms of fuel.

What does this mean? To my knowledge the experts almost totally discount the energy and fuel savings resulting from self-sufficiency. They call it a drop in the bucket. But I don't know many experts who are willing to save much energy in their personal life-styles. We can contribute to society in many ways, but most of those ways are unmeasurable. The only way I know to really measure my contribution is by comparing myself with the average rate of consumption. Am I above or below average and by how much? I know I'm below average when it comes to fuel consumed per can of corn.

If we believe our society is gluttonous of resources, both renewable and non-renewable, and that consumption must be reduced if we are interested in our society's long-term survival, we can do something. Use less! We can measure our contribution to society and possibly it is much greater than those who preach sound environmental management (the experts). This brings to mind a quote used by Paul Ehrlich in his book, *The End of Affluence*: "He who reforms himself has done more toward reforming the public than a crowd of noisy, impotent patriots." I call it one's "contribution to the mean" and we can reform ourselves on the farmstead.

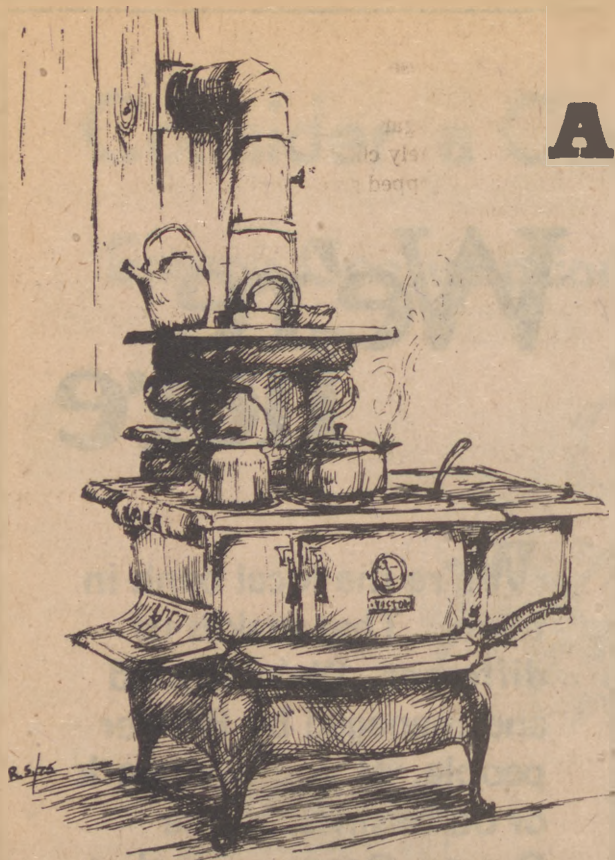
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Around the Wood Stove

by Karen Frangoulis

CRANBERRY SQUARES

- ½ cup shortening
- ½ cup sugar
- 1 teaspoon grated lemon rind
- 2 egg yolks
- 1 cup flour
- ½ teaspoon salt
- ¼ teaspoon baking soda
- 1 pound can whole cranberry sauce, drained
- 2 egg whites
- ¼ cup sugar
- ½ cup finely chopped walnuts

Cream shortening, sugar and lemon rind. Add egg yolks one at a time, beating after each addition. Sift flour, salt, and soda. Add to creamed mixture. Mix well. Spread or press dough evenly into a greased 12"x8"x2" pan. Spread cranberry sauce evenly over dough. Beat egg whites until stiff but not dry. Gradually add sugar and continue beating until mixed. Fold in finely chopped walnuts. Spread meringue over cranberry sauce. Bake in medium oven about 40 minutes. Cool. Cut into strips or squares.

Sprinkle with confectioners' sugar.

BAKED LENTILS

- 1½ cup lentils, sorted and rinsed
- 4 cups water
- ½ teaspoon salt
- ½ teaspoon thyme
- ½ teaspoon oregano
- 1 teaspoon paprika
- ¼ cup dry parsley
- 1 Tablespoon Tamari
- 2 Tablespoons olive oil
- 1 small onion, chopped
- ¼ pound sharp cheddar, diced

Boil lentils, water and salt until tender (about 1 hour). Add remaining ingredients. Pour into casserole and bake in a medium oven 1 hour. Serves 4.

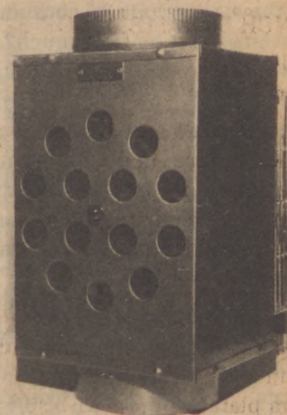
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- 1 cup whole wheat flour
- ½ cup rice flour
- ½ cup corn flour
- 1 teaspoon baking powder
- 2 teaspoons baking soda
- 1 teaspoon salt
- 2 eggs
- 4 Tablespoons melted fat
- 2 Tablespoons molasses
- 2 cups milk (approximately)

Grind the wheat, rice and corn fine. Mix the eggs, fat, molasses and milk together and stir into the dry ingredients. Fry on a hot, greased griddle. This batter will be even better if allowed to rest overnight before using.

ENGLISH WHEAT MUFFINS

Heat griddle to medium hot (350°).

- 2 packages active dry yeast
- 2 cups warm water
- ½ cup lard, melted and cooled slightly
- 4 teaspoons salt
- 1 Tablespoon sugar
- 2 cups whole wheat flour
- 3 cups unbleached white flour
- cornmeal

Soften yeast in warm water. Add salt, sugar, whole wheat flour and lard. Mix and beat until smooth. Gradually add white flour to form a stiff dough. Knead lightly on a floured board; roll out to ¼ inch thickness and cut into rounds with floured 4 inch cutter. Sprinkle cornmeal onto ungreased cookie sheets; place muffins on the cornmeal and sprinkle more cornmeal on top of muffins. Let rise in a warm place until light (30 to 60 minutes). Using a wide spatula, gently lift muffin from sheet and place upside down onto hot, lightly greased griddle. Bake 7 minutes on each side or until light golden brown. Let cool, then split with a fork and toast.

LUNCH SCRAMBLE FOR FOUR

- alfalfa sprouts (3 Tablespoons alfalfa seeds — soaked, drained, kept moist about three days)
- Tamari (naturally fermented soybean and wheat sauce)
- 1 small onion, chopped fine
- 3 Tablespoons oil
- 1 pound chicken livers, cut in half
- 4 eggs, beaten with 4 Tablespoons milk
- ½ teaspoon salt

Saute onion in oil and remove from skillet. Add liver and cook until brown and almost done. Stir in eggs, cooked onion and salt. Scramble until soft cooked. Serve on warm plates, topped with sprouts and Tamari to taste. Super nutritious!

BUTTERMILK SALAD DRESSING

- 1 cup cottage cheese
- ½ cup buttermilk
- 1 Tablespoon vinegar
- 2 Tablespoons finely chopped parsley
- 1 Tablespoon chopped green onion or chives
- ¼ teaspoon salt

Sieve cottage cheese or mix in a blender until smooth and creamy. Stir in remaining ingredients. Pour over mixed greens. This makes 1½ cups and will keep about two weeks, covered and stored in the refrigerator.

CREAMED CORN SOUFFLE

This is a hearty, soothing, economical dish similar to corn chowder.

- ½ stick butter
- ¼ cup flour
- 2 cups cream-style corn
- 1/3 cup milk
- 1 teaspoon Worcestershire sauce
- ½ teaspoon salt
- juice of one garlic clove
- 2 cups grated sharp cheddar cheese
- 3 slices bacon, cooked, drained and crumbled
- 5 large eggs, separated

Melt butter in a 3 quart saucepan. Add flour and stir over low heat 1 minute. Add corn, milk, Worcestershire sauce, salt and garlic, stirring over medium heat until thickened. Add cheese and stir until melted. Beat egg yolks slightly; stir in a little of the hot corn mixture, then add yolks to the corn mixture, stirring well. Remove from heat; add crumbled bacon. Beat the egg whites until soft peaks form. Add ¼ of the beaten egg whites to other ingredients, stirring gently. Fold in remaining whites. Pour into an ungreased 2 quart casserole. Run spoon around top of mixture about an inch from the edge of the casserole. Place in 350° oven and bake about 1 hour. Serve immediately to four or five people.

APPLESAUCE SQUASH BREAD

- 2/3 cup shortening
- 2 2/3 cups sugar
- 4 eggs
- 1 cup unsweetened applesauce, homemade (juicy)
- 1 cup mashed, cooked squash
- 3 1/3 cups flour
- 1 cup walnuts
- 2 teaspoons baking soda
- ½ teaspoon baking powder
- 1½ teaspoon salt
- 1 teaspoon cinnamon
- 1 teaspoon nutmeg

Cream shortening and sugar. Add eggs, one at a time. Stir in squash. Sift together dry ingredients and add alternately with applesauce. Stir in nuts. Pour into 2 greased loaf pans. Bake at 350° for 1 hour.



MAINE ALBUM

Maine Album is a continuing feature of the magazine. Jo Barrett, FARMSTEAD staffer, lives in Penobscot, where she conducted this interview and took the photograph

Through the years many different people and events have touched the history of the old water-powered mill on Wight's pond. Ethel M. Gray Barrett was born in 1893 and raised by her grandparents, Sewell and Clara Gray. From the age 3 until college Ethel lived at the mill, while it was owned and operated by Sewell. The mill, and especially the people involved with it were the most important factors in her early life. These are her childhood recollections.

Young men were always hired at the mill because good sight and hearing were necessary for being alert to the many dangers. One crew worked in the mill and another in the woods. At the time of Ethel's earliest recollections her grandfather was having trouble making ends meet. A major factor in keeping good men was the cooking, since most of the men lived there through the week. One relative tried the job of cooking for a while, "She was an awful good cook, but she was an extravagant


one. So when I was three years old my grandmother said, 'Well, I'm going to try it.' At that time we were down on the farm, so that was quite an experience. My grandmother really had to go up to the mill because the good men wouldn't stay there if they didn't like the food. We didn't have much transportation in those days, we used what we had. We had what we'd call a trace ox. That would be an ox whose team partner got killed. Our ox were always pets, but they used him, had a harness for him to drag out logs. My grandfather harnessed this trace ox up to the sled and we started out across the 'back highway'. My grandmother had packed everything we had in the sled. She has something wrapped around her head, then she put on this cap of my grandfathers's. He wore one like they wear on yachts — that was his good hat. Sewell drove the ox and we sat on the seat he made for us. When we got up about half way my grandmother said, 'Oh, Sewell, I've lost your hat!' It had come off way back. I was only three years old, but I can remember every bit of this. We sat there, I was scared to death afraid the ox would take off with us. Of course he was a pet, my grandfather knew he wouldn't. My grandfather walked way back till he found the cap. We got up to the camp, unloaded, and from then on I didn't want to live anywhere else. From the time I put my foot in that little ole camp I wanted to stay there, and I never wanted to leave. I didn't want to go to school, I didn't want to go anywhere because I loved it. I could have all the company I wanted. One time my grandmother gave me the privilege of staying overnight with a friend. Before dark my

grandfather came down and said 'I can't sleep when she isn't there.' So I had to go home.

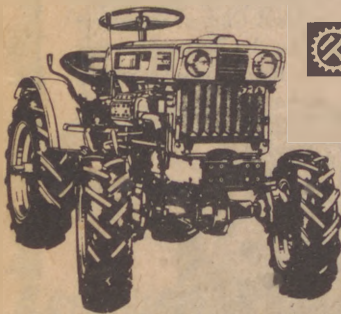
We lived in the little house — four rooms. There were two bedrooms, a kitchen, now that's what I fell in love with. When they built the big house they were going to make a new ell, a nice place. I cried so hard that my poor grandmother had to use that little camp the rest of the time. They then built on for an ice house and a meat house. There were lots of barns and buildings. There was a horse barn, an ox barn, chicken house, blacksmith shop with living quarters overhead, the house, a bunk-house, and the mill. The grist mill was built onto the front of the saw mill.


I think Sewell bought the mill in 1890 from a man named Grindle. In 1896 I was there. Before the mill he had a brickyard on the river (Bagaduce). He had to give that up because the clay gave out, but he didn't really like it. It's kind of a cruel thing the way the horses had to go round and round to mix the clay. My father later came in with him on the mill. My father had been a teacher on the islands. Later he went on to be a builder. My grandfather did most of the sawing up until about three years before he died, when my father again began to work there. My grandfather became totally deaf in one ear. The old saw was really high.

Christine and Zo ran the farm down in the "Kingdom" and provided the mill with food. Christine was the youngest daughter. In the spring, probably April, we went down to the farm because what they called




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"the privilege" let out. They had to let the water off where it was flooded for the mill. There is probably a mile and a half from the mill to the head of the pond. All along there they had to let the water off so the people who owned the land could use the hay for bedding, but some of them would feed it to their cattle. There is nothing worse than that hay, it will cut your hand, but it is good for bedding. This continued up until about four years before my grandfather died, then they stopped using it. He either paid for the privilege or they permitted him to do it (flood their shore land). They could then saw anytime. Of course there was a lot of haying going on. Many of the men worked in the winter time at the mill, then went to haying. Most of the sawing was still done in the winter but they could start earlier (in the fall)." From the middle of September 'til the middle of April was when most of the sawing was done. Before the privilege was paid for they let the water out in April for the summer, and most of the men went to work their farms.

"My grandfather worked oxen entirely. He had horses but hired two men, a North Blue Hiller, and a Blue Hill man. A horse breaks his legs so much easier. The oxen are slow, and of course if he should, God help him, break a leg we could have used him for beef — I don't think that ever happened.

Along the stream people would cut for the next sawing. A boom is a circle of connected logs around each person's saw logs. We recently found the tool used to make the holes for the pegs that held the boom together. The booms would float and wait to be sawed. Sometimes the pond

had quite a number of these booms. When they were ready to saw they'd take a boat to get the logs. Where the water is deepest there is a ramp going up to the saw — was that ever slippery! When it rained everybody was always falling in, but that was part of the game. The great big logs were pulled up the ramp by a chain, right to the saw. The log was rolled over to make a square. Then that old big saw would scream through. That's what I waked up to for so many years. I loved it — you know that would be terrible now! The logs went from there to the cut off saw, a dangerous thing. It was a box not much bigger than a small table. The cut off saw was to make the log square on the end. That would be going a mile a minute, and would come up from the bottom of the piece of lumber.

At one time my grandfather put in a little shingle machine. He wouldn't let anyone else run it, it was so dangerous. Because of all the gradations of shingles, a man's hand had to go right in there. One day Sewell's hand went in and the three middle fingers got peeled to the bone. The doctor was gone, and my grandmother knew it needed to be done while it was still numb. She took the fingers and put them up together, made her own antiseptic bandages. She put that all together and put it into sulfa-naphthal. When the doctor came, she was tickled that he'd come, he took one bandage off and said, 'Mrs. Gray, I can't do any better than you've done.' She could do anything, honest to goodness she could. We had very few accidents, almost none. When

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I was old enough to realize what could have happened, it seemed awful.

The men were never to drink then work. My grandfather gave them Saturday off (probably the first person to do that). He said if they were going to drink and have a hangover, have it on Sunday, not Monday. They did exactly as he said, none of those boys drank much anyway. The closest we came to a bad accident was one time when Jap Wescott was feeling mean. He was a pleasant, frisky guy, but a hangover had him. He was using one of those iron dogs to turn the logs. The dog and the log didn't do what he wanted them to, so he threw the dog onto the saw, beside my grandfather's head. It split in two, and one part went right by my grandfather's head, and the other part went just as near another boy's head as it could. My poor grandfather just stopped, weak, couldn't say anything for a minute. Finally he got his breath, and he had quite a language when he did get mad, he stripped Jap right down. He said 'now listen . . .', I don't know what all he did say, but Jap never did it again anyway! Jap shipped out summers, got his whole license that way. He almost always came home winters, was part of the crew for quite a while.

The men would come down from the mill for dinner — always laughing. My grandfather loved jolly people. There was Cory and Freeman Grindle, and two boys from over to the Docean shore that were just clowns. Sewell didn't think he had a sense of humor himself. Many times he'd come down, those boys would have a cat's cradle made with their arms, he would be riding in it — laughing like

fools. They'd do stuff like that. We thought it was awful silly. That's the way they were. He loved kids like that — just as funny as they could be but hard workers too — believe me, they had to be that. For dinner there would probably be eight from the mill. Clara fed them all breakfast, usually twelve to fourteen men. The men that worked in the woods had breakfast there then she had to pack lunches for them to take to the woods.

Some of the men lived near, so they walked or bicycled. Some lived there through the week and went home weekends. There was a four double-bunk house with an area for playing cards. The men liked living there a lot. There was a darn good cook and all. In more recent times the men who were still alive came by and talked of Mrs. Gray's 10-inch pies, which she'd cut into quarters and serve. They were always talking about those pies. All kinds of pies. I don't know how she did it all from that little oven. She made biscuits enough for that crew every morning. Jap would go out and cut off some meat. In those days by November the meat would freeze and it would stay frozen 'til spring. There is a definite change in the weather. It was always Jap's job to slice off some meat. They had great meals, beans, always beans. All from that little Dirigo stove.

On either side of us was the Irish place and Kane's. Miss Irish had one leg removed. My grandfather built her a ramp so she would be wheeled down and go to the Kane's. When she had to have one of her operations the whole mill stopped. My grandfather was so thoughtful of anyone

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like that. You wouldn't think my grandfather had any religion at all, but he had a deep religion. He and Brainerd would discuss the weather. He would say, 'Wouldn't it be a heck of a thing if any one person could run the weather. The weather is what it is because it's what we need.' He always had work to do on a rainy day, harnesses to mend and all. It never bothered him to have to take a day off because of the weather.

One rainy day someone came down from the pond where the logs were and said 'Somebody has cut the boom.' The logs were going downstream. Everybody had their own mark on their boom. It was windy so they all got their "Sou-westers" on with their wool collars, went up and got the boom together. They brought it down nearer the mill. Sewell got a roughed place on the back of his neck, didn't think anything of it and just kept on working. The doctor was gone. The infection spread quickly, even under the care of another doctor. They had a doctor come down from Bangor to remove a leg the infection had spread to, but it was too late. That's the way it was in those days.

I loved the mill, except there was one thing I didn't like. I can feel it today. There was this great big saw my grandfather used and of course it was cold outside. The camp was an awful little place. When it was cold he'd bring that great big saw in with the help, and file it. You can't imagine waking up to the sound of that, and there was no place to go to get away from that so early in the morning. I don't know how my grandmother stood it."

One time there were some related Grays from down in the kingdom whose steam-powered mill had burned down (as it was always doing). They had to get an order out so asked to use the mill. One of them, Gene, was very temperamental, easily riled. The other two knew how they could get him. "They just loved it but he was really dangerous. My grandfather was going to Ellsworth for the day and leave my grandmother and me there. He told the boys, 'You're welcome to use the mill, but I'm leaving my wife and child here and I don't want any trouble. You do your work but don't go rubbing him the wrong way.' They said, 'Oh no,' they wouldn't make trouble of course. Well about noon, it must have been when they stopped to eat, we heard this unGodly noise. We saw them running and yelling towards the barn with this guy after them with one of the tools, just as sharp as it could be. We didn't know what to do, we knew somebody was going to die! Thank the Lord, my grandfather just drove into the yard. He said, 'Hold the horses,' and he went up there. Those boys said they couldn't have held those barn doors very much longer against Gene. My grandfather told them to stay where they were and he'd take Gene down. He blamed them as much as Gene. He told Gene to go down, wash his face and hands in the cold water, take his bicycle and get out, and not come back. The boys were perfectly glad to stay in the barn! Then my grandfather gave it to them. I never was so scared. To have something like that happening and being alone. That was one time when my grandfather's vocabulary really took place!



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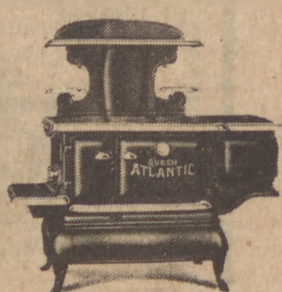
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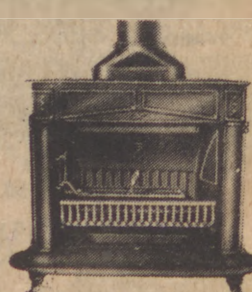
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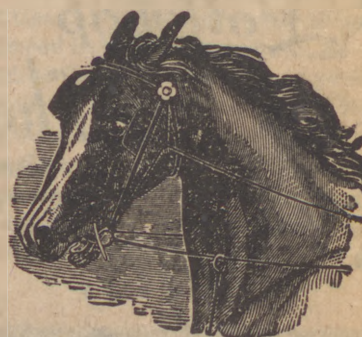
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Old Orchard Pie



by A. Carman Clark

Yesterday we had apple pie and it was good. But, with the first fork full, we were all thinking ahead to the special Old Orchard Pie we'll have in October. Someday we should try that pie on a panel of objective judges to find out whether its super flavor is authentic or purely sentimental.

Four special ingredients are required for Old Orchard Pie. Choose an early October day with brilliant foliage and warm sun. Explore an old back road, up over the ridges past long-abandoned farms, find at least five different kinds of apples picked from the bounty of old orchards. And have appetites whetted by fresh air, exercise and the prospect of hot apple pie. It's the blend of different varieties of apples which makes this pie more delicious. But no blending ever tastes quite as good as the first pie made just hours after clammering over stone walls and striding up bush-tangled wheel tracks seeking the old orchards planted by long-gone farmers.

Our younger daughter, trying to fit together her way of life in rural Maine with the world she studies about in school, paused once beside a pine wood outlined with high stone walls. "If cities are getting bigger and people can't find room to live," she asked, "why did the owners leave these farms? How come things seem just the opposite here?" Sharply outlined before the dark pines was a knarled, bent, old apple tree, its red fruit shining in the sun. In the soft stillness of that wood, once the corner of someones pasture and orchard, I could not answer that question by saying that progress had by-passed some parts of Maine. In the beauty and solitude of that Indian Summer afternoon, we'd walk miles without a glimpse of concrete or steel. Our apple hunting expedition amid

a riot of color and an abundance of apples, was no time to explain the school books' term 'progress'. It was time to enjoy Maine at its best and to wend our way home to make our first Old Orchard Pie of the season.

OLD ORCHARD PIE

4 cups sliced apples of at least five varieties
¾ cup sugar (we use half brown, half white)
½ teaspoon cinnamon
½ teaspoon nutmeg
2 tablespoons flour
½ teaspoon of salt
2 tablespoons butter

Blend all ingredients together in a bowl. Turn into a pie shell. Add top crust and paint it with milk. Bake 10 minutes at 450° and then 30 minutes at 350°. Serve warm with cheddar cheese or vanilla ice cream.

SENNEBEC HILL PIE CRUST

Sift together:
2 cups flour
2 teaspoons cornstarch
1 teaspoon salt
1 tablespoon sugar
½ teaspoon baking powder

Blend in with pastry blender:
¾ cup shortening plus 2 tablespoons

Use a mixture of skim milk (made from dry powdered milk) to moisten the flour mixture.

Roll bottom crust and fit.

Roll top crust. Spread with shortening and fold in half.

Roll again. Moisten edges of bottom crust; cut top crust to fit and press on.



Remarks on the Climate of Penobscot

I OBSERVED, in passing through Pownalborough on the 4th of August, 1786, that the farmers were reaping their spring rye and barley — their winter rye ripe about a week sooner.

At Warren, some of the people had made bread of their new rye and barley on the 6th of August.

At Camden, on the 7th of August, very fine flax, which had been pulled the 26th of July, water rotted nine days, dew rotted three. — That which was reserved for feed, was pulled but three days later.

At Longisland, in Penobscot Bay, they raise two sorts of six rowed barley; the one they call malt barley, the other bald or bear barley. The grains of the former are much like our common two rowed barley, covered with a thick and close hull; the latter has a loose coat or hulk, that easily separates in threshing; and when winnowed, looks like wheat: It yields equal to the former, and makes a very white flour. Its growth is not confined to the islands; Capt. Perkins, who lives at the Casteen River, on the main, had a fine crop, at the rate of 21 bushels per acre.

At Meerumseeunkook, 70 miles up the River Penobscot, from the sea coast, vegetation forward, the soil warm, good for grass and corn. Hornet and Onoquaugh beans ripe, gathered in, and threshed on the 31st of August. Musk and water melons ripe, and plenty. Although their Indian corn, in general, has suffered this year, greatly, by the unusual coldness of the month of August, and a late severe drought; yet, at the Indian old town, but six miles above, the corn of the Indians is near as ripe as usual. They plant the seed of their fathers, dress with only fish manure, and choose a warm, high, interval soil, chiefly on the islands in the river.

On the 24th and 28th of the month of August, the potatoe tops, and two or three fields of Indian corn above the head of the tide, were struck with the frost; but no frost down the river, and bay of Penobscot, till the 25th of September, which is near a month sooner than in common years. I have observed, when formerly in that part of the country, that destructive frosts were not so early as in the county of York, 130 miles westward; and this year, the frost, on the said 24th and 28th of August, wholly destroyed some fields in the town of Sanford;



by Daniel Little

and in my own fields at Wells, the crop near one third diminished.

The soil in no country is universally good, or equally fit for husbandry. That near the sea, and on the banks of large rivers, is seldom so good as on the high branches of the rivers, or some considerable distance from the sea; but in the eastern country, of which I am now writing, although the back lands are more fertile than on the sea-coast, yet the many natural advantages of the latter, which are, or may be known, perhaps, will make a balance. — Besides the benefits derived from navigation and fishery, the farmer has, at hand, an inexhaustible source of natural manure, to mend the soil, from sea grass, rock weed, muscle beds and lime stone; all of which I have seen upon or contiguous to, the same plantation. And besides, it is probable, in that part of a country where lime stone abounds, there may, by and by, be found a plenty of marle, the one porous and friable, the other compact and indurated.

Of orchards, they have but few. Those planted by the first settlers and properly cultivated, bear a good fruit. Instead of apples, in many places, they make a pleasant

and useful juice by mixing an equal quantity of stewed cranberries and pumpkins.

The scarcity of bread, so often, in that part of the country, does not arise from the want of natural advantages, but from a deficiency in agriculture and economy.

The soil is almost universally good for barley and wheat, and seldom or never subject to mildew. I saw a fine field of Siberian wheat, on Long Island, ripe the 7th of August, which spring from the feed that was first brought into the country.

Besides the use of lime on the poorer land, on the sea coast, as a manure, the new settlers, back, may more conveniently supply themselves for use, in building their houses, than in many other places. And there are other useful fossils, beneficial to the farmer and mechanick, on the islands in the bay, and far up the rivers, in plenty, particularly iron ore, near valuable streams for manufacturing the same, and several quarries of stone, of different species, for sharpening edge tools, from the coarsest grit of whetstones, up to the first fort of hones, or oil stones.



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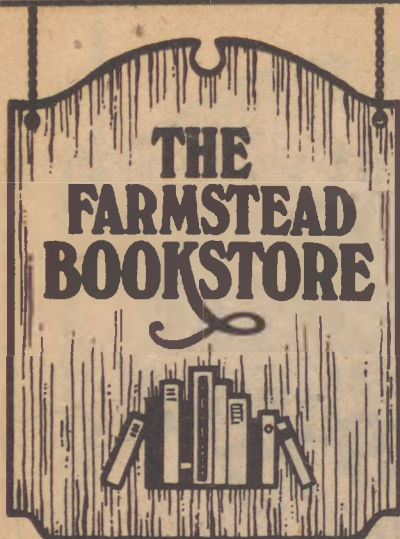


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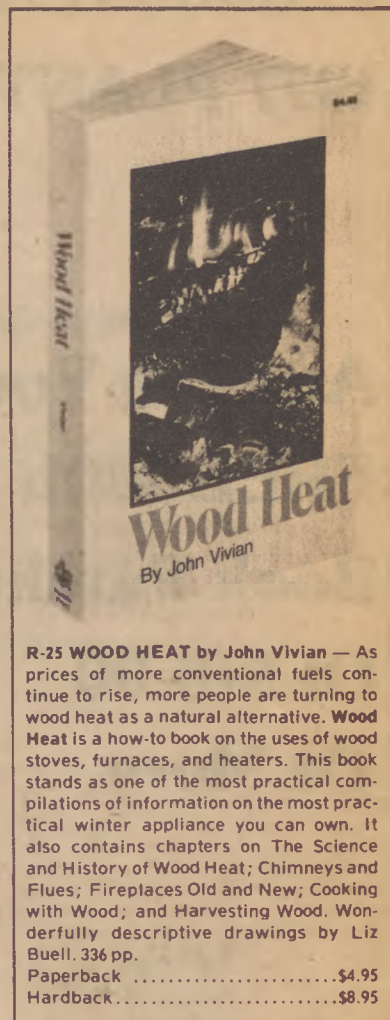
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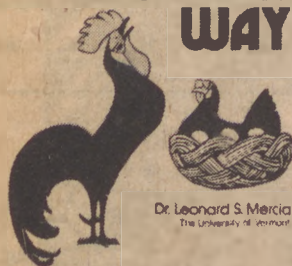
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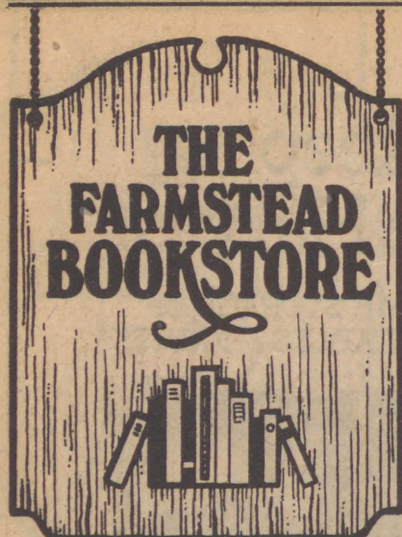
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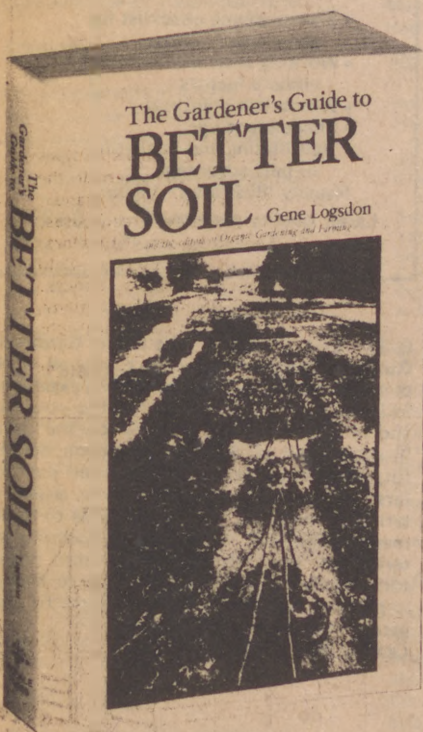


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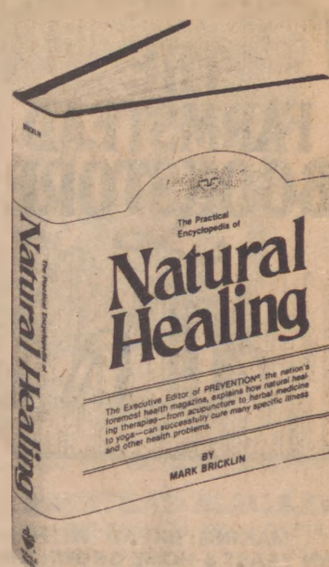
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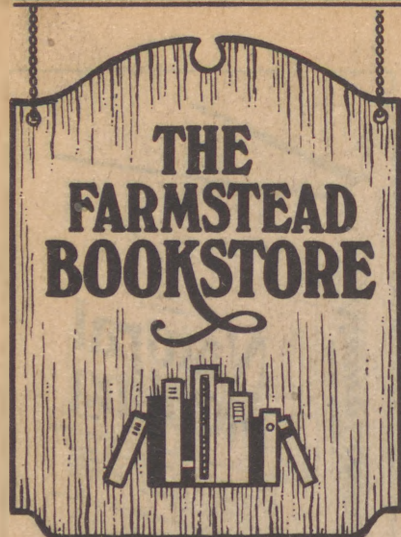
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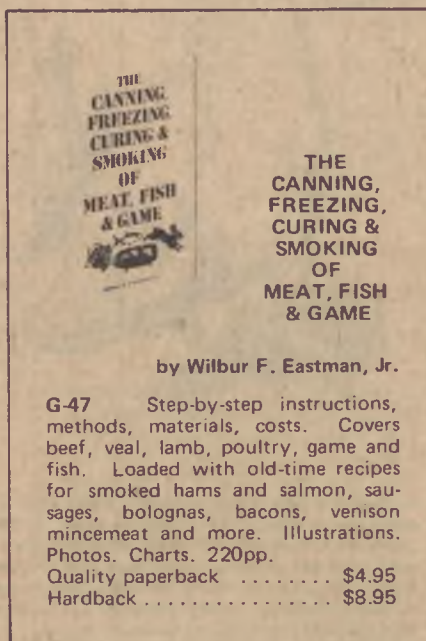
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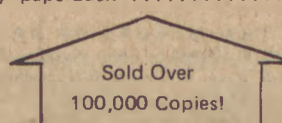
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The Farmstead Reviewer

by Dennis R. King

Livestock books for small raisers have been coming out fast and furiously of late. If you wanted to know how to raise field mice for food there might just be a book on it. In the South there is even a 'Possum Benevolent Society pushing the benefits of raising opossum for food. Seriously, for first-time animal raisers, most of these books are of value. *The Family Cow* by Dirk van Loon (Garden Way, \$5.95) is one of the better ones. It is a fairly complete treatment of raising a milk cow for one or two cow families. It begins with one of the most important points that first-time animal keepers usually ignore, the economics of keeping a milk cow. He skillfully does away with the cow versus goat argument by admitting that the question is usually decided by personal bias. Most everything a first-time cow raiser would need to know from breeds, feeding and health, to care and handling milk, and care of the land is included. There was even plenty of information which was new to a long-time cow raiser.

At the other end of the scale is *Raising a Calf for Beef* by Phyllis Hobson (Garden Way, \$4.95). Even though the book tells you what you would need to know if you were interested in buying a day-old calf and raising it for beef, it fails to give much information to allow one to make the decision to tackle the job in the first place. In contrast to van Loon's detailed discussion of economics, Hobson skims over the question. I suspect it's because the economics are favorable in the first case and not in the second! Hobson does say you can have beef at half the retail price by raising it yourself, but you can also have beef at only slightly over half the retail price by buying a side of beef. The most economical way to get grain-fed beef would be to go and buy a good grain

fed steer at a reputable auction and butcher and process it yourself, since most of the profits are in processing and retailing anyway.

Another problem with the book is its emphasis on grain feeding. Cattle are reputable as being the least efficient converters of grain to meat of any of our common livestock. By buying a calf which is not yet ready to wean (less than 6 months old) one is committed to heavy reliance on grain, milk or milk substitute, since grass and other forage is not of high enough quality for a calf which normally still has access to mother's milk. Since the only thing that cattle really do efficiently is to convert grass and other forage to meat or milk, we need to emphasize these aspects rather than sticking to the strictly affluent product of grain fed beef. As a final note (and I really shouldn't be this mean because Phyllis Hobson has written some other truly useful books) the last 40 pages, one third of the book, is a word-for-word reprinting of a U.S.D.A. publication on slaughtering and processing beef (Farmer's Bulletin No. 2209, usually available free at your County Extension Office).

Raising Sheep the Modern Way by Paula Simmons (Garden Way, \$5.95) is quite a complete book on sheep raising and is geared for the person who keeps a small flock of about 10 to 20 ewes. Even though at the end of the book she lists and discusses 14 sources of income from sheep she doesn't really include much information to help one decide whether or not to undertake small scale sheep raising. She obviously has a lot of experience, however, and includes most of the information necessary for first-time and small scale raisers.

A book tuned to do-it-yourselfers is *Backyard Livestock* by Steven Thomas (The Countryman Press, Taftsville, Vermont, \$5.95). It is a general book and covers all small scale livestock enterprises except cattle; he does have a section on veal calves. The emphasis is mostly on raising your own meat and stresses ways to cut corners and save money, while maintaining quality. I like his emphasis on raising your own animal feeds and feeding otherwise waste products (garbage). I also like his warning that you can save and cut corners in many ways but not by underfeeding. People who think they are saving money by simply skipping on the store-bought feed are actually decreasing the feed conversion efficiency of the animal and causing

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health problems. Thomas also stresses the importance of providing fresh, unfrozen water at all times. The book is short on details, but any book covering all livestock must be. It would be a good book for first-time raisers interested in a lot of different livestock or for those trying to make up their minds about what kinds of livestock to raise.

Finally, there is a complete book on one of my passions, *Great Sausage Recipes and Meat Curing* by Rytek Kutas (Richard S. Kutas Co., Buffalo, New York \$12.95). About ten or twelve years ago, I set myself the goal to become self-sufficient in smoked sausage, cheese and wine. Even though we've approached it on all counts at one time or another, we've never put all three together at the same time. I guess I've never decided whether I want liver sclerosis or stomach cancer, but since I've made a lot more wine than smoked sausage, I suppose liver sclerosis is in the lead. This book might just bring stomach cancer closer though, (Haven't you heard of the stomach cancer - smoked meat connection?) since Kutas has all kinds of good recipes for smoked sausage. The book is aimed both at home production and someone interested in setting up a commercial sausage kitchen. The only step left out is the cleaning of sausage casings. (It's really not much fun, however, to try to make a sausage casing out of a piece of animal gut filled with its native material. I've got a very vivid memory of going to the basement towards the end of butchering day when I was about five years old, and finding my Mother, Aunt and Grandma each bent over tubs of pig guts, cleaning casings. Somehow that gave me the chauvinist idea that it was "woman's work.")

Almost everything one might want to know about sausage or meat curing is in the book. One bottleneck in home sausage production, if you don't clean your own casings, is obtaining commercial casings from large sausage makers. It is hard to find someone who will sell small quantities of casings. I've found this a problem every place I've lived and maybe it's because sausage making has been monopolized by the big meat packers. Perhaps Kutas will set up a small mail order business in salted casings so those of us interested in making 20 pounds of sausage won't have to buy enough casings to make 1,000 pounds.

Wood Heat by John Vivian; illustrated by Liz Buell. Rodale Press, 320 pages, paperback \$4.95.

by Frank Booker

What's this," I said. "Another book on wood burning and heating?" Seems as though they've been cropping up about as fast as the alders on some of the old wood lots that have been getting cut over lately — and most of them aren't much better, either. I was raised in a wood heated home — hauled the wood, banked the wood fires, lugged the ashes — until oil came in and saved us. Course, the last four years have found me cutting and hauling and banking and lugging once again to the point where I'm just about free from the oil mongers.

What could a book tell me that I, with all my years of experience and savvy, didn't already know? Well, being in favor of book learning to some extent, I thought I'd find out — and I did. The book told me plenty.

This is an important book to any back to the land family. The importance of this book lies in the actual information it contains, and in the range of that information. It is all there, and it is there in a clear concise style.

The chapter on flues is an example. It covers the building of flues, either temporary or permanent, the inspection, maintenance and repair of flues, and even throws in a little history. The illustrations are very well done, work well with the text, and are easy to understand. Safety is stressed, as it should be, and the author, to his credit, is not afraid to advise getting the help of a professional when the job warrants it. Probably most important of all, the author is speaking from first hand experience. The chapters on stoves, fireplaces and cooking are just as informative.

However, I'm afraid I must fault the chapter about getting the wood in, which contains some statements that are misleading or incorrect. For example, in order for a cord of wood to have the same heating value as 200 gallons of oil, it must be of the densest wood around here — hickory. Then it has to be burned as efficiently. Usually oil burners are more efficient converters of fuel. As to splitting wood while holding it with the foot, I have a badly mauled steel toed boot that is mute testimony to the folly of that. Suffice it to say that not all people with six toes have birth defects. Also, there is a photo of the author driving an axe into a stick with a maul. Very bad practice if you care for your axe at all. The head will spread where the handle goes in, and could some day come loose and fly wonderfully through the air.

All in all, I found the book to be a valuable addition to my library, and would recommend it as a must to anyone not very familiar with wood heat, but who wants to take it up.

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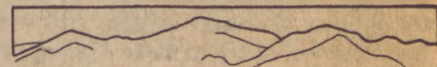
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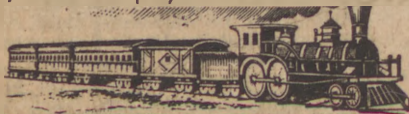
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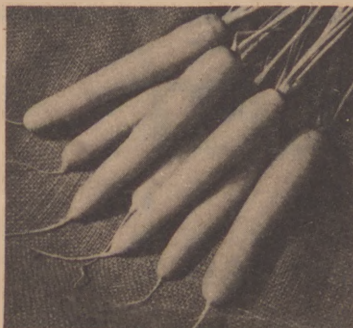
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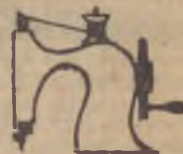
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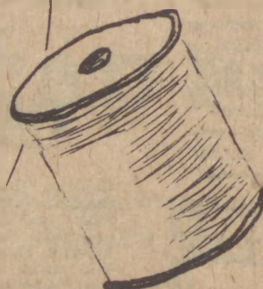
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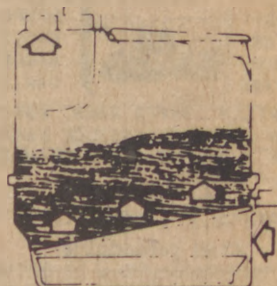
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